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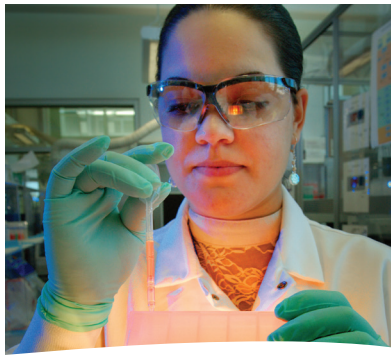
Fourth National Report on Human Exposure to Environmental Chemicals

Updated Tables, January 2019, Volume Two



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Special Analysis of Pooled Samples for Select Chemicals

Background

In the National Biomonitoring Program, the decision to pool samples before making chemical measurements has been driven by at least two factors:

- The need to improve the sensitivity of the measurement; that is, the chemical concentrations are so low that a larger sample volume is necessary to achieve lower limits of detection and greater likelihood of detectable results; and
- The need to reduce the number of samples analyzed, based on weighing the costs of the analysis against a low frequency of detectable results.

Pooled Samples in the *Updated Tables*

This release of the *Updated Tables* includes NHANES 2011-2012 and 2013-2014 results for chemicals that were measured in samples created from pools of serum samples. The historical data tables for these chemicals with results for NHANES survey periods prior to 2005-2006 are included and show results for individual sample measurements. Each historical data table is presented before its corresponding pooled sample data table. PCBs 114 and 123 and the brominated flame retardant BDE 209 were not measured prior to NHANES 2005-2006; therefore, for these chemicals only the pooled data tables are presented. In addition, five organochlorine pesticides were not measured after NHANES 2003-2004, so there are no pooled data tables for these chemicals.

Overview of Sample Pooling

Beginning with NHANES 2005-2006, the CDC is using a weighted pooled-sample design to measure serum concentrations of dioxins, furans, polychlorinated biphenyls (PCBs), organochlorine pesticides and metabolites, and the brominated flame retardants (polybrominated diphenyl ethers and the polybrominated diphenyl, PBB 153). In previous NHANES survey periods, measurements were made on individual serum samples from the U.S. population using stratified multistage selection.

Although NHANES sampling weights can be incorporated to make pooled sample estimates representative of the non-institutionalized U.S. population, there are statistical estimation challenges. Measurements of these chemicals in individuals tend to have a log-normal distribution with central tendency best estimated using a geometric mean. However, the measured value for a pooled sample is comparable to an arithmetic average of measurements in individuals. Consequently, the pooled sample result is expected to be higher than the geometric mean of multiple individual results. Another challenge is that direct calculation of the design effects required for accurate standard error and confidence interval estimation is not possible because samples are pooled across the design cells of the original survey. For these reasons, data tables showing the pooled sample results present only weighted arithmetic means and unadjusted standard errors for each category.

Interpreting the Data

The following cautions and suggestions apply to the pooled sample results and data tables:

a) Individual sample data, as explained above, tend to be log-normally distributed with central tendency best estimated using a geometric mean. Pooled data are comparable to an arithmetic mean of individual sample results and therefore, pooled data results are expected to be higher than the geometric mean of individual sample results. Therefore, the weighted arithmetic means from pooled samples are expected to be higher than the geometric means provided in the historical (companion) data tables or in other publications based on data provided on individual results.

b) The standard errors are unadjusted and therefore, do not reflect the design effects of the survey. In many cases, the standard errors are based on very few pooled sample measurements and cannot be expected to accurately reflect the true imprecision of the weighted arithmetic mean estimates. Therefore, when the unadjusted standard error was more than 30% of the weighted arithmetic mean, this is noted with a double asterisk (**) and footnoted.

Additional information about sample pooling is available from the following sources:

Geometric mean estimation from pooled samples (2007)

http://www.ncbi.nlm.nih.gov/pubmed/17618673

Characterizing populations of individuals using pooled samples (2010)

http://www.ncbi.nlm.nih.gov/pubmed/19002216

Use of pooled samples from the National Health and Nutrition Examination Survey (2012)

http://www.ncbi.nlm.nih.gov/pubmed/22492247

Estimation of exposure distributions from pooled samples (2014)

http://www.ncbi.nlm.nih.gov/pubmed/25213192

Serum Aldrin (lipid adjusted) (2001 – 2004)

CAS Number 309-00-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2275
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1946
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1519
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1358
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1057
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	946
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1218
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1000
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	456
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	512
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.94 and 7.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Aldrin (whole weight) (2001 – 2004)

CAS Number 309-00-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2275
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1946
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1519
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1358
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1057
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	946
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1218
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1000
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	456
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	512
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	881

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (lipid adjusted) (2001 – 2004)

CAS Number 60-57-1

Also a Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	15.3 (14.5-17.4)	20.3 (18.7-22.4)	2159
Total population (2003 - 2004)	*	< LOD	9.00 (8.40-9.90)	14.4 (12.1-16.4)	19.0 (15.8-24.2)	1952
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	716
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	9.10 (<LOD-16.4)	587
Age 20+ years (2001 - 2002)	*	< LOD	10.5 (<LOD-11.6)	16.6 (15.1-18.2)	21.3 (19.1-24.0)	1443
Age 20+ years (2003 - 2004)	*	< LOD	9.50 (8.80-10.4)	14.9 (12.8-17.0)	19.5 (16.0-25.7)	1365
Males (2001 - 2002)	*	< LOD	< LOD	15.7 (14.4-18.7)	20.3 (18.6-24.0)	1007
Males (2003 - 2004)	*	< LOD	9.30 (8.40-10.8)	15.1 (13.1-19.1)	21.9 (14.9-38.5)	954
Females (2001 - 2002)	*	< LOD	< LOD	15.3 (13.4-17.2)	19.8 (18.0-21.6)	1152
Females (2003 - 2004)	*	< LOD	8.70 (7.80-9.50)	12.8 (11.2-15.4)	16.9 (13.9-22.4)	998
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	11.7 (<LOD-15.1)	15.4 (12.7-19.1)	539
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	10.8 (9.00-14.1)	14.0 (10.6-24.1)	456
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	15.0 (11.8-19.1)	20.6 (15.8-25.2)	484
Non-Hispanic blacks (2003 - 2004)	*	< LOD	8.80 (<LOD-10.1)	13.0 (10.5-15.8)	15.9 (13.3-21.5)	487
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	15.6 (14.8-17.8)	21.1 (18.9-23.6)	980
Non-Hispanic whites (2003 - 2004)	*	< LOD	9.30 (8.60-10.2)	14.9 (12.5-17.5)	19.7 (15.6-33.4)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 7.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (whole weight) (2001 – 2004)

CAS Number 60-57-1

Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	.110 (.100-.120)	.150 (.130-.170)	2159
Total population (2003 - 2004)	*	< LOD	.059 (.054-.064)	.098 (.083-.112)	.138 (.109-.177)	1952
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	716
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.048 (<LOD-.093)	587
Age 20+ years (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.120 (.110-.130)	.160 (.140-.180)	1443
Age 20+ years (2003 - 2004)	*	< LOD	.062 (.056-.069)	.102 (.088-.117)	.139 (.112-.182)	1365
Males (2001 - 2002)	*	< LOD	< LOD	.120 (.100-.130)	.160 (.130-.190)	1007
Males (2003 - 2004)	*	< LOD	.064 (.054-.075)	.109 (.084-.138)	.147 (.108-.242)	954
Females (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.110)	.140 (.120-.160)	1152
Females (2003 - 2004)	*	< LOD	.055 (.049-.060)	.089 (.077-.100)	.110 (.096-.147)	998
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.090 (<LOD-.100)	.120 (.090-.140)	539
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	.077 (.062-.116)	.113 (.073-.158)	456
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.090 (.070-.110)	.130 (.090-.190)	484
Non-Hispanic blacks (2003 - 2004)	*	< LOD	.053 (<LOD-.058)	.080 (.063-.101)	.103 (.080-.149)	487
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.110 (.100-.130)	.150 (.130-.180)	980
Non-Hispanic whites (2003 - 2004)	*	< LOD	.062 (.054-.070)	.103 (.086-.124)	.139 (.109-.202)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (lipid adjusted) (2001 – 2004)

CAS Number 72-20-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	5.10 (<LOD-5.40)	2187
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1825
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	5.20 (<LOD-5.50)	5.60 (5.40-5.70)	730
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	539
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1457
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1286
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	5.20 (<LOD-5.40)	1022
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	885
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1165
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	940
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	5.30 (<LOD-6.50)	547
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	433
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	5.40 (<LOD-6.30)	487
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	446
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	5.10 (<LOD-5.40)	1000
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	831

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.09 and 7.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (whole weight) (2001 – 2004)

CAS Number 72-20-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	.020 (<LOD-.020)	2187
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1825
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	.020 (<LOD-.020)	.020 (.020-.020)	730
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	539
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1457
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1286
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	.020 (<LOD-.020)	1022
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	885
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1165
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	940
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.020 (<LOD-.020)	547
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	433
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	.020 (<LOD-.020)	487
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	446
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	.020 (<LOD-.020)	1000
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	831

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (lipid adjusted) (1999 – 2004)

CAS Number 1024-57-3

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	15.4 (<LOD-19.8)	24.0 (15.1-38.8)	1589
Total population (2001 - 2002)	*	< LOD	< LOD	14.8 (13.0-17.8)	21.8 (18.2-27.3)	2259
Total population (2003 - 2004)	*	< LOD	< LOD	13.4 (11.1-15.9)	18.9 (15.9-23.0)	1963
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	638
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	741
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	17.8 (<LOD-23.9)	27.1 (16.8-46.1)	951
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	15.7 (13.7-18.8)	23.1 (19.1-29.1)	1518
Age 20+ years (2003 - 2004)	*	< LOD	8.20 (<LOD-9.50)	14.5 (11.6-17.6)	20.6 (16.8-24.0)	1371
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	19.6 (<LOD-27.2)	760
Males (2001 - 2002)	*	< LOD	< LOD	13.9 (12.0-17.8)	20.8 (15.9-25.3)	1047
Males (2003 - 2004)	*	< LOD	< LOD	13.4 (11.2-16.4)	18.6 (16.6-21.3)	956
Females (1999 - 2000)	*	< LOD	< LOD	18.2 (<LOD-25.2)	27.7 (16.0-54.3)	829
Females (2001 - 2002)	*	< LOD	< LOD	15.6 (13.3-18.2)	23.2 (18.9-29.8)	1212
Females (2003 - 2004)	*	< LOD	< LOD	13.5 (11.0-16.8)	19.6 (14.8-24.5)	1007
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	15.3 (<LOD-25.6)	22.2 (<LOD-62.3)	598
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	13.2 (<LOD-16.3)	16.8 (13.8-23.1)	553
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	10.6 (8.10-13.5)	13.7 (10.9-16.5)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	19.5 (<LOD-32.4)	336
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	14.6 (11.7-19.0)	21.5 (18.2-27.3)	503
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	13.5 (10.1-16.8)	18.6 (12.7-25.2)	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	16.5 (<LOD-21.8)	26.4 (<LOD-54.3)	539
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	15.3 (13.0-19.6)	22.8 (18.9-29.8)	1041
Non-Hispanic whites (2003 - 2004)	*	< LOD	7.90 (<LOD-9.40)	14.0 (11.2-17.6)	20.4 (15.8-24.5)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (whole weight) (1999 – 2004)

CAS Number 1024-57-3

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.110 (<LOD-.140)	.180 (.110-.220)	1589
Total population (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.120)	.150 (.130-.180)	2259
Total population (2003 - 2004)	*	< LOD	< LOD	.094 (.076-.108)	.128 (.108-.161)	1963
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	638
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	741
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.130 (<LOD-.170)	.190 (.130-.270)	951
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	.110 (.090-.140)	.170 (.140-.190)	1518
Age 20+ years (2003 - 2004)	*	< LOD	.057 (<LOD-.063)	.101 (.082-.116)	.135 (.113-.173)	1371
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	.150 (<LOD-.180)	760
Males (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.120)	.150 (.110-.180)	1047
Males (2003 - 2004)	*	< LOD	< LOD	.094 (.077-.111)	.126 (.106-.149)	956
Females (1999 - 2000)	*	< LOD	< LOD	.120 (<LOD-.190)	.200 (.120-.310)	829
Females (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.130)	.170 (.130-.200)	1212
Females (2003 - 2004)	*	< LOD	< LOD	.096 (.071-.108)	.133 (.107-.173)	1007
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	.100 (<LOD-.170)	.170 (<LOD-.380)	598
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.090 (<LOD-.110)	.120 (.100-.240)	553
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	.069 (.053-.097)	.098 (.074-.113)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	.110 (<LOD-.200)	336
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.090 (.070-.110)	.130 (.100-.180)	503
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	.087 (.067-.104)	.110 (.090-.157)	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.120 (<LOD-.170)	.180 (<LOD-.310)	539
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.130)	.170 (.130-.190)	1041
Non-Hispanic whites (2003 - 2004)	*	< LOD	.055 (<LOD-.063)	.101 (.077-.117)	.135 (.111-.180)	888

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Oxychlordane (lipid adjusted) (1999 – 2004)

CAS Number 27304-13-8

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	20.8 (17.8-23.0)	34.4 (30.5-38.6)	44.8 (40.2-49.6)	1661
Total population (2001 - 2002)	11.4 (<LOD-12.5)	11.1 (<LOD-12.5)	21.7 (19.3-24.4)	36.4 (31.5-41.4)	49.7 (42.0-61.2)	2249
Total population (2003 - 2004)	9.37 (8.69-10.1)	10.3 (9.20-11.0)	18.0 (16.8-20.1)	29.0 (26.8-32.1)	37.7 (34.8-43.8)	1978
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	663
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	11.5 (<LOD-12.6)	752
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	9.20 (<LOD-11.5)	11.5 (8.10-18.9)	595
Age 20+ years (1999 - 2000)	*	< LOD	23.3 (21.0-25.9)	37.7 (32.3-43.5)	47.7 (43.1-50.8)	998
Age 20+ years (2001 - 2002)	12.9 (11.7-14.3)	13.3 (11.4-14.9)	23.9 (21.2-26.7)	38.5 (33.4-45.9)	53.1 (44.1-65.9)	1497
Age 20+ years (2003 - 2004)	10.6 (9.82-11.5)	11.4 (10.6-12.4)	19.9 (17.9-21.5)	31.3 (28.8-33.2)	39.2 (36.5-44.8)	1383
Males (1999 - 2000)	*	< LOD	18.1 (16.1-19.6)	31.3 (25.9-38.2)	42.4 (35.3-49.6)	793
Males (2001 - 2002)	11.1 (<LOD-12.6)	11.1 (<LOD-12.6)	20.6 (16.6-24.9)	33.1 (27.5-43.8)	48.1 (40.2-56.9)	1049
Males (2003 - 2004)	9.10 (8.20-10.1)	9.90 (8.30-11.2)	17.1 (15.6-18.4)	27.6 (25.3-32.2)	36.0 (32.7-39.2)	963
Females (1999 - 2000)	*	< LOD	22.3 (20.1-25.9)	36.9 (31.5-40.3)	46.2 (39.1-51.8)	868
Females (2001 - 2002)	11.7 (10.7-12.7)	11.0 (<LOD-12.9)	23.1 (20.7-25.0)	37.5 (34.5-42.1)	52.8 (42.7-70.0)	1200
Females (2003 - 2004)	9.63 (8.89-10.4)	10.6 (9.10-11.3)	20.1 (17.4-21.7)	30.3 (27.5-32.7)	41.9 (36.3-45.5)	1015
Mexican Americans (1999 - 2000)	*	< LOD	16.3 (<LOD-19.9)	28.9 (18.8-42.0)	39.9 (26.8-61.0)	628
Mexican Americans (2001 - 2002)	*	< LOD	13.9 (11.0-18.4)	27.2 (21.0-33.1)	37.9 (29.9-42.0)	557
Mexican Americans (2003 - 2004)	*	< LOD	12.8 (10.1-15.8)	22.9 (15.8-31.4)	31.4 (22.4-51.6)	462
Non-Hispanic blacks (1999 - 2000)	*	< LOD	18.7 (<LOD-32.2)	39.9 (26.5-47.3)	48.6 (43.5-65.5)	350
Non-Hispanic blacks (2001 - 2002)	11.7 (<LOD-13.6)	< LOD	22.8 (17.2-28.3)	41.4 (30.6-53.7)	56.5 (41.8-73.5)	501
Non-Hispanic blacks (2003 - 2004)	8.74 (<LOD-10.2)	8.70 (<LOD-10.6)	18.9 (15.9-21.5)	35.1 (25.4-40.2)	44.2 (37.7-56.8)	493
Non-Hispanic whites (1999 - 2000)	*	< LOD	21.8 (18.6-24.6)	34.2 (28.9-40.9)	44.0 (37.2-49.8)	559
Non-Hispanic whites (2001 - 2002)	12.1 (11.0-13.3)	11.8 (10.5-13.9)	23.0 (20.1-25.7)	37.5 (31.6-45.1)	52.2 (41.0-67.4)	1031
Non-Hispanic whites (2003 - 2004)	10.2 (9.36-11.1)	11.2 (10.0-12.1)	19.7 (17.2-21.7)	30.3 (26.8-33.6)	37.7 (34.3-45.5)	898

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	4.80	1.1	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.52	0.52	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	6.50	1.06	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	6.93	0.75	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	14.9	1.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	12.1	0.5	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	25.4	2.5	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	26.1	1.4	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	22.7	1.5	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.98	0.3	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	3.66	0.74	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	5.64	0.56	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	5.79	0.51	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	13.7	1	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	11.8	0.8	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	28.9	2.6	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	31.8	2.3	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	28.1	2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	4.08	0.49	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.80	0.75	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	4.53	0.9	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	5.72	0.28	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	12.0	1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	12.1	1.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	32.7	5.3	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	26.6	2.5	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	25.3	3.6	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 14.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.92	0.31	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	5.56	0.68	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	4.45	0.79	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	14.5	0.8	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	14.3	1	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	52.9	11.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	38.1	1.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	40.3	3.9	7
Mexican American Male, 12-19 years (2005 - 2006)	2.54	0.33	11
Mexican American Male, 12-19 years (2007 - 2008)	2.76	0.45	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	5.84	1.22	9
Mexican American Male, 20-39 years (2007 - 2008)	4.93	0.38	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	11.0	1.4	4
Mexican American Male, 40-59 years (2007 - 2008)	12.0	0.7	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	18.6	2.4	4
Mexican American Male, 60+ years (2007 - 2008)	21.9	2.2	5
Mexican American Male, 60+ years (2009 - 2010)	30.5	4	5
Mexican American Female, 12-19 years (2005 - 2006)	2.39	0.25	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	4.39	0.5	9
Mexican American Female, 20-39 years (2007 - 2008)	4.17	0.55	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	13.7	1.8	6
Mexican American Female, 40-59 years (2007 - 2008)	13.4	2.2	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	27.4	3.8	3
Mexican American Female, 60+ years (2007 - 2008)	28.2	4.3	5
Mexican American Female, 60+ years (2009 - 2010)	32.0	6.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 14.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	26.4	3.2	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	28.2	3.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 14.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	2.44	0.27	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	2.23	0.17	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	4.27	0.25	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	3.64	0.27	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	10.8	0.5	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	9.98	0.67	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	24.3	3.1	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	23.1	1.2	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	2.75	0.55	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	2.42	0.2	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	3.82	0.4	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	4.40	0.37	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	12.7	1.2	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	10.8	0.7	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	28.9	3.9	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	28.6	2.4	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.84	0.6	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	2.59	0.13	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	4.43	0.51	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	3.83	0.44	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	8.62	0.68	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	10.8	1.3	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	21.5	1.5	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	24.3	3.5	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.87	0.28	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.32	0.22	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	3.71	0.56	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	3.04	0.32	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	12.2	1.2	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	13.7	1.4	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	29.7	2.8	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	39.0	4.8	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	2.17	0.33	5
Mexican American Male, 12-19 years (2013 - 2014)	1.62	0.3	7
Mexican American Male, 20-39 years (2011 - 2012)	4.15	0.29	4
Mexican American Male, 20-39 years (2013 - 2014)	3.15	0.36	5
Mexican American Male, 40-59 years (2011 - 2012)	11.2	2	4
Mexican American Male, 40-59 years (2013 - 2014)	7.65	0.96	5
Mexican American Male, 60+ years (2011 - 2012)	15.9	4.3	2
Mexican American Male, 60+ years (2013 - 2014)	17.7	2.7	4
Mexican American Female, 12-19 years (2011 - 2012)	1.76	0.46	4
Mexican American Female, 12-19 years (2013 - 2014)	1.83	0.19	7
Mexican American Female, 20-39 years (2011 - 2012)	3.04	0.52	4
Mexican American Female, 20-39 years (2013 - 2014)	3.65	0.51	5
Mexican American Female, 40-59 years (2011 - 2012)	10.8	0.6	3
Mexican American Female, 40-59 years (2013 - 2014)	7.84	1.62	6
Mexican American Female, 60+ years (2011 - 2012)	27.4	4.1	3
Mexican American Female, 60+ years (2013 - 2014)	24.7	1.1	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.83	0.25	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	3.27	0.24	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	7.23	0.66	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	16.5	2.4	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.90	0.22	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	3.14	0.34	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	8.15	0.99	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	22.7	1.4	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.73	0.02	3
Asian Male, 12-19 years (2013 - 2014)	2.01	0.35	3
Asian Male, 20-39 years (2011 - 2012)	3.94	0.41	6
Asian Male, 20-39 years (2013 - 2014)	3.10	0.38	4
Asian Male, 40-59 years (2011 - 2012)	7.01	0.73	6
Asian Male, 40-59 years (2013 - 2014)	6.73	1.31	4
Asian Male, 60+ years (2011 - 2012)	11.3	1.7	4
Asian Male, 60+ years (2013 - 2014)	13.3	2.4	3
Asian Female, 12-19 years (2011 - 2012)	1.49	0.18	4
Asian Female, 12-19 years (2013 - 2014)	2.28	0.35	3
Asian Female, 20-39 years (2011 - 2012)	3.61	0.84	6
Asian Female, 20-39 years (2013 - 2014)	3.31	0.35	5
Asian Female, 40-59 years (2011 - 2012)	6.87	1.24	6
Asian Female, 40-59 years (2013 - 2014)	7.09	0.76	7
Asian Female, 60+ years (2011 - 2012)	**25.8	10.3	3
Asian Female, 60+ years (2013 - 2014)	18.2	3.8	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (1999 – 2004)

CAS Number 27304-13-8

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	.140 (.120-.150)	.260 (.200-.290)	.310 (.290-.340)	1661
Total population (2001 - 2002)	.070 (<LOD-.077)	.070 (<LOD-.080)	.140 (.130-.160)	.250 (.220-.300)	.350 (.290-.440)	2249
Total population (2003 - 2004)	.057 (.053-.062)	.063 (.058-.068)	.119 (.106-.133)	.204 (.189-.213)	.269 (.246-.291)	1978
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	663
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	.060 (<LOD-.070)	752
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.047 (<LOD-.063)	.066 (.048-.092)	595
Age 20+ years (1999 - 2000)	*	< LOD	.150 (.140-.180)	.280 (.230-.300)	.330 (.300-.400)	998
Age 20+ years (2001 - 2002)	.082 (.074-.091)	.080 (.070-.090)	.160 (.140-.180)	.270 (.230-.320)	.370 (.310-.450)	1497
Age 20+ years (2003 - 2004)	.067 (.061-.073)	.073 (.066-.079)	.130 (.115-.146)	.210 (.203-.227)	.286 (.258-.320)	1383
Males (1999 - 2000)	*	< LOD	.120 (.100-.140)	.220 (.180-.280)	.300 (.260-.340)	793
Males (2001 - 2002)	.069 (<LOD-.079)	.070 (<LOD-.080)	.130 (.120-.160)	.230 (.190-.300)	.320 (.250-.430)	1049
Males (2003 - 2004)	.056 (.050-.063)	.063 (.055-.076)	.115 (.100-.126)	.189 (.168-.207)	.258 (.216-.302)	963
Females (1999 - 2000)	*	< LOD	.140 (.130-.170)	.270 (.200-.310)	.320 (.290-.400)	868
Females (2001 - 2002)	.071 (.065-.077)	.070 (<LOD-.080)	.150 (.130-.160)	.260 (.230-.310)	.370 (.280-.510)	1200
Females (2003 - 2004)	.058 (.053-.064)	.063 (.057-.068)	.126 (.104-.146)	.208 (.199-.231)	.286 (.245-.331)	1015
Mexican Americans (1999 - 2000)	*	< LOD	.100 (<LOD-.130)	.210 (.130-.320)	.290 (.190-.410)	628
Mexican Americans (2001 - 2002)	*	< LOD	.100 (.070-.130)	.200 (.150-.240)	.280 (.210-.360)	557
Mexican Americans (2003 - 2004)	*	< LOD	.083 (.066-.104)	.149 (.108-.230)	.230 (.148-.373)	462
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.110 (<LOD-.170)	.240 (.170-.290)	.320 (.240-.430)	350
Non-Hispanic blacks (2001 - 2002)	.066 (<LOD-.077)	< LOD	.130 (.090-.170)	.260 (.180-.350)	.350 (.240-.560)	501
Non-Hispanic blacks (2003 - 2004)	.049 (<LOD-.057)	.050 (<LOD-.062)	.112 (.087-.136)	.225 (.165-.287)	.315 (.253-.348)	493
Non-Hispanic whites (1999 - 2000)	*	< LOD	.140 (.120-.170)	.270 (.200-.300)	.320 (.280-.380)	559
Non-Hispanic whites (2001 - 2002)	.075 (.068-.083)	.080 (.070-.090)	.150 (.130-.170)	.250 (.220-.310)	.370 (.280-.450)	1031
Non-Hispanic whites (2003 - 2004)	.063 (.058-.070)	.070 (.063-.077)	.128 (.110-.148)	.207 (.190-.223)	.271 (.242-.315)	898

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.026	0.006	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.018	0.003	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.049	0.01	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.047	0.006	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.113	0.013	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.089	0.005	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.171	0.015	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.167	0.009	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.137	0.008	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.016	0.002	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.017	0.004	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.037	0.004	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.035	0.003	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.101	0.01	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.079	0.006	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.210	0.017	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.214	0.017	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.170	0.012	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.020	0.002	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.013	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.027	0.005	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.032	0.002	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.076	0.006	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.077	0.007	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.193	0.028	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.162	0.017	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.135	0.019	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.014	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.032	0.004	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.022	0.004	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.093	0.006	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.086	0.008	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.347	0.067	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.229	0.012	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.229	0.017	7
Mexican American Male, 12-19 years (2005 - 2006)	.014	0.002	11
Mexican American Male, 12-19 years (2007 - 2008)	.014	0.002	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	.041	0.007	9
Mexican American Male, 20-39 years (2007 - 2008)	.034	0.004	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.089	0.014	4
Mexican American Male, 40-59 years (2007 - 2008)	.087	0.009	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.137	0.025	4
Mexican American Male, 60+ years (2007 - 2008)	.156	0.011	5
Mexican American Male, 60+ years (2009 - 2010)	.188	0.025	5
Mexican American Female, 12-19 years (2005 - 2006)	.013	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.029	0.003	9
Mexican American Female, 20-39 years (2007 - 2008)	.024	0.004	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.100	0.011	6
Mexican American Female, 40-59 years (2007 - 2008)	.090	0.014	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.208	0.035	3
Mexican American Female, 60+ years (2007 - 2008)	.193	0.03	5
Mexican American Female, 60+ years (2009 - 2010)	.176	0.033	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2005 – 2010)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.166	0.019	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.165	0.02	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.012	0.002	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.010	0.001	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.025	0.002	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.020	0.002	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.072	0.005	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.059	0.005	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.134	0.017	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.124	0.007	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.015	0.003	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.012	0.001	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.021	0.002	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.023	0.002	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.081	0.008	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.064	0.005	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.177	0.023	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.170	0.016	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.013	0.003	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.011	0	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.023	0.003	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.019	0.002	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.048	0.004	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.060	0.007	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.117	0.009	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.126	0.02	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.008	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.010	0.001	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.020	0.003	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.015	0.002	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.074	0.008	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.072	0.008	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.166	0.015	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.208	0.024	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.011	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.007	0.001	7
Mexican American Male, 20-39 years (2011 - 2012)	.026	0.003	4
Mexican American Male, 20-39 years (2013 - 2014)	.019	0.002	5
Mexican American Male, 40-59 years (2011 - 2012)	.085	0.01	4
Mexican American Male, 40-59 years (2013 - 2014)	.047	0.006	5
Mexican American Male, 60+ years (2011 - 2012)	.094	0.023	2
Mexican American Male, 60+ years (2013 - 2014)	.094	0.014	4
Mexican American Female, 12-19 years (2011 - 2012)	.009	0.002	4
Mexican American Female, 12-19 years (2013 - 2014)	.009	0.001	7
Mexican American Female, 20-39 years (2011 - 2012)	.017	0.002	4
Mexican American Female, 20-39 years (2013 - 2014)	.019	0.003	5
Mexican American Female, 40-59 years (2011 - 2012)	.064	0.005	3
Mexican American Female, 40-59 years (2013 - 2014)	.046	0.01	6
Mexican American Female, 60+ years (2011 - 2012)	.170	0.032	3
Mexican American Female, 60+ years (2013 - 2014)	.144	0.008	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.009	0.001	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.019	0.001	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.044	0.004	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.088	0.012	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.009	0.001	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.017	0.002	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.047	0.006	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.134	0.008	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2011 – 2014)

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.009	0	3
Asian Male, 12-19 years (2013 - 2014)	.009	0.002	3
Asian Male, 20-39 years (2011 - 2012)	.022	0.002	6
Asian Male, 20-39 years (2013 - 2014)	.018	0.003	4
Asian Male, 40-59 years (2011 - 2012)	.043	0.005	6
Asian Male, 40-59 years (2013 - 2014)	.038	0.007	4
Asian Male, 60+ years (2011 - 2012)	.061	0.008	4
Asian Male, 60+ years (2013 - 2014)	.079	0.009	3
Asian Female, 12-19 years (2011 - 2012)	.007	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.011	0.002	3
Asian Female, 20-39 years (2011 - 2012)	.020	0.004	6
Asian Female, 20-39 years (2013 - 2014)	.017	0.002	5
Asian Female, 40-59 years (2011 - 2012)	.042	0.009	6
Asian Female, 40-59 years (2013 - 2014)	.041	0.004	7
Asian Female, 60+ years (2011 - 2012)	**.149	0.063	3
Asian Female, 60+ years (2013 - 2014)	.106	0.017	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (1999 – 2004)

CAS Number 39765-80-5

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	18.3 (16.7-20.0)	17.9 (16.1-20.1)	31.9 (28.9-36.0)	55.1 (48.4-62.6)	79.4 (67.6-88.1)	1933
Total population (2001 - 2002)	17.0 (15.2-18.9)	17.9 (15.5-20.5)	33.7 (30.2-37.2)	56.3 (49.6-66.0)	78.2 (64.0-113)	2286
Total population (2003 - 2004)	14.7 (13.1-16.5)	14.8 (13.5-17.0)	30.2 (26.7-32.5)	49.0 (42.6-54.7)	68.3 (58.6-82.3)	1955
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	18.8 (<LOD-20.6)	25.2 (19.1-28.4)	664
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	13.4 (11.8-16.4)	19.2 (15.2-23.5)	758
Age 12-19 years (2003 - 2004)	*	< LOD	8.70 (<LOD-12.5)	16.1 (10.7-23.7)	22.6 (16.1-34.6)	589
Age 20+ years (1999 - 2000)	20.8 (19.0-22.8)	20.7 (18.0-23.5)	35.4 (30.9-40.3)	59.9 (51.8-67.6)	82.7 (74.9-89.6)	1269
Age 20+ years (2001 - 2002)	19.8 (17.6-22.3)	20.9 (19.0-23.1)	36.6 (32.8-41.1)	60.6 (52.5-69.9)	84.9 (66.0-123)	1528
Age 20+ years (2003 - 2004)	16.9 (15.1-18.9)	17.3 (14.6-20.0)	31.8 (28.9-35.3)	51.4 (45.9-58.6)	74.7 (59.8-90.0)	1366
Males (1999 - 2000)	17.7 (16.5-19.1)	17.2 (14.9-20.1)	30.2 (27.7-34.2)	51.1 (47.3-58.6)	78.2 (60.2-88.1)	922
Males (2001 - 2002)	17.0 (14.8-19.5)	18.3 (14.8-21.1)	34.4 (28.3-39.3)	54.8 (45.0-68.9)	78.2 (59.7-113)	1062
Males (2003 - 2004)	14.8 (12.7-17.3)	14.6 (12.2-18.0)	30.8 (26.7-35.3)	51.0 (42.0-59.4)	68.6 (56.0-93.8)	955
Females (1999 - 2000)	18.8 (16.7-21.1)	18.4 (16.1-22.2)	32.9 (29.0-38.3)	59.0 (48.4-67.6)	80.8 (71.5-95.5)	1011
Females (2001 - 2002)	17.0 (15.4-18.7)	17.6 (15.0-20.3)	32.8 (30.4-36.7)	56.9 (51.9-65.5)	78.1 (65.5-111)	1224
Females (2003 - 2004)	14.5 (13.1-16.1)	15.0 (13.8-16.3)	28.2 (25.3-32.8)	48.1 (41.4-52.7)	68.3 (56.8-79.9)	1000
Mexican Americans (1999 - 2000)	*	< LOD	25.1 (22.7-29.5)	40.7 (35.1-51.8)	56.3 (45.8-77.2)	650
Mexican Americans (2001 - 2002)	11.9 (<LOD-14.6)	10.6 (<LOD-14.5)	26.0 (19.3-30.4)	47.9 (36.3-57.2)	59.8 (49.3-74.1)	558
Mexican Americans (2003 - 2004)	10.2 (7.86-13.2)	9.10 (<LOD-11.1)	20.7 (11.1-34.7)	39.5 (25.9-65.5)	62.2 (36.0-93.4)	457
Non-Hispanic blacks (1999 - 2000)	20.3 (17.0-24.1)	17.5 (15.4-23.5)	35.7 (28.9-45.5)	77.0 (60.8-90.7)	107 (84.0-143)	404
Non-Hispanic blacks (2001 - 2002)	18.8 (15.4-22.9)	19.2 (14.7-22.0)	36.8 (28.3-50.5)	73.6 (50.8-110)	112 (68.7-160)	514
Non-Hispanic blacks (2003 - 2004)	14.4 (12.2-17.0)	13.8 (11.2-16.3)	30.8 (26.5-36.1)	59.9 (47.7-77.7)	86.6 (56.8-129)	486
Non-Hispanic whites (1999 - 2000)	19.1 (17.2-21.1)	19.0 (16.9-22.2)	32.8 (28.0-37.6)	52.5 (44.9-64.4)	74.0 (62.3-86.7)	722
Non-Hispanic whites (2001 - 2002)	17.5 (15.6-19.7)	19.0 (16.3-21.1)	34.0 (29.7-38.1)	55.5 (45.9-69.4)	78.7 (59.1-126)	1052
Non-Hispanic whites (2003 - 2004)	15.8 (13.7-18.2)	16.0 (13.8-19.3)	30.8 (26.4-35.0)	48.8 (42.1-55.7)	67.6 (57.5-87.3)	889

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**9.03	2.84	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	6.06	1.08	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	6.17	1.26	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	11.3	2	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	11.1	1.5	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	9.29	0.68	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	26.9	3.9	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	21.5	1.2	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	17.9	1.3	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	49.4	7.9	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	50.6	4.2	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	36.4	3.6	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	4.94	0.52	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	6.70	0.89	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.65	0.2	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	9.70	1.44	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	8.95	0.97	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	6.25	0.5	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	21.8	2.3	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	16.4	1.5	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	17.7	1.6	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	50.2	6.1	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	51.7	6.1	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	42.9	4.1	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	6.50	0.67	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	4.71	0.65	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	4.25	0.95	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	8.24	0.86	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	8.87	0.97	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	7.63	1.89	5
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	22.0	2.6	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	21.7	2.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	22.5	2.5	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	66.4	13.2	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	54.4	4.9	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	51.4	7.9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.77, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	4.44	0.54	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**3.39	1.18	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	3.27	0.38	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	9.32	1.22	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	6.42	0.6	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	6.82	0.5	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	24.1	1.5	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	20.4	1.7	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	21.7	3.1	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	89.0	15.4	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	68.0	3.9	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	64.2	5.5	7
Mexican American Male, 12-19 years (2005 - 2006)	3.71	0.49	11
Mexican American Male, 12-19 years (2007 - 2008)	3.91	0.81	6
Mexican American Male, 12-19 years (2009 - 2010)	3.71	0.37	8
Mexican American Male, 20-39 years (2005 - 2006)	7.58	0.75	9
Mexican American Male, 20-39 years (2007 - 2008)	8.43	0.97	9
Mexican American Male, 20-39 years (2009 - 2010)	6.37	1.07	8
Mexican American Male, 40-59 years (2005 - 2006)	18.8	2.4	4
Mexican American Male, 40-59 years (2007 - 2008)	24.5	2.9	6
Mexican American Male, 40-59 years (2009 - 2010)	18.8	1.6	8
Mexican American Male, 60+ years (2005 - 2006)	30.7	6.3	4
Mexican American Male, 60+ years (2007 - 2008)	40.3	4.5	5
Mexican American Male, 60+ years (2009 - 2010)	62.9	11.8	5
Mexican American Female, 12-19 years (2005 - 2006)	3.53	0.23	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	2.76	0.33	7
Mexican American Female, 20-39 years (2005 - 2006)	6.40	0.75	9
Mexican American Female, 20-39 years (2007 - 2008)	7.55	0.9	8
Mexican American Female, 20-39 years (2009 - 2010)	6.06	0.72	10
Mexican American Female, 40-59 years (2005 - 2006)	18.5	1.7	6
Mexican American Female, 40-59 years (2007 - 2008)	22.6	4.4	6
Mexican American Female, 40-59 years (2009 - 2010)	20.1	2.2	9
Mexican American Female, 60+ years (2005 - 2006)	46.4	9.8	3
Mexican American Female, 60+ years (2007 - 2008)	46.9	8	5
Mexican American Female, 60+ years (2009 - 2010)	58.3	10.9	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.77, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	3.48	0.3	11
All Hispanic Male, 20-39 years (2009 - 2010)	7.49	1.04	13
All Hispanic Male, 40-59 years (2009 - 2010)	17.2	1.3	13
All Hispanic Male, 60+ years (2009 - 2010)	52.2	9	8
All Hispanic Female, 12-19 years (2009 - 2010)	2.84	0.26	10
All Hispanic Female, 20-39 years (2009 - 2010)	6.08	0.64	14
All Hispanic Female, 40-59 years (2009 - 2010)	17.6	1.9	14
All Hispanic Female, 60+ years (2009 - 2010)	51.3	7.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.77, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	3.86	0.56	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	3.21	0.37	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	7.47	0.65	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	6.34	0.49	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	18.7	1.1	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	16.9	1.3	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	52.7	8.6	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	42.1	3.2	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.84	1.16	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	3.55	0.41	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	6.85	0.85	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	7.62	0.86	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	21.5	3.3	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	17.3	1.9	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	47.5	8.4	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	45.5	4.9	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	4.57	1.05	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	4.11	0.54	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	8.42	0.87	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	6.07	0.83	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	16.2	1.9	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	19.6	3.3	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	43.2	3.1	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	41.6	3.9	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	3.28	0.65	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	3.80	0.55	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	5.76	0.87	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	4.60	0.41	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	20.9	2.7	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	20.9	2	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	50.8	6.2	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	61.6	8.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	3.58	0.34	5
Mexican American Male, 12-19 years (2013 - 2014)	2.59	0.33	7
Mexican American Male, 20-39 years (2011 - 2012)	7.23	0.97	4
Mexican American Male, 20-39 years (2013 - 2014)	5.03	0.77	5
Mexican American Male, 40-59 years (2011 - 2012)	21.8	3	4
Mexican American Male, 40-59 years (2013 - 2014)	15.7	1.7	5
Mexican American Male, 60+ years (2011 - 2012)	24.9	2.8	2
Mexican American Male, 60+ years (2013 - 2014)	36.5	7.3	4
Mexican American Female, 12-19 years (2011 - 2012)	2.91	0.44	4
Mexican American Female, 12-19 years (2013 - 2014)	2.27	0.24	7
Mexican American Female, 20-39 years (2011 - 2012)	5.04	0.79	4
Mexican American Female, 20-39 years (2013 - 2014)	4.49	0.51	5
Mexican American Female, 40-59 years (2011 - 2012)	16.1	0.5	3
Mexican American Female, 40-59 years (2013 - 2014)	12.0	2.4	6
Mexican American Female, 60+ years (2011 - 2012)	48.4	6.3	3
Mexican American Female, 60+ years (2013 - 2014)	40.2	4.9	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	2.82	0.32	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	5.00	0.53	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	13.4	1.4	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	33.6	6	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.64	0.38	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	4.08	0.33	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	12.0	1.5	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	35.7	3.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	2.60	0.14	3
Asian Male, 12-19 years (2013 - 2014)	3.50	0.96	3
Asian Male, 20-39 years (2011 - 2012)	6.39	1.21	6
Asian Male, 20-39 years (2013 - 2014)	5.62	1.3	4
Asian Male, 40-59 years (2011 - 2012)	16.9	2	6
Asian Male, 40-59 years (2013 - 2014)	14.8	2.1	4
Asian Male, 60+ years (2011 - 2012)	27.1	5.4	4
Asian Male, 60+ years (2013 - 2014)	29.9	5.9	3
Asian Female, 12-19 years (2011 - 2012)	2.08	0.13	4
Asian Female, 12-19 years (2013 - 2014)	4.52	1.27	3
Asian Female, 20-39 years (2011 - 2012)	7.23	2	6
Asian Female, 20-39 years (2013 - 2014)	5.14	0.44	5
Asian Female, 40-59 years (2011 - 2012)	13.3	2.2	6
Asian Female, 40-59 years (2013 - 2014)	13.4	1.9	7
Asian Female, 60+ years (2011 - 2012)	**51.9	19.8	3
Asian Female, 60+ years (2013 - 2014)	40.4	11.8	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (1999 – 2004)

CAS Number 39765-80-5

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	.109 (.099-.119)	.110 (.090-.120)	.210 (.190-.240)	.370 (.330-.420)	.550 (.470-.630)	1933
Total population (2001 - 2002)	.104 (.093-.116)	.110 (.100-.120)	.220 (.190-.250)	.390 (.330-.480)	.590 (.430-.800)	2286
Total population (2003 - 2004)	.089 (.080-.100)	.094 (.084-.108)	.191 (.171-.211)	.324 (.290-.371)	.470 (.410-.558)	1955
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.110)	.120 (.100-.130)	664
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	.070 (.060-.080)	.090 (.080-.130)	758
Age 12-19 years (2003 - 2004)	*	< LOD	.041 (<LOD-.060)	.081 (.054-.117)	.109 (.081-.161)	589
Age 20+ years (1999 - 2000)	.128 (.116-.141)	.130 (.110-.150)	.230 (.210-.260)	.400 (.360-.460)	.580 (.490-.690)	1269
Age 20+ years (2001 - 2002)	.125 (.111-.141)	.130 (.120-.150)	.240 (.210-.280)	.420 (.350-.540)	.640 (.470-.840)	1528
Age 20+ years (2003 - 2004)	.106 (.095-.119)	.112 (.096-.127)	.210 (.186-.237)	.355 (.301-.405)	.520 (.430-.594)	1366
Males (1999 - 2000)	.106 (.098-.114)	.100 (.090-.120)	.210 (.180-.220)	.350 (.310-.400)	.520 (.400-.630)	922
Males (2001 - 2002)	.105 (.091-.122)	.110 (.090-.130)	.220 (.190-.260)	.380 (.310-.500)	.580 (.390-.830)	1062
Males (2003 - 2004)	.092 (.079-.108)	.098 (.085-.126)	.202 (.177-.232)	.343 (.285-.395)	.458 (.395-.594)	955
Females (1999 - 2000)	.111 (.099-.125)	.110 (.090-.130)	.220 (.190-.250)	.390 (.310-.460)	.580 (.460-.690)	1011
Females (2001 - 2002)	.103 (.093-.113)	.110 (.090-.120)	.220 (.180-.240)	.400 (.340-.450)	.590 (.430-.830)	1224
Females (2003 - 2004)	.087 (.078-.097)	.092 (.079-.098)	.183 (.161-.210)	.317 (.286-.367)	.470 (.409-.565)	1000
Mexican Americans (1999 - 2000)	*	< LOD	.170 (.120-.210)	.310 (.240-.340)	.390 (.320-.520)	650
Mexican Americans (2001 - 2002)	.071 (<LOD-.091)	.060 (<LOD-.090)	.160 (.120-.210)	.330 (.270-.390)	.470 (.360-.590)	558
Mexican Americans (2003 - 2004)	.062 (.047-.082)	.055 (<LOD-.069)	.135 (.069-.237)	.288 (.158-.559)	.414 (.279-.651)	457
Non-Hispanic blacks (1999 - 2000)	.112 (.093-.134)	.100 (.080-.130)	.220 (.180-.300)	.490 (.340-.600)	.760 (.510-.960)	404
Non-Hispanic blacks (2001 - 2002)	.106 (.085-.131)	.110 (.080-.130)	.220 (.160-.310)	.490 (.320-.680)	.680 (.410-1.20)	514
Non-Hispanic blacks (2003 - 2004)	.080 (.068-.096)	.078 (.061-.093)	.186 (.145-.242)	.417 (.272-.565)	.573 (.497-.684)	486
Non-Hispanic whites (1999 - 2000)	.116 (.104-.129)	.120 (.100-.140)	.220 (.190-.240)	.370 (.300-.440)	.510 (.440-.630)	722
Non-Hispanic whites (2001 - 2002)	.108 (.096-.122)	.120 (.100-.130)	.220 (.190-.250)	.390 (.310-.490)	.600 (.400-.930)	1052
Non-Hispanic whites (2003 - 2004)	.098 (.085-.113)	.103 (.090-.124)	.205 (.173-.234)	.327 (.288-.390)	.461 (.397-.576)	889

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**.048	0.015	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.030	0.005	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.033	0.007	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.086	0.019	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.076	0.011	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.061	0.005	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.206	0.034	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.159	0.012	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.122	0.01	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.331	0.049	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.325	0.028	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.221	0.021	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.026	0.003	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.031	0.004	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.017	0.001	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.063	0.01	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.054	0.007	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.034	0.003	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.161	0.019	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.108	0.009	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.111	0.01	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.362	0.04	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.352	0.045	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.259	0.024	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.032	0.003	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.022	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.020	0.005	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.049	0.006	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.050	0.006	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.039	0.009	5
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.140	0.014	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.138	0.013	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.139	0.015	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.390	0.071	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.331	0.032	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.275	0.043	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.022	0.003	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**.016	0.005	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.014	0.002	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.054	0.007	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.032	0.003	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.034	0.003	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.154	0.009	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.124	0.012	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.121	0.015	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.588	0.088	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.409	0.027	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.365	0.025	7
Mexican American Male, 12-19 years (2005 - 2006)	.020	0.002	11
Mexican American Male, 12-19 years (2007 - 2008)	.020	0.004	6
Mexican American Male, 12-19 years (2009 - 2010)	.018	0.002	8
Mexican American Male, 20-39 years (2005 - 2006)	.054	0.005	9
Mexican American Male, 20-39 years (2007 - 2008)	.058	0.008	9
Mexican American Male, 20-39 years (2009 - 2010)	.040	0.008	8
Mexican American Male, 40-59 years (2005 - 2006)	.153	0.022	4
Mexican American Male, 40-59 years (2007 - 2008)	.176	0.024	6
Mexican American Male, 40-59 years (2009 - 2010)	.129	0.012	8
Mexican American Male, 60+ years (2005 - 2006)	.228	0.06	4
Mexican American Male, 60+ years (2007 - 2008)	.289	0.028	5
Mexican American Male, 60+ years (2009 - 2010)	.387	0.073	5
Mexican American Female, 12-19 years (2005 - 2006)	.019	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.013	0.002	7
Mexican American Female, 20-39 years (2005 - 2006)	.042	0.005	9
Mexican American Female, 20-39 years (2007 - 2008)	.044	0.006	8
Mexican American Female, 20-39 years (2009 - 2010)	.033	0.004	10
Mexican American Female, 40-59 years (2005 - 2006)	.135	0.011	6
Mexican American Female, 40-59 years (2007 - 2008)	.151	0.029	6
Mexican American Female, 40-59 years (2009 - 2010)	.128	0.013	9
Mexican American Female, 60+ years (2005 - 2006)	.360	0.095	3
Mexican American Female, 60+ years (2007 - 2008)	.323	0.058	5
Mexican American Female, 60+ years (2009 - 2010)	.321	0.056	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2005 – 2010)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.016	0.002	11
All Hispanic Male, 20-39 years (2009 - 2010)	.049	0.008	13
All Hispanic Male, 40-59 years (2009 - 2010)	.117	0.01	13
All Hispanic Male, 60+ years (2009 - 2010)	.327	0.054	8
All Hispanic Female, 12-19 years (2009 - 2010)	.013	0.001	10
All Hispanic Female, 20-39 years (2009 - 2010)	.034	0.004	14
All Hispanic Female, 40-59 years (2009 - 2010)	.110	0.012	14
All Hispanic Female, 60+ years (2009 - 2010)	.299	0.038	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.019	0.003	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.015	0.002	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.043	0.003	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.035	0.003	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.126	0.011	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.100	0.009	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.289	0.046	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.225	0.017	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.026	0.006	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.018	0.002	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.038	0.005	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.040	0.005	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.139	0.022	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.103	0.012	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.291	0.05	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.269	0.031	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.020	0.004	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.018	0.002	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.044	0.005	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.031	0.005	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.091	0.012	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.109	0.018	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.236	0.02	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.214	0.017	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.014	0.003	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.017	0.003	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.032	0.005	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.023	0.002	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.127	0.018	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.110	0.012	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.283	0.033	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.329	0.043	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.017	0.002	5
Mexican American Male, 12-19 years (2013 - 2014)	.012	0.001	7
Mexican American Male, 20-39 years (2011 - 2012)	.045	0.006	4
Mexican American Male, 20-39 years (2013 - 2014)	.031	0.005	5
Mexican American Male, 40-59 years (2011 - 2012)	.168	0.011	4
Mexican American Male, 40-59 years (2013 - 2014)	.097	0.012	5
Mexican American Male, 60+ years (2011 - 2012)	.147	0.013	2
Mexican American Male, 60+ years (2013 - 2014)	.193	0.034	4
Mexican American Female, 12-19 years (2011 - 2012)	.014	0.002	4
Mexican American Female, 12-19 years (2013 - 2014)	.011	0.001	7
Mexican American Female, 20-39 years (2011 - 2012)	.028	0.004	4
Mexican American Female, 20-39 years (2013 - 2014)	.023	0.003	5
Mexican American Female, 40-59 years (2011 - 2012)	.096	0.005	3
Mexican American Female, 40-59 years (2013 - 2014)	.069	0.014	6
Mexican American Female, 60+ years (2011 - 2012)	.300	0.05	3
Mexican American Female, 60+ years (2013 - 2014)	.232	0.023	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.013	0.002	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.030	0.003	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.082	0.01	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.179	0.029	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.012	0.002	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.022	0.002	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.069	0.008	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.209	0.018	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (2011 – 2014)

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.013	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.017	0.005	3
Asian Male, 20-39 years (2011 - 2012)	.035	0.006	6
Asian Male, 20-39 years (2013 - 2014)	.034	0.009	4
Asian Male, 40-59 years (2011 - 2012)	.104	0.014	6
Asian Male, 40-59 years (2013 - 2014)	.083	0.01	4
Asian Male, 60+ years (2011 - 2012)	.145	0.027	4
Asian Male, 60+ years (2013 - 2014)	.178	0.025	3
Asian Female, 12-19 years (2011 - 2012)	.010	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.021	0.006	3
Asian Female, 20-39 years (2011 - 2012)	.039	0.01	6
Asian Female, 20-39 years (2013 - 2014)	.026	0.003	5
Asian Female, 40-59 years (2011 - 2012)	.082	0.014	6
Asian Female, 40-59 years (2013 - 2014)	.077	0.009	7
Asian Female, 60+ years (2011 - 2012)	**.300	0.121	3
Asian Female, 60+ years (2013 - 2014)	.233	0.058	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum p,p'-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999 – 2004)

CAS Number 50-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	28.0 (21.9-34.0)	1679
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	26.6 (22.5-36.0)	2305
Total population (2003 - 2004)	*	< LOD	< LOD	11.9 (10.0-15.1)	19.5 (15.1-27.5)	1965
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	677
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	9.10 (<LOD-12.2)	595
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	30.5 (23.0-37.3)	1002
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	28.1 (23.8-39.0)	1549
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	12.9 (10.3-16.5)	20.7 (15.9-28.7)	1370
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	25.1 (<LOD-39.3)	799
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	21.6 (<LOD-25.8)	1073
Males (2003 - 2004)	*	< LOD	< LOD	10.6 (9.10-13.7)	15.2 (11.8-26.9)	959
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	29.4 (23.0-35.8)	880
Females (2001 - 2002)	*	< LOD	< LOD	18.3 (<LOD-21.9)	36.6 (25.5-54.3)	1232
Females (2003 - 2004)	*	< LOD	< LOD	14.0 (10.8-17.5)	21.0 (18.0-27.8)	1006
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	61.3 (27.0-155)	155 (59.3-590)	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	83.1 (33.3-236)	293 (104-541)	566
Mexican Americans (2003 - 2004)	*	< LOD	8.90 (<LOD-12.9)	24.0 (18.6-33.3)	48.6 (31.1-71.1)	461
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	22.3 (<LOD-31.5)	31.5 (23.2-65.0)	356
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	23.2 (<LOD-40.9)	40.9 (21.2-95.8)	514
Non-Hispanic blacks (2003 - 2004)	*	< LOD	9.00 (<LOD-10.4)	17.5 (14.8-23.2)	30.7 (19.0-53.4)	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	564
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	17.9 (<LOD-20.7)	1061
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	9.70 (8.50-11.2)	12.9 (10.7-16.6)	890

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.23	0.15	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**10.7	8.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.05	0.37	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.51	0.31	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	3.79	0.26	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	2.81	0.25	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	2.56	0.17	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	5.68	0.54	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	4.85	0.47	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	3.91	0.41	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.27	0.45	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.72	0.22	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.72	0.32	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	3.81	0.41	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	2.90	0.23	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	2.86	0.3	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	6.21	0.41	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	6.37	0.91	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	4.86	0.51	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	**4.98	1.85	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**7.55	3.07	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	1.80	0.37	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	**7.42	3.13	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	4.68	0.69	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.41	0.7	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	14.9	3.2	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	6.57	0.83	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	6.49	0.78	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.59	0.34	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**26.1	27.1	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**14.5	10.8	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.98	0.56	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	7.36	1.11	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	5.86	0.51	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	**21.4	9.6	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**32.5	11.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	19.3	3	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	**14.8	5.1	7
Mexican American Male, 12-19 years (2005 - 2006)	**118	67	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	**4.94	2.18	8
Mexican American Male, 20-39 years (2005 - 2006)	**46.9	16	9
Mexican American Male, 20-39 years (2007 - 2008)	18.6	4.2	9
Mexican American Male, 20-39 years (2009 - 2010)	**12.2	9.8	8
Mexican American Male, 40-59 years (2005 - 2006)	**107	62	4
Mexican American Male, 40-59 years (2007 - 2008)	**14.7	7.1	6
Mexican American Male, 40-59 years (2009 - 2010)	**9.00	3.29	8
Mexican American Male, 60+ years (2005 - 2006)	7.14	1.69	4
Mexican American Male, 60+ years (2007 - 2008)	**17.5	16.1	5
Mexican American Male, 60+ years (2009 - 2010)	6.36	1.16	5
Mexican American Female, 12-19 years (2005 - 2006)	**21.5	12.2	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	**9.22	3.57	7
Mexican American Female, 20-39 years (2005 - 2006)	**47.9	27.9	9
Mexican American Female, 20-39 years (2007 - 2008)	**40.4	28	8
Mexican American Female, 20-39 years (2009 - 2010)	**23.5	12	10
Mexican American Female, 40-59 years (2005 - 2006)	**33.7	15.9	6
Mexican American Female, 40-59 years (2007 - 2008)	11.8	3.1	6
Mexican American Female, 40-59 years (2009 - 2010)	**113	64	9
Mexican American Female, 60+ years (2005 - 2006)	17.3	4.8	3
Mexican American Female, 60+ years (2007 - 2008)	**119	151	5
Mexican American Female, 60+ years (2009 - 2010)	**56.9	32.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	**4.10	1.63	11
All Hispanic Male, 20-39 years (2009 - 2010)	**9.70	5.98	13
All Hispanic Male, 40-59 years (2009 - 2010)	7.35	2.08	13
All Hispanic Male, 60+ years (2009 - 2010)	7.75	1.43	8
All Hispanic Female, 12-19 years (2009 - 2010)	**7.08	2.74	10
All Hispanic Female, 20-39 years (2009 - 2010)	**17.5	8.6	14
All Hispanic Female, 40-59 years (2009 - 2010)	**75.2	42.3	14
All Hispanic Female, 60+ years (2009 - 2010)	**37.0	18.7	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.06	0.1	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	2.41	0.34	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	1.58	0.16	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	2.86	0.31	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	2.65	0.25	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	3.20	0.15	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	3.01	0.23	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.33	0.38	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	2.07	0.27	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.62	0.15	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	2.30	0.18	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	1.94	0.11	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	4.35	0.82	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	3.86	0.39	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.90	0.45	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.65	0.39	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	2.10	0.24	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	1.79	0.17	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	**5.36	1.93	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	2.77	0.33	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	4.04	0.52	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	3.62	0.59	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	**8.30	3.08	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	1.47	0.2	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**9.09	3.78	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	**5.08	2.28	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	10.2	2.3	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	13.5	2.7	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	2.02	0.08	5
Mexican American Male, 12-19 years (2013 - 2014)	**2.51	0.96	7
Mexican American Male, 20-39 years (2011 - 2012)	**4.86	1.85	4
Mexican American Male, 20-39 years (2013 - 2014)	7.84	2.08	5
Mexican American Male, 40-59 years (2011 - 2012)	**52.9	41.9	4
Mexican American Male, 40-59 years (2013 - 2014)	3.33	0.62	5
Mexican American Male, 60+ years (2011 - 2012)	6.98	0.28	2
Mexican American Male, 60+ years (2013 - 2014)	**12.1	8.7	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	**2.44	0.77	7
Mexican American Female, 20-39 years (2011 - 2012)	**16.9	12	4
Mexican American Female, 20-39 years (2013 - 2014)	**17.1	8.6	5
Mexican American Female, 40-59 years (2011 - 2012)	**19.1	15.2	3
Mexican American Female, 40-59 years (2013 - 2014)	3.83	0.43	6
Mexican American Female, 60+ years (2011 - 2012)	22.1	3.8	3
Mexican American Female, 60+ years (2013 - 2014)	9.62	2.34	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**2.09	0.7	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	6.40	1.57	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	3.60	0.49	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**8.82	5.01	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.11	0.57	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**10.0	5.2	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	4.35	0.55	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	9.27	1.41	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (lipid adjusted) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	7.74	1.82	3
Asian Male, 12-19 years (2013 - 2014)	3.26	0.94	3
Asian Male, 20-39 years (2011 - 2012)	12.4	2.9	6
Asian Male, 20-39 years (2013 - 2014)	10.2	2.2	4
Asian Male, 40-59 years (2011 - 2012)	15.5	4.1	6
Asian Male, 40-59 years (2013 - 2014)	**24.9	11.4	4
Asian Male, 60+ years (2011 - 2012)	18.9	3.7	4
Asian Male, 60+ years (2013 - 2014)	13.8	3	3
Asian Female, 12-19 years (2011 - 2012)	3.98	0.6	4
Asian Female, 12-19 years (2013 - 2014)	2.23	0.62	3
Asian Female, 20-39 years (2011 - 2012)	16.0	4.4	6
Asian Female, 20-39 years (2013 - 2014)	**8.98	3.11	5
Asian Female, 40-59 years (2011 - 2012)	18.0	4.4	6
Asian Female, 40-59 years (2013 - 2014)	15.1	3.9	7
Asian Female, 60+ years (2011 - 2012)	29.4	2.3	3
Asian Female, 60+ years (2013 - 2014)	**107	54	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyltrichloroethane (DDT) (whole weight) (1999 – 2004)

CAS Number 50-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	.170 (.130-.220)	1679
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	.180 (.160-.220)	2305
Total population (2003 - 2004)	*	< LOD	< LOD	.078 (.065-.097)	.128 (.098-.167)	1965
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	677
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.048 (<LOD-.069)	595
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	.190 (.150-.230)	1002
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	.200 (.170-.260)	1549
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	.084 (.068-.106)	.142 (.105-.189)	1370
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	.150 (<LOD-.240)	799
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	.150 (<LOD-.180)	1073
Males (2003 - 2004)	*	< LOD	< LOD	.071 (.059-.095)	.108 (.078-.180)	959
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	.190 (.150-.230)	880
Females (2001 - 2002)	*	< LOD	< LOD	.130 (<LOD-.150)	.240 (.180-.400)	1232
Females (2003 - 2004)	*	< LOD	< LOD	.087 (.071-.106)	.146 (.106-.207)	1006
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	.400 (.190-1.00)	1.00 (.330-4.26)	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.530 (.250-1.34)	1.62 (.570-4.01)	566
Mexican Americans (2003 - 2004)	*	< LOD	.063 (<LOD-.079)	.146 (.114-.203)	.313 (.189-.627)	461
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.120 (<LOD-.170)	.180 (.140-.420)	356
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.130 (<LOD-.290)	.250 (.120-.530)	514
Non-Hispanic blacks (2003 - 2004)	*	< LOD	.051 (<LOD-.061)	.112 (.080-.143)	.201 (.132-.343)	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	564
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	.130 (<LOD-.140)	1061
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	.064 (.054-.075)	.086 (.074-.107)	890

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.012	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**.088	0.072	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.014	0.003	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.016	0.002	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.028	0.002	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.021	0.002	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.017	0.001	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.038	0.003	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.031	0.003	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.024	0.002	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.012	0.002	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.018	0.002	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.014	0.002	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.028	0.003	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.019	0.002	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.018	0.002	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.045	0.003	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.043	0.006	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.029	0.003	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	**.025	0.01	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**.047	0.02	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.010	0.002	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	**.048	0.021	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.030	0.004	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.028	0.005	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.088	0.019	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.040	0.005	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.034	0.003	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.013	0.002	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**.113	0.117	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**.085	0.064	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.015	0.003	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.047	0.007	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.035	0.003	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	**.119	0.054	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**.216	0.078	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.115	0.017	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	**.086	0.031	7
Mexican American Male, 12-19 years (2005 - 2006)	**.632	0.352	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	**.024	0.01	8
Mexican American Male, 20-39 years (2005 - 2006)	**.349	0.127	9
Mexican American Male, 20-39 years (2007 - 2008)	.129	0.029	9
Mexican American Male, 20-39 years (2009 - 2010)	**.070	0.054	8
Mexican American Male, 40-59 years (2005 - 2006)	**.864	0.515	4
Mexican American Male, 40-59 years (2007 - 2008)	**.108	0.052	6
Mexican American Male, 40-59 years (2009 - 2010)	**.060	0.021	8
Mexican American Male, 60+ years (2005 - 2006)	.053	0.015	4
Mexican American Male, 60+ years (2007 - 2008)	**.131	0.121	5
Mexican American Male, 60+ years (2009 - 2010)	.040	0.009	5
Mexican American Female, 12-19 years (2005 - 2006)	**.117	0.068	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	**.043	0.016	7
Mexican American Female, 20-39 years (2005 - 2006)	**.293	0.163	9
Mexican American Female, 20-39 years (2007 - 2008)	**.233	0.159	8
Mexican American Female, 20-39 years (2009 - 2010)	**.136	0.073	10
Mexican American Female, 40-59 years (2005 - 2006)	**.239	0.107	6
Mexican American Female, 40-59 years (2007 - 2008)	.081	0.022	6
Mexican American Female, 40-59 years (2009 - 2010)	**.796	0.486	9
Mexican American Female, 60+ years (2005 - 2006)	**.138	0.05	3
Mexican American Female, 60+ years (2007 - 2008)	**.820	1.049	5
Mexican American Female, 60+ years (2009 - 2010)	**.338	0.208	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2005 – 2010)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	**.019	0.008	11
All Hispanic Male, 20-39 years (2009 - 2010)	**.058	0.033	13
All Hispanic Male, 40-59 years (2009 - 2010)	.049	0.013	13
All Hispanic Male, 60+ years (2009 - 2010)	.050	0.01	8
All Hispanic Female, 12-19 years (2009 - 2010)	**.033	0.013	10
All Hispanic Female, 20-39 years (2009 - 2010)	**.101	0.052	14
All Hispanic Female, 40-59 years (2009 - 2010)	**.525	0.32	14
All Hispanic Female, 60+ years (2009 - 2010)	**.223	0.118	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.005	0	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.014	0.002	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.009	0.001	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.020	0.003	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.016	0.002	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.018	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.016	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.007	0.002	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.011	0.001	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.008	0.001	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.015	0.001	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.011	0.001	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.027	0.005	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.023	0.002	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.008	0.002	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.007	0.002	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.011	0.001	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.009	0.001	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	**.030	0.01	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.015	0.002	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.022	0.003	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.018	0.002	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	**.045	0.017	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.007	0.001	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**.058	0.026	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	**.027	0.013	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.057	0.012	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.071	0.013	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.010	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	**.012	0.005	7
Mexican American Male, 20-39 years (2011 - 2012)	**.029	0.01	4
Mexican American Male, 20-39 years (2013 - 2014)	.049	0.014	5
Mexican American Male, 40-59 years (2011 - 2012)	**.369	0.278	4
Mexican American Male, 40-59 years (2013 - 2014)	.021	0.004	5
Mexican American Male, 60+ years (2011 - 2012)	.041	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	**.063	0.044	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	**.011	0.003	7
Mexican American Female, 20-39 years (2011 - 2012)	**.094	0.067	4
Mexican American Female, 20-39 years (2013 - 2014)	**.090	0.044	5
Mexican American Female, 40-59 years (2011 - 2012)	**.107	0.083	3
Mexican American Female, 40-59 years (2013 - 2014)	.022	0.003	6
Mexican American Female, 60+ years (2011 - 2012)	.137	0.027	3
Mexican American Female, 60+ years (2013 - 2014)	.055	0.011	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.010	0.004	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.039	0.01	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.022	0.003	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**.047	0.025	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.010	0.003	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.053	0.027	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.025	0.003	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.054	0.007	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDT (whole weight) (2011 – 2014)

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.041	0.011	3
Asian Male, 12-19 years (2013 - 2014)	.015	0.004	3
Asian Male, 20-39 years (2011 - 2012)	.070	0.017	6
Asian Male, 20-39 years (2013 - 2014)	.058	0.01	4
Asian Male, 40-59 years (2011 - 2012)	.098	0.028	6
Asian Male, 40-59 years (2013 - 2014)	**.151	0.077	4
Asian Male, 60+ years (2011 - 2012)	.100	0.017	4
Asian Male, 60+ years (2013 - 2014)	.082	0.015	3
Asian Female, 12-19 years (2011 - 2012)	.019	0.002	4
Asian Female, 12-19 years (2013 - 2014)	.011	0.003	3
Asian Female, 20-39 years (2011 - 2012)	.086	0.021	6
Asian Female, 20-39 years (2013 - 2014)	**.046	0.016	5
Asian Female, 40-59 years (2011 - 2012)	.110	0.028	6
Asian Female, 40-59 years (2013 - 2014)	.091	0.026	7
Asian Female, 60+ years (2011 - 2012)	.166	0.015	3
Asian Female, 60+ years (2013 - 2014)	**.605	0.285	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyldichloroethene (DDE) (lipid adjusted) (1999 – 2004)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	260 (226-298)	226 (184-278)	537 (476-631)	1150 (976-1350)	1830 (1410-2300)	1964
Total population (2001 - 2002)	295 (267-327)	251 (228-278)	598 (521-699)	1410 (1210-1500)	2320 (1830-2780)	2298
Total population (2003 - 2004)	238 (195-292)	203 (163-275)	509 (376-655)	1170 (836-1570)	1860 (1400-2380)	1956
Age 12-19 years (1999 - 2000)	118 (102-135)	108 (97.7-119)	185 (141-237)	339 (243-479)	528 (339-812)	686
Age 12-19 years (2001 - 2002)	124 (106-146)	113 (100-140)	213 (172-253)	319 (282-389)	456 (343-722)	758
Age 12-19 years (2003 - 2004)	105 (84.7-129)	93.6 (81.0-114)	167 (123-240)	341 (211-586)	522 (313-1430)	588
Age 20+ years (1999 - 2000)	297 (256-344)	269 (213-323)	608 (530-693)	1260 (1030-1550)	2020 (1520-2730)	1278
Age 20+ years (2001 - 2002)	338 (303-376)	285 (249-337)	695 (595-798)	1480 (1310-1700)	2550 (1980-3080)	1540
Age 20+ years (2003 - 2004)	268 (217-332)	233 (175-314)	557 (420-734)	1270 (877-1800)	1990 (1500-2470)	1368
Males (1999 - 2000)	249 (220-283)	223 (182-262)	494 (380-578)	1010 (789-1130)	1430 (1080-2160)	937
Males (2001 - 2002)	285 (252-323)	248 (222-285)	520 (441-627)	1160 (937-1360)	1900 (1580-2490)	1069
Males (2003 - 2004)	235 (193-288)	200 (164-262)	466 (331-653)	1000 (763-1400)	1610 (1210-2320)	955
Females (1999 - 2000)	270 (226-322)	234 (184-302)	601 (492-711)	1350 (1040-1720)	2210 (1570-2810)	1027
Females (2001 - 2002)	305 (273-341)	256 (219-297)	708 (567-844)	1480 (1410-1710)	2670 (1940-3300)	1229
Females (2003 - 2004)	241 (193-301)	207 (161-281)	539 (386-735)	1250 (813-1900)	2010 (1500-2450)	1001
Mexican Americans (1999 - 2000)	674 (574-792)	624 (545-701)	1350 (1090-1660)	3090 (2040-4950)	4950 (3070-9350)	657
Mexican Americans (2001 - 2002)	652 (569-747)	561 (455-690)	1400 (1050-1950)	4110 (2520-6550)	7080 (3080-	566
Mexican Americans (2003 - 2004)	444 (362-545)	373 (283-522)	875 (608-1170)	2150 (1520-2470)	3290 (2380-9240)	457
Non-Hispanic blacks (1999 - 2000)	295 (241-362)	251 (199-313)	668 (492-874)	1850 (1040-2220)	2300 (1560-5680)	416
Non-Hispanic blacks (2001 - 2002)	324 (262-400)	248 (223-296)	762 (583-999)	1620 (1180-2980)	3260 (1270-6900)	515
Non-Hispanic blacks (2003 - 2004)	262 (233-295)	216 (173-267)	589 (453-747)	1620 (1130-2310)	2860 (1880-3440)	487
Non-Hispanic whites (1999 - 2000)	217 (189-249)	194 (162-238)	438 (355-507)	825 (647-1010)	1160 (1010-1350)	732
Non-Hispanic whites (2001 - 2002)	253 (226-284)	225 (203-254)	463 (402-558)	1150 (878-1340)	1640 (1410-1940)	1053
Non-Hispanic whites (2003 - 2004)	208 (165-263)	177 (148-238)	417 (302-564)	907 (574-1480)	1490 (909-2300)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 18.6, 8.3, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2005 – 2010)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	113	20	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	86.7	7.7	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	85.4	17.7	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**399	280	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	113	11	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	102	7	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	220	19	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	176	14	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	153	17	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	696	53	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	502	46	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	368	26	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	83.6	6.7	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	70.2	14.9	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	51.6	5.5	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	102	7	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	91.8	6.3	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	86.3	6.3	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	276	36	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	179	12	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	256	65	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	736	71	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	521	46	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	538	47	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	141	21	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	91.5	8.5	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	98.4	16.2	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	236	59	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	123	12	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**263	105	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	454	70	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	333	20	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	325	48	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1910	448	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	854	88	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1030	230	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.02, 1.4, and 3.68, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2005 – 2010)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	81.8	4.8	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	63.6	8.4	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**287	242	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**237	87	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	105	10	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	110	15	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	691	130	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	495	82	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	736	202	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	2110	398	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	2390	354	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	1510	348	6
Mexican American Male, 12-19 years (2005 - 2006)	**2450	1272	11
Mexican American Male, 12-19 years (2007 - 2008)	265	39	6
Mexican American Male, 12-19 years (2009 - 2010)	254	51	8
Mexican American Male, 20-39 years (2005 - 2006)	1730	472	9
Mexican American Male, 20-39 years (2007 - 2008)	1090	233	9
Mexican American Male, 20-39 years (2009 - 2010)	583	143	8
Mexican American Male, 40-59 years (2005 - 2006)	**2160	845	4
Mexican American Male, 40-59 years (2007 - 2008)	1010	149	6
Mexican American Male, 40-59 years (2009 - 2010)	803	108	8
Mexican American Male, 60+ years (2005 - 2006)	**1180	394	4
Mexican American Male, 60+ years (2007 - 2008)	1160	223	5
Mexican American Male, 60+ years (2009 - 2010)	1130	155	5
Mexican American Female, 12-19 years (2005 - 2006)	464	118	16
Mexican American Female, 12-19 years (2007 - 2008)	164	34	5
Mexican American Female, 12-19 years (2009 - 2010)	489	127	7
Mexican American Female, 20-39 years (2005 - 2006)	895	239	9
Mexican American Female, 20-39 years (2007 - 2008)	**653	301	8
Mexican American Female, 20-39 years (2009 - 2010)	**694	228	9
Mexican American Female, 40-59 years (2005 - 2006)	1320	121	6
Mexican American Female, 40-59 years (2007 - 2008)	1080	133	6
Mexican American Female, 40-59 years (2009 - 2010)	2550	762	9
Mexican American Female, 60+ years (2005 - 2006)	1550	153	3
Mexican American Female, 60+ years (2007 - 2008)	**2960	1477	5
Mexican American Female, 60+ years (2009 - 2010)	2590	528	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.02, 1.4, and 3.68, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2005 – 2010)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	233	39	11
All Hispanic Male, 20-39 years (2009 - 2010)	571	115	13
All Hispanic Male, 40-59 years (2009 - 2010)	798	75	13
All Hispanic Male, 60+ years (2009 - 2010)	1040	106	8
All Hispanic Female, 12-19 years (2009 - 2010)	384	105	10
All Hispanic Female, 20-39 years (2009 - 2010)	563	162	13
All Hispanic Female, 40-59 years (2009 - 2010)	1940	529	14
All Hispanic Female, 60+ years (2009 - 2010)	2040	363	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.02, 1.4, and 3.68, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	62.6	3.6	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	57.8	6.3	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	118	16	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	76.3	6.2	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	132	8	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	151	16	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	391	47	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	387	34	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	62.6	14.9	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	40.4	2.9	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	83.8	7	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	72.3	5.2	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	157	14	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	133	12	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	561	100	13
Non-Hispanic White Female, 60+ years (2013 - 2014)	503	54	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	81.0	16.1	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	83.4	16	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	93.2	5.2	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	**162	58	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	249	49	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	207	50	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	725	67	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	525	51	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	48.5	6.9	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	44.1	3.9	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	161	40	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	79.9	15.1	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	408	84	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	384	87	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	1450	254	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	1670	156	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 3.1 and 1.8.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	267	49	5
Mexican American Male, 12-19 years (2013 - 2014)	162	26	7
Mexican American Male, 20-39 years (2011 - 2012)	**325	119	4
Mexican American Male, 20-39 years (2013 - 2014)	578	166	5
Mexican American Male, 40-59 years (2011 - 2012)	**2030	1108	4
Mexican American Male, 40-59 years (2013 - 2014)	**549	170	5
Mexican American Male, 60+ years (2011 - 2012)	1430	346	2
Mexican American Male, 60+ years (2013 - 2014)	1140	271	4
Mexican American Female, 12-19 years (2011 - 2012)	117	28	4
Mexican American Female, 12-19 years (2013 - 2014)	136	18	7
Mexican American Female, 20-39 years (2011 - 2012)	**560	272	4
Mexican American Female, 20-39 years (2013 - 2014)	571	150	5
Mexican American Female, 40-59 years (2011 - 2012)	**1050	418	3
Mexican American Female, 40-59 years (2013 - 2014)	482	67	6
Mexican American Female, 60+ years (2011 - 2012)	2010	258	3
Mexican American Female, 60+ years (2013 - 2014)	1700	273	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	145	21	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	455	127	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	546	102	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	962	194	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	126	14	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	397	105	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	549	107	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	1440	187	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 3.1 and 1.8.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (lipid adjusted) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	204	8	3
Asian Male, 12-19 years (2013 - 2014)	109	20	3
Asian Male, 20-39 years (2011 - 2012)	512	85	6
Asian Male, 20-39 years (2013 - 2014)	307	67	4
Asian Male, 40-59 years (2011 - 2012)	647	120	6
Asian Male, 40-59 years (2013 - 2014)	**931	286	4
Asian Male, 60+ years (2011 - 2012)	1070	153	4
Asian Male, 60+ years (2013 - 2014)	934	226	3
Asian Female, 12-19 years (2011 - 2012)	**231	72	4
Asian Female, 12-19 years (2013 - 2014)	**186	100	3
Asian Female, 20-39 years (2011 - 2012)	486	129	6
Asian Female, 20-39 years (2013 - 2014)	275	76	5
Asian Female, 40-59 years (2011 - 2012)	808	79	6
Asian Female, 40-59 years (2013 - 2014)	733	125	7
Asian Female, 60+ years (2011 - 2012)	2610	377	3
Asian Female, 60+ years (2013 - 2014)	2320	492	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 3.1 and 1.8.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyldichloroethene (DDE) (whole weight) (1999 – 2004)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	1.54 (1.33-1.79)	1.31 (1.09-1.66)	3.50 (2.97-4.27)	7.49 (6.14-9.25)	11.6 (9.25-14.8)	1964
Total population (2001 - 2002)	1.81 (1.64-2.01)	1.57 (1.37-1.72)	3.97 (3.43-4.59)	8.81 (7.85-10.1)	15.4 (12.9-17.6)	2298
Total population (2003 - 2004)	1.45 (1.18-1.79)	1.26 (1.00-1.58)	3.16 (2.40-4.21)	7.07 (5.55-9.80)	12.1 (8.37-16.0)	1956
Age 12-19 years (1999 - 2000)	.561 (.488-.646)	.520 (.430-.600)	.870 (.680-1.18)	1.52 (1.13-2.25)	2.32 (1.76-3.56)	686
Age 12-19 years (2001 - 2002)	.623 (.534-.726)	.590 (.500-.730)	1.00 (.820-1.22)	1.65 (1.39-2.07)	2.30 (1.91-3.14)	758
Age 12-19 years (2003 - 2004)	.516 (.419-.635)	.456 (.385-.557)	.796 (.611-1.19)	1.69 (.994-2.69)	2.51 (1.56-6.71)	588
Age 20+ years (1999 - 2000)	1.83 (1.56-2.14)	1.61 (1.26-2.07)	4.17 (3.48-4.66)	8.12 (6.37-10.6)	12.3 (9.87-16.7)	1278
Age 20+ years (2001 - 2002)	2.14 (1.91-2.39)	1.77 (1.61-2.05)	4.59 (4.10-5.26)	9.75 (8.34-11.5)	16.8 (13.7-19.1)	1540
Age 20+ years (2003 - 2004)	1.69 (1.36-2.10)	1.46 (1.12-1.96)	3.68 (2.66-4.96)	7.91 (6.01-11.0)	12.8 (9.25-16.8)	1368
Males (1999 - 2000)	1.49 (1.30-1.70)	1.25 (1.10-1.44)	3.02 (2.57-3.80)	6.43 (5.40-8.00)	9.63 (6.63-15.6)	937
Males (2001 - 2002)	1.77 (1.57-2.01)	1.59 (1.36-1.76)	3.40 (3.03-4.10)	7.48 (6.43-8.75)	13.1 (9.66-17.6)	1069
Males (2003 - 2004)	1.46 (1.18-1.80)	1.30 (1.04-1.58)	2.80 (2.18-4.13)	6.71 (5.51-8.54)	9.93 (7.51-15.4)	955
Females (1999 - 2000)	1.59 (1.32-1.92)	1.38 (1.03-1.99)	4.05 (3.15-4.79)	8.18 (6.36-11.5)	13.2 (9.81-18.5)	1027
Females (2001 - 2002)	1.85 (1.66-2.06)	1.49 (1.32-1.75)	4.57 (3.81-5.47)	10.2 (9.01-11.9)	16.8 (13.4-19.7)	1229
Females (2003 - 2004)	1.45 (1.16-1.82)	1.25 (.965-1.66)	3.55 (2.43-4.59)	7.87 (5.41-12.6)	13.7 (8.50-17.3)	1001
Mexican Americans (1999 - 2000)	3.92 (3.40-4.51)	3.52 (3.17-3.91)	8.22 (7.26-10.4)	22.0 (12.2-32.2)	32.2 (19.7-48.1)	657
Mexican Americans (2001 - 2002)	3.92 (3.37-4.57)	3.53 (2.68-4.34)	9.34 (7.31-12.5)	26.6 (17.9-38.3)	40.9 (26.8-90.5)	566
Mexican Americans (2003 - 2004)	2.69 (2.18-3.32)	2.24 (1.70-3.24)	5.78 (4.54-7.21)	13.0 (9.53-15.6)	22.9 (15.3-43.4)	457
Non-Hispanic blacks (1999 - 2000)	1.63 (1.31-2.02)	1.37 (1.11-1.66)	3.84 (3.01-5.69)	11.2 (6.57-13.3)	14.6 (8.88-35.2)	416
Non-Hispanic blacks (2001 - 2002)	1.82 (1.46-2.28)	1.38 (1.22-1.72)	4.39 (3.52-6.06)	10.6 (7.24-17.6)	19.4 (8.51-49.3)	515
Non-Hispanic blacks (2003 - 2004)	1.47 (1.30-1.65)	1.20 (.963-1.51)	3.76 (2.85-4.75)	9.23 (7.19-14.9)	16.8 (14.7-20.6)	487
Non-Hispanic whites (1999 - 2000)	1.32 (1.14-1.53)	1.13 (1.01-1.35)	2.88 (2.34-3.36)	5.75 (4.62-6.53)	8.04 (6.32-9.81)	732
Non-Hispanic whites (2001 - 2002)	1.57 (1.39-1.76)	1.41 (1.27-1.58)	3.11 (2.56-3.68)	7.00 (6.02-8.34)	11.3 (8.60-13.7)	1053
Non-Hispanic whites (2003 - 2004)	1.29 (1.01-1.64)	1.12 (.890-1.49)	2.63 (1.84-3.90)	6.36 (3.90-8.71)	9.71 (6.01-15.0)	888

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2005 – 2010)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.592	0.071	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.429	0.031	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.454	0.089	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**3.23	2.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.745	0.073	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.670	0.053	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.64	0.13	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.27	0.09	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	1.05	0.12	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	4.72	0.32	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	3.21	0.29	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	2.21	0.14	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.444	0.034	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.334	0.079	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.247	0.029	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.657	0.046	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.546	0.037	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.457	0.033	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	2.02	0.27	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.18	0.08	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.59	0.39	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	5.38	0.51	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	3.50	0.31	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	3.21	0.25	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.705	0.099	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.434	0.044	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.436	0.053	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	1.43	0.39	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.694	0.076	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**1.64	0.75	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	2.86	0.39	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	2.14	0.15	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.03	0.34	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	11.4	2.7	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	5.21	0.59	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	5.36	1.13	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2005 – 2010)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.406	0.025	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.300	0.037	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**1.25	1.04	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**1.38	0.52	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.524	0.05	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.548	0.084	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	4.51	0.94	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	2.97	0.49	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.11	1.12	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	14.0	2.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	14.4	2.2	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	8.88	2.18	6
Mexican American Male, 12-19 years (2005 - 2006)	**13.0	6.7	11
Mexican American Male, 12-19 years (2007 - 2008)	1.39	0.18	6
Mexican American Male, 12-19 years (2009 - 2010)	1.20	0.25	8
Mexican American Male, 20-39 years (2005 - 2006)	12.8	3.7	9
Mexican American Male, 20-39 years (2007 - 2008)	7.50	1.68	9
Mexican American Male, 20-39 years (2009 - 2010)	3.54	0.83	8
Mexican American Male, 40-59 years (2005 - 2006)	**17.0	6	4
Mexican American Male, 40-59 years (2007 - 2008)	7.34	1.34	6
Mexican American Male, 40-59 years (2009 - 2010)	5.42	0.69	8
Mexican American Male, 60+ years (2005 - 2006)	**8.69	3.03	4
Mexican American Male, 60+ years (2007 - 2008)	8.68	2.08	5
Mexican American Male, 60+ years (2009 - 2010)	6.96	0.97	5
Mexican American Female, 12-19 years (2005 - 2006)	2.52	0.65	16
Mexican American Female, 12-19 years (2007 - 2008)	.803	0.172	5
Mexican American Female, 12-19 years (2009 - 2010)	2.28	0.58	7
Mexican American Female, 20-39 years (2005 - 2006)	5.94	1.49	9
Mexican American Female, 20-39 years (2007 - 2008)	**3.80	1.71	8
Mexican American Female, 20-39 years (2009 - 2010)	**3.86	1.31	9
Mexican American Female, 40-59 years (2005 - 2006)	9.64	0.85	6
Mexican American Female, 40-59 years (2007 - 2008)	7.28	0.97	6
Mexican American Female, 40-59 years (2009 - 2010)	**17.1	5.6	9
Mexican American Female, 60+ years (2005 - 2006)	12.1	2.3	3
Mexican American Female, 60+ years (2007 - 2008)	**20.4	10.2	5
Mexican American Female, 60+ years (2009 - 2010)	14.7	3.5	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2005 – 2010)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.09	0.19	11
All Hispanic Male, 20-39 years (2009 - 2010)	3.84	0.93	13
All Hispanic Male, 40-59 years (2009 - 2010)	5.42	0.53	13
All Hispanic Male, 60+ years (2009 - 2010)	6.51	0.65	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.79	0.48	10
All Hispanic Female, 20-39 years (2009 - 2010)	3.14	0.93	13
All Hispanic Female, 40-59 years (2009 - 2010)	**12.8	3.9	14
All Hispanic Female, 60+ years (2009 - 2010)	12.1	2.3	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.296	0.011	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.272	0.026	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.684	0.094	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.411	0.031	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.870	0.052	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.894	0.104	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	2.13	0.24	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	2.06	0.16	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.330	0.062	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.200	0.015	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.455	0.04	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.381	0.029	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.00	0.1	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.793	0.077	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	3.39	0.54	13
Non-Hispanic White Female, 60+ years (2013 - 2014)	2.97	0.32	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.356	0.065	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.379	0.088	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.485	0.031	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	**.810	0.287	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	1.39	0.27	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	1.15	0.28	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	3.96	0.39	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	2.75	0.3	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.214	0.03	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.193	0.015	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.872	0.216	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.395	0.078	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	2.55	0.6	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	2.03	0.5	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	8.10	1.36	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	8.94	0.74	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	1.29	0.22	5
Mexican American Male, 12-19 years (2013 - 2014)	.750	0.123	7
Mexican American Male, 20-39 years (2011 - 2012)	**1.99	0.75	4
Mexican American Male, 20-39 years (2013 - 2014)	3.55	0.92	5
Mexican American Male, 40-59 years (2011 - 2012)	**14.9	7.1	4
Mexican American Male, 40-59 years (2013 - 2014)	**3.43	1.07	5
Mexican American Male, 60+ years (2011 - 2012)	8.41	1.84	2
Mexican American Male, 60+ years (2013 - 2014)	5.95	1.23	4
Mexican American Female, 12-19 years (2011 - 2012)	.565	0.124	4
Mexican American Female, 12-19 years (2013 - 2014)	.633	0.081	7
Mexican American Female, 20-39 years (2011 - 2012)	**3.09	1.52	4
Mexican American Female, 20-39 years (2013 - 2014)	3.00	0.82	5
Mexican American Female, 40-59 years (2011 - 2012)	**6.06	2.17	3
Mexican American Female, 40-59 years (2013 - 2014)	2.80	0.4	6
Mexican American Female, 60+ years (2011 - 2012)	12.4	1.8	3
Mexican American Female, 60+ years (2013 - 2014)	9.86	1.55	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.684	0.094	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	2.76	0.74	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	3.33	0.64	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	5.17	0.98	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.588	0.064	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	2.13	0.56	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	3.20	0.66	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	8.52	1.08	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-DDE (whole weight) (2011 – 2014)

CAS Number 72-55-9

Metabolite of DDT

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.05	0.06	3
Asian Male, 12-19 years (2013 - 2014)	.509	0.09	3
Asian Male, 20-39 years (2011 - 2012)	2.90	0.54	6
Asian Male, 20-39 years (2013 - 2014)	1.82	0.43	4
Asian Male, 40-59 years (2011 - 2012)	4.04	0.84	6
Asian Male, 40-59 years (2013 - 2014)	**5.49	1.79	4
Asian Male, 60+ years (2011 - 2012)	5.70	0.7	4
Asian Male, 60+ years (2013 - 2014)	5.50	0.93	3
Asian Female, 12-19 years (2011 - 2012)	1.09	0.32	4
Asian Female, 12-19 years (2013 - 2014)	**.878	0.476	3
Asian Female, 20-39 years (2011 - 2012)	2.61	0.61	6
Asian Female, 20-39 years (2013 - 2014)	1.41	0.39	5
Asian Female, 40-59 years (2011 - 2012)	4.96	0.53	6
Asian Female, 40-59 years (2013 - 2014)	4.35	0.79	7
Asian Female, 60+ years (2011 - 2012)	14.9	2.6	3
Asian Female, 60+ years (2013 - 2014)	13.8	2.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum o,p'-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999 – 2004)

CAS Number 72-55-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1669
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2279
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1946
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1523
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1358
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	796
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1059
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	949
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	873
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1220
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	997
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	458
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	354
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	507
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	560
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum o,p'-Dichlorodiphenyltrichloroethane (DDT) (whole weight) (1999 – 2004)

CAS Number 72-55-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1669
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2279
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1946
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1523
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1358
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	796
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1059
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	949
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	873
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1220
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	997
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	458
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	354
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	507
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	560
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (1999 – 2004)

CAS Number 118-74-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1702
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2277
Total population (2003 - 2004)	15.2 (14.5-15.9)	14.9 (14.2-15.7)	19.0 (18.1-20.3)	24.4 (22.6-26.4)	28.9 (25.6-32.8)	1961
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	591
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	747
Age 12-19 years (2003 - 2004)	13.3 (12.5-14.1)	13.4 (11.5-14.9)	16.7 (15.5-18.4)	20.7 (19.7-22.7)	25.3 (22.7-30.2)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1111
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1530
Age 20+ years (2003 - 2004)	15.5 (14.7-16.2)	15.1 (14.5-15.9)	19.4 (18.3-20.9)	24.8 (22.7-26.6)	29.0 (25.6-33.6)	1373
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	807
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1058
Males (2003 - 2004)	14.5 (13.8-15.3)	14.2 (13.4-15.0)	18.1 (17.0-19.3)	23.6 (21.0-25.6)	26.9 (25.2-31.3)	957
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	895
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1219
Females (2003 - 2004)	15.8 (15.0-16.6)	15.7 (15.1-16.4)	20.0 (18.7-21.4)	24.9 (23.0-28.6)	29.8 (26.5-33.7)	1004
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	583
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	554
Mexican Americans (2003 - 2004)	16.2 (14.9-17.7)	15.3 (14.7-16.4)	20.4 (18.3-22.5)	27.6 (24.7-29.4)	33.7 (27.6-44.6)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	350
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	511
Non-Hispanic blacks (2003 - 2004)	14.5 (13.9-15.0)	14.1 (13.7-15.1)	18.3 (16.6-19.9)	22.3 (20.9-24.0)	26.6 (23.9-30.9)	488
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1052
Non-Hispanic whites (2003 - 2004)	15.1 (14.4-16.0)	15.0 (14.2-15.9)	19.2 (17.9-20.8)	24.3 (22.3-26.4)	28.2 (24.9-32.8)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 118.0, 31.4, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	7.62	1.17	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	12.4	0.8	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	9.69	0.56	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	7.34	0.41	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	9.45	0.46	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	8.56	0.17	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	8.85	0.38	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	10.1	0.3	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	9.29	0.44	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	11.1	0.5	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	11.8	0.5	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	9.95	0.43	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	5.44	0.49	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.06	0.29	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	7.36	0.38	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	7.11	0.33	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	7.94	0.23	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	7.57	0.25	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	9.25	0.44	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	10.8	0.7	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	11.1	1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	13.9	0.7	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	15.1	0.7	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	14.9	1.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	6.42	0.37	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	9.67	0.79	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	7.82	0.99	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	5.77	0.38	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	9.11	0.58	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	7.45	0.61	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	7.19	0.45	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	9.58	0.43	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	9.27	0.65	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	10.9	1.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	10.3	0.6	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	10.1	0.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.17, 1.4, and 3.11, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	4.41	0.27	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	7.20	0.57	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	5.97	0.49	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	5.90	0.64	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	7.04	0.3	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	6.41	0.27	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	9.19	0.42	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	9.90	0.58	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	8.58	0.68	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	18.1	1.9	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	15.1	1.2	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	15.6	0.8	7
Mexican American Male, 12-19 years (2005 - 2006)	6.25	0.43	11
Mexican American Male, 12-19 years (2007 - 2008)	9.49	0.7	6
Mexican American Male, 12-19 years (2009 - 2010)	11.3	0.3	8
Mexican American Male, 20-39 years (2005 - 2006)	9.61	1.74	9
Mexican American Male, 20-39 years (2007 - 2008)	9.47	0.57	9
Mexican American Male, 20-39 years (2009 - 2010)	11.5	1.6	8
Mexican American Male, 40-59 years (2005 - 2006)	14.0	1.9	4
Mexican American Male, 40-59 years (2007 - 2008)	**20.6	8.3	6
Mexican American Male, 40-59 years (2009 - 2010)	14.7	2.4	8
Mexican American Male, 60+ years (2005 - 2006)	10.5	1.3	4
Mexican American Male, 60+ years (2007 - 2008)	12.1	0.8	5
Mexican American Male, 60+ years (2009 - 2010)	12.7	0.3	5
Mexican American Female, 12-19 years (2005 - 2006)	5.93	0.55	16
Mexican American Female, 12-19 years (2007 - 2008)	6.81	0.44	5
Mexican American Female, 12-19 years (2009 - 2010)	7.48	0.39	7
Mexican American Female, 20-39 years (2005 - 2006)	9.78	0.81	9
Mexican American Female, 20-39 years (2007 - 2008)	10.4	0.7	8
Mexican American Female, 20-39 years (2009 - 2010)	8.88	0.59	10
Mexican American Female, 40-59 years (2005 - 2006)	15.9	1.4	6
Mexican American Female, 40-59 years (2007 - 2008)	20.6	2.6	6
Mexican American Female, 40-59 years (2009 - 2010)	12.3	0.7	9
Mexican American Female, 60+ years (2005 - 2006)	19.6	2.6	3
Mexican American Female, 60+ years (2007 - 2008)	20.7	1.9	5
Mexican American Female, 60+ years (2009 - 2010)	21.8	3.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.17, 1.4, and 3.11, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	10.5	0.5	11
All Hispanic Male, 20-39 years (2009 - 2010)	10.5	1.1	13
All Hispanic Male, 40-59 years (2009 - 2010)	13.1	1.6	13
All Hispanic Male, 60+ years (2009 - 2010)	12.0	0.4	8
All Hispanic Female, 12-19 years (2009 - 2010)	7.11	0.35	10
All Hispanic Female, 20-39 years (2009 - 2010)	8.26	0.5	14
All Hispanic Female, 40-59 years (2009 - 2010)	15.2	2.7	14
All Hispanic Female, 60+ years (2009 - 2010)	**22.8	8.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 4.17, 1.4, and 3.11, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	8.17	0.74	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	7.39	0.47	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	9.33	0.53	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	8.66	0.34	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	9.78	0.33	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	10.5	0.5	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	10.1	0.3	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	11.3	0.4	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	6.34	0.34	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	6.70	0.24	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	6.96	0.23	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	7.90	0.27	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	9.66	0.51	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	9.75	0.25	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	13.0	1.4	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	13.9	0.5	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	8.44	0.79	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	7.57	0.46	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	7.41	0.36	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	7.88	0.52	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	8.63	0.44	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	9.64	0.51	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	9.20	0.4	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	9.90	0.45	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	5.64	0.27	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	6.62	0.3	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	6.62	0.29	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	6.18	0.27	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	8.31	0.22	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	10.8	0.8	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	12.2	0.7	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	14.8	0.8	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.7 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	7.75	0.61	5
Mexican American Male, 12-19 years (2013 - 2014)	8.70	0.34	7
Mexican American Male, 20-39 years (2011 - 2012)	8.92	1.16	4
Mexican American Male, 20-39 years (2013 - 2014)	9.85	0.78	5
Mexican American Male, 40-59 years (2011 - 2012)	14.3	4.3	4
Mexican American Male, 40-59 years (2013 - 2014)	11.6	0.2	5
Mexican American Male, 60+ years (2011 - 2012)	13.3	1.1	2
Mexican American Male, 60+ years (2013 - 2014)	13.7	1.2	4
Mexican American Female, 12-19 years (2011 - 2012)	6.37	0.41	4
Mexican American Female, 12-19 years (2013 - 2014)	7.47	0.33	7
Mexican American Female, 20-39 years (2011 - 2012)	7.29	0.48	4
Mexican American Female, 20-39 years (2013 - 2014)	8.86	0.59	5
Mexican American Female, 40-59 years (2011 - 2012)	19.0	4.5	3
Mexican American Female, 40-59 years (2013 - 2014)	13.0	1.4	6
Mexican American Female, 60+ years (2011 - 2012)	18.7	3.2	3
Mexican American Female, 60+ years (2013 - 2014)	21.6	2	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	8.47	0.28	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	9.54	0.66	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	11.5	0.6	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	11.7	1.1	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	7.12	0.31	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	7.86	0.52	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	12.2	0.9	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	18.7	1.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.7 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	8.48	1.43	3
Asian Male, 12-19 years (2013 - 2014)	7.57	0.35	3
Asian Male, 20-39 years (2011 - 2012)	15.1	2.7	6
Asian Male, 20-39 years (2013 - 2014)	11.1	1.2	4
Asian Male, 40-59 years (2011 - 2012)	12.1	1.3	6
Asian Male, 40-59 years (2013 - 2014)	15.3	2.5	4
Asian Male, 60+ years (2011 - 2012)	14.9	2.5	4
Asian Male, 60+ years (2013 - 2014)	12.9	2.1	3
Asian Female, 12-19 years (2011 - 2012)	7.36	0.78	4
Asian Female, 12-19 years (2013 - 2014)	8.17	0.13	3
Asian Female, 20-39 years (2011 - 2012)	8.93	1.69	6
Asian Female, 20-39 years (2013 - 2014)	8.59	0.75	5
Asian Female, 40-59 years (2011 - 2012)	10.7	0.9	6
Asian Female, 40-59 years (2013 - 2014)	13.1	1.3	7
Asian Female, 60+ years (2011 - 2012)	21.7	1.8	3
Asian Female, 60+ years (2013 - 2014)	14.6	3	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.7 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (1999 – 2004)

CAS Number 118-74-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1702
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2277
Total population (2003 - 2004)	.092 (.088-.097)	.090 (.086-.095)	.120 (.113-.126)	.157 (.145-.167)	.186 (.169-.212)	1961
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	591
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	747
Age 12-19 years (2003 - 2004)	.065 (.062-.069)	.064 (.060-.069)	.079 (.072-.086)	.102 (.091-.111)	.123 (.111-.141)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1111
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1530
Age 20+ years (2003 - 2004)	.097 (.092-.102)	.095 (.090-.099)	.123 (.118-.130)	.160 (.147-.175)	.191 (.174-.223)	1373
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	807
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1058
Males (2003 - 2004)	.090 (.085-.095)	.087 (.082-.094)	.115 (.107-.122)	.147 (.135-.163)	.179 (.159-.203)	957
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	895
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1219
Females (2003 - 2004)	.095 (.089-.100)	.092 (.088-.099)	.123 (.118-.132)	.163 (.148-.176)	.190 (.176-.226)	1004
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	583
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	554
Mexican Americans (2003 - 2004)	.098 (.089-.109)	.090 (.081-.107)	.125 (.114-.152)	.171 (.157-.203)	.225 (.178-.258)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	350
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	511
Non-Hispanic blacks (2003 - 2004)	.081 (.077-.085)	.078 (.073-.083)	.104 (.095-.118)	.140 (.127-.155)	.167 (.145-.196)	488
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1052
Non-Hispanic whites (2003 - 2004)	.094 (.088-.099)	.092 (.086-.097)	.121 (.114-.129)	.156 (.143-.173)	.182 (.163-.218)	888

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.043	0.008	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.062	0.003	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.052	0.003	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.054	0.004	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.062	0.003	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.056	0.002	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.067	0.003	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.074	0.003	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.063	0.003	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.076	0.002	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.075	0.003	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.060	0.003	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.029	0.003	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.033	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.035	0.002	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.046	0.002	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.047	0.002	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.040	0.001	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.069	0.005	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.071	0.005	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.070	0.007	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.102	0.005	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.102	0.004	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.090	0.007	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.032	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.046	0.004	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.036	0.005	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.034	0.003	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.051	0.003	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.042	0.003	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.046	0.003	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.061	0.003	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.057	0.005	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.064	0.008	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.062	0.003	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.054	0.003	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.022	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.034	0.003	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.026	0.002	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.034	0.004	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.035	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.032	0.002	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.059	0.003	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.059	0.004	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.048	0.004	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.121	0.012	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.090	0.006	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.090	0.005	7
Mexican American Male, 12-19 years (2005 - 2006)	.034	0.002	11
Mexican American Male, 12-19 years (2007 - 2008)	.050	0.003	6
Mexican American Male, 12-19 years (2009 - 2010)	.053	0.002	8
Mexican American Male, 20-39 years (2005 - 2006)	.066	0.01	9
Mexican American Male, 20-39 years (2007 - 2008)	.065	0.006	9
Mexican American Male, 20-39 years (2009 - 2010)	.070	0.011	8
Mexican American Male, 40-59 years (2005 - 2006)	.113	0.011	4
Mexican American Male, 40-59 years (2007 - 2008)	**.146	0.058	6
Mexican American Male, 40-59 years (2009 - 2010)	.099	0.014	8
Mexican American Male, 60+ years (2005 - 2006)	.076	0.011	4
Mexican American Male, 60+ years (2007 - 2008)	.089	0.011	5
Mexican American Male, 60+ years (2009 - 2010)	.078	0.004	5
Mexican American Female, 12-19 years (2005 - 2006)	.032	0.003	16
Mexican American Female, 12-19 years (2007 - 2008)	.033	0.002	5
Mexican American Female, 12-19 years (2009 - 2010)	.035	0.002	7
Mexican American Female, 20-39 years (2005 - 2006)	.066	0.008	9
Mexican American Female, 20-39 years (2007 - 2008)	.060	0.004	8
Mexican American Female, 20-39 years (2009 - 2010)	.049	0.004	10
Mexican American Female, 40-59 years (2005 - 2006)	.117	0.01	6
Mexican American Female, 40-59 years (2007 - 2008)	.138	0.016	6
Mexican American Female, 40-59 years (2009 - 2010)	.080	0.008	9
Mexican American Female, 60+ years (2005 - 2006)	.148	0.02	3
Mexican American Female, 60+ years (2007 - 2008)	.141	0.013	5
Mexican American Female, 60+ years (2009 - 2010)	.122	0.02	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2005 – 2010)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.049	0.002	11
All Hispanic Male, 20-39 years (2009 - 2010)	.066	0.007	13
All Hispanic Male, 40-59 years (2009 - 2010)	.088	0.01	13
All Hispanic Male, 60+ years (2009 - 2010)	.076	0.004	8
All Hispanic Female, 12-19 years (2009 - 2010)	.033	0.002	10
All Hispanic Female, 20-39 years (2009 - 2010)	.046	0.003	14
All Hispanic Female, 40-59 years (2009 - 2010)	.096	0.018	14
All Hispanic Female, 60+ years (2009 - 2010)	**.139	0.059	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.039	0.004	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.035	0.002	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.053	0.003	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.047	0.002	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.065	0.003	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.062	0.004	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.056	0.002	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.061	0.002	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.035	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.033	0.001	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.038	0.001	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.041	0.001	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.062	0.004	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.058	0.002	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.081	0.01	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.082	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.037	0.003	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.033	0.002	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.039	0.002	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.040	0.002	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.048	0.003	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.054	0.003	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.050	0.002	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.052	0.003	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.025	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.029	0.002	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.036	0.002	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.030	0.002	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.050	0.002	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.056	0.005	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.069	0.004	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.079	0.003	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.038	0.004	5
Mexican American Male, 12-19 years (2013 - 2014)	.040	0.001	7
Mexican American Male, 20-39 years (2011 - 2012)	.055	0.009	4
Mexican American Male, 20-39 years (2013 - 2014)	.061	0.003	5
Mexican American Male, 40-59 years (2011 - 2012)	.109	0.025	4
Mexican American Male, 40-59 years (2013 - 2014)	.072	0.004	5
Mexican American Male, 60+ years (2011 - 2012)	.079	0.009	2
Mexican American Male, 60+ years (2013 - 2014)	.073	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	.031	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.035	0.001	7
Mexican American Female, 20-39 years (2011 - 2012)	.040	0.002	4
Mexican American Female, 20-39 years (2013 - 2014)	.046	0.004	5
Mexican American Female, 40-59 years (2011 - 2012)	.113	0.028	3
Mexican American Female, 40-59 years (2013 - 2014)	.075	0.006	6
Mexican American Female, 60+ years (2011 - 2012)	.114	0.017	3
Mexican American Female, 60+ years (2013 - 2014)	.126	0.013	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.040	0.001	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.057	0.003	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.070	0.004	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.063	0.006	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.033	0.001	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.043	0.003	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.070	0.004	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.111	0.01	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2011 – 2014)

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.043	0.005	3
Asian Male, 12-19 years (2013 - 2014)	.036	0.001	3
Asian Male, 20-39 years (2011 - 2012)	.086	0.018	6
Asian Male, 20-39 years (2013 - 2014)	.065	0.007	4
Asian Male, 40-59 years (2011 - 2012)	.074	0.009	6
Asian Male, 40-59 years (2013 - 2014)	.087	0.014	4
Asian Male, 60+ years (2011 - 2012)	.081	0.016	4
Asian Male, 60+ years (2013 - 2014)	.080	0.017	3
Asian Female, 12-19 years (2011 - 2012)	.035	0.004	4
Asian Female, 12-19 years (2013 - 2014)	.038	0.001	3
Asian Female, 20-39 years (2011 - 2012)	.047	0.007	6
Asian Female, 20-39 years (2013 - 2014)	.044	0.003	5
Asian Female, 40-59 years (2011 - 2012)	.066	0.006	6
Asian Female, 40-59 years (2013 - 2014)	.076	0.007	7
Asian Female, 60+ years (2011 - 2012)	.123	0.013	3
Asian Female, 60+ years (2013 - 2014)	.088	0.022	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (1999 – 2004)

CAS Number 319-85-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	9.68 (<LOD-10.9)	< LOD	19.1 (16.0-21.6)	42.0 (33.4-50.6)	68.9 (50.6-89.5)	1893
Total population (2001 - 2002)	*	< LOD	16.0 (14.2-17.3)	36.7 (30.4-45.7)	67.2 (50.3-85.7)	2291
Total population (2003 - 2004)	*	< LOD	14.1 (12.1-16.5)	32.1 (27.1-37.8)	56.5 (43.7-69.4)	1959
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	11.7 (<LOD-16.1)	653
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	13.1 (9.70-19.0)	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	8.80 (<LOD-14.7)	589
Age 20+ years (1999 - 2000)	10.9 (9.61-12.4)	< LOD	21.1 (18.9-24.0)	46.0 (35.9-56.8)	73.4 (52.7-96.0)	1240
Age 20+ years (2001 - 2002)	9.87 (9.04-10.8)	7.80 (6.90-8.90)	17.4 (16.0-20.5)	39.6 (33.2-52.0)	71.7 (53.7-96.2)	1533
Age 20+ years (2003 - 2004)	7.89 (<LOD-9.09)	< LOD	16.3 (13.6-18.4)	35.2 (29.6-42.5)	62.2 (48.2-87.6)	1370
Males (1999 - 2000)	*	< LOD	14.6 (10.8-19.1)	29.8 (23.3-38.7)	44.9 (32.8-68.9)	901
Males (2001 - 2002)	*	< LOD	12.9 (11.1-15.7)	27.5 (24.0-34.4)	45.7 (35.2-55.6)	1067
Males (2003 - 2004)	*	< LOD	10.4 (8.70-12.5)	21.6 (17.7-26.4)	35.3 (26.1-49.9)	952
Females (1999 - 2000)	11.1 (9.56-12.8)	< LOD	22.0 (19.1-27.6)	51.3 (42.2-67.6)	81.8 (64.4-111)	992
Females (2001 - 2002)	10.2 (9.46-11.0)	7.70 (6.90-8.50)	18.5 (16.2-22.7)	47.5 (37.6-62.0)	84.7 (62.0-111)	1224
Females (2003 - 2004)	8.43 (<LOD-9.45)	< LOD	18.6 (16.9-21.5)	41.8 (33.9-51.4)	70.3 (62.2-98.4)	1007
Mexican Americans (1999 - 2000)	16.7 (13.7-20.2)	15.5 (11.6-20.4)	37.7 (29.6-47.3)	97.9 (62.6-135)	142 (99.8-199)	632
Mexican Americans (2001 - 2002)	13.1 (11.6-14.7)	11.8 (9.60-13.4)	25.8 (21.1-32.7)	69.4 (50.8-87.6)	134 (85.7-166)	563
Mexican Americans (2003 - 2004)	10.5 (8.66-12.8)	10.0 (<LOD-12.7)	23.8 (17.5-29.9)	50.1 (30.0-70.3)	70.3 (42.5-123)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	15.4 (12.0-23.1)	37.9 (30.2-42.2)	49.9 (40.9-81.1)	403
Non-Hispanic blacks (2001 - 2002)	*	< LOD	12.0 (8.20-16.2)	36.2 (18.4-73.4)	71.2 (31.9-178)	513
Non-Hispanic blacks (2003 - 2004)	*	< LOD	9.70 (8.30-11.9)	27.1 (21.1-36.3)	48.2 (34.8-54.3)	487
Non-Hispanic whites (1999 - 2000)	*	< LOD	17.5 (14.2-20.5)	34.7 (25.2-46.1)	51.6 (40.0-70.8)	702
Non-Hispanic whites (2001 - 2002)	*	< LOD	14.4 (11.8-16.8)	31.9 (26.6-37.8)	52.0 (37.7-69.5)	1051
Non-Hispanic whites (2003 - 2004)	*	< LOD	12.8 (10.9-14.7)	27.6 (22.1-32.2)	40.8 (32.3-56.5)	887

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 9.36, 6.76, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**3.53	1.51	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.44	0.23	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.34	0.35	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.00	0.22	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	14.3	2.1	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	11.3	2.6	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	8.84	1.14	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.79	0.55	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.19	0.5	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	7.32	0.81	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	3.90	1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	**9.70	3.19	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	19.6	1.3	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	17.3	1.7	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	16.6	1.7	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.00	0.39	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	5.64	1.62	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	3.62	0.43	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.19	0.97	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	15.0	3.5	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	7.79	1.2	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	7.12	0.88	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**3.89	1.98	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	9.50	1.59	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	6.79	1.13	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	**8.52	2.96	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	56.1	12.3	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	34.4	5.5	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	31.6	6.8	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	10.7	2.2	9
Mexican American Male, 20-39 years (2007 - 2008)	5.59	1.57	9
Mexican American Male, 20-39 years (2009 - 2010)	**5.07	1.81	8
Mexican American Male, 40-59 years (2005 - 2006)	**23.7	8.6	4
Mexican American Male, 40-59 years (2007 - 2008)	16.6	5	6
Mexican American Male, 40-59 years (2009 - 2010)	14.4	4.1	8
Mexican American Male, 60+ years (2005 - 2006)	20.5	1.6	4
Mexican American Male, 60+ years (2007 - 2008)	21.9	5.7	5
Mexican American Male, 60+ years (2009 - 2010)	20.7	2.9	5
Mexican American Female, 12-19 years (2005 - 2006)	3.50	0.67	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	12.0	2.2	9
Mexican American Female, 20-39 years (2007 - 2008)	5.65	1.61	8
Mexican American Female, 20-39 years (2009 - 2010)	**10.2	3.3	9
Mexican American Female, 40-59 years (2005 - 2006)	25.3	3.5	6
Mexican American Female, 40-59 years (2007 - 2008)	16.8	2.1	6
Mexican American Female, 40-59 years (2009 - 2010)	21.9	3.3	9
Mexican American Female, 60+ years (2005 - 2006)	36.8	5.5	3
Mexican American Female, 60+ years (2007 - 2008)	50.2	8.6	5
Mexican American Female, 60+ years (2009 - 2010)	56.9	9.3	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	**5.24	1.58	13
All Hispanic Male, 40-59 years (2009 - 2010)	10.8	2.8	13
All Hispanic Male, 60+ years (2009 - 2010)	17.8	2.5	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	8.31	2.42	13
All Hispanic Female, 40-59 years (2009 - 2010)	20.3	4.2	14
All Hispanic Female, 60+ years (2009 - 2010)	45.4	7.6	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	1.14	0.13	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	2.79	0.26	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	3.67	1.05	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	8.70	1.47	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	11.8	1.6	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	1.37	0.19	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	3.95	0.52	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	3.29	0.45	14
Non-Hispanic White Female, 60+ years (2011 - 2012)	16.4	2.9	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	18.4	5.2	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	2.28	0.27	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	3.70	1.11	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	6.67	0.97	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	6.90	1.67	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	1.78	0.35	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	6.16	1.25	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	**5.61	1.73	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	27.4	5.7	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	32.9	8.1	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	2.96	0.49	4
Mexican American Male, 20-39 years (2013 - 2014)	**5.52	3.05	5
Mexican American Male, 40-59 years (2011 - 2012)	**17.0	8.8	4
Mexican American Male, 40-59 years (2013 - 2014)	4.54	1.08	5
Mexican American Male, 60+ years (2011 - 2012)	15.0	0.2	2
Mexican American Male, 60+ years (2013 - 2014)	8.64	1.27	4
Mexican American Female, 12-19 years (2011 - 2012)	**3.37	1.61	4
Mexican American Female, 12-19 years (2013 - 2014)	1.35	0.25	7
Mexican American Female, 20-39 years (2011 - 2012)	3.33	0.76	4
Mexican American Female, 20-39 years (2013 - 2014)	8.28	1.76	5
Mexican American Female, 40-59 years (2011 - 2012)	20.2	3.2	3
Mexican American Female, 40-59 years (2013 - 2014)	11.4	1.1	6
Mexican American Female, 60+ years (2011 - 2012)	42.0	4.2	3
Mexican American Female, 60+ years (2013 - 2014)	44.4	9.6	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	**4.38	2.08	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	4.35	0.98	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	10.7	1.4	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	5.58	1.46	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	10.3	1.5	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	37.8	6.9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**22.5	10.6	3
Asian Male, 12-19 years (2013 - 2014)	**23.0	17.7	3
Asian Male, 20-39 years (2011 - 2012)	97.7	24.2	6
Asian Male, 20-39 years (2013 - 2014)	25.7	0.7	4
Asian Male, 40-59 years (2011 - 2012)	72.7	20.7	6
Asian Male, 40-59 years (2013 - 2014)	143	22	4
Asian Male, 60+ years (2011 - 2012)	179	21	4
Asian Male, 60+ years (2013 - 2014)	**57.4	41	3
Asian Female, 12-19 years (2011 - 2012)	**29.2	11.6	4
Asian Female, 12-19 years (2013 - 2014)	**9.01	5.74	3
Asian Female, 20-39 years (2011 - 2012)	74.1	15.5	6
Asian Female, 20-39 years (2013 - 2014)	**44.7	14.1	5
Asian Female, 40-59 years (2011 - 2012)	136	35	6
Asian Female, 40-59 years (2013 - 2014)	**227	115	7
Asian Female, 60+ years (2011 - 2012)	775	111	3
Asian Female, 60+ years (2013 - 2014)	**242	101	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (1999 – 2004)

CAS Number 319-85-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	.058 (<LOD-.066)	< LOD	.120 (.100-.150)	.290 (.220-.360)	.450 (.360-.560)	1893
Total population (2001 - 2002)	*	< LOD	.100 (.090-.120)	.250 (.210-.310)	.460 (.340-.600)	2291
Total population (2003 - 2004)	*	< LOD	.092 (.081-.103)	.216 (.173-.254)	.372 (.294-.442)	1959
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	.050 (<LOD-.070)	653
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	.080 (.050-.100)	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.048 (<LOD-.064)	589
Age 20+ years (1999 - 2000)	.067 (.059-.077)	< LOD	.140 (.120-.160)	.330 (.240-.410)	.480 (.410-.620)	1240
Age 20+ years (2001 - 2002)	.062 (.057-.069)	.050 (.050-.060)	.120 (.100-.140)	.270 (.230-.350)	.480 (.370-.690)	1533
Age 20+ years (2003 - 2004)	.050 (<LOD-.058)	< LOD	.103 (.089-.125)	.234 (.191-.290)	.412 (.308-.587)	1370
Males (1999 - 2000)	*	< LOD	.090 (.080-.120)	.210 (.160-.250)	.290 (.220-.470)	901
Males (2001 - 2002)	*	< LOD	.080 (.070-.100)	.200 (.150-.260)	.310 (.250-.400)	1067
Males (2003 - 2004)	*	< LOD	.072 (.056-.089)	.144 (.118-.174)	.222 (.170-.305)	952
Females (1999 - 2000)	.065 (.056-.077)	< LOD	.150 (.120-.190)	.380 (.300-.450)	.560 (.420-.680)	992
Females (2001 - 2002)	.062 (.057-.067)	.050 (.040-.050)	.130 (.110-.150)	.320 (.260-.400)	.570 (.450-.710)	1224
Females (2003 - 2004)	.051 (<LOD-.057)	< LOD	.118 (.103-.130)	.290 (.244-.319)	.442 (.382-.661)	1007
Mexican Americans (1999 - 2000)	.098 (.080-.119)	.090 (.070-.110)	.240 (.200-.310)	.580 (.390-.840)	.910 (.580-1.37)	632
Mexican Americans (2001 - 2002)	.078 (.068-.091)	.070 (.050-.080)	.160 (.130-.210)	.470 (.330-.700)	1.01 (.620-1.32)	563
Mexican Americans (2003 - 2004)	.064 (.051-.080)	.057 (<LOD-.086)	.139 (.124-.190)	.331 (.191-.501)	.521 (.297-.814)	460
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.100 (.070-.140)	.250 (.190-.290)	.360 (.280-.460)	403
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.070 (.050-.110)	.220 (.120-.410)	.410 (.190-1.05)	513
Non-Hispanic blacks (2003 - 2004)	*	< LOD	.065 (.047-.083)	.167 (.131-.214)	.281 (.200-.404)	487
Non-Hispanic whites (1999 - 2000)	*	< LOD	.120 (.100-.140)	.250 (.170-.340)	.390 (.280-.510)	702
Non-Hispanic whites (2001 - 2002)	*	< LOD	.090 (.080-.110)	.210 (.180-.260)	.350 (.250-.480)	1051
Non-Hispanic whites (2003 - 2004)	*	< LOD	.083 (.073-.096)	.175 (.146-.220)	.287 (.221-.372)	887

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**.028	0.013	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.033	0.002	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.025	0.003	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.020	0.001	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.095	0.012	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.071	0.015	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.053	0.007	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.018	0.004	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.012	0.003	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.055	0.007	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.026	0.007	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	**.060	0.019	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.142	0.008	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.117	0.012	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.100	0.009	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.012	0.002	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.036	0.011	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.023	0.003	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.027	0.006	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.087	0.018	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.047	0.007	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.038	0.005	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**.021	0.01	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.062	0.011	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.041	0.007	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	**.046	0.015	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.369	0.07	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.204	0.029	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.180	0.036	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	.075	0.015	9
Mexican American Male, 20-39 years (2007 - 2008)	**.041	0.013	9
Mexican American Male, 20-39 years (2009 - 2010)	**.034	0.014	8
Mexican American Male, 40-59 years (2005 - 2006)	**.185	0.058	4
Mexican American Male, 40-59 years (2007 - 2008)	**.120	0.038	6
Mexican American Male, 40-59 years (2009 - 2010)	**.101	0.031	8
Mexican American Male, 60+ years (2005 - 2006)	.150	0.02	4
Mexican American Male, 60+ years (2007 - 2008)	**.171	0.058	5
Mexican American Male, 60+ years (2009 - 2010)	.130	0.023	5
Mexican American Female, 12-19 years (2005 - 2006)	.019	0.003	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.082	0.016	9
Mexican American Female, 20-39 years (2007 - 2008)	.033	0.009	8
Mexican American Female, 20-39 years (2009 - 2010)	**.055	0.018	9
Mexican American Female, 40-59 years (2005 - 2006)	.186	0.025	6
Mexican American Female, 40-59 years (2007 - 2008)	.114	0.015	6
Mexican American Female, 40-59 years (2009 - 2010)	.141	0.021	9
Mexican American Female, 60+ years (2005 - 2006)	.275	0.037	3
Mexican American Female, 60+ years (2007 - 2008)	.344	0.06	5
Mexican American Female, 60+ years (2009 - 2010)	.322	0.058	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2005 – 2010)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	**.039	0.014	13
All Hispanic Male, 40-59 years (2009 - 2010)	.075	0.021	13
All Hispanic Male, 60+ years (2009 - 2010)	.115	0.019	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	.045	0.013	13
All Hispanic Female, 40-59 years (2009 - 2010)	.129	0.027	14
All Hispanic Female, 60+ years (2009 - 2010)	.268	0.046	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.007	0.001	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.018	0.002	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	**.022	0.007	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.048	0.008	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.064	0.008	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.007	0.001	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.026	0.004	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.020	0.003	14
Non-Hispanic White Female, 60+ years (2011 - 2012)	.100	0.017	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.108	0.031	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.013	0.002	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.021	0.006	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.036	0.005	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.037	0.01	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.010	0.002	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.039	0.009	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	**.030	0.01	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.153	0.031	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.173	0.039	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.019	0.003	4
Mexican American Male, 20-39 years (2013 - 2014)	**.033	0.017	5
Mexican American Male, 40-59 years (2011 - 2012)	**.127	0.06	4
Mexican American Male, 40-59 years (2013 - 2014)	.029	0.009	5
Mexican American Male, 60+ years (2011 - 2012)	.089	0.004	2
Mexican American Male, 60+ years (2013 - 2014)	.048	0.009	4
Mexican American Female, 12-19 years (2011 - 2012)	**.016	0.008	4
Mexican American Female, 12-19 years (2013 - 2014)	.006	0.001	7
Mexican American Female, 20-39 years (2011 - 2012)	.018	0.004	4
Mexican American Female, 20-39 years (2013 - 2014)	.044	0.01	5
Mexican American Female, 40-59 years (2011 - 2012)	.119	0.016	3
Mexican American Female, 40-59 years (2013 - 2014)	.068	0.009	6
Mexican American Female, 60+ years (2011 - 2012)	.259	0.03	3
Mexican American Female, 60+ years (2013 - 2014)	.253	0.049	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	**.026	0.012	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.027	0.007	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.059	0.008	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.030	0.008	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.061	0.01	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.222	0.039	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (2011 – 2014)

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**.121	0.059	3
Asian Male, 12-19 years (2013 - 2014)	**.107	0.081	3
Asian Male, 20-39 years (2011 - 2012)	.557	0.142	6
Asian Male, 20-39 years (2013 - 2014)	.152	0.013	4
Asian Male, 40-59 years (2011 - 2012)	.452	0.129	6
Asian Male, 40-59 years (2013 - 2014)	.812	0.127	4
Asian Male, 60+ years (2011 - 2012)	.965	0.124	4
Asian Male, 60+ years (2013 - 2014)	**.370	0.279	3
Asian Female, 12-19 years (2011 - 2012)	**.138	0.053	4
Asian Female, 12-19 years (2013 - 2014)	**.043	0.027	3
Asian Female, 20-39 years (2011 - 2012)	.418	0.094	6
Asian Female, 20-39 years (2013 - 2014)	**.232	0.073	5
Asian Female, 40-59 years (2011 - 2012)	.829	0.215	6
Asian Female, 40-59 years (2013 - 2014)	**1.42	0.77	7
Asian Female, 60+ years (2011 - 2012)	4.42	0.75	3
Asian Female, 60+ years (2013 - 2014)	**1.50	0.72	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (1999 – 2004)

CAS Number 58-89-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1799
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2280
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1960
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	593
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1139
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1522
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1367
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	863
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1060
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	952
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	936
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1220
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1008
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	563
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	380
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	509
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	646
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 40-59 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 60+ years (2011 - 2012)	*	*	12
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	*	*	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡‡Not measured after Survey years 2011-2012.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.92.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 40-59 years (2011 - 2012)	*	*	4
Mexican American Male, 60+ years (2011 - 2012)	*	*	2
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡‡Not measured after Survey years 2011-2012.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.92.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 40-59 years (2011 - 2012)	*	*	6
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 60+ years (2011 - 2012)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation

‡‡Not measured after Survey years 2011-2012..

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.92.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (1999 – 2004)

CAS Number 58-89-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1799
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2280
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1960
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	593
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1139
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1522
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1367
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	863
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1060
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	952
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	936
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1220
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1008
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	563
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	380
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	509
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	646
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1045
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2005 – 2010)

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 40-59 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 60+ years (2011 - 2012)	*	*	12
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	*	*	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡‡Not measured after Survey years 2011-2012.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 40-59 years (2011 - 2012)	*	*	4
Mexican American Male, 60+ years (2011 - 2012)	*	*	2
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡‡Not measured after Survey years 2011-2012.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (2011 – 2012)‡‡

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 40-59 years (2011 - 2012)	*	*	6
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 60+ years (2011 - 2012)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡‡Not measured after Survey years 2011-2012.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (1999 – 2004)

CAS Number 2385-85-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1853
Total population (2001 - 2002)	*	< LOD	< LOD	15.8 (<LOD-73.7)	57.1 (13.2-230)	2257
Total population (2003 - 2004)	*	< LOD	< LOD	8.40 (<LOD-13.0)	13.2 (7.90-29.6)	1951
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	659
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	728
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1194
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	19.6 (<LOD-108)	71.0 (14.6-305)	1529
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	9.10 (<LOD-15.6)	15.4 (8.10-37.1)	1359
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	887
Males (2001 - 2002)	*	< LOD	< LOD	16.1 (<LOD-65.6)	50.8 (12.3-225)	1052
Males (2003 - 2004)	*	< LOD	< LOD	9.70 (<LOD-15.4)	15.5 (9.70-24.4)	949
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	966
Females (2001 - 2002)	*	< LOD	< LOD	15.0 (<LOD-108)	63.0 (12.0-374)	1205
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	11.6 (<LOD-31.3)	1002
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	617
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	548
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	459
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	15.5 (<LOD-42.2)	39.5 (<LOD-115)	398
Non-Hispanic blacks (2001 - 2002)	*	< LOD	13.7 (<LOD-47.3)	51.3 (15.4-230)	153 (30.5-425)	500
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	18.1 (8.70-40.8)	40.3 (15.5-82.7)	484
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	688
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	15.1 (<LOD-104)	66.7 (12.5-291)	1049
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	11.6 (<LOD-23.4)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**3.88	2.18	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	**6.39	2.15	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	4.25	0.31	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	5.25	1.32	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	5.32	0.61	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	6.36	1.34	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.89	0.44	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	2.42	0.14	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	2.05	0.28	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	3.32	0.33	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	3.51	0.24	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	3.90	0.39	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	4.42	0.4	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.68	0.59	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	5.90	0.49	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	**16.8	6.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	6.44	1.04	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**27.2	10.1	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	13.9	2.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	14.2	4.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	1.62	0.32	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	5.92	0.65	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	5.42	1.21	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	5.03	0.84	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	10.3	2.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**24.0	9.3	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	7.49	1.68	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	2.66	0.74	4
Mexican American Male, 40-59 years (2007 - 2008)	**4.37	1.38	6
Mexican American Male, 40-59 years (2009 - 2010)	3.08	0.83	8
Mexican American Male, 60+ years (2005 - 2006)	2.89	0.78	4
Mexican American Male, 60+ years (2007 - 2008)	**11.0	8	5
Mexican American Male, 60+ years (2009 - 2010)	5.10	1.27	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	1.84	0.34	6
Mexican American Female, 40-59 years (2007 - 2008)	**3.76	1.3	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	2.84	0.37	3
Mexican American Female, 60+ years (2007 - 2008)	2.59	0.49	5
Mexican American Female, 60+ years (2009 - 2010)	4.04	0.97	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	4.58	1.27	13
All Hispanic Male, 60+ years (2009 - 2010)	5.18	0.82	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	4.13	0.55	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.4, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	4.08	0.52	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	**5.04	2	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	8.59	1.95	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	19.1	5.3	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	2.19	0.18	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	4.18	1	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	5.43	1.46	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	**9.05	2.9	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	1.42	0.26	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	**1.96	0.64	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	4.58	0.53	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**12.2	3.8	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	11.4	1.7	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	23.6	6.6	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	3.36	0.35	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	13.7	4	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	8.25	1.66	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	**42.3	14.8	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	2.93	0.47	4
Mexican American Male, 40-59 years (2013 - 2014)	2.37	0.41	5
Mexican American Male, 60+ years (2011 - 2012)	3.12	0.45	2
Mexican American Male, 60+ years (2013 - 2014)	**8.17	5.25	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**2.39	0.78	3
Mexican American Female, 40-59 years (2013 - 2014)	1.47	0.32	6
Mexican American Female, 60+ years (2011 - 2012)	**5.24	2.93	3
Mexican American Female, 60+ years (2013 - 2014)	4.55	1.13	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	2.80	0.32	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**6.56	2.96	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	1.69	0.21	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	3.95	0.73	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	1.30	0.29	6
Asian Male, 20-39 years (2013 - 2014)	**3.93	2.01	4
Asian Male, 40-59 years (2011 - 2012)	**6.21	4.54	6
Asian Male, 40-59 years (2013 - 2014)	**7.85	4.89	4
Asian Male, 60+ years (2011 - 2012)	3.61	0.54	4
Asian Male, 60+ years (2013 - 2014)	4.23	1.22	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	1.36	0.08	6
Asian Female, 40-59 years (2013 - 2014)	1.82	0.33	7
Asian Female, 60+ years (2011 - 2012)	2.53	0.35	3
Asian Female, 60+ years (2013 - 2014)	**4.21	1.75	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.92 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (1999 – 2004)

CAS Number 2385-85-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1853
Total population (2001 - 2002)	*	< LOD	< LOD	.100 (<LOD-.470)	.410 (.080-1.73)	2257
Total population (2003 - 2004)	*	< LOD	< LOD	.054 (<LOD-.084)	.093 (.052-.170)	1951
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	659
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	728
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1194
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	.140 (<LOD-.690)	.470 (.090-1.92)	1529
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	.059 (<LOD-.102)	.106 (.053-.215)	1359
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	887
Males (2001 - 2002)	*	< LOD	< LOD	.110 (<LOD-.470)	.370 (.090-1.37)	1052
Males (2003 - 2004)	*	< LOD	< LOD	.064 (<LOD-.106)	.108 (.062-.170)	949
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	966
Females (2001 - 2002)	*	< LOD	< LOD	.090 (<LOD-.510)	.430 (.070-1.79)	1205
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	.077 (<LOD-.170)	1002
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	617
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	548
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	459
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.220)	.220 (<LOD-.450)	398
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.090 (<LOD-.240)	.310 (.090-1.41)	1.08 (.170-3.02)	500
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	.112 (.055-.268)	.256 (.089-.635)	484
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	688
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.100 (<LOD-.610)	.450 (.080-1.79)	1049
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	.079 (<LOD-.174)	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**.027	0.014	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	**.048	0.016	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.031	0.003	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.034	0.008	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.036	0.004	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.040	0.008	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.030	0.003	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.018	0.002	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.014	0.002	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.021	0.002	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.026	0.002	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.026	0.003	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.027	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.016	0.004	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.038	0.003	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	**.109	0.04	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.041	0.008	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**.168	0.062	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.084	0.012	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.076	0.023	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.009	0.002	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.038	0.004	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.032	0.008	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.028	0.005	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.067	0.016	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**.146	0.057	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.043	0.01	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	**.022	0.007	4
Mexican American Male, 40-59 years (2007 - 2008)	**.031	0.01	6
Mexican American Male, 40-59 years (2009 - 2010)	.020	0.005	8
Mexican American Male, 60+ years (2005 - 2006)	**.022	0.008	4
Mexican American Male, 60+ years (2007 - 2008)	**.074	0.052	5
Mexican American Male, 60+ years (2009 - 2010)	.031	0.008	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.014	0.003	6
Mexican American Female, 40-59 years (2007 - 2008)	**.024	0.008	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.022	0.005	3
Mexican American Female, 60+ years (2007 - 2008)	.018	0.003	5
Mexican American Female, 60+ years (2009 - 2010)	.023	0.005	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2005 – 2010)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.031	0.008	13
All Hispanic Male, 60+ years (2009 - 2010)	.032	0.005	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.025	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.027	0.003	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	**.029	0.014	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.045	0.009	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.101	0.029	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.014	0.001	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.026	0.007	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.033	0.009	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	**.053	0.016	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.007	0.001	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	**.010	0.003	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.025	0.003	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**.068	0.021	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.061	0.009	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.118	0.03	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.020	0.003	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.072	0.021	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.046	0.009	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	**.225	0.075	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.023	0.003	4
Mexican American Male, 40-59 years (2013 - 2014)	.015	0.003	5
Mexican American Male, 60+ years (2011 - 2012)	.018	0.002	2
Mexican American Male, 60+ years (2013 - 2014)	**.042	0.027	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.014	0.005	3
Mexican American Female, 40-59 years (2013 - 2014)	.008	0.002	6
Mexican American Female, 60+ years (2011 - 2012)	**.034	0.02	3
Mexican American Female, 60+ years (2013 - 2014)	.026	0.006	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.017	0.002	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**.034	0.015	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.010	0.001	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.023	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2011 – 2014)

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.007	0.002	6
Asian Male, 20-39 years (2013 - 2014)	**.024	0.013	4
Asian Male, 40-59 years (2011 - 2012)	**.039	0.029	6
Asian Male, 40-59 years (2013 - 2014)	**.042	0.025	4
Asian Male, 60+ years (2011 - 2012)	.020	0.003	4
Asian Male, 60+ years (2013 - 2014)	**.027	0.009	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.008	0.001	6
Asian Female, 40-59 years (2013 - 2014)	.011	0.002	7
Asian Female, 60+ years (2011 - 2012)	.014	0.002	3
Asian Female, 60+ years (2013 - 2014)	**.024	0.009	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2003 – 2004)

CAS Number 147217-75-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1992
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	607
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1385
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	964
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1028
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	482
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	491
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	892

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2005 – 2010)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.59, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2005 – 2010)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.59, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2005 – 2010)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.59, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2011 – 2014)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	*	*	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	*	*	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	*	*	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	*	*	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.33 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2011 – 2014)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	*	*	4
Mexican American Male, 40-59 years (2013 - 2014)	*	*	5
Mexican American Male, 60+ years (2011 - 2012)	*	*	2
Mexican American Male, 60+ years (2013 - 2014)	*	*	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2013 - 2014)	*	*	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	*	*	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	*	*	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.33 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2011 – 2014)

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	*	*	6
Asian Male, 40-59 years (2013 - 2014)	*	*	4
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Male, 60+ years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2013 - 2014)	*	*	7
Asian Female, 60+ years (2011 - 2012)	*	*	3
Asian Female, 60+ years (2013 - 2014)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.33 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2003 – 2004)

CAS Number 41318-75-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	1.19 (1.03-1.37)	1.10 (1.00-1.30)	2.20 (1.90-2.60)	4.80 (3.30-6.70)	8.00 (5.40-11.3)	1987
Age 12-19 years (2003 - 2004)	1.30 (1.15-1.46)	1.20 (1.10-1.50)	2.40 (2.00-2.60)	4.00 (2.90-5.60)	6.10 (4.00-9.40)	598
Age 20+ years (2003 - 2004)	1.17 (1.01-1.37)	1.10 (.900-1.30)	2.20 (1.90-2.70)	5.00 (3.30-7.20)	8.20 (6.00-10.9)	1389
Males (2003 - 2004)	1.21 (1.05-1.39)	1.10 (1.00-1.30)	2.30 (2.00-2.70)	5.10 (3.50-7.30)	8.20 (6.00-11.3)	964
Females (2003 - 2004)	1.17 (.990-1.38)	1.10 (.900-1.40)	2.10 (1.80-2.60)	4.60 (3.00-6.90)	7.80 (4.70-11.8)	1023
Mexican Americans (2003 - 2004)	1.43 (1.29-1.59)	1.40 (1.20-1.50)	2.40 (2.00-2.90)	4.70 (3.70-5.50)	7.30 (5.60-8.30)	488
Non-Hispanic blacks (2003 - 2004)	1.21 (1.03-1.42)	1.10 (.900-1.30)	2.20 (1.80-2.50)	5.30 (3.50-6.70)	8.40 (5.40-12.3)	470
Non-Hispanic whites (2003 - 2004)	1.17 (.968-1.42)	1.10 (.900-1.30)	2.20 (1.80-2.70)	4.90 (3.00-8.00)	8.00 (4.50-13.6)	905

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2005 – 2010)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.82	0.44	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.38	0.19	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.68	0.48	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.16	0.45	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	1.37	0.16	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	1.10	0.12	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.23	0.12	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.97	0.43	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	1.09	0.15	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	3.07	0.34	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	2.39	0.29	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.46	0.2	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.37	0.49	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.31	0.12	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.838	0.067	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	1.70	0.32	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	1.67	0.23	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.805	0.083	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.44	0.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.37	0.15	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.09	0.15	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.59	0.55	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2.51	0.38	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2.02	0.22	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.79	0.2	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.21	0.1	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	1.38	0.19	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	1.25	0.14	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.822	0.129	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	1.47	0.35	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1.33	0.17	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.30	0.52	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1.91	0.5	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1.94	0.3	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	2.34	0.34	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.66, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2005 – 2010)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.29	0.39	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**1.66	0.56	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.19	0.23	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	1.93	0.37	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	1.61	0.21	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.37	0.08	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**2.07	0.77	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.29	0.11	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.06	0.18	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**1.76	0.56	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	2.33	0.61	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	1.70	0.3	7
Mexican American Male, 12-19 years (2005 - 2006)	2.04	0.21	11
Mexican American Male, 12-19 years (2007 - 2008)	2.06	0.38	6
Mexican American Male, 12-19 years (2009 - 2010)	1.88	0.25	8
Mexican American Male, 20-39 years (2005 - 2006)	1.99	0.21	9
Mexican American Male, 20-39 years (2007 - 2008)	1.52	0.21	9
Mexican American Male, 20-39 years (2009 - 2010)	1.56	0.18	8
Mexican American Male, 40-59 years (2005 - 2006)	2.06	0.13	4
Mexican American Male, 40-59 years (2007 - 2008)	2.15	0.28	6
Mexican American Male, 40-59 years (2009 - 2010)	1.64	0.25	8
Mexican American Male, 60+ years (2005 - 2006)	2.38	0.14	4
Mexican American Male, 60+ years (2007 - 2008)	2.87	0.84	5
Mexican American Male, 60+ years (2009 - 2010)	2.25	0.45	5
Mexican American Female, 12-19 years (2005 - 2006)	2.08	0.19	16
Mexican American Female, 12-19 years (2007 - 2008)	1.49	0.24	5
Mexican American Female, 12-19 years (2009 - 2010)	1.79	0.23	7
Mexican American Female, 20-39 years (2005 - 2006)	1.51	0.14	9
Mexican American Female, 20-39 years (2007 - 2008)	1.84	0.42	8
Mexican American Female, 20-39 years (2009 - 2010)	1.36	0.2	10
Mexican American Female, 40-59 years (2005 - 2006)	1.57	0.29	6
Mexican American Female, 40-59 years (2007 - 2008)	1.81	0.31	6
Mexican American Female, 40-59 years (2009 - 2010)	1.68	0.22	9
Mexican American Female, 60+ years (2005 - 2006)	3.29	0.62	3
Mexican American Female, 60+ years (2007 - 2008)	2.34	0.33	5
Mexican American Female, 60+ years (2009 - 2010)	1.95	0.21	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.66, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2005 – 2010)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.65	0.22	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.61	0.16	13
All Hispanic Male, 40-59 years (2009 - 2010)	1.53	0.17	13
All Hispanic Male, 60+ years (2009 - 2010)	1.90	0.34	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.66	0.18	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.21	0.15	14
All Hispanic Female, 40-59 years (2009 - 2010)	1.46	0.16	14
All Hispanic Female, 60+ years (2009 - 2010)	1.77	0.22	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.66, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2011 – 2014)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.936	0.19	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.52	0.38	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.975	0.141	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.884	0.078	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	1.34	0.19	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	1.19	0.14	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.54	0.22	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	2.04	0.18	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	**1.25	0.48	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.888	0.108	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.958	0.096	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.959	0.104	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.50	0.41	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.941	0.124	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	1.29	0.14	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	1.50	0.17	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.00	0.16	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.941	0.135	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	1.31	0.32	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.914	0.237	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	1.28	0.22	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**1.40	0.42	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	1.59	0.27	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**1.70	0.54	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.10	0.2	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.04	0.19	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	1.09	0.11	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.866	0.129	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**1.60	0.5	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	1.45	0.16	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.846	0.124	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	1.44	0.16	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.48 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2011 – 2014)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	2.10	0.41	5
Mexican American Male, 12-19 years (2013 - 2014)	1.53	0.4	7
Mexican American Male, 20-39 years (2011 - 2012)	1.48	0.2	4
Mexican American Male, 20-39 years (2013 - 2014)	1.48	0.37	5
Mexican American Male, 40-59 years (2011 - 2012)	1.99	0.57	4
Mexican American Male, 40-59 years (2013 - 2014)	1.37	0.25	5
Mexican American Male, 60+ years (2011 - 2012)	1.24	0.13	2
Mexican American Male, 60+ years (2013 - 2014)	2.90	0.47	4
Mexican American Female, 12-19 years (2011 - 2012)	1.38	0.37	4
Mexican American Female, 12-19 years (2013 - 2014)	1.06	0.11	7
Mexican American Female, 20-39 years (2011 - 2012)	**1.25	0.44	4
Mexican American Female, 20-39 years (2013 - 2014)	1.15	0.22	5
Mexican American Female, 40-59 years (2011 - 2012)	2.33	0.3	3
Mexican American Female, 40-59 years (2013 - 2014)	1.36	0.2	6
Mexican American Female, 60+ years (2011 - 2012)	1.73	0.32	3
Mexican American Female, 60+ years (2013 - 2014)	1.46	0.14	5
All Hispanic Male, 12-19 years (2011 - 2012)	1.88	0.36	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.36	0.29	10
All Hispanic Male, 20-39 years (2011 - 2012)	1.18	0.21	8
All Hispanic Male, 20-39 years (2013 - 2014)	1.38	0.27	8
All Hispanic Male, 40-59 years (2011 - 2012)	1.60	0.35	7
All Hispanic Male, 40-59 years (2013 - 2014)	1.27	0.17	9
All Hispanic Male, 60+ years (2011 - 2012)	1.59	0.35	6
All Hispanic Male, 60+ years (2013 - 2014)	2.52	0.32	7
All Hispanic Female, 12-19 years (2011 - 2012)	1.08	0.26	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.08	0.1	10
All Hispanic Female, 20-39 years (2011 - 2012)	1.06	0.23	8
All Hispanic Female, 20-39 years (2013 - 2014)	.927	0.17	9
All Hispanic Female, 40-59 years (2011 - 2012)	1.62	0.29	7
All Hispanic Female, 40-59 years (2013 - 2014)	1.43	0.16	10
All Hispanic Female, 60+ years (2011 - 2012)	1.11	0.25	7
All Hispanic Female, 60+ years (2013 - 2014)	1.25	0.14	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.48 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2011 – 2014)

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.808	0.088	3
Asian Male, 12-19 years (2013 - 2014)	**1.92	1.02	3
Asian Male, 20-39 years (2011 - 2012)	.865	0.12	6
Asian Male, 20-39 years (2013 - 2014)	.551	0.094	4
Asian Male, 40-59 years (2011 - 2012)	1.15	0.2	6
Asian Male, 40-59 years (2013 - 2014)	1.23	0.27	4
Asian Male, 60+ years (2011 - 2012)	1.20	0.24	4
Asian Male, 60+ years (2013 - 2014)	**1.37	0.56	3
Asian Female, 12-19 years (2011 - 2012)	1.38	0.35	4
Asian Female, 12-19 years (2013 - 2014)	1.31	0.34	3
Asian Female, 20-39 years (2011 - 2012)	.674	0.093	6
Asian Female, 20-39 years (2013 - 2014)	1.02	0.19	5
Asian Female, 40-59 years (2011 - 2012)	1.42	0.2	6
Asian Female, 40-59 years (2013 - 2014)	1.17	0.14	7
Asian Female, 60+ years (2011 - 2012)	1.67	0.09	3
Asian Female, 60+ years (2013 - 2014)	**2.65	1.52	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.48 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2003 – 2004)

CAS Number 5436-43-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	20.5 (17.6-23.9)	19.2 (15.7-22.3)	41.1 (35.6-49.2)	85.1 (66.8-127)	163 (108-240)	2016
Age 12-19 years (2003 - 2004)	28.2 (24.6-32.3)	27.2 (22.1-33.6)	53.6 (44.9-63.6)	104 (82.4-145)	174 (115-211)	615
Age 20+ years (2003 - 2004)	19.5 (16.5-23.1)	18.0 (14.6-21.6)	39.1 (32.8-47.0)	83.3 (63.0-127)	163 (102-240)	1401
Males (2003 - 2004)	21.4 (18.1-25.3)	19.2 (15.8-24.0)	45.2 (37.3-54.9)	94.3 (66.8-148)	168 (112-382)	981
Females (2003 - 2004)	19.6 (16.4-23.5)	19.1 (14.1-23.2)	38.4 (31.8-46.4)	79.5 (60.7-121)	155 (102-239)	1035
Mexican Americans (2003 - 2004)	25.5 (23.0-28.1)	23.6 (21.2-25.5)	47.1 (38.2-56.5)	87.2 (72.0-105)	151 (105-195)	478
Non-Hispanic blacks (2003 - 2004)	24.3 (20.9-28.2)	21.4 (18.2-25.6)	47.5 (40.7-53.2)	116 (81.8-149)	242 (136-481)	499
Non-Hispanic whites (2003 - 2004)	19.5 (16.1-23.7)	17.4 (14.4-22.2)	40.2 (33.1-51.9)	85.1 (60.3-142)	163 (90.2-283)	912

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 4.2.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2005 – 2010)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	59.0	16.8	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	32.9	4.8	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**46.8	16.5	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**46.1	14.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	29.1	4.2	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	25.7	4.1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	21.2	2.6	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	38.7	9.7	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	23.3	4.4	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	67.3	12.4	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	40.1	6.5	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	26.0	4.8	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	62.5	14.4	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	31.2	3.2	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	22.0	1.7	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	**50.0	16.4	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	32.2	6.6	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	15.2	1.6	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	22.5	4.6	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	20.5	3.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	17.1	2.3	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**60.0	20.4	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	40.4	7.5	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	33.6	5	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	51.3	4.9	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	31.0	4.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	20.3	3.5	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	42.8	8.7	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	28.1	3.3	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	19.6	3.3	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	29.6	6.9	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	30.5	5.3	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	**60.3	21.1	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	65.8	18.9	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	31.8	4.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	68.4	19	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.6, 0.6, and 0.64, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2005 – 2010)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	74.9	13.9	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**56.4	23.5	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	36.6	6	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**61.0	21.6	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	32.2	4.1	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	36.3	2.3	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**59.0	26.9	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	20.9	2.4	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	22.0	5.4	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	41.4	8.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	46.4	12.5	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	28.6	5.5	7
Mexican American Male, 12-19 years (2005 - 2006)	46.8	5	11
Mexican American Male, 12-19 years (2007 - 2008)	53.1	9.7	6
Mexican American Male, 12-19 years (2009 - 2010)	45.3	6.4	8
Mexican American Male, 20-39 years (2005 - 2006)	41.2	4.2	9
Mexican American Male, 20-39 years (2007 - 2008)	33.9	6	9
Mexican American Male, 20-39 years (2009 - 2010)	32.2	3.9	8
Mexican American Male, 40-59 years (2005 - 2006)	36.4	3.7	4
Mexican American Male, 40-59 years (2007 - 2008)	37.4	8.6	6
Mexican American Male, 40-59 years (2009 - 2010)	25.1	3.5	8
Mexican American Male, 60+ years (2005 - 2006)	36.8	2.9	4
Mexican American Male, 60+ years (2007 - 2008)	41.5	6.6	5
Mexican American Male, 60+ years (2009 - 2010)	36.0	7.4	5
Mexican American Female, 12-19 years (2005 - 2006)	50.7	5.4	16
Mexican American Female, 12-19 years (2007 - 2008)	34.2	6	5
Mexican American Female, 12-19 years (2009 - 2010)	37.6	4.6	7
Mexican American Female, 20-39 years (2005 - 2006)	30.4	3.6	9
Mexican American Female, 20-39 years (2007 - 2008)	31.2	8.1	8
Mexican American Female, 20-39 years (2009 - 2010)	25.1	3.9	10
Mexican American Female, 40-59 years (2005 - 2006)	25.4	4	6
Mexican American Female, 40-59 years (2007 - 2008)	23.0	3	6
Mexican American Female, 40-59 years (2009 - 2010)	29.6	4.1	9
Mexican American Female, 60+ years (2005 - 2006)	52.9	12.1	3
Mexican American Female, 60+ years (2007 - 2008)	37.8	6.9	5
Mexican American Female, 60+ years (2009 - 2010)	33.1	4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.6, 0.6, and 0.64, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2005 – 2010)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	40.2	5.3	11
All Hispanic Male, 20-39 years (2009 - 2010)	31.0	2.9	13
All Hispanic Male, 40-59 years (2009 - 2010)	26.7	3.3	13
All Hispanic Male, 60+ years (2009 - 2010)	29.8	5.7	8
All Hispanic Female, 12-19 years (2009 - 2010)	39.6	4.2	10
All Hispanic Female, 20-39 years (2009 - 2010)	23.3	2.9	14
All Hispanic Female, 40-59 years (2009 - 2010)	27.4	3.2	14
All Hispanic Female, 60+ years (2009 - 2010)	29.8	4.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.6, 0.6, and 0.64, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2011 – 2014)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	26.7	4.8	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	38.7	11	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	19.1	3.7	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	14.2	1.3	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	26.4	4.6	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	21.4	3.4	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	31.6	6.1	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	31.5	4.1	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	**25.3	8.5	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	17.9	2.1	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	21.3	3.7	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	19.1	2.5	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	**25.5	9.2	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	16.5	2.5	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	25.0	4.6	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	21.6	2.6	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	32.7	7.2	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	24.6	4	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	36.9	8.9	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	22.6	6.5	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	28.2	6.7	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**31.7	14.2	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	40.5	8.9	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**38.3	15	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	32.0	7	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	25.7	4	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	21.7	2.3	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	17.3	2.8	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**36.0	12.1	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	26.2	3.6	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	20.2	4.5	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	25.4	3.7	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.7 and 1.0.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2011 – 2014)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	63.3	9.3	5
Mexican American Male, 12-19 years (2013 - 2014)	31.6	6.9	7
Mexican American Male, 20-39 years (2011 - 2012)	28.4	6.1	4
Mexican American Male, 20-39 years (2013 - 2014)	**29.9	9.8	5
Mexican American Male, 40-59 years (2011 - 2012)	**27.5	8.4	4
Mexican American Male, 40-59 years (2013 - 2014)	17.3	2.4	5
Mexican American Male, 60+ years (2011 - 2012)	19.6	1.5	2
Mexican American Male, 60+ years (2013 - 2014)	33.4	0.9	4
Mexican American Female, 12-19 years (2011 - 2012)	30.3	7.4	4
Mexican American Female, 12-19 years (2013 - 2014)	23.9	2	7
Mexican American Female, 20-39 years (2011 - 2012)	**23.3	9.2	4
Mexican American Female, 20-39 years (2013 - 2014)	19.7	2.8	5
Mexican American Female, 40-59 years (2011 - 2012)	52.9	14.1	3
Mexican American Female, 40-59 years (2013 - 2014)	22.9	3.9	6
Mexican American Female, 60+ years (2011 - 2012)	29.3	7.6	3
Mexican American Female, 60+ years (2013 - 2014)	17.0	2.1	5
All Hispanic Male, 12-19 years (2011 - 2012)	55.5	9.7	7
All Hispanic Male, 12-19 years (2013 - 2014)	28.6	5.1	10
All Hispanic Male, 20-39 years (2011 - 2012)	22.9	4.5	8
All Hispanic Male, 20-39 years (2013 - 2014)	25.3	6.8	8
All Hispanic Male, 40-59 years (2011 - 2012)	23.8	5	7
All Hispanic Male, 40-59 years (2013 - 2014)	16.8	1.6	9
All Hispanic Male, 60+ years (2011 - 2012)	24.7	3.6	6
All Hispanic Male, 60+ years (2013 - 2014)	33.4	1	7
All Hispanic Female, 12-19 years (2011 - 2012)	24.1	5.2	7
All Hispanic Female, 12-19 years (2013 - 2014)	24.4	1.8	10
All Hispanic Female, 20-39 years (2011 - 2012)	20.0	4.9	8
All Hispanic Female, 20-39 years (2013 - 2014)	15.7	2.7	9
All Hispanic Female, 40-59 years (2011 - 2012)	36.1	8.7	7
All Hispanic Female, 40-59 years (2013 - 2014)	25.3	4	10
All Hispanic Female, 60+ years (2011 - 2012)	**16.0	5	7
All Hispanic Female, 60+ years (2013 - 2014)	16.0	1.6	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.7 and 1.0.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2011 – 2014)

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	14.7	3.6	3
Asian Male, 12-19 years (2013 - 2014)	**42.5	27.5	3
Asian Male, 20-39 years (2011 - 2012)	14.5	3.9	6
Asian Male, 20-39 years (2013 - 2014)	8.00	1.24	4
Asian Male, 40-59 years (2011 - 2012)	14.9	2.2	6
Asian Male, 40-59 years (2013 - 2014)	19.1	2.4	4
Asian Male, 60+ years (2011 - 2012)	19.2	4.1	4
Asian Male, 60+ years (2013 - 2014)	**17.7	7.5	3
Asian Female, 12-19 years (2011 - 2012)	24.1	5.9	4
Asian Female, 12-19 years (2013 - 2014)	**29.9	11	3
Asian Female, 20-39 years (2011 - 2012)	11.1	2.2	6
Asian Female, 20-39 years (2013 - 2014)	13.8	3.5	5
Asian Female, 40-59 years (2011 - 2012)	21.6	3.1	6
Asian Female, 40-59 years (2013 - 2014)	15.1	2	7
Asian Female, 60+ years (2011 - 2012)	23.0	1.8	3
Asian Female, 60+ years (2013 - 2014)	**45.8	30.6	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.7 and 1.0.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2003 – 2004)

CAS Number 189084-61-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	1.30 (1.00-2.10)	1999
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	1.30 (<LOD-1.90)	606
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	1.30 (1.00-2.20)	1393
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	1.40 (1.00-2.60)	970
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	1.10 (<LOD-2.20)	1029
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.60)	461
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	1.00 (<LOD-2.00)	2.40 (1.40-5.10)	496
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	1.20 (<LOD-2.50)	914

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 – 2010)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	**.494	0.227	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.536	0.142	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 – 2010)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 – 2010)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2011 – 2014)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	*	*	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	*	*	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	*	*	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	*	*	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**.519	0.163	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.41 and 0.73.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2011 – 2014)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	*	*	4
Mexican American Male, 40-59 years (2013 - 2014)	*	*	5
Mexican American Male, 60+ years (2011 - 2012)	*	*	2
Mexican American Male, 60+ years (2013 - 2014)	*	*	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	.511	0.149	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2013 - 2014)	*	*	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	*	*	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	*	*	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.41 and 0.73.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2011 – 2014)

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	*	*	6
Asian Male, 40-59 years (2013 - 2014)	*	*	4
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Male, 60+ years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2013 - 2014)	*	*	7
Asian Female, 60+ years (2011 - 2012)	*	*	3
Asian Female, 60+ years (2013 - 2014)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.41 and 0.73.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2003 – 2004)

CAS Number 182346-21-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	4.10 (2.80-6.30)	2000
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	2.80 (<LOD-3.50)	4.00 (3.50-6.30)	610
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	4.10 (2.50-6.70)	1390
Males (2003 - 2004)	*	< LOD	< LOD	2.40 (<LOD-3.30)	4.80 (3.10-8.40)	967
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	3.60 (<LOD-5.20)	1033
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	3.70 (2.80-4.80)	484
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	3.50 (2.50-4.40)	6.90 (3.10-18.0)	493
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	3.90 (<LOD-7.50)	895

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2005 – 2010)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**1.56	0.49	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.648	0.088	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**1.07	0.47	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**.960	0.337	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.618	0.09	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.510	0.111	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.06	0.29	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	1.58	0.32	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.971	0.197	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.486	0.106	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.50	0.41	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.807	0.166	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.447	0.065	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	**1.26	0.43	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.804	0.207	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**1.70	0.77	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.802	0.172	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.606	0.124	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.14	0.11	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.763	0.149	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	1.08	0.2	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.727	0.104	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.829	0.141	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	**1.53	0.71	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**1.55	0.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.848	0.199	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	**1.34	0.46	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2005 – 2010)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.88	0.41	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**1.61	0.74	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.732	0.112	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**1.58	0.69	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.905	0.109	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.779	0.039	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**1.51	0.8	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.455	0.128	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	1.11	0.32	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	1.16	0.33	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.625	0.141	7
Mexican American Male, 12-19 years (2005 - 2006)	.899	0.078	11
Mexican American Male, 12-19 years (2007 - 2008)	1.04	0.3	6
Mexican American Male, 12-19 years (2009 - 2010)	.684	0.096	8
Mexican American Male, 20-39 years (2005 - 2006)	.825	0.081	9
Mexican American Male, 20-39 years (2007 - 2008)	.790	0.125	9
Mexican American Male, 20-39 years (2009 - 2010)	.571	0.075	8
Mexican American Male, 40-59 years (2005 - 2006)	.900	0.144	4
Mexican American Male, 40-59 years (2007 - 2008)	.804	0.214	6
Mexican American Male, 40-59 years (2009 - 2010)	.505	0.061	8
Mexican American Male, 60+ years (2005 - 2006)	.683	0.167	4
Mexican American Male, 60+ years (2007 - 2008)	.967	0.239	5
Mexican American Male, 60+ years (2009 - 2010)	.711	0.155	5
Mexican American Female, 12-19 years (2005 - 2006)	1.00	0.1	16
Mexican American Female, 12-19 years (2007 - 2008)	.766	0.147	5
Mexican American Female, 12-19 years (2009 - 2010)	.687	0.096	7
Mexican American Female, 20-39 years (2005 - 2006)	.662	0.098	9
Mexican American Female, 20-39 years (2007 - 2008)	**.789	0.256	8
Mexican American Female, 20-39 years (2009 - 2010)	.504	0.078	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	.675	0.118	9
Mexican American Female, 60+ years (2005 - 2006)	1.10	0.33	3
Mexican American Female, 60+ years (2007 - 2008)	1.00	0.25	5
Mexican American Female, 60+ years (2009 - 2010)	.684	0.132	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2005 – 2010)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.605	0.081	11
All Hispanic Male, 20-39 years (2009 - 2010)	.554	0.055	13
All Hispanic Male, 40-59 years (2009 - 2010)	.602	0.1	13
All Hispanic Male, 60+ years (2009 - 2010)	.575	0.122	8
All Hispanic Female, 12-19 years (2009 - 2010)	.778	0.107	10
All Hispanic Female, 20-39 years (2009 - 2010)	.495	0.063	14
All Hispanic Female, 40-59 years (2009 - 2010)	.617	0.091	14
All Hispanic Female, 60+ years (2009 - 2010)	.571	0.092	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2011 – 2014)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.481	0.094	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	**.960	0.332	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.367	0.073	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.351	0.043	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.545	0.12	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.516	0.072	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.698	0.157	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.674	0.121	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.496	0.144	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.415	0.07	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.422	0.117	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	**.550	0.183	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	**.544	0.238	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.338	0.049	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.504	0.128	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.409	0.075	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.659	0.174	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.528	0.074	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	**.824	0.276	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.535	0.155	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.615	0.155	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**.850	0.416	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.967	0.266	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.862	0.336	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.716	0.132	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.557	0.09	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.451	0.059	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.416	0.066	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**.785	0.303	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.560	0.104	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.457	0.102	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.665	0.114	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2011 – 2014)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	1.16	0.21	5
Mexican American Male, 12-19 years (2013 - 2014)	.614	0.148	7
Mexican American Male, 20-39 years (2011 - 2012)	.504	0.129	4
Mexican American Male, 20-39 years (2013 - 2014)	**.709	0.306	5
Mexican American Male, 40-59 years (2011 - 2012)	**.673	0.264	4
Mexican American Male, 40-59 years (2013 - 2014)	.344	0.055	5
Mexican American Male, 60+ years (2011 - 2012)	.284	0.004	2
Mexican American Male, 60+ years (2013 - 2014)	.815	0.067	4
Mexican American Female, 12-19 years (2011 - 2012)	.567	0.098	4
Mexican American Female, 12-19 years (2013 - 2014)	.435	0.038	7
Mexican American Female, 20-39 years (2011 - 2012)	**.402	0.145	4
Mexican American Female, 20-39 years (2013 - 2014)	.415	0.037	5
Mexican American Female, 40-59 years (2011 - 2012)	**1.27	0.47	3
Mexican American Female, 40-59 years (2013 - 2014)	.533	0.113	6
Mexican American Female, 60+ years (2011 - 2012)	**.538	0.168	3
Mexican American Female, 60+ years (2013 - 2014)	.421	0.089	5
All Hispanic Male, 12-19 years (2011 - 2012)	1.02	0.2	7
All Hispanic Male, 12-19 years (2013 - 2014)	.591	0.105	10
All Hispanic Male, 20-39 years (2011 - 2012)	.426	0.079	8
All Hispanic Male, 20-39 years (2013 - 2014)	**.592	0.206	8
All Hispanic Male, 40-59 years (2011 - 2012)	**.507	0.158	7
All Hispanic Male, 40-59 years (2013 - 2014)	.325	0.04	9
All Hispanic Male, 60+ years (2011 - 2012)	.376	0.06	6
All Hispanic Male, 60+ years (2013 - 2014)	.804	0.109	7
All Hispanic Female, 12-19 years (2011 - 2012)	.459	0.077	7
All Hispanic Female, 12-19 years (2013 - 2014)	.462	0.038	10
All Hispanic Female, 20-39 years (2011 - 2012)	.331	0.079	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	.829	0.249	7
All Hispanic Female, 40-59 years (2013 - 2014)	.551	0.091	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.356	0.059	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2011 – 2014)

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	**.707	0.436	3
Asian Male, 20-39 years (2011 - 2012)	**.278	0.107	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.201	0.033	6
Asian Male, 40-59 years (2013 - 2014)	.360	0.012	4
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Male, 60+ years (2013 - 2014)	**.356	0.123	3
Asian Female, 12-19 years (2011 - 2012)	.575	0.049	4
Asian Female, 12-19 years (2013 - 2014)	**.634	0.38	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	.266	0.056	5
Asian Female, 40-59 years (2011 - 2012)	.312	0.033	6
Asian Female, 40-59 years (2013 - 2014)	.283	0.048	7
Asian Female, 60+ years (2011 - 2012)	.291	0.063	3
Asian Female, 60+ years (2013 - 2014)	**1.21	0.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2003 – 2004)

CAS Number 60328-60-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	9.20 (7.50-11.1)	21.7 (17.0-29.1)	42.2 (33.3-54.8)	1985
Age 12-19 years (2003 - 2004)	6.88 (6.14-7.72)	5.70 (<LOD-7.70)	12.9 (11.4-15.7)	27.9 (19.6-37.9)	45.2 (35.9-56.8)	602
Age 20+ years (2003 - 2004)	*	< LOD	8.50 (7.10-10.5)	20.6 (15.5-28.8)	41.6 (30.8-57.3)	1383
Males (2003 - 2004)	5.28 (<LOD-6.14)	< LOD	10.0 (8.40-11.6)	24.5 (18.0-37.3)	45.5 (33.8-57.3)	964
Females (2003 - 2004)	*	< LOD	8.70 (6.60-10.6)	18.3 (14.7-28.8)	41.2 (22.9-60.3)	1021
Mexican Americans (2003 - 2004)	5.90 (5.45-6.39)	5.50 (<LOD-5.80)	10.8 (9.30-12.6)	20.0 (17.0-23.5)	30.8 (24.5-41.7)	478
Non-Hispanic blacks (2003 - 2004)	6.22 (5.42-7.12)	5.00 (<LOD-5.70)	11.5 (9.60-13.1)	30.2 (21.5-42.2)	74.7 (30.2-155)	479
Non-Hispanic whites (2003 - 2004)	*	< LOD	8.90 (6.80-11.3)	21.7 (15.3-34.0)	43.6 (30.7-71.4)	903

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 5.0.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2005 – 2010)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**14.6	4.7	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	6.80	1.22	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**11.8	5.1	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**10.3	3.6	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	5.38	0.78	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	5.13	1.02	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.45	0.74	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	**9.95	3.12	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.56	1.02	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	15.4	4.3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	9.80	2.13	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	5.22	1.24	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	17.5	4.8	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	8.10	2.09	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.95	0.84	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	**13.4	5	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	7.72	2.02	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.74	0.48	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.16	0.79	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	4.40	0.82	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	3.25	0.42	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**12.3	4.4	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	8.00	1.79	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	6.60	1.33	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	12.6	1.4	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	7.39	1.79	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	4.38	0.94	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**16.5	6.2	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	6.25	0.82	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	4.28	0.78	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	5.66	1.1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	7.22	1.5	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	**18.3	10.8	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**19.5	10.2	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	8.27	1.74	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	**21.6	9.4	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.2, 0.6, and 0.56, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2005 – 2010)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	23.3	4.8	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**17.6	8.3	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	9.84	1.81	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**17.5	7.8	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	7.19	1.14	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	8.51	0.96	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**16.1	8.9	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	4.30	0.6	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.18	1.1	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	11.2	3.1	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**11.3	4	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	5.92	1.34	7
Mexican American Male, 12-19 years (2005 - 2006)	9.27	0.91	11
Mexican American Male, 12-19 years (2007 - 2008)	10.7	2.5	6
Mexican American Male, 12-19 years (2009 - 2010)	8.21	1.28	8
Mexican American Male, 20-39 years (2005 - 2006)	8.47	1	9
Mexican American Male, 20-39 years (2007 - 2008)	7.77	1.66	9
Mexican American Male, 20-39 years (2009 - 2010)	5.66	0.66	8
Mexican American Male, 40-59 years (2005 - 2006)	9.14	0.97	4
Mexican American Male, 40-59 years (2007 - 2008)	6.94	1.71	6
Mexican American Male, 40-59 years (2009 - 2010)	5.98	1.19	8
Mexican American Male, 60+ years (2005 - 2006)	7.52	1.13	4
Mexican American Male, 60+ years (2007 - 2008)	8.39	1.47	5
Mexican American Male, 60+ years (2009 - 2010)	6.99	1.39	5
Mexican American Female, 12-19 years (2005 - 2006)	10.7	1.3	16
Mexican American Female, 12-19 years (2007 - 2008)	7.04	0.95	5
Mexican American Female, 12-19 years (2009 - 2010)	7.91	1.43	7
Mexican American Female, 20-39 years (2005 - 2006)	6.51	0.65	9
Mexican American Female, 20-39 years (2007 - 2008)	**6.44	1.97	8
Mexican American Female, 20-39 years (2009 - 2010)	4.74	0.64	10
Mexican American Female, 40-59 years (2005 - 2006)	**6.30	2.32	6
Mexican American Female, 40-59 years (2007 - 2008)	4.47	0.66	6
Mexican American Female, 40-59 years (2009 - 2010)	6.48	1.14	9
Mexican American Female, 60+ years (2005 - 2006)	13.0	3.7	3
Mexican American Female, 60+ years (2007 - 2008)	9.24	1.82	5
Mexican American Female, 60+ years (2009 - 2010)	6.99	1.41	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.2, 0.6, and 0.56, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2005 – 2010)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	7.16	1.08	11
All Hispanic Male, 20-39 years (2009 - 2010)	5.92	0.57	13
All Hispanic Male, 40-59 years (2009 - 2010)	6.42	1.02	13
All Hispanic Male, 60+ years (2009 - 2010)	5.81	1.12	8
All Hispanic Female, 12-19 years (2009 - 2010)	8.98	1.38	10
All Hispanic Female, 20-39 years (2009 - 2010)	4.88	0.6	14
All Hispanic Female, 40-59 years (2009 - 2010)	5.77	0.83	14
All Hispanic Female, 60+ years (2009 - 2010)	5.98	0.96	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.2, 0.6, and 0.56, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2011 – 2014)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.45	1	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	**8.98	3.15	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	3.48	0.75	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	2.94	0.4	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	6.03	1.68	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	5.00	0.88	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	6.06	1.17	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	6.32	1.15	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	**5.74	1.84	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	3.82	0.64	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	**5.21	1.9	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	4.16	1.08	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	**5.76	2.6	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	3.08	0.49	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	5.25	1.39	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	4.20	0.7	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	**8.32	2.7	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	5.66	1.69	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	9.17	2.18	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	4.48	0.95	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	**8.42	2.66	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**9.17	5.04	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	**12.0	3.8	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**8.74	3.68	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	7.33	1.63	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	5.49	1.05	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	4.72	0.58	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	3.63	0.61	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**8.70	3.23	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	4.66	0.84	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	**5.20	1.75	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	4.95	0.88	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.37 and 0.44.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2011 – 2014)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	13.6	2.5	5
Mexican American Male, 12-19 years (2013 - 2014)	5.63	1.23	7
Mexican American Male, 20-39 years (2011 - 2012)	4.92	1.38	4
Mexican American Male, 20-39 years (2013 - 2014)	**6.43	2.66	5
Mexican American Male, 40-59 years (2011 - 2012)	**5.39	2.08	4
Mexican American Male, 40-59 years (2013 - 2014)	2.86	0.29	5
Mexican American Male, 60+ years (2011 - 2012)	2.94	0.2	2
Mexican American Male, 60+ years (2013 - 2014)	7.32	0.29	4
Mexican American Female, 12-19 years (2011 - 2012)	5.96	0.81	4
Mexican American Female, 12-19 years (2013 - 2014)	4.16	0.33	7
Mexican American Female, 20-39 years (2011 - 2012)	**4.38	1.92	4
Mexican American Female, 20-39 years (2013 - 2014)	3.89	0.56	5
Mexican American Female, 40-59 years (2011 - 2012)	13.4	3.6	3
Mexican American Female, 40-59 years (2013 - 2014)	4.92	1.19	6
Mexican American Female, 60+ years (2011 - 2012)	4.98	1.35	3
Mexican American Female, 60+ years (2013 - 2014)	3.67	0.84	5
All Hispanic Male, 12-19 years (2011 - 2012)	11.9	2.4	7
All Hispanic Male, 12-19 years (2013 - 2014)	5.41	0.88	10
All Hispanic Male, 20-39 years (2011 - 2012)	4.09	0.88	8
All Hispanic Male, 20-39 years (2013 - 2014)	**5.28	1.81	8
All Hispanic Male, 40-59 years (2011 - 2012)	4.51	1.19	7
All Hispanic Male, 40-59 years (2013 - 2014)	2.99	0.23	9
All Hispanic Male, 60+ years (2011 - 2012)	3.97	0.62	6
All Hispanic Male, 60+ years (2013 - 2014)	7.54	0.72	7
All Hispanic Female, 12-19 years (2011 - 2012)	4.94	0.73	7
All Hispanic Female, 12-19 years (2013 - 2014)	4.34	0.36	10
All Hispanic Female, 20-39 years (2011 - 2012)	3.64	1.02	8
All Hispanic Female, 20-39 years (2013 - 2014)	2.99	0.59	9
All Hispanic Female, 40-59 years (2011 - 2012)	8.74	2.33	7
All Hispanic Female, 40-59 years (2013 - 2014)	5.35	0.97	10
All Hispanic Female, 60+ years (2011 - 2012)	**2.74	0.86	7
All Hispanic Female, 60+ years (2013 - 2014)	3.26	0.53	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.37 and 0.44.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2011 – 2014)

CAS Number 60328-60-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	2.89	0.67	3
Asian Male, 12-19 years (2013 - 2014)	**6.99	4.64	3
Asian Male, 20-39 years (2011 - 2012)	**3.26	1.39	6
Asian Male, 20-39 years (2013 - 2014)	1.37	0.28	4
Asian Male, 40-59 years (2011 - 2012)	2.24	0.39	6
Asian Male, 40-59 years (2013 - 2014)	3.24	0.25	4
Asian Male, 60+ years (2011 - 2012)	3.96	0.91	4
Asian Male, 60+ years (2013 - 2014)	**3.71	1.43	3
Asian Female, 12-19 years (2011 - 2012)	4.70	0.58	4
Asian Female, 12-19 years (2013 - 2014)	**7.21	3.87	3
Asian Female, 20-39 years (2011 - 2012)	2.12	0.61	6
Asian Female, 20-39 years (2013 - 2014)	2.38	0.63	5
Asian Female, 40-59 years (2011 - 2012)	3.76	0.47	6
Asian Female, 40-59 years (2013 - 2014)	2.73	0.39	7
Asian Female, 60+ years (2011 - 2012)	3.68	0.66	3
Asian Female, 60+ years (2013 - 2014)	**12.6	10.1	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.37 and 0.44.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2003 – 2004)

CAS Number 189084-64-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	3.93 (3.42-4.51)	3.60 (3.10-4.10)	7.80 (6.80-9.00)	18.4 (15.4-22.0)	36.5 (24.6-54.0)	2040
Age 12-19 years (2003 - 2004)	5.17 (4.46-6.00)	4.90 (3.80-6.10)	9.50 (7.90-12.8)	19.3 (14.4-26.2)	34.3 (25.2-45.0)	622
Age 20+ years (2003 - 2004)	3.77 (3.24-4.38)	3.30 (2.90-4.00)	7.40 (6.20-9.00)	18.3 (15.0-22.2)	36.6 (23.2-59.2)	1418
Males (2003 - 2004)	4.16 (3.55-4.86)	3.80 (3.10-4.50)	8.50 (7.50-9.90)	18.5 (14.9-25.1)	44.1 (21.9-61.5)	994
Females (2003 - 2004)	3.72 (3.15-4.40)	3.30 (2.80-4.10)	7.10 (6.00-8.00)	18.4 (14.4-23.1)	33.3 (23.3-46.0)	1046
Mexican Americans (2003 - 2004)	4.58 (4.03-5.22)	4.30 (3.80-5.20)	8.10 (6.80-9.10)	14.9 (11.4-20.3)	26.7 (20.3-36.2)	488
Non-Hispanic blacks (2003 - 2004)	4.72 (4.01-5.55)	4.30 (3.30-5.20)	9.50 (7.80-10.9)	24.1 (16.6-34.3)	41.3 (26.0-79.2)	503
Non-Hispanic whites (2003 - 2004)	3.78 (3.17-4.51)	3.30 (2.90-4.10)	7.70 (6.20-9.70)	18.6 (14.5-23.3)	40.5 (22.6-59.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 – 2010)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**13.1	4.2	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	5.68	0.92	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**8.17	2.49	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**8.98	2.81	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	7.65	1.18	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	5.37	0.8	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.07	0.61	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	9.00	2.08	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.66	0.97	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	14.2	2.6	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	7.76	1.41	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.63	0.76	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	10.8	1.9	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.98	0.69	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.31	0.34	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	9.89	2.83	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	6.11	1.05	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	3.52	0.44	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.06	0.66	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	4.12	0.55	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	4.46	1.15	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**12.8	5.3	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	8.12	1.66	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	7.17	1.35	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	10.8	1	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	6.45	0.92	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	4.69	1.19	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	9.11	2.32	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	7.18	1.05	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	3.93	0.6	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	7.19	1.91	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	7.41	0.94	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	12.5	3.4	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	12.1	2.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	6.56	0.9	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	11.4	2.8	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 – 2010)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	14.2	2.8	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**10.2	3.6	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	8.70	1.56	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**11.7	4.5	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	7.39	1.17	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	7.49	0.98	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**10.4	5	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	4.37	0.48	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.39	0.99	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	8.03	2.35	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	8.54	2.26	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	5.70	1.01	7
Mexican American Male, 12-19 years (2005 - 2006)	8.93	1.09	11
Mexican American Male, 12-19 years (2007 - 2008)	11.0	2.6	6
Mexican American Male, 12-19 years (2009 - 2010)	7.19	0.77	8
Mexican American Male, 20-39 years (2005 - 2006)	8.90	1.44	9
Mexican American Male, 20-39 years (2007 - 2008)	7.71	1.43	9
Mexican American Male, 20-39 years (2009 - 2010)	6.01	0.83	8
Mexican American Male, 40-59 years (2005 - 2006)	7.89	1.25	4
Mexican American Male, 40-59 years (2007 - 2008)	8.15	1.99	6
Mexican American Male, 40-59 years (2009 - 2010)	5.55	0.8	8
Mexican American Male, 60+ years (2005 - 2006)	6.74	0.97	4
Mexican American Male, 60+ years (2007 - 2008)	**9.53	3.21	5
Mexican American Male, 60+ years (2009 - 2010)	7.70	1.84	5
Mexican American Female, 12-19 years (2005 - 2006)	9.45	1.14	16
Mexican American Female, 12-19 years (2007 - 2008)	6.40	1.09	5
Mexican American Female, 12-19 years (2009 - 2010)	7.20	0.83	7
Mexican American Female, 20-39 years (2005 - 2006)	5.36	0.72	9
Mexican American Female, 20-39 years (2007 - 2008)	7.45	1.76	8
Mexican American Female, 20-39 years (2009 - 2010)	5.39	0.9	10
Mexican American Female, 40-59 years (2005 - 2006)	5.98	1.15	6
Mexican American Female, 40-59 years (2007 - 2008)	4.87	0.76	6
Mexican American Female, 40-59 years (2009 - 2010)	6.46	0.86	9
Mexican American Female, 60+ years (2005 - 2006)	10.2	2.3	3
Mexican American Female, 60+ years (2007 - 2008)	7.86	1.53	5
Mexican American Female, 60+ years (2009 - 2010)	6.30	0.81	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 – 2010)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	6.44	0.69	11
All Hispanic Male, 20-39 years (2009 - 2010)	5.74	0.61	13
All Hispanic Male, 40-59 years (2009 - 2010)	5.96	0.87	13
All Hispanic Male, 60+ years (2009 - 2010)	6.25	1.34	8
All Hispanic Female, 12-19 years (2009 - 2010)	7.58	0.79	10
All Hispanic Female, 20-39 years (2009 - 2010)	4.85	0.67	14
All Hispanic Female, 40-59 years (2009 - 2010)	5.88	0.72	14
All Hispanic Female, 60+ years (2009 - 2010)	5.52	0.74	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2011 – 2014)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	4.98	0.79	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	7.10	1.65	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	4.32	0.89	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	3.49	0.46	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	5.12	0.9	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	4.41	0.58	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	8.06	1.92	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	6.77	0.99	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.93	0.86	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	3.71	0.39	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	4.33	0.6	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	5.00	0.95	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	**4.63	1.47	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	3.29	0.47	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	5.62	1.5	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	4.28	0.58	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	6.47	1.31	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	5.68	0.83	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	7.40	2	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	5.49	1.34	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	6.05	1.15	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**5.91	2	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	7.78	1.4	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**6.09	2	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	7.14	1.55	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	5.37	0.59	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	4.79	0.7	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	3.68	0.46	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	5.82	1.58	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	5.75	0.75	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	3.85	0.73	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	5.59	0.8	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.71 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2011 – 2014)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	12.9	2.3	5
Mexican American Male, 12-19 years (2013 - 2014)	6.12	1.05	7
Mexican American Male, 20-39 years (2011 - 2012)	5.78	1.54	4
Mexican American Male, 20-39 years (2013 - 2014)	5.89	1.53	5
Mexican American Male, 40-59 years (2011 - 2012)	**8.67	3.47	4
Mexican American Male, 40-59 years (2013 - 2014)	3.79	0.73	5
Mexican American Male, 60+ years (2011 - 2012)	3.68	0.24	2
Mexican American Male, 60+ years (2013 - 2014)	5.41	0.6	4
Mexican American Female, 12-19 years (2011 - 2012)	5.71	1.31	4
Mexican American Female, 12-19 years (2013 - 2014)	4.82	0.48	7
Mexican American Female, 20-39 years (2011 - 2012)	4.00	1.04	4
Mexican American Female, 20-39 years (2013 - 2014)	3.69	0.39	5
Mexican American Female, 40-59 years (2011 - 2012)	9.37	2.51	3
Mexican American Female, 40-59 years (2013 - 2014)	4.36	0.65	6
Mexican American Female, 60+ years (2011 - 2012)	**6.85	2.47	3
Mexican American Female, 60+ years (2013 - 2014)	3.95	0.65	5
All Hispanic Male, 12-19 years (2011 - 2012)	11.2	2.3	7
All Hispanic Male, 12-19 years (2013 - 2014)	5.70	0.77	10
All Hispanic Male, 20-39 years (2011 - 2012)	4.71	0.98	8
All Hispanic Male, 20-39 years (2013 - 2014)	4.99	1.1	8
All Hispanic Male, 40-59 years (2011 - 2012)	**6.03	2.13	7
All Hispanic Male, 40-59 years (2013 - 2014)	3.81	0.45	9
All Hispanic Male, 60+ years (2011 - 2012)	4.52	0.93	6
All Hispanic Male, 60+ years (2013 - 2014)	6.00	0.7	7
All Hispanic Female, 12-19 years (2011 - 2012)	4.55	0.94	7
All Hispanic Female, 12-19 years (2013 - 2014)	4.82	0.36	10
All Hispanic Female, 20-39 years (2011 - 2012)	3.64	0.59	8
All Hispanic Female, 20-39 years (2013 - 2014)	3.03	0.4	9
All Hispanic Female, 40-59 years (2011 - 2012)	6.97	1.55	7
All Hispanic Female, 40-59 years (2013 - 2014)	4.95	0.76	10
All Hispanic Female, 60+ years (2011 - 2012)	**3.72	1.33	7
All Hispanic Female, 60+ years (2013 - 2014)	3.37	0.44	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.71 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2011 – 2014)

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**2.78	0.93	3
Asian Male, 12-19 years (2013 - 2014)	**9.67	6.79	3
Asian Male, 20-39 years (2011 - 2012)	2.31	0.52	6
Asian Male, 20-39 years (2013 - 2014)	1.54	0.22	4
Asian Male, 40-59 years (2011 - 2012)	2.63	0.26	6
Asian Male, 40-59 years (2013 - 2014)	4.17	0.79	4
Asian Male, 60+ years (2011 - 2012)	3.74	0.73	4
Asian Male, 60+ years (2013 - 2014)	3.44	0.74	3
Asian Female, 12-19 years (2011 - 2012)	3.73	0.46	4
Asian Female, 12-19 years (2013 - 2014)	**4.77	1.8	3
Asian Female, 20-39 years (2011 - 2012)	2.11	0.37	6
Asian Female, 20-39 years (2013 - 2014)	2.79	0.52	5
Asian Female, 40-59 years (2011 - 2012)	3.60	0.52	6
Asian Female, 40-59 years (2013 - 2014)	3.18	0.45	7
Asian Female, 60+ years (2011 - 2012)	3.77	0.1	3
Asian Female, 60+ years (2013 - 2014)	**9.59	6.2	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.71 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2003 – 2004)

CAS Number 68631-49-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	5.69 (5.11-6.34)	4.80 (4.20-5.30)	11.3 (9.90-12.8)	32.6 (27.9-40.3)	65.7 (54.9-88.4)	2039
Age 12-19 years (2003 - 2004)	8.05 (6.68-9.70)	7.50 (6.10-9.90)	15.3 (11.7-19.4)	31.0 (22.9-44.2)	52.9 (35.9-68.5)	621
Age 20+ years (2003 - 2004)	5.41 (4.83-6.05)	4.40 (3.80-5.10)	10.6 (9.00-12.3)	32.8 (26.5-45.9)	73.3 (58.2-90.4)	1418
Males (2003 - 2004)	6.85 (5.99-7.84)	5.50 (4.80-6.70)	12.7 (11.2-16.5)	49.3 (31.0-62.9)	88.4 (63.4-115)	994
Females (2003 - 2004)	4.78 (4.20-5.43)	4.10 (3.40-5.00)	9.70 (7.40-11.9)	26.0 (20.2-31.6)	54.5 (34.6-62.9)	1045
Mexican Americans (2003 - 2004)	5.11 (4.32-6.06)	4.80 (4.20-5.40)	8.70 (6.50-11.0)	17.2 (13.0-25.3)	34.0 (18.3-55.1)	487
Non-Hispanic blacks (2003 - 2004)	6.05 (5.35-6.83)	5.50 (4.80-6.20)	12.9 (9.90-17.5)	30.0 (21.0-44.2)	53.1 (36.8-63.3)	503
Non-Hispanic whites (2003 - 2004)	5.85 (5.03-6.81)	4.90 (3.90-5.70)	11.9 (9.90-15.2)	39.0 (28.5-54.9)	75.9 (58.0-93.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.2.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2005 – 2010)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	18.0	4.4	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	13.8	2.3	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	13.8	2	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	15.4	3.7	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	20.9	3.1	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	13.0	1.4	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	7.53	1.04	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	16.0	3.1	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	16.5	3	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	19.7	4.7	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	14.7	3.8	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	10.8	1.9	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	12.8	2.2	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	8.84	0.94	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.53	0.94	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	11.1	1.9	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	11.8	1.7	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	13.2	3	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	10.4	2.3	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	9.89	1.77	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	12.5	3.1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**9.64	2.9	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	13.2	2.5	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	11.7	2.3	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	16.5	1.5	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	20.7	3.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	13.3	2.6	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	10.3	1.6	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	13.4	2.8	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**21.7	8.3	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	13.4	3.6	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	10.2	1.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	13.5	2.6	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	14.7	1.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	10.6	1.8	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	**14.8	5.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.6, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2005 – 2010)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	12.1	1.5	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	11.1	2	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	12.8	2.7	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	9.55	1.69	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	11.0	1.7	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	10.1	2.8	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	7.41	2.22	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	6.28	1.03	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.46	0.65	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**6.89	2.52	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	7.91	2.1	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	7.22	1.1	7
Mexican American Male, 12-19 years (2005 - 2006)	11.0	1	11
Mexican American Male, 12-19 years (2007 - 2008)	17.2	5	6
Mexican American Male, 12-19 years (2009 - 2010)	11.0	1.1	8
Mexican American Male, 20-39 years (2005 - 2006)	11.9	2.6	9
Mexican American Male, 20-39 years (2007 - 2008)	10.7	2.1	9
Mexican American Male, 20-39 years (2009 - 2010)	10.2	2.5	8
Mexican American Male, 40-59 years (2005 - 2006)	**11.3	3.7	4
Mexican American Male, 40-59 years (2007 - 2008)	11.9	2.4	6
Mexican American Male, 40-59 years (2009 - 2010)	15.9	4.5	8
Mexican American Male, 60+ years (2005 - 2006)	8.00	1.44	4
Mexican American Male, 60+ years (2007 - 2008)	17.6	4.5	5
Mexican American Male, 60+ years (2009 - 2010)	10.3	2.3	5
Mexican American Female, 12-19 years (2005 - 2006)	10.5	1.4	16
Mexican American Female, 12-19 years (2007 - 2008)	7.14	0.72	5
Mexican American Female, 12-19 years (2009 - 2010)	8.58	1.78	7
Mexican American Female, 20-39 years (2005 - 2006)	6.73	1.42	9
Mexican American Female, 20-39 years (2007 - 2008)	11.1	2.3	8
Mexican American Female, 20-39 years (2009 - 2010)	7.75	1.4	10
Mexican American Female, 40-59 years (2005 - 2006)	9.24	2.16	6
Mexican American Female, 40-59 years (2007 - 2008)	6.55	1.61	6
Mexican American Female, 40-59 years (2009 - 2010)	10.3	1.5	9
Mexican American Female, 60+ years (2005 - 2006)	11.0	1.8	3
Mexican American Female, 60+ years (2007 - 2008)	**10.2	3.7	5
Mexican American Female, 60+ years (2009 - 2010)	9.72	1.92	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.6, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2005 – 2010)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	10.9	1	11
All Hispanic Male, 20-39 years (2009 - 2010)	9.04	1.6	13
All Hispanic Male, 40-59 years (2009 - 2010)	14.9	2.9	13
All Hispanic Male, 60+ years (2009 - 2010)	9.73	1.5	8
All Hispanic Female, 12-19 years (2009 - 2010)	8.80	1.34	10
All Hispanic Female, 20-39 years (2009 - 2010)	7.37	1.02	14
All Hispanic Female, 40-59 years (2009 - 2010)	8.98	1.14	14
All Hispanic Female, 60+ years (2009 - 2010)	7.97	1.23	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.6, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2011 – 2014)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	11.7	1.4	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	12.8	1.8	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	15.3	1.8	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	12.9	1.4	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	20.1	2.7	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	20.6	2.9	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	13.9	3.3	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	26.3	7.3	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	8.63	1.51	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	9.69	1.28	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	11.2	2	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	10.7	1	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	9.07	1.99	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	12.3	1.7	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	**18.5	9.2	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	11.6	1.1	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	13.1	1.7	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	16.5	2	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	16.2	4.3	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	12.4	1.6	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	14.4	3.3	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	12.7	2.2	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	14.8	2.6	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	9.51	1.29	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	**17.9	6.4	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	11.2	1.6	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	10.2	2	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	7.89	1.11	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	8.00	2.06	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	10.0	1.6	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	4.32	0.66	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	7.70	1.28	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (PBB 153) (lipid adjusted) (2011 – 2014)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	20.6	5.5	5
Mexican American Male, 12-19 years (2013 - 2014)	10.8	0.9	7
Mexican American Male, 20-39 years (2011 - 2012)	9.79	2.01	4
Mexican American Male, 20-39 years (2013 - 2014)	7.89	0.94	5
Mexican American Male, 40-59 years (2011 - 2012)	**16.0	8.4	4
Mexican American Male, 40-59 years (2013 - 2014)	9.66	2.11	5
Mexican American Male, 60+ years (2011 - 2012)	7.67	0.05	2
Mexican American Male, 60+ years (2013 - 2014)	**14.9	4.9	4
Mexican American Female, 12-19 years (2011 - 2012)	8.28	2.19	4
Mexican American Female, 12-19 years (2013 - 2014)	8.38	1.4	7
Mexican American Female, 20-39 years (2011 - 2012)	7.17	1.12	4
Mexican American Female, 20-39 years (2013 - 2014)	5.17	0.5	5
Mexican American Female, 40-59 years (2011 - 2012)	8.74	2.57	3
Mexican American Female, 40-59 years (2013 - 2014)	6.97	1.19	6
Mexican American Female, 60+ years (2011 - 2012)	9.72	2.62	3
Mexican American Female, 60+ years (2013 - 2014)	**11.6	3.6	5
All Hispanic Male, 12-19 years (2011 - 2012)	18.4	4.5	7
All Hispanic Male, 12-19 years (2013 - 2014)	10.7	1.1	10
All Hispanic Male, 20-39 years (2011 - 2012)	8.44	1.2	8
All Hispanic Male, 20-39 years (2013 - 2014)	7.34	0.77	8
All Hispanic Male, 40-59 years (2011 - 2012)	**12.1	4.7	7
All Hispanic Male, 40-59 years (2013 - 2014)	10.9	1.6	9
All Hispanic Male, 60+ years (2011 - 2012)	8.76	1.64	6
All Hispanic Male, 60+ years (2013 - 2014)	14.0	2.7	7
All Hispanic Female, 12-19 years (2011 - 2012)	7.06	1.4	7
All Hispanic Female, 12-19 years (2013 - 2014)	8.17	1	10
All Hispanic Female, 20-39 years (2011 - 2012)	5.74	0.8	8
All Hispanic Female, 20-39 years (2013 - 2014)	5.95	0.92	9
All Hispanic Female, 40-59 years (2011 - 2012)	6.87	1.35	7
All Hispanic Female, 40-59 years (2013 - 2014)	7.63	1.07	10
All Hispanic Female, 60+ years (2011 - 2012)	6.72	1.54	7
All Hispanic Female, 60+ years (2013 - 2014)	8.55	2.29	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2011 – 2014)

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	7.24	1.96	3
Asian Male, 12-19 years (2013 - 2014)	**11.7	4	3
Asian Male, 20-39 years (2011 - 2012)	4.63	1.21	6
Asian Male, 20-39 years (2013 - 2014)	4.02	0.57	4
Asian Male, 40-59 years (2011 - 2012)	7.13	0.76	6
Asian Male, 40-59 years (2013 - 2014)	8.18	1.37	4
Asian Male, 60+ years (2011 - 2012)	**9.60	3.38	4
Asian Male, 60+ years (2013 - 2014)	9.33	2.08	3
Asian Female, 12-19 years (2011 - 2012)	5.17	0.41	4
Asian Female, 12-19 years (2013 - 2014)	**6.77	2.57	3
Asian Female, 20-39 years (2011 - 2012)	3.38	0.61	6
Asian Female, 20-39 years (2013 - 2014)	**6.23	1.9	5
Asian Female, 40-59 years (2011 - 2012)	**7.97	2.61	6
Asian Female, 40-59 years (2013 - 2014)	5.19	0.44	7
Asian Female, 60+ years (2011 - 2012)	5.92	1.22	3
Asian Female, 60+ years (2013 - 2014)	**20.0	6.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2003 – 2004)

CAS Number 207122-15-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	.900 (.800-1.10)	2.10 (1.70-2.70)	4.20 (2.80-5.40)	2014
Age 12-19 years (2003 - 2004)	*	< LOD	1.20 (1.00-1.40)	2.70 (2.00-3.00)	4.00 (3.00-4.80)	614
Age 20+ years (2003 - 2004)	*	< LOD	.900 (.800-1.10)	2.00 (1.60-2.60)	4.20 (2.70-5.70)	1400
Males (2003 - 2004)	*	< LOD	1.00 (.800-1.20)	2.30 (1.80-3.00)	4.30 (3.20-6.50)	976
Females (2003 - 2004)	*	< LOD	.900 (.800-1.00)	1.80 (1.40-2.80)	4.20 (2.50-5.70)	1038
Mexican Americans (2003 - 2004)	*	< LOD	1.00 (.900-1.10)	1.80 (1.40-2.30)	3.90 (2.30-4.50)	477
Non-Hispanic blacks (2003 - 2004)	*	< LOD	1.20 (.900-1.40)	2.70 (2.30-4.40)	5.30 (3.10-8.70)	498
Non-Hispanic whites (2003 - 2004)	*	< LOD	.900 (.800-1.10)	2.00 (1.50-2.80)	4.20 (2.50-6.70)	913

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2005 – 2010)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**1.30	0.45	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**.798	0.297	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.802	0.237	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.686	0.089	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.974	0.279	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	1.36	0.28	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.833	0.152	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.23	0.3	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	**1.30	0.53	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.753	0.141	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.619	0.114	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.20	0.16	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.712	0.108	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**1.24	0.42	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.637	0.083	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.623	0.16	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.733	0.099	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	**1.43	0.69	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1.40	0.38	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.693	0.103	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	**1.38	0.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.58, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2005 – 2010)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.73	0.39	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**1.25	0.46	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.972	0.24	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	**1.32	0.55	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.704	0.088	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.656	0.042	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**1.26	0.66	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**1.11	0.46	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**.940	0.329	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	.902	0.091	11
Mexican American Male, 12-19 years (2007 - 2008)	.973	0.224	6
Mexican American Male, 12-19 years (2009 - 2010)	.638	0.085	8
Mexican American Male, 20-39 years (2005 - 2006)	.827	0.103	9
Mexican American Male, 20-39 years (2007 - 2008)	.789	0.148	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.870	0.104	4
Mexican American Male, 40-59 years (2007 - 2008)	.732	0.19	6
Mexican American Male, 40-59 years (2009 - 2010)	**.784	0.308	8
Mexican American Male, 60+ years (2005 - 2006)	.657	0.135	4
Mexican American Male, 60+ years (2007 - 2008)	.797	0.177	5
Mexican American Male, 60+ years (2009 - 2010)	.733	0.203	5
Mexican American Female, 12-19 years (2005 - 2006)	.965	0.106	16
Mexican American Female, 12-19 years (2007 - 2008)	.649	0.13	5
Mexican American Female, 12-19 years (2009 - 2010)	.658	0.108	7
Mexican American Female, 20-39 years (2005 - 2006)	.609	0.061	9
Mexican American Female, 20-39 years (2007 - 2008)	.671	0.177	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	**.710	0.295	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	.613	0.099	9
Mexican American Female, 60+ years (2005 - 2006)	1.09	0.25	3
Mexican American Female, 60+ years (2007 - 2008)	.898	0.201	5
Mexican American Female, 60+ years (2009 - 2010)	.619	0.091	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.58, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2005 – 2010)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.701	0.196	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	.750	0.11	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.58, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2011 – 2014)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.438	0.078	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.760	0.228	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.332	0.091	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.295	0.036	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.526	0.12	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.415	0.068	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	**.762	0.245	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.537	0.084	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.639	0.136	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.343	0.023	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.400	0.113	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.453	0.105	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	**.446	0.142	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.265	0.04	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	**.533	0.186	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	*	*	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.611	0.171	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.515	0.13	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.781	0.182	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.500	0.115	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.689	0.16	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	**.739	0.335	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.886	0.219	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.682	0.236	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.653	0.132	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.466	0.053	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.471	0.073	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.345	0.04	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	**.625	0.191	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.474	0.078	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.391	0.102	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.507	0.077	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2011 – 2014)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	1.24	0.24	5
Mexican American Male, 12-19 years (2013 - 2014)	.516	0.088	7
Mexican American Male, 20-39 years (2011 - 2012)	.450	0.105	4
Mexican American Male, 20-39 years (2013 - 2014)	.588	0.15	5
Mexican American Male, 40-59 years (2011 - 2012)	**.675	0.225	4
Mexican American Male, 40-59 years (2013 - 2014)	.322	0.037	5
Mexican American Male, 60+ years (2011 - 2012)	.305	0.013	2
Mexican American Male, 60+ years (2013 - 2014)	.628	0.074	4
Mexican American Female, 12-19 years (2011 - 2012)	.503	0.104	4
Mexican American Female, 12-19 years (2013 - 2014)	.427	0.039	7
Mexican American Female, 20-39 years (2011 - 2012)	**.394	0.142	4
Mexican American Female, 20-39 years (2013 - 2014)	.367	0.034	5
Mexican American Female, 40-59 years (2011 - 2012)	1.06	0.26	3
Mexican American Female, 40-59 years (2013 - 2014)	.392	0.069	6
Mexican American Female, 60+ years (2011 - 2012)	**.549	0.216	3
Mexican American Female, 60+ years (2013 - 2014)	.424	0.115	5
All Hispanic Male, 12-19 years (2011 - 2012)	1.08	0.23	7
All Hispanic Male, 12-19 years (2013 - 2014)	.492	0.063	10
All Hispanic Male, 20-39 years (2011 - 2012)	.390	0.078	8
All Hispanic Male, 20-39 years (2013 - 2014)	.487	0.112	8
All Hispanic Male, 40-59 years (2011 - 2012)	.496	0.141	7
All Hispanic Male, 40-59 years (2013 - 2014)	.333	0.023	9
All Hispanic Male, 60+ years (2011 - 2012)	.377	0.052	6
All Hispanic Male, 60+ years (2013 - 2014)	.630	0.077	7
All Hispanic Female, 12-19 years (2011 - 2012)	.399	0.08	7
All Hispanic Female, 12-19 years (2013 - 2014)	.425	0.032	10
All Hispanic Female, 20-39 years (2011 - 2012)	.318	0.078	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	.688	0.179	7
All Hispanic Female, 40-59 years (2013 - 2014)	.432	0.063	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.344	0.072	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2011 – 2014)

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.251	0.071	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.228	0.033	6
Asian Male, 40-59 years (2013 - 2014)	.386	0.043	4
Asian Male, 60+ years (2011 - 2012)	.368	0.093	4
Asian Male, 60+ years (2013 - 2014)	.329	0.089	3
Asian Female, 12-19 years (2011 - 2012)	.399	0.048	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	.204	0.025	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.305	0.034	6
Asian Female, 40-59 years (2013 - 2014)	.311	0.032	7
Asian Female, 60+ years (2011 - 2012)	.301	0.008	3
Asian Female, 60+ years (2013 - 2014)	**1.12	0.84	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2003 – 2004)

CAS Number 207122-16-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1993
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	604
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1389
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	1.70 (<LOD-2.60)	962
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1031
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	484
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	1.80 (<LOD-2.70)	482
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	901

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.7.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2005 – 2010)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	**.694	0.238	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.611	0.077	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.693	0.188	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.733	0.087	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.572	0.093	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.49, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2005 – 2010)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	**.508	0.171	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.49, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2005 – 2010)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.49, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2011 – 2014)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	**.335	0.169	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.380	0.076	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.304	0.026	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	*	*	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	*	*	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	*	*	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.326	0.041	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.321	0.063	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.344	0.059	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.278	0.049	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.487	0.077	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.377	0.088	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.460	0.129	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.404	0.109	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.261	0.031	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.325	0.069	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2011 – 2014)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.308	0.071	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.384	0.067	4
Mexican American Male, 40-59 years (2013 - 2014)	.351	0.063	5
Mexican American Male, 60+ years (2011 - 2012)	**.897	0.409	2
Mexican American Male, 60+ years (2013 - 2014)	**.510	0.156	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	.250	0.061	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2013 - 2014)	*	*	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	.278	0.039	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	.317	0.047	7
All Hispanic Male, 40-59 years (2013 - 2014)	.343	0.05	9
All Hispanic Male, 60+ years (2011 - 2012)	.607	0.174	6
All Hispanic Male, 60+ years (2013 - 2014)	.434	0.092	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	.246	0.045	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	.251	0.026	7
All Hispanic Female, 60+ years (2013 - 2014)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2011 – 2014)

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	.305	0.033	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	**.437	0.177	6
Asian Male, 40-59 years (2013 - 2014)	*	*	4
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Male, 60+ years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2013 - 2014)	*	*	7
Asian Female, 60+ years (2011 - 2012)	*	*	3
Asian Female, 60+ years (2013 - 2014)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2005 – 2010)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	**6.31	1.92	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.63	0.4	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	**6.36	3.89	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	3.58	0.8	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.27	0.48	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	**8.64	5.4	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.07	0.47	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**8.38	3.46	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	3.47	0.42	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.59	0.73	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 6.0, 5.8, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2005 – 2010)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.22	0.18	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	2.94	0.17	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	2.37	0.27	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	2.77	0.28	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	3.62	0.5	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	2.37	0.27	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	**2.67	0.84	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	3.25	0.44	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	3.80	0.45	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 6.0, 5.8, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2005 – 2010)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	2.55	0.22	11
All Hispanic Male, 20-39 years (2009 - 2010)	2.91	0.23	13
All Hispanic Male, 40-59 years (2009 - 2010)	4.02	0.45	13
All Hispanic Male, 60+ years (2009 - 2010)	2.52	0.34	8
All Hispanic Female, 12-19 years (2009 - 2010)	3.06	0.67	10
All Hispanic Female, 20-39 years (2009 - 2010)	3.29	0.43	14
All Hispanic Female, 40-59 years (2009 - 2010)	**2.81	0.85	14
All Hispanic Female, 60+ years (2009 - 2010)	3.75	0.47	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 6.0, 5.8, and 2.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2011 – 2014)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	*	*	13
Non-Hispanic White Male, 60+ years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	*	*	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	*	*	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	*	*	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	*	*	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	*	*	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	*	*	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	*	*	7
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.13 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2011 – 2014)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	*	*	4
Mexican American Male, 40-59 years (2013 - 2014)	*	*	5
Mexican American Male, 60+ years (2011 - 2012)	*	*	2
Mexican American Male, 60+ years (2013 - 2014)	*	*	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	*	*	3
Mexican American Female, 60+ years (2013 - 2014)	*	*	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	*	*	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	*	*	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.13 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2011 – 2014)

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	*	*	6
Asian Male, 40-59 years (2013 - 2014)	*	*	4
Asian Male, 60+ years (2011 - 2012)	*	*	4
Asian Male, 60+ years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	*	*	6
Asian Female, 40-59 years (2013 - 2014)	*	*	7
Asian Female, 60+ years (2011 - 2012)	*	*	3
Asian Female, 60+ years (2013 - 2014)	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.13 and 1.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2003 – 2004)

CAS Number 59080-40-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	2.29 (1.82-2.87)	2.20 (2.00-2.60)	4.40 (3.40-6.30)	12.8 (6.60-25.5)	27.2 (11.7-60.9)	2032
Age 12-19 years (2003 - 2004)	*	< LOD	1.10 (.900-1.60)	2.70 (2.00-3.00)	4.10 (2.90-4.70)	616
Age 20+ years (2003 - 2004)	2.72 (2.14-3.47)	2.50 (2.20-2.80)	4.90 (3.60-7.90)	13.6 (7.20-34.6)	34.6 (12.8-66.8)	1416
Males (2003 - 2004)	2.76 (2.21-3.45)	2.70 (2.30-3.20)	5.40 (3.90-8.50)	15.8 (9.30-27.8)	35.4 (13.5-70.3)	987
Females (2003 - 2004)	1.92 (1.50-2.46)	2.00 (1.60-2.30)	3.60 (2.80-4.90)	9.70 (4.60-27.5)	23.9 (7.40-56.6)	1045
Mexican Americans (2003 - 2004)	1.11 (.917-1.33)	1.10 (<LOD-1.30)	2.60 (2.00-3.00)	6.00 (3.50-8.60)	10.0 (6.50-15.2)	484
Non-Hispanic blacks (2003 - 2004)	2.35 (1.64-3.37)	2.10 (1.70-2.80)	4.80 (3.00-12.1)	13.9 (7.00-38.2)	29.7 (12.1-70.2)	503
Non-Hispanic whites (2003 - 2004)	2.66 (2.06-3.42)	2.50 (2.20-2.80)	4.90 (3.40-7.80)	13.5 (6.60-36.4)	34.6 (11.6-70.3)	917

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2005 – 2010)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**1.90	1.09	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.824	0.161	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	**6.86	3.02	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	**3.58	1.27	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.75	0.57	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	**16.8	11.2	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	8.92	1.44	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	**9.87	3.19	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.95	2.02	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	6.84	0.74	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	9.28	1.76	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.826	0.18	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.63	0.45	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	1.81	0.34	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	**1.69	0.52	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	**9.35	3.65	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	4.63	1.07	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	3.40	0.37	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	8.83	1.74	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	6.74	1.65	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	8.50	1.91	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.13	0.18	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.689	0.111	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**4.08	2.26	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.10	0.56	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.46	0.23	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	**17.1	8.8	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	**14.5	6.6	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.59	0.67	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	8.56	1.13	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	7.25	1.17	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	6.51	0.73	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2005 – 2010)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.38	0.55	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	**3.36	1.64	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	**4.26	1.69	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	6.31	1.13	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	**4.18	1.77	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**6.84	2.86	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	8.01	1.65	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	4.88	1.46	7
Mexican American Male, 12-19 years (2005 - 2006)	.601	0.074	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	1.69	0.44	9
Mexican American Male, 20-39 years (2007 - 2008)	.962	0.178	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	4.29	1.26	4
Mexican American Male, 40-59 years (2007 - 2008)	**22.7	20.5	6
Mexican American Male, 40-59 years (2009 - 2010)	4.74	1.14	8
Mexican American Male, 60+ years (2005 - 2006)	**19.7	9.8	4
Mexican American Male, 60+ years (2007 - 2008)	**14.0	8.8	5
Mexican American Male, 60+ years (2009 - 2010)	4.69	0.94	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	**2.53	1.14	9
Mexican American Female, 20-39 years (2007 - 2008)	**1.30	0.45	8
Mexican American Female, 20-39 years (2009 - 2010)	.941	0.266	10
Mexican American Female, 40-59 years (2005 - 2006)	2.12	0.4	6
Mexican American Female, 40-59 years (2007 - 2008)	1.64	0.35	6
Mexican American Female, 40-59 years (2009 - 2010)	2.26	0.36	9
Mexican American Female, 60+ years (2005 - 2006)	**4.16	1.3	3
Mexican American Female, 60+ years (2007 - 2008)	**4.28	1.44	5
Mexican American Female, 60+ years (2009 - 2010)	3.29	0.55	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2005 – 2010)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.03	0.12	13
All Hispanic Male, 40-59 years (2009 - 2010)	4.29	0.73	13
All Hispanic Male, 60+ years (2009 - 2010)	4.53	0.66	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	2.17	0.25	14
All Hispanic Female, 60+ years (2009 - 2010)	3.52	0.37	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.6, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2011 – 2014)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	**1.08	0.49	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.757	0.19	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	1.44	0.27	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	**1.95	0.62	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	**7.64	2.31	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	8.66	1.97	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	4.49	1.01	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	**15.8	6.3	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	**.442	0.14	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.594	0.153	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	1.01	0.14	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.30	0.32	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	2.97	0.64	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	**8.47	2.98	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	**7.25	2.41	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	5.93	1.16	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	**.520	0.159	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.353	0.066	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	**2.97	1.51	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	1.74	0.43	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	5.18	1.03	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	3.78	0.48	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	12.8	3.8	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**13.5	5.1	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.316	0.048	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	**3.21	1.41	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.725	0.117	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	2.05	0.31	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	**5.01	1.8	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	4.82	1.2	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	**6.59	2.06	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.18.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2011 – 2014)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	**1.26	0.75	5
Mexican American Male, 12-19 years (2013 - 2014)	.259	0.034	7
Mexican American Male, 20-39 years (2011 - 2012)	1.69	0.38	4
Mexican American Male, 20-39 years (2013 - 2014)	.922	0.155	5
Mexican American Male, 40-59 years (2011 - 2012)	**6.51	4.19	4
Mexican American Male, 40-59 years (2013 - 2014)	2.28	0.25	5
Mexican American Male, 60+ years (2011 - 2012)	18.2	5	2
Mexican American Male, 60+ years (2013 - 2014)	**47.2	33.9	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	**6.29	5.9	4
Mexican American Female, 20-39 years (2013 - 2014)	.443	0.049	5
Mexican American Female, 40-59 years (2011 - 2012)	**3.85	4.09	3
Mexican American Female, 40-59 years (2013 - 2014)	**2.44	0.97	6
Mexican American Female, 60+ years (2011 - 2012)	1.76	0.21	3
Mexican American Female, 60+ years (2013 - 2014)	5.03	1.13	5
All Hispanic Male, 12-19 years (2011 - 2012)	**1.06	0.58	7
All Hispanic Male, 12-19 years (2013 - 2014)	.263	0.03	10
All Hispanic Male, 20-39 years (2011 - 2012)	1.33	0.28	8
All Hispanic Male, 20-39 years (2013 - 2014)	.800	0.126	8
All Hispanic Male, 40-59 years (2011 - 2012)	**4.60	2.32	7
All Hispanic Male, 40-59 years (2013 - 2014)	2.29	0.16	9
All Hispanic Male, 60+ years (2011 - 2012)	**8.79	3.56	6
All Hispanic Male, 60+ years (2013 - 2014)	**32.6	19.7	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	**3.63	2.97	8
All Hispanic Female, 20-39 years (2013 - 2014)	.586	0.099	9
All Hispanic Female, 40-59 years (2011 - 2012)	**2.64	1.56	7
All Hispanic Female, 40-59 years (2013 - 2014)	2.88	0.6	10
All Hispanic Female, 60+ years (2011 - 2012)	2.11	0.33	7
All Hispanic Female, 60+ years (2013 - 2014)	3.87	0.78	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.18.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2011 – 2014)

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.467	0.084	6
Asian Male, 20-39 years (2013 - 2014)	.452	0.089	4
Asian Male, 40-59 years (2011 - 2012)	1.78	0.35	6
Asian Male, 40-59 years (2013 - 2014)	**1.47	0.62	4
Asian Male, 60+ years (2011 - 2012)	3.54	0.77	4
Asian Male, 60+ years (2013 - 2014)	**4.64	2.26	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	**3.59	1.6	3
Asian Female, 20-39 years (2011 - 2012)	**.866	0.468	6
Asian Female, 20-39 years (2013 - 2014)	.634	0.113	5
Asian Female, 40-59 years (2011 - 2012)	**1.43	0.59	6
Asian Female, 40-59 years (2013 - 2014)	.906	0.085	7
Asian Female, 60+ years (2011 - 2012)	1.82	0.44	3
Asian Female, 60+ years (2013 - 2014)	2.51	0.64	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.18.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (1999 - 2000)	*	< LOD	58.2 (<LOD-63.6)	86.0 (75.5-96.7)	112 (101-131)	1894
Total population (2001 - 2002)	39.0 (33.7-45.0)	40.2 (34.9-46.9)	68.7 (56.7-82.2)	115 (88.2-138)	147 (126-181)	1220
Total population (2003 - 2004)	25.3 (23.4-27.3)	24.9 (22.8-26.9)	42.5 (38.8-48.1)	70.4 (62.7-80.1)	91.3 (73.5-117)	1874
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	63.6 (<LOD-75.6)	657
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	16.7 (15.1-18.4)	16.4 (15.1-18.3)	23.6 (21.5-25.8)	33.4 (28.6-36.8)	46.7 (34.5-78.1)	586
Age 20+ years (1999 - 2000)	*	< LOD	62.0 (57.1-66.7)	92.9 (81.2-101)	120 (102-139)	1237
Age 20+ years (2001 - 2002)	39.0 (33.7-45.0)	40.2 (34.9-46.9)	68.7 (56.7-82.2)	115 (88.2-138)	147 (126-181)	1220
Age 20+ years (2003 - 2004)	26.8 (24.6-29.2)	27.3 (24.6-29.0)	45.6 (41.3-53.2)	73.7 (64.1-88.6)	95.0 (76.1-126)	1288
Males (1999 - 2000)	*	< LOD	< LOD	73.6 (69.0-80.8)	94.7 (83.1-103)	910
Males (2001 - 2002)	36.6 (31.7-42.3)	39.0 (33.3-42.6)	62.1 (49.7-75.0)	102 (75.8-132)	138 (103-169)	553
Males (2003 - 2004)	24.2 (21.7-27.0)	23.2 (21.1-25.6)	40.6 (35.3-46.9)	64.2 (58.8-73.7)	85.0 (65.8-113)	920
Females (1999 - 2000)	*	< LOD	62.7 (<LOD-69.1)	102 (86.0-118)	131 (111-164)	984
Females (2001 - 2002)	41.2 (34.9-48.7)	43.6 (35.3-52.4)	76.0 (59.5-90.1)	125 (93.4-150)	158 (130-191)	667
Females (2003 - 2004)	26.3 (24.4-28.3)	26.8 (24.3-28.3)	44.4 (41.1-50.2)	76.1 (65.3-89.1)	95.7 (80.7-128)	954
Mexican Americans (1999 - 2000)	*	< LOD	61.4 (<LOD-69.0)	97.7 (82.8-111)	132 (108-159)	621
Mexican Americans (2001 - 2002)	39.6 (35.7-43.9)	39.7 (33.6-47.4)	64.0 (55.8-74.7)	107 (82.4-128)	149 (111-171)	262
Mexican Americans (2003 - 2004)	25.8 (22.6-29.4)	26.1 (20.9-30.9)	41.9 (36.7-44.7)	61.0 (49.7-71.9)	80.1 (65.0-89.1)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	58.1 (<LOD-71.1)	95.0 (75.1-110)	125 (102-183)	408
Non-Hispanic blacks (2001 - 2002)	43.7 (35.4-54.0)	42.8 (32.2-59.8)	80.6 (60.9-106)	134 (101-166)	167 (130-230)	218
Non-Hispanic blacks (2003 - 2004)	25.8 (22.6-29.4)	23.7 (20.7-27.1)	41.2 (32.6-56.4)	69.2 (54.6-115)	115 (67.1-164)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	59.0 (<LOD-64.8)	84.9 (72.0-97.0)	106 (96.7-122)	709
Non-Hispanic whites (2001 - 2002)	39.3 (33.0-46.8)	40.5 (34.0-50.1)	71.0 (56.3-87.5)	117 (87.1-147)	147 (125-186)	657
Non-Hispanic whites (2003 - 2004)	25.0 (22.6-27.7)	24.6 (22.3-27.4)	42.6 (39.4-48.5)	73.5 (60.4-86.7)	93.7 (71.6-127)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.9, 10.3, and 13.0, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	19.2	1.6	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	14.5	0.4	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	13.2	0.5	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	19.4	1.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	16.9	1.6	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	17.1	1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	36.1	4.6	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	21.0	1.8	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	24.1	2.5	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	47.8	4.3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	36.5	2.2	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	30.1	1.6	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	15.0	1	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	12.7	1	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	9.94	0.9	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	20.5	2.1	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	17.3	0.9	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	15.1	2.6	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	32.2	2.9	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	22.2	1.8	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	19.0	0.9	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	49.8	3	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	41.6	3.9	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	30.8	2.8	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	17.2	0.7	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	11.9	0.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	8.75	0.59	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	16.1	1	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	16.0	1.1	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	11.6	1.5	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	23.4	1.6	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	20.8	1.5	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	17.6	2.6	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	44.9	5.7	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	28.9	5.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	24.4	1.6	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.43, 4.22, and 4.5, respectively.
Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	15.9	1.7	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	11.0	1.1	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	8.67	0.72	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	20.8	1.6	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	19.4	1.7	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	13.6	1.9	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	36.3	4.3	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	28.1	2.1	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	21.9	4.1	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	77.4	12.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	55.1	6	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	51.0	5.4	7
Mexican American Male, 12-19 years (2005 - 2006)	15.3	1.1	11
Mexican American Male, 12-19 years (2007 - 2008)	12.8	1.1	6
Mexican American Male, 12-19 years (2009 - 2010)	12.5	0.9	8
Mexican American Male, 20-39 years (2005 - 2006)	26.0	2.6	9
Mexican American Male, 20-39 years (2007 - 2008)	17.7	1.4	9
Mexican American Male, 20-39 years (2009 - 2010)	19.9	2.1	8
Mexican American Male, 40-59 years (2005 - 2006)	34.5	3.6	4
Mexican American Male, 40-59 years (2007 - 2008)	29.0	2.2	6
Mexican American Male, 40-59 years (2009 - 2010)	29.5	2.2	7
Mexican American Male, 60+ years (2005 - 2006)	40.3	5	4
Mexican American Male, 60+ years (2007 - 2008)	27.5	3.8	5
Mexican American Male, 60+ years (2009 - 2010)	46.0	7.2	5
Mexican American Female, 12-19 years (2005 - 2006)	13.2	0.7	16
Mexican American Female, 12-19 years (2007 - 2008)	10.9	2.3	5
Mexican American Female, 12-19 years (2009 - 2010)	7.94	0.68	7
Mexican American Female, 20-39 years (2005 - 2006)	25.1	1.9	9
Mexican American Female, 20-39 years (2007 - 2008)	23.0	2.9	8
Mexican American Female, 20-39 years (2009 - 2010)	14.0	2.2	10
Mexican American Female, 40-59 years (2005 - 2006)	41.8	4.3	6
Mexican American Female, 40-59 years (2007 - 2008)	30.9	3.6	6
Mexican American Female, 40-59 years (2009 - 2010)	39.2	4.3	9
Mexican American Female, 60+ years (2005 - 2006)	59.1	6.9	3
Mexican American Female, 60+ years (2007 - 2008)	52.8	2.8	5
Mexican American Female, 60+ years (2009 - 2010)	68.0	7.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.43, 4.22, and 4.5, respectively.
Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	12.4	0.8	11
All Hispanic Male, 20-39 years (2009 - 2010)	16.9	1.9	13
All Hispanic Male, 40-59 years (2009 - 2010)	24.0	2.3	12
All Hispanic Male, 60+ years (2009 - 2010)	37.4	6.3	8
All Hispanic Female, 12-19 years (2009 - 2010)	8.23	0.56	10
All Hispanic Female, 20-39 years (2009 - 2010)	14.1	1.6	14
All Hispanic Female, 40-59 years (2009 - 2010)	33.3	3.6	14
All Hispanic Female, 60+ years (2009 - 2010)	53.5	6.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.43, 4.22, and 4.5, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	354 (<LOD384)	564 (501-617)	749 (646-869)	1894
Total population (2001 - 2002)	252 (219-289)	267 (232-305)	440 (376-529)	779 (591-989)	1030 (840-1290)	1220
Total population (2003 - 2004)	155 (143-167)	150 (134-163)	288 (242-319)	465 (399-550)	618 (516-787)	1874
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	289 (<LOD340)	657
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	84.6 (77.4-92.5)	83.9 (76.1-92.0)	118 (106-131)	165 (139-185)	210 (176-319)	586
Age 20+ years (1999 - 2000)	*	< LOD	385 (354-418)	610 (534-677)	802 (681-936)	1237
Age 20+ years (2001 - 2002)	252 (219-289)	267 (232-305)	440 (376-529)	779 (591-989)	1030 (840-1290)	1220
Age 20+ years (2003 - 2004)	169 (155-184)	170 (150-186)	314 (267-348)	506 (419-576)	628 (546-810)	1288
Males (1999 - 2000)	*	< LOD	< LOD	489 (436-543)	613 (535-681)	910
Males (2001 - 2002)	243 (211-279)	245 (213-291)	422 (349-527)	766 (536-976)	983 (766-1260)	553
Males (2003 - 2004)	150 (135-167)	144 (129-161)	273 (236-305)	424 (365-516)	554 (440-667)	920
Females (1999 - 2000)	*	< LOD	373 (<LOD428)	637 (562-802)	907 (806-1040)	984
Females (2001 - 2002)	260 (221-306)	281 (236-324)	466 (386-551)	795 (621-997)	1140 (849-1330)	667
Females (2003 - 2004)	159 (147-172)	158 (138-170)	303 (249-345)	520 (429-591)	623 (545-848)	954
Mexican Americans (1999 - 2000)	*	< LOD	372 (<LOD404)	598 (546-657)	849 (657-1020)	621
Mexican Americans (2001 - 2002)	254 (232-278)	249 (229-286)	403 (360-521)	791 (643-929)	988 (817-1240)	262
Mexican Americans (2003 - 2004)	158 (139-180)	159 (138-193)	274 (241-299)	414 (349-469)	556 (451-592)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	323 (<LOD391)	567 (422-716)	778 (574-1130)	408
Non-Hispanic blacks (2001 - 2002)	258 (208-319)	262 (180-339)	478 (343-600)	852 (578-1170)	1170 (821-1660)	218
Non-Hispanic blacks (2003 - 2004)	148 (128-170)	137 (117-156)	247 (188-344)	434 (345-599)	715 (405-1090)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	370 (<LOD401)	565 (491-634)	733 (637-816)	709
Non-Hispanic whites (2001 - 2002)	255 (216-302)	277 (228-328)	442 (374-547)	782 (551-1020)	1020 (803-1290)	657
Non-Hispanic whites (2003 - 2004)	155 (140-170)	152 (131-171)	292 (248-325)	492 (390-571)	621 (506-810)	875

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (whole weight) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	106	10	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	72.5	2.5	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	70.6	3.5	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	140	12	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	111	10	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	113	8	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	274	39	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	154	12	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	162	16	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	325	28	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	233	13	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	182	8	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	79.4	5	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	59.1	3.8	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	47.5	4.6	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	135	17	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	103	6	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	80.5	14.4	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	237	23	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	146	12	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	120	7	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	365	24	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	279	27	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	190	15	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	86.6	3.3	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	56.1	3.8	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	40.1	3.5	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	95.6	7.3	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	90.1	7	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	64.2	6.9	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	149	12	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	133	9	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	107	13	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	266	30	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	174	31	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	131	9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (whole weight) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	78.3	7.7	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	52.6	6.3	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	38.1	2.7	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	120	10	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	98.6	9.4	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	66.7	9	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	234	31	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	169	14	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	124	23	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	522	90	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	329	29	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	290	27	7
Mexican American Male, 12-19 years (2005 - 2006)	82.5	5.3	11
Mexican American Male, 12-19 years (2007 - 2008)	67.4	4.5	6
Mexican American Male, 12-19 years (2009 - 2010)	59.1	5	8
Mexican American Male, 20-39 years (2005 - 2006)	184	16	9
Mexican American Male, 20-39 years (2007 - 2008)	123	15	9
Mexican American Male, 20-39 years (2009 - 2010)	121	14	8
Mexican American Male, 40-59 years (2005 - 2006)	284	41	4
Mexican American Male, 40-59 years (2007 - 2008)	207	19	6
Mexican American Male, 40-59 years (2009 - 2010)	207	13	7
Mexican American Male, 60+ years (2005 - 2006)	286	26	4
Mexican American Male, 60+ years (2007 - 2008)	207	44	5
Mexican American Male, 60+ years (2009 - 2010)	282	44	5
Mexican American Female, 12-19 years (2005 - 2006)	72.1	4.2	16
Mexican American Female, 12-19 years (2007 - 2008)	52.9	10.5	5
Mexican American Female, 12-19 years (2009 - 2010)	37.0	2.9	7
Mexican American Female, 20-39 years (2005 - 2006)	168	15	9
Mexican American Female, 20-39 years (2007 - 2008)	133	17	8
Mexican American Female, 20-39 years (2009 - 2010)	75.9	12.5	10
Mexican American Female, 40-59 years (2005 - 2006)	311	37	6
Mexican American Female, 40-59 years (2007 - 2008)	210	28	6
Mexican American Female, 40-59 years (2009 - 2010)	245	21	9
Mexican American Female, 60+ years (2005 - 2006)	458	88	3
Mexican American Female, 60+ years (2007 - 2008)	363	25	5
Mexican American Female, 60+ years (2009 - 2010)	376	37	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (whole weight) (2005 – 2010)

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	58.2	4.4	11
All Hispanic Male, 20-39 years (2009 - 2010)	108	14	13
All Hispanic Male, 40-59 years (2009 - 2010)	166	16	12
All Hispanic Male, 60+ years (2009 - 2010)	236	38	8
All Hispanic Female, 12-19 years (2009 - 2010)	38.1	2.5	10
All Hispanic Female, 20-39 years (2009 - 2010)	77.4	9	14
All Hispanic Female, 40-59 years (2009 - 2010)	206	20	14
All Hispanic Female, 60+ years (2009 - 2010)	310	33	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2001 – 2004)

CAS Number 39227-28-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	10.7 (<LOD-13.9)	14.9 (11.7-20.0)	1239
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1861
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	582
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	10.7 (<LOD-13.9)	14.9 (11.7-20.0)	1239
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1279
Males (2001 - 2002)	*	< LOD	< LOD	10.9 (<LOD-14.3)	14.7 (11.5-17.6)	566
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	914
Females (2001 - 2002)	*	< LOD	< LOD	10.7 (<LOD-14.1)	15.6 (11.1-23.0)	673
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	947
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	9.20 (<LOD-11.8)	263
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	421
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	13.9 (<LOD-17.6)	18.3 (13.9-23.0)	220
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	450
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	11.3 (<LOD-14.4)	15.1 (12.0-20.5)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	870

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 9.0 and 11.9.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.11	0.25	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.08	0.06	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	1.44	0.35	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	1.38	0.25	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	1.79	0.1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.47	0.42	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	2.95	0.17	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	2.84	0.2	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	7.15	0.76	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	5.65	0.49	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.51	0.19	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.767	0.094	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	1.10	0.19	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	1.19	0.09	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	3.59	0.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	2.45	0.21	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	2.42	0.11	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	6.40	0.33	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	5.71	0.44	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	4.93	0.38	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.705	0.137	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	1.56	0.33	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**1.06	0.38	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.17	0.15	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	2.78	0.37	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	2.93	0.17	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.34	0.22	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	6.65	0.19	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	4.83	0.8	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.85	0.34	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.15, 0.26, and 0.28, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.800	0.097	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	1.87	0.24	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.23	0.13	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	3.83	0.44	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	3.34	0.44	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	2.49	0.36	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	12.7	1.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	9.88	1.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	6.79	0.82	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	1.01	0.1	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	1.41	0.2	9
Mexican American Male, 20-39 years (2009 - 2010)	1.44	0.17	8
Mexican American Male, 40-59 years (2005 - 2006)	**2.65	0.93	4
Mexican American Male, 40-59 years (2007 - 2008)	2.91	0.2	6
Mexican American Male, 40-59 years (2009 - 2010)	2.66	0.13	7
Mexican American Male, 60+ years (2005 - 2006)	4.96	0.17	4
Mexican American Male, 60+ years (2007 - 2008)	4.83	0.34	5
Mexican American Male, 60+ years (2009 - 2010)	5.68	0.82	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.544	0.043	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	1.47	0.27	8
Mexican American Female, 20-39 years (2009 - 2010)	.944	0.133	10
Mexican American Female, 40-59 years (2005 - 2006)	3.64	0.8	6
Mexican American Female, 40-59 years (2007 - 2008)	3.03	0.47	6
Mexican American Female, 40-59 years (2009 - 2010)	2.76	0.18	9
Mexican American Female, 60+ years (2005 - 2006)	7.30	0.67	3
Mexican American Female, 60+ years (2007 - 2008)	6.19	0.72	5
Mexican American Female, 60+ years (2009 - 2010)	6.95	0.96	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.15, 0.26, and 0.28, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.954	0.081	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.30	0.14	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.41	0.15	12
All Hispanic Male, 60+ years (2009 - 2010)	4.75	0.68	8
All Hispanic Female, 12-19 years (2009 - 2010)	.573	0.036	10
All Hispanic Female, 20-39 years (2009 - 2010)	.979	0.096	14
All Hispanic Female, 40-59 years (2009 - 2010)	2.46	0.19	14
All Hispanic Female, 60+ years (2009 - 2010)	5.85	0.71	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.15, 0.26, and 0.28, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2001 – 2004)

CAS Number 39227-28-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	74.7 (<LOD-90.7)	105 (81.2-139)	1239
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1861
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	582
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	74.7 (<LOD-90.7)	105 (81.2-139)	1239
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1279
Males (2001 - 2002)	*	< LOD	< LOD	73.6 (<LOD-90.7)	105 (77.9-134)	566
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	914
Females (2001 - 2002)	*	< LOD	< LOD	74.7 (<LOD-90.7)	102 (78.0-152)	673
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	947
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	71.2 (<LOD-118)	263
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	421
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	82.1 (<LOD-130)	130 (75.7-184)	220
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	450
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	77.5 (<LOD-97.1)	105 (78.8-143)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	870

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	5.49	1.24	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	5.72	0.32	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	10.8	2.9	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	9.33	1.72	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	11.8	0.8	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	33.7	3.5	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	21.5	0.9	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	19.2	1.4	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	48.4	4.7	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	36.0	2.7	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	27.2	0.9	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.67	0.46	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	6.65	1.23	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	6.35	0.53	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	26.6	2.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	16.2	1.4	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	15.4	1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	46.7	2.5	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	38.5	3.2	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	29.8	2.1	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.20	0.64	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	9.31	2.04	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**6.04	2.2	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	6.50	0.71	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	17.8	2.4	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	18.7	0.9	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	14.4	1.4	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	40.0	2.1	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	29.2	5	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	20.5	1.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	3.52	0.39	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	10.7	1.4	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	6.07	0.64	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	24.6	3	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	20.0	2.8	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	14.1	2.1	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	83.9	9.4	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	59.3	10	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	38.5	4.1	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	4.74	0.52	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	9.33	1.39	9
Mexican American Male, 20-39 years (2009 - 2010)	8.95	1.39	8
Mexican American Male, 40-59 years (2005 - 2006)	**21.7	8.3	4
Mexican American Male, 40-59 years (2007 - 2008)	20.8	2	6
Mexican American Male, 40-59 years (2009 - 2010)	18.8	0.9	7
Mexican American Male, 60+ years (2005 - 2006)	36.0	2.7	4
Mexican American Male, 60+ years (2007 - 2008)	35.1	3.8	5
Mexican American Male, 60+ years (2009 - 2010)	34.7	4.9	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	2.54	0.2	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	8.36	1.42	8
Mexican American Female, 20-39 years (2009 - 2010)	5.10	0.74	10
Mexican American Female, 40-59 years (2005 - 2006)	27.1	5.7	6
Mexican American Female, 40-59 years (2007 - 2008)	20.4	3.3	6
Mexican American Female, 40-59 years (2009 - 2010)	17.6	1.2	9
Mexican American Female, 60+ years (2005 - 2006)	55.9	8.6	3
Mexican American Female, 60+ years (2007 - 2008)	42.7	5.7	5
Mexican American Female, 60+ years (2009 - 2010)	38.2	4.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	4.45	0.41	11
All Hispanic Male, 20-39 years (2009 - 2010)	8.46	1.21	13
All Hispanic Male, 40-59 years (2009 - 2010)	16.7	1.1	12
All Hispanic Male, 60+ years (2009 - 2010)	29.7	4	8
All Hispanic Female, 12-19 years (2009 - 2010)	2.65	0.17	10
All Hispanic Female, 20-39 years (2009 - 2010)	5.36	0.54	14
All Hispanic Female, 40-59 years (2009 - 2010)	15.4	1.3	14
All Hispanic Female, 60+ years (2009 - 2010)	33.9	3.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

CAS Number 57653-85-7

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	32.6 (28.3-38.2)	56.9 (47.4-67.3)	74.0 (68.3-82.4)	1885
Total population (2001 - 2002)	34.6 (29.6-40.6)	39.2 (32.7-44.7)	60.8 (50.3-74.2)	95.2 (76.2-120)	128 (99.4-153)	1234
Total population (2003 - 2004)	17.2 (15.7-18.9)	20.0 (17.8-22.9)	36.5 (32.2-40.0)	53.0 (48.1-59.6)	68.5 (59.6-74.9)	1871
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	26.7 (20.2-29.6)	648
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	16.1 (14.3-18.1)	19.4 (16.4-27.7)	584
Age 20+ years (1999 - 2000)	*	< LOD	36.2 (31.5-40.7)	62.8 (53.6-69.1)	75.6 (70.5-84.2)	1237
Age 20+ years (2001 - 2002)	34.6 (29.6-40.6)	39.2 (32.7-44.7)	60.8 (50.3-74.2)	95.2 (76.2-120)	128 (99.4-153)	1234
Age 20+ years (2003 - 2004)	19.7 (17.8-21.8)	23.8 (20.7-26.4)	39.3 (35.4-42.2)	56.6 (49.7-63.8)	70.8 (60.7-82.2)	1287
Males (1999 - 2000)	*	< LOD	31.5 (23.7-38.2)	55.0 (45.7-64.2)	71.3 (59.4-79.4)	908
Males (2001 - 2002)	34.1 (28.3-41.1)	38.9 (32.1-44.7)	61.9 (50.0-79.5)	94.9 (70.8-131)	130 (88.5-181)	564
Males (2003 - 2004)	17.5 (15.5-19.8)	19.8 (17.8-21.6)	35.5 (29.8-40.3)	52.9 (45.4-63.2)	70.2 (57.5-88.7)	920
Females (1999 - 2000)	*	< LOD	34.9 (29.1-39.7)	61.2 (51.0-69.2)	74.9 (68.4-92.2)	977
Females (2001 - 2002)	35.1 (29.9-41.2)	40.1 (32.4-46.3)	59.8 (49.8-72.3)	97.6 (77.1-114)	126 (108-142)	670
Females (2003 - 2004)	16.9 (15.3-18.6)	20.5 (17.8-24.6)	36.9 (33.2-41.0)	53.6 (48.3-59.6)	65.6 (60.0-73.4)	951
Mexican Americans (1999 - 2000)	*	< LOD	21.3 (<LOD-27.6)	43.3 (34.1-52.3)	58.0 (49.5-64.8)	624
Mexican Americans (2001 - 2002)	18.3 (15.6-21.4)	21.2 (19.4-25.0)	31.9 (27.5-40.3)	51.5 (40.3-69.9)	68.3 (48.0-111)	260
Mexican Americans (2003 - 2004)	*	< LOD	21.1 (16.3-26.5)	32.2 (24.5-47.4)	43.0 (31.5-65.3)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	31.9 (26.6-41.2)	56.7 (44.9-74.6)	81.6 (72.2-91.7)	402
Non-Hispanic blacks (2001 - 2002)	38.9 (33.6-45.0)	40.3 (33.5-47.3)	63.5 (54.6-76.9)	93.9 (78.7-133)	136 (92.6-185)	219
Non-Hispanic blacks (2003 - 2004)	16.2 (12.9-20.4)	18.1 (14.4-21.6)	34.9 (28.4-42.9)	54.5 (44.4-69.4)	74.0 (54.3-122)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	35.5 (29.7-40.0)	60.9 (51.4-68.3)	74.3 (68.3-83.0)	703
Non-Hispanic whites (2001 - 2002)	37.8 (31.5-45.4)	42.8 (33.9-51.2)	65.0 (52.3-82.9)	99.6 (78.4-130)	131 (103-165)	671
Non-Hispanic whites (2003 - 2004)	18.7 (17.0-20.6)	22.9 (19.9-26.2)	38.0 (35.2-41.5)	56.6 (48.7-63.8)	69.0 (60.6-74.9)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.1, 9.1, and 12.3, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	10.5	0.8	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	9.78	0.51	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.25	0.47	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	14.7	1.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	14.2	0.7	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	11.9	0.6	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	31.8	3.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	23.0	1.1	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	23.4	1.5	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	46.6	3.4	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	40.5	2.6	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	36.5	2.1	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	6.76	0.95	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	6.74	0.45	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	5.69	0.61	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	13.1	1.4	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	12.5	0.8	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	10.8	1.1	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	25.6	1.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	23.7	0.9	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	19.5	0.9	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	47.4	3.5	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	45.7	2.9	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	40.8	2.8	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	9.16	0.4	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	7.63	0.94	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.71	0.71	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	12.7	0.8	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	13.4	1.2	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	8.65	1.1	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	20.4	1.3	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	23.6	2.6	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	18.2	1.8	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	45.5	6.1	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	36.3	4.4	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	31.0	2.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.12, 0.2, and 0.22, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	5.50	0.65	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.07	0.4	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	4.70	0.41	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	12.2	0.8	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	13.4	1.3	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	9.23	0.94	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	25.1	2.6	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	25.8	1.4	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	19.8	1.8	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	69.4	8	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	54.2	5.4	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	49.8	5.3	7
Mexican American Male, 12-19 years (2005 - 2006)	4.25	1.01	11
Mexican American Male, 12-19 years (2007 - 2008)	7.12	0.85	6
Mexican American Male, 12-19 years (2009 - 2010)	6.08	0.48	8
Mexican American Male, 20-39 years (2005 - 2006)	9.78	0.77	9
Mexican American Male, 20-39 years (2007 - 2008)	10.2	0.5	9
Mexican American Male, 20-39 years (2009 - 2010)	8.73	0.74	8
Mexican American Male, 40-59 years (2005 - 2006)	18.9	2.8	4
Mexican American Male, 40-59 years (2007 - 2008)	19.4	1.3	6
Mexican American Male, 40-59 years (2009 - 2010)	19.0	1.1	7
Mexican American Male, 60+ years (2005 - 2006)	34.5	2.4	4
Mexican American Male, 60+ years (2007 - 2008)	31.3	2.6	5
Mexican American Male, 60+ years (2009 - 2010)	38.3	5.7	5
Mexican American Female, 12-19 years (2005 - 2006)	3.62	0.73	16
Mexican American Female, 12-19 years (2007 - 2008)	**4.01	1.25	5
Mexican American Female, 12-19 years (2009 - 2010)	3.95	0.2	7
Mexican American Female, 20-39 years (2005 - 2006)	8.51	0.79	9
Mexican American Female, 20-39 years (2007 - 2008)	9.61	0.86	8
Mexican American Female, 20-39 years (2009 - 2010)	6.40	0.97	10
Mexican American Female, 40-59 years (2005 - 2006)	18.9	1.5	6
Mexican American Female, 40-59 years (2007 - 2008)	19.5	2	6
Mexican American Female, 40-59 years (2009 - 2010)	18.4	1.4	9
Mexican American Female, 60+ years (2005 - 2006)	36.4	3.3	3
Mexican American Female, 60+ years (2007 - 2008)	36.7	4.6	5
Mexican American Female, 60+ years (2009 - 2010)	43.6	6.2	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.12, 0.2, and 0.22, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	6.11	0.38	11
All Hispanic Male, 20-39 years (2009 - 2010)	8.06	0.83	13
All Hispanic Male, 40-59 years (2009 - 2010)	16.8	1.1	12
All Hispanic Male, 60+ years (2009 - 2010)	32.9	4.4	8
All Hispanic Female, 12-19 years (2009 - 2010)	4.14	0.24	10
All Hispanic Female, 20-39 years (2009 - 2010)	6.82	0.69	14
All Hispanic Female, 40-59 years (2009 - 2010)	17.3	1	14
All Hispanic Female, 60+ years (2009 - 2010)	37.9	4.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.12, 0.2, and 0.22, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (1999 – 2004)

CAS Number 57653-85-7

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	202 (168-239)	374 (314-426)	496 (429-571)	1885
Total population (2001 - 2002)	224 (192-261)	247 (219-287)	412 (347-498)	663 (549-785)	870 (696-1100)	1234
Total population (2003 - 2004)	105 (95.7-116)	123 (111-136)	240 (219-263)	357 (325-395)	443 (395-487)	1871
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	126 (93.2-155)	648
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	77.6 (67.4-84.8)	94.5 (77.6-122)	584
Age 20+ years (1999 - 2000)	*	< LOD	232 (196-268)	403 (349-458)	521 (458-607)	1237
Age 20+ years (2001 - 2002)	224 (192-261)	247 (219-287)	412 (347-498)	663 (549-785)	870 (696-1100)	1234
Age 20+ years (2003 - 2004)	124 (112-138)	146 (125-172)	259 (235-285)	376 (334-422)	466 (403-528)	1287
Males (1999 - 2000)	*	< LOD	189 (134-239)	353 (278-417)	449 (378-526)	908
Males (2001 - 2002)	226 (190-270)	263 (223-301)	425 (347-540)	678 (547-794)	883 (666-1180)	564
Males (2003 - 2004)	108 (95.4-123)	123 (108-141)	231 (206-261)	351 (286-424)	450 (374-538)	920
Females (1999 - 2000)	*	< LOD	213 (174-263)	400 (344-467)	553 (467-651)	977
Females (2001 - 2002)	222 (190-260)	239 (207-281)	397 (338-474)	644 (526-771)	864 (720-1060)	670
Females (2003 - 2004)	103 (92.8-113)	121 (101-142)	249 (225-277)	363 (336-395)	429 (395-512)	951
Mexican Americans (1999 - 2000)	*	< LOD	128 (<LOD-167)	284 (242-334)	380 (328-419)	624
Mexican Americans (2001 - 2002)	117 (99.4-139)	130 (107-157)	233 (198-270)	409 (278-524)	524 (384-731)	260
Mexican Americans (2003 - 2004)	*	< LOD	141 (106-188)	221 (188-337)	327 (210-426)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	191 (150-234)	374 (267-424)	477 (389-568)	402
Non-Hispanic blacks (2001 - 2002)	229 (199-264)	229 (190-284)	371 (333-477)	643 (480-799)	821 (596-1260)	219
Non-Hispanic blacks (2003 - 2004)	92.9 (73.3-118)	106 (77.0-125)	219 (165-260)	362 (279-460)	461 (372-689)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	222 (183-270)	403 (346-460)	520 (450-615)	703
Non-Hispanic whites (2001 - 2002)	246 (206-293)	275 (233-325)	443 (365-553)	684 (549-870)	897 (718-1150)	671
Non-Hispanic whites (2003 - 2004)	116 (105-127)	136 (120-165)	258 (231-286)	375 (333-418)	466 (402-519)	872

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	57.9	5.2	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	48.6	1.6	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	38.3	1.9	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	109	14	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	93.4	5	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	78.2	5.3	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	240	27	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	169	8	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	159	10	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	316	21	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	257	14	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	220	10	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	36.0	4.9	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	31.5	2.2	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	27.3	3.1	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	85.9	10.4	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	74.7	5.5	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	57.6	6.6	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	189	13	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	157	7	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	123	7	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	344	24	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	306	19	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	246	15	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	46.0	1.5	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	35.8	3.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	30.7	3.6	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	75.2	5.9	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	75.1	6.4	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	47.9	5.1	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	130	8	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	151	16	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	111	10	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	270	32	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	219	27	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	166	11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	27.2	3.2	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	28.9	2.5	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	20.7	1.6	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	70.2	4.3	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	67.9	7.1	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	45.7	4.7	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	160	17	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	156	12	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	112	10	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	461	45	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	325	27	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	283	26	7
Mexican American Male, 12-19 years (2005 - 2006)	22.8	5.3	11
Mexican American Male, 12-19 years (2007 - 2008)	37.9	4.9	6
Mexican American Male, 12-19 years (2009 - 2010)	28.7	2.6	8
Mexican American Male, 20-39 years (2005 - 2006)	68.7	4.7	9
Mexican American Male, 20-39 years (2007 - 2008)	70.2	4.8	9
Mexican American Male, 20-39 years (2009 - 2010)	53.6	5.9	8
Mexican American Male, 40-59 years (2005 - 2006)	156	28	4
Mexican American Male, 40-59 years (2007 - 2008)	139	12	6
Mexican American Male, 40-59 years (2009 - 2010)	135	9	7
Mexican American Male, 60+ years (2005 - 2006)	248	17	4
Mexican American Male, 60+ years (2007 - 2008)	227	25	5
Mexican American Male, 60+ years (2009 - 2010)	235	35	5
Mexican American Female, 12-19 years (2005 - 2006)	20.3	4.1	16
Mexican American Female, 12-19 years (2007 - 2008)	**19.3	5.8	5
Mexican American Female, 12-19 years (2009 - 2010)	18.4	0.9	7
Mexican American Female, 20-39 years (2005 - 2006)	56.7	5.7	9
Mexican American Female, 20-39 years (2007 - 2008)	55.4	5	8
Mexican American Female, 20-39 years (2009 - 2010)	34.6	5.5	10
Mexican American Female, 40-59 years (2005 - 2006)	140	13	6
Mexican American Female, 40-59 years (2007 - 2008)	131	14	6
Mexican American Female, 40-59 years (2009 - 2010)	117	8	9
Mexican American Female, 60+ years (2005 - 2006)	280	43	3
Mexican American Female, 60+ years (2007 - 2008)	252	35	5
Mexican American Female, 60+ years (2009 - 2010)	239	29	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	28.7	2.1	11
All Hispanic Male, 20-39 years (2009 - 2010)	52.8	8	13
All Hispanic Male, 40-59 years (2009 - 2010)	116	9	12
All Hispanic Male, 60+ years (2009 - 2010)	206	27	8
All Hispanic Female, 12-19 years (2009 - 2010)	19.2	1	10
All Hispanic Female, 20-39 years (2009 - 2010)	37.4	4	14
All Hispanic Female, 40-59 years (2009 - 2010)	108	7	14
All Hispanic Female, 60+ years (2009 - 2010)	221	19	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

CAS Number 19408-74-3

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1870
Total population (2001 - 2002)	*	< LOD	< LOD	12.5 (10.5-15.3)	17.0 (14.3-20.0)	1238
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1869
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	642
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1228
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	12.5 (10.5-15.3)	17.0 (14.3-20.0)	1238
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1284
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	895
Males (2001 - 2002)	*	< LOD	< LOD	12.1 (<LOD-14.8)	15.1 (12.9-18.5)	567
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	918
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	975
Females (2001 - 2002)	*	< LOD	< LOD	13.0 (10.7-16.8)	18.3 (15.7-21.1)	671
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	618
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	9.60 (<LOD-11.6)	12.2 (<LOD-20.6)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	396
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	14.6 (11.2-20.0)	19.9 (14.6-23.9)	220
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	701
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	12.9 (9.90-15.9)	17.3 (14.7-20.6)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.3, 9.3, and 12.3, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.68	0.43	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.18	0.11	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.89	0.07	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	1.92	0.26	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.33	0.29	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.25	0.1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	3.99	0.38	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	2.99	0.16	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.06	0.17	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	5.48	0.47	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	4.80	0.3	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.56	0.25	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.61	0.4	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.60	0.21	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.47	0.2	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.29	0.3	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.04	0.21	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	3.93	0.25	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	3.29	0.25	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	2.91	0.14	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	6.02	0.36	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	6.23	0.41	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	5.59	0.35	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.73	0.31	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.49	0.03	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.08	0.11	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**1.37	0.47	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.52	0.18	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	2.57	0.18	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	3.26	0.33	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.36	0.25	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	5.18	0.91	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	4.15	0.53	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.46	0.33	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.08, 0.13, and 0.14, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.23	0.14	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.44	0.23	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.89	0.18	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	3.84	0.36	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	3.97	0.29	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	3.17	0.41	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	9.10	1.09	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	8.05	0.9	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	6.54	0.63	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	1.67	0.09	7
Mexican American Male, 20-39 years (2005 - 2006)	2.20	0.29	9
Mexican American Male, 20-39 years (2007 - 2008)	1.54	0.34	9
Mexican American Male, 20-39 years (2009 - 2010)	1.67	0.15	8
Mexican American Male, 40-59 years (2005 - 2006)	3.37	0.53	4
Mexican American Male, 40-59 years (2007 - 2008)	2.47	0.61	6
Mexican American Male, 40-59 years (2009 - 2010)	2.73	0.18	7
Mexican American Male, 60+ years (2005 - 2006)	4.52	0.22	4
Mexican American Male, 60+ years (2007 - 2008)	4.55	0.44	5
Mexican American Male, 60+ years (2009 - 2010)	5.43	0.74	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	**1.41	0.43	5
Mexican American Female, 12-19 years (2009 - 2010)	1.16	0.11	7
Mexican American Female, 20-39 years (2005 - 2006)	1.81	0.32	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	1.64	0.24	10
Mexican American Female, 40-59 years (2005 - 2006)	4.02	0.32	6
Mexican American Female, 40-59 years (2007 - 2008)	3.94	0.35	6
Mexican American Female, 40-59 years (2009 - 2010)	4.04	0.32	9
Mexican American Female, 60+ years (2005 - 2006)	6.50	0.96	3
Mexican American Female, 60+ years (2007 - 2008)	7.38	0.68	5
Mexican American Female, 60+ years (2009 - 2010)	7.73	0.92	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.08, 0.13, and 0.14, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.77	0.12	10
All Hispanic Male, 20-39 years (2009 - 2010)	1.74	0.12	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.50	0.14	12
All Hispanic Male, 60+ years (2009 - 2010)	4.67	0.6	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.20	0.08	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.70	0.17	14
All Hispanic Female, 40-59 years (2009 - 2010)	3.47	0.3	14
All Hispanic Female, 60+ years (2009 - 2010)	6.25	0.74	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.08, 0.13, and 0.14, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (1999 – 2004)

CAS Number 19408-74-3

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1870
Total population (2001 - 2002)	*	< LOD	< LOD	86.5 (68.8-108)	121 (99.5-146)	1238
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1869
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	642
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1228
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	86.5 (68.8-108)	121 (99.5-146)	1238
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1284
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	895
Males (2001 - 2002)	*	< LOD	< LOD	84.1 (<LOD-104)	108 (90.6-142)	567
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	918
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	975
Females (2001 - 2002)	*	< LOD	< LOD	89.8 (67.9-121)	123 (102-157)	671
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	618
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	74.7 (<LOD-104)	107 (<LOD-167)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	396
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	92.6 (62.8-126)	123 (82.6-169)	220
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	701
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	88.1 (67.9-119)	124 (96.6-152)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	871

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	9.49	2.41	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	10.9	0.7	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	10.0	0.3	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	13.8	2	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	15.4	1.7	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	14.8	0.8	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	30.2	3.2	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	21.9	1	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	20.8	1.2	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	37.3	3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	30.5	1.6	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	27.5	1.4	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.48	1.85	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	7.66	1.04	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	16.1	1.5	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	13.8	1.8	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	10.9	1.2	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	29.1	2.3	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	21.8	1.7	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	18.4	1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	44.0	2.6	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	41.8	2.9	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	33.7	1.8	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	8.07	1.37	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.85	0.44	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	12.3	0.8	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**8.05	2.77	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	8.44	0.85	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	16.4	1.2	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	20.8	2	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	14.5	1.5	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	30.7	5	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	25.0	3.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	18.4	1.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	5.39	0.54	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	14.0	1.3	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	9.32	0.88	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	24.6	2.4	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	23.9	2.1	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	17.9	2.3	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	60.7	6.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	48.1	4.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	37.2	3	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	7.80	0.44	7
Mexican American Male, 20-39 years (2005 - 2006)	15.7	2	9
Mexican American Male, 20-39 years (2007 - 2008)	10.0	2.2	9
Mexican American Male, 20-39 years (2009 - 2010)	10.2	1.2	8
Mexican American Male, 40-59 years (2005 - 2006)	27.8	5.5	4
Mexican American Male, 40-59 years (2007 - 2008)	17.2	4.2	6
Mexican American Male, 40-59 years (2009 - 2010)	19.2	1.1	7
Mexican American Male, 60+ years (2005 - 2006)	32.5	1.2	4
Mexican American Male, 60+ years (2007 - 2008)	33.1	4.3	5
Mexican American Male, 60+ years (2009 - 2010)	33.3	4.6	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	6.79	1.99	5
Mexican American Female, 12-19 years (2009 - 2010)	5.43	0.48	7
Mexican American Female, 20-39 years (2005 - 2006)	12.3	2.2	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	8.87	1.33	10
Mexican American Female, 40-59 years (2005 - 2006)	29.8	2.8	6
Mexican American Female, 40-59 years (2007 - 2008)	26.6	2.8	6
Mexican American Female, 40-59 years (2009 - 2010)	25.4	1.3	9
Mexican American Female, 60+ years (2005 - 2006)	49.7	9.5	3
Mexican American Female, 60+ years (2007 - 2008)	50.8	5.6	5
Mexican American Female, 60+ years (2009 - 2010)	42.6	4.3	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2005 – 2010)

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	8.20	0.5	10
All Hispanic Male, 20-39 years (2009 - 2010)	11.1	1.1	13
All Hispanic Male, 40-59 years (2009 - 2010)	17.2	1	12
All Hispanic Male, 60+ years (2009 - 2010)	29.3	3.6	8
All Hispanic Female, 12-19 years (2009 - 2010)	5.57	0.36	10
All Hispanic Female, 20-39 years (2009 - 2010)	9.31	0.96	14
All Hispanic Female, 40-59 years (2009 - 2010)	21.6	1.7	14
All Hispanic Female, 60+ years (2009 - 2010)	36.2	3.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (lipid adjusted) (1999 – 2004)

CAS Number 3268-87-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	406 (359-453)	674 (597-767)	913 (787-1010)	1921
Total population (2001 - 2002)	346 (<LOD-394)	333 (<LOD-402)	573 (498-668)	944 (780-1090)	1260 (998-1610)	1171
Total population (2003 - 2004)	*	< LOD	336 (283-389)	582 (490-658)	767 (645-913)	1851
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	421 (363-517)	667
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	244 (<LOD-330)	352 (264-458)	581
Age 20+ years (1999 - 2000)	*	< LOD	445 (389-496)	710 (624-802)	948 (822-1080)	1254
Age 20+ years (2001 - 2002)	346 (<LOD-394)	333 (<LOD-402)	573 (498-668)	944 (780-1090)	1260 (998-1610)	1171
Age 20+ years (2003 - 2004)	220 (<LOD-244)	223 (<LOD-243)	358 (297-421)	597 (502-719)	794 (665-978)	1270
Males (1999 - 2000)	*	< LOD	< LOD	517 (447-580)	704 (563-838)	919
Males (2001 - 2002)	*	< LOD	442 (346-579)	767 (593-968)	1030 (837-1240)	517
Males (2003 - 2004)	*	< LOD	270 (244-320)	457 (377-559)	668 (501-856)	910
Females (1999 - 2000)	*	< LOD	504 (422-579)	802 (674-928)	1010 (928-1180)	1002
Females (2001 - 2002)	410 (356-472)	405 (335-502)	647 (574-751)	1020 (858-1360)	1450 (1060-1780)	654
Females (2003 - 2004)	235 (<LOD-256)	238 (225-248)	402 (321-486)	640 (551-749)	829 (675-1020)	941
Mexican Americans (1999 - 2000)	*	< LOD	418 (365-502)	703 (610-873)	940 (737-1230)	632
Mexican Americans (2001 - 2002)	*	< LOD	432 (394-545)	755 (578-1220)	1150 (696-1640)	250
Mexican Americans (2003 - 2004)	*	< LOD	296 (225-356)	452 (363-540)	588 (417-861)	419
Non-Hispanic blacks (1999 - 2000)	*	< LOD	444 (371-519)	741 (566-983)	1120 (799-1560)	411
Non-Hispanic blacks (2001 - 2002)	421 (352-503)	420 (339-509)	682 (537-907)	1110 (956-1520)	1640 (1130-1900)	210
Non-Hispanic blacks (2003 - 2004)	*	< LOD	345 (276-455)	642 (513-883)	926 (636-1310)	448
Non-Hispanic whites (1999 - 2000)	*	< LOD	391 (333-452)	625 (562-754)	861 (676-1010)	721
Non-Hispanic whites (2001 - 2002)	349 (<LOD-409)	335 (<LOD-421)	574 (496-679)	945 (764-1170)	1290 (972-1660)	632
Non-Hispanic whites (2003 - 2004)	*	< LOD	343 (282-403)	585 (464-674)	758 (635-922)	865

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 329.0, 319.0, and 218.0, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (lipid adjusted) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	123	13	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	114	8	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	96.4	7.3	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	129	8	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	125	12	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	109	5	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	238	25	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	164	11	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	172	16	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	379	38	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	306	24	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	284	18	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	106	9	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	103	7	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	83.6	6.2	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	179	19	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	139	7	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	126	11	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	304	22	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	222	15	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	198	10	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	546	66	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	435	51	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	407	31	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	142	12	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	111	12	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	90.2	4.3	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	127	9	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	136	10	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	102	6	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	200	32	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	190	17	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	161	14	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	420	82	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	314	32	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	265	11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 13.0, 22.6, and 24.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (lipid adjusted) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	153	22	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	100	12	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	81.7	5.6	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	188	18	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	193	26	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	139	15	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	381	43	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	303	25	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	239	29	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	927	135	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	660	88	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	672	133	7
Mexican American Male, 12-19 years (2005 - 2006)	111	9	11
Mexican American Male, 12-19 years (2007 - 2008)	117	10	6
Mexican American Male, 12-19 years (2009 - 2010)	98.4	10.6	8
Mexican American Male, 20-39 years (2005 - 2006)	180	21	9
Mexican American Male, 20-39 years (2007 - 2008)	130	9	9
Mexican American Male, 20-39 years (2009 - 2010)	130	12	8
Mexican American Male, 40-59 years (2005 - 2006)	220	19	4
Mexican American Male, 40-59 years (2007 - 2008)	217	14	6
Mexican American Male, 40-59 years (2009 - 2010)	231	32	7
Mexican American Male, 60+ years (2005 - 2006)	350	46	4
Mexican American Male, 60+ years (2007 - 2008)	266	23	5
Mexican American Male, 60+ years (2009 - 2010)	413	78	5
Mexican American Female, 12-19 years (2005 - 2006)	111	5	16
Mexican American Female, 12-19 years (2007 - 2008)	107	12	5
Mexican American Female, 12-19 years (2009 - 2010)	79.3	5.7	7
Mexican American Female, 20-39 years (2005 - 2006)	184	12	9
Mexican American Female, 20-39 years (2007 - 2008)	174	14	8
Mexican American Female, 20-39 years (2009 - 2010)	123	19	10
Mexican American Female, 40-59 years (2005 - 2006)	410	60	6
Mexican American Female, 40-59 years (2007 - 2008)	290	20	6
Mexican American Female, 40-59 years (2009 - 2010)	336	34	9
Mexican American Female, 60+ years (2005 - 2006)	540	65	3
Mexican American Female, 60+ years (2007 - 2008)	426	34	5
Mexican American Female, 60+ years (2009 - 2010)	552	52	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 13.0, 22.6, and 24.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (lipid adjusted) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	109	11	11
All Hispanic Male, 20-39 years (2009 - 2010)	128	13	13
All Hispanic Male, 40-59 years (2009 - 2010)	200	22	12
All Hispanic Male, 60+ years (2009 - 2010)	361	68	7
All Hispanic Female, 12-19 years (2009 - 2010)	78.4	4.7	10
All Hispanic Female, 20-39 years (2009 - 2010)	121	14	14
All Hispanic Female, 40-59 years (2009 - 2010)	286	29	14
All Hispanic Female, 60+ years (2009 - 2010)	458	48	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 13.0, 22.6, and 24.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (whole weight) (1999 – 2004)

CAS Number 3268-87-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	2530 (2230-2880)	4260 (3770-4760)	5950 (5090-6790)	1921
Total population (2001 - 2002)	2230 (<LOD-2540)	2170 (<LOD-2550)	3860 (3180-4520)	6460 (5140-8290)	9110 (6940-	1171
Total population (2003 - 2004)	*	< LOD	2180 (1830-2540)	3760 (3100-4540)	5020 (4190-6070)	1851
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	1910 (1600-2340)	667
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	1160 (<LOD1590)	1780 (1160-2850)	581
Age 20+ years (1999 - 2000)	*	< LOD	2810 (2480-3110)	4570 (4100-5020)	6200 (5340-7300)	1254
Age 20+ years (2001 - 2002)	2230 (<LOD-2540)	2170 (<LOD-2550)	3860 (3180-4520)	6460 (5140-8290)	9110 (6940-	1171
Age 20+ years (2003 - 2004)	1380 (<LOD-1540)	1360 (<LOD-1470)	2350 (1970-2900)	4030 (3370-4700)	5340 (4490-6370)	1270
Males (1999 - 2000)	*	< LOD	< LOD	3160 (2760-3760)	4160 (3320-5570)	919
Males (2001 - 2002)	*	< LOD	3160 (2410-4070)	5270 (4070-7140)	7620 (6020-9760)	517
Males (2003 - 2004)	*	< LOD	1780 (1540-2070)	3090 (2410-4020)	4190 (3410-5350)	910
Females (1999 - 2000)	*	< LOD	3110 (2680-3560)	5090 (4610-5740)	6760 (5870-8710)	1002
Females (2001 - 2002)	2590 (2250-2980)	2620 (2160-3000)	4340 (3880-4860)	6990 (5870-9040)	10000 (7070-	654
Females (2003 - 2004)	1420 (<LOD-1560)	1410 (1300-1510)	2700 (2210-3030)	4340 (3750-4830)	5770 (4590-6740)	941
Mexican Americans (1999 - 2000)	*	< LOD	2470 (2240-2990)	4350 (3660-5570)	6560 (5340-7590)	632
Mexican Americans (2001 - 2002)	*	< LOD	3410 (2760-3860)	5810 (4250-7670)	8050 (5760-	250
Mexican Americans (2003 - 2004)	*	< LOD	1880 (1560-2220)	3240 (2450-3880)	3910 (3240-4630)	419
Non-Hispanic blacks (1999 - 2000)	*	< LOD	2520 (2090-2950)	4770 (4040-5740)	7140 (4740-	411
Non-Hispanic blacks (2001 - 2002)	2480 (2050-3000)	2460 (2060-2970)	4170 (3160-5560)	7250 (5470-9920)	9920 (7990-	210
Non-Hispanic blacks (2003 - 2004)	*	< LOD	2150 (1780-2880)	3860 (3080-5640)	5720 (3750-7830)	448
Non-Hispanic whites (1999 - 2000)	*	< LOD	2560 (2160-2910)	4120 (3580-4780)	5800 (4740-6790)	721
Non-Hispanic whites (2001 - 2002)	2270 (<LOD-2660)	2200 (<LOD-2770)	3860 (3090-4720)	6530 (4890-8860)	9150 (6630-	632
Non-Hispanic whites (2003 - 2004)	*	< LOD	2220 (1830-2700)	3770 (3040-4680)	5050 (4190-6350)	865

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (whole weight) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	674	73	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	570	41	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	514	41	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	936	79	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	809	66	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	721	43	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1800	219	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1210	84	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	1160	106	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2580	245	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1950	134	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1700	92	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	562	44	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	476	26	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	398	32	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	1180	153	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	829	50	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	674	64	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	2240	191	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1470	107	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1250	62	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	3970	469	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2920	348	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2460	164	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	712	59	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	523	48	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	412	28	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	761	71	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	771	71	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	573	23	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	1270	183	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1210	109	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	991	83	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	2470	424	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1900	184	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1420	61	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (whole weight) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	753	106	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	483	75	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	360	22	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	1080	109	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	978	136	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	683	73	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	2450	300	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1830	184	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1350	173	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	6220	925	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	3920	407	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	3800	678	7
Mexican American Male, 12-19 years (2005 - 2006)	606	47	11
Mexican American Male, 12-19 years (2007 - 2008)	614	32	6
Mexican American Male, 12-19 years (2009 - 2010)	458	43	8
Mexican American Male, 20-39 years (2005 - 2006)	1280	156	9
Mexican American Male, 20-39 years (2007 - 2008)	906	109	9
Mexican American Male, 20-39 years (2009 - 2010)	784	70	8
Mexican American Male, 40-59 years (2005 - 2006)	1800	216	4
Mexican American Male, 40-59 years (2007 - 2008)	1540	138	6
Mexican American Male, 40-59 years (2009 - 2010)	1620	211	7
Mexican American Male, 60+ years (2005 - 2006)	2500	251	4
Mexican American Male, 60+ years (2007 - 2008)	1970	302	5
Mexican American Male, 60+ years (2009 - 2010)	2540	493	5
Mexican American Female, 12-19 years (2005 - 2006)	605	23	16
Mexican American Female, 12-19 years (2007 - 2008)	524	56	5
Mexican American Female, 12-19 years (2009 - 2010)	369	24	7
Mexican American Female, 20-39 years (2005 - 2006)	1240	104	9
Mexican American Female, 20-39 years (2007 - 2008)	1000	69	8
Mexican American Female, 20-39 years (2009 - 2010)	664	102	10
Mexican American Female, 40-59 years (2005 - 2006)	3050	469	6
Mexican American Female, 40-59 years (2007 - 2008)	1960	171	6
Mexican American Female, 40-59 years (2009 - 2010)	2100	156	9
Mexican American Female, 60+ years (2005 - 2006)	4190	843	3
Mexican American Female, 60+ years (2007 - 2008)	2900	189	5
Mexican American Female, 60+ years (2009 - 2010)	3050	242	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (whole weight) (2005 – 2010)

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	508	54	11
All Hispanic Male, 20-39 years (2009 - 2010)	837	128	13
All Hispanic Male, 40-59 years (2009 - 2010)	1370	148	12
All Hispanic Male, 60+ years (2009 - 2010)	2210	436	7
All Hispanic Female, 12-19 years (2009 - 2010)	362	20	10
All Hispanic Female, 20-39 years (2009 - 2010)	662	76	14
All Hispanic Female, 40-59 years (2009 - 2010)	1770	165	14
All Hispanic Female, 60+ years (2009 - 2010)	2670	230	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (lipid adjusted) (1999 – 2004)

CAS Number 40321-76-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1915
Total population (2001 - 2002)	*	< LOD	< LOD	11.3 (9.30-13.6)	15.8 (13.3-19.8)	1236
Total population (2003 - 2004)	*	< LOD	6.10 (5.50-6.80)	9.00 (8.30-9.70)	11.0 (9.90-12.2)	1878
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	659
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	4.80 (<LOD-5.90)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1256
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	11.3 (9.30-13.6)	15.8 (13.3-19.8)	1236
Age 20+ years (2003 - 2004)	*	< LOD	6.60 (5.90-7.20)	9.30 (8.60-10.1)	11.3 (10.1-12.7)	1290
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	920
Males (2001 - 2002)	*	< LOD	< LOD	10.8 (9.10-13.3)	14.5 (11.7-19.4)	564
Males (2003 - 2004)	*	< LOD	5.90 (5.30-6.40)	8.90 (7.90-9.60)	11.0 (9.60-12.7)	923
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	995
Females (2001 - 2002)	*	< LOD	6.10 (<LOD-7.80)	11.8 (9.40-14.3)	16.6 (13.7-20.8)	672
Females (2003 - 2004)	*	< LOD	6.50 (5.70-7.20)	9.10 (8.30-10.1)	11.0 (10.0-12.2)	955
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	8.70 (<LOD-12.7)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	6.50 (5.20-7.90)	7.80 (6.70-9.20)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	7.70 (<LOD-9.30)	13.9 (9.60-18.4)	18.4 (14.2-24.0)	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	6.40 (5.30-8.20)	9.90 (8.50-13.4)	14.4 (9.60-20.1)	455
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	717
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	11.7 (9.50-14.3)	16.7 (13.6-20.2)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	6.50 (5.80-7.10)	9.30 (8.60-10.0)	11.1 (10.1-12.2)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.2, 6.0, and 4.5, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (lipid adjusted) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.55	0.14	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.31	0.31	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.22	0.1	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.49	0.23	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.93	0.18	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.59	0.17	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.48	0.54	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.96	0.13	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.77	0.21	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	7.26	0.4	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	7.08	0.78	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	6.03	0.24	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.55	0.22	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.61	0.36	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.70	0.24	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.57	0.23	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.40	0.18	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.06	0.12	17
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.25	0.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	4.12	0.16	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	3.65	0.17	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	7.83	0.56	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	8.09	0.42	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	7.06	0.48	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.34	0.15	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.14	0.46	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.43	0.17	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.95	0.16	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.94	0.28	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	2.14	0.29	5
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	4.00	0.24	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	4.41	0.38	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.81	0.31	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	8.16	1.26	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	6.56	0.86	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	5.33	0.38	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.62, 1.08, and 1.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (lipid adjusted) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.13	0.15	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.52	0.1	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	2.55	0.32	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.17	0.19	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	4.64	0.44	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	4.40	0.5	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.05	0.37	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	12.5	1.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	11.4	1.1	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	8.95	0.84	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	1.84	0.13	6
Mexican American Male, 12-19 years (2009 - 2010)	1.87	0.31	8
Mexican American Male, 20-39 years (2005 - 2006)	2.13	0.26	9
Mexican American Male, 20-39 years (2007 - 2008)	2.44	0.31	9
Mexican American Male, 20-39 years (2009 - 2010)	2.09	0.17	8
Mexican American Male, 40-59 years (2005 - 2006)	3.61	0.63	4
Mexican American Male, 40-59 years (2007 - 2008)	3.96	0.38	6
Mexican American Male, 40-59 years (2009 - 2010)	3.45	0.19	7
Mexican American Male, 60+ years (2005 - 2006)	5.59	0.16	4
Mexican American Male, 60+ years (2007 - 2008)	5.92	0.34	5
Mexican American Male, 60+ years (2009 - 2010)	6.57	1.05	5
Mexican American Female, 12-19 years (2005 - 2006)	1.14	0.16	16
Mexican American Female, 12-19 years (2007 - 2008)	1.50	0.29	5
Mexican American Female, 12-19 years (2009 - 2010)	1.16	0.11	7
Mexican American Female, 20-39 years (2005 - 2006)	1.65	0.23	9
Mexican American Female, 20-39 years (2007 - 2008)	2.81	0.33	8
Mexican American Female, 20-39 years (2009 - 2010)	1.46	0.21	10
Mexican American Female, 40-59 years (2005 - 2006)	3.23	0.62	6
Mexican American Female, 40-59 years (2007 - 2008)	4.15	0.81	6
Mexican American Female, 40-59 years (2009 - 2010)	3.51	0.26	9
Mexican American Female, 60+ years (2005 - 2006)	6.48	0.82	3
Mexican American Female, 60+ years (2007 - 2008)	6.35	0.75	5
Mexican American Female, 60+ years (2009 - 2010)	7.45	0.93	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.62, 1.08, and 1.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (lipid adjusted) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.78	0.25	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.83	0.18	13
All Hispanic Male, 40-59 years (2009 - 2010)	3.06	0.21	11
All Hispanic Male, 60+ years (2009 - 2010)	6.07	0.84	7
All Hispanic Female, 12-19 years (2009 - 2010)	1.21	0.09	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.50	0.15	14
All Hispanic Female, 40-59 years (2009 - 2010)	3.25	0.2	14
All Hispanic Female, 60+ years (2009 - 2010)	6.22	0.73	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.62, 1.08, and 1.1, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (1999 – 2004)

CAS Number 40321-76-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1915
Total population (2001 - 2002)	*	< LOD	< LOD	77.8 (62.8-96.3)	117 (90.3-133)	1236
Total population (2003 - 2004)	*	< LOD	40.7 (37.4-43.0)	60.3 (53.2-67.4)	76.1 (66.9-87.4)	1878
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	659
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	23.8 (<LOD-27.2)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1256
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	77.8 (62.8-96.3)	117 (90.3-133)	1236
Age 20+ years (2003 - 2004)	*	< LOD	43.0 (39.2-47.8)	63.5 (55.6-71.5)	80.7 (67.9-89.9)	1290
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	920
Males (2001 - 2002)	*	< LOD	< LOD	76.1 (54.7-93.7)	107 (83.5-133)	564
Males (2003 - 2004)	*	< LOD	39.3 (35.1-43.4)	57.3 (49.3-66.1)	67.8 (58.7-90.4)	923
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	995
Females (2001 - 2002)	*	< LOD	37.8 (<LOD-50.2)	80.4 (62.9-107)	121 (85.7-167)	672
Females (2003 - 2004)	*	< LOD	41.8 (37.7-45.2)	63.6 (55.9-72.9)	80.7 (70.5-88.3)	955
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	66.0 (<LOD-111)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	44.5 (34.2-52.0)	52.8 (44.5-76.6)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	43.8 (<LOD-53.8)	81.9 (58.2-117)	123 (81.9-169)	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	39.7 (30.6-48.0)	67.3 (48.0-93.0)	93.0 (66.7-137)	455
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	717
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	80.8 (61.6-107)	121 (88.6-142)	672
Non-Hispanic whites (2003 - 2004)	*	< LOD	42.6 (38.6-45.1)	63.4 (55.4-67.9)	78.8 (67.9-84.7)	877

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	13.8	0.6	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	11.6	1.6	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	11.8	0.6	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	18.0	2.1	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	19.3	1.1	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	17.0	1.3	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	34.2	4.3	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	29.2	1.1	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	25.6	1.5	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	49.2	2.3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	45.3	4.5	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	36.4	1.2	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	8.26	1.17	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.53	1.75	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.16	1.16	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	16.8	1.7	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	14.4	1.2	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	10.8	0.7	17
Non-Hispanic White Female, 40-59 years (2005 - 2006)	31.4	2.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	27.2	1.2	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	23.1	1.3	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	56.9	3.7	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	54.3	3	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	42.6	2.5	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	11.7	0.6	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	10.1	2.1	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.53	0.89	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	17.5	1	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	16.4	1.4	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	12.4	1.2	5
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	25.5	1.5	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	28.3	2.7	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	17.4	2.3	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	48.9	7.8	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	39.5	5.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	28.4	1.8	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	5.09	0.75	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	14.5	0.7	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	12.9	1.6	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	10.7	0.9	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	29.8	3.1	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	26.6	3.4	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	22.8	2.1	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	83.0	10	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	68.3	5.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	50.9	3.9	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	9.76	0.73	6
Mexican American Male, 12-19 years (2009 - 2010)	8.83	1.5	8
Mexican American Male, 20-39 years (2005 - 2006)	15.0	1.9	9
Mexican American Male, 20-39 years (2007 - 2008)	16.0	1.9	9
Mexican American Male, 20-39 years (2009 - 2010)	12.8	1.3	8
Mexican American Male, 40-59 years (2005 - 2006)	29.7	6.3	4
Mexican American Male, 40-59 years (2007 - 2008)	28.3	3.4	6
Mexican American Male, 40-59 years (2009 - 2010)	24.5	1.6	7
Mexican American Male, 60+ years (2005 - 2006)	40.5	2.9	4
Mexican American Male, 60+ years (2007 - 2008)	42.9	3.8	5
Mexican American Male, 60+ years (2009 - 2010)	40.2	6.5	5
Mexican American Female, 12-19 years (2005 - 2006)	6.29	0.9	16
Mexican American Female, 12-19 years (2007 - 2008)	7.29	1.35	5
Mexican American Female, 12-19 years (2009 - 2010)	5.40	0.49	7
Mexican American Female, 20-39 years (2005 - 2006)	11.1	1.7	9
Mexican American Female, 20-39 years (2007 - 2008)	16.0	1.5	8
Mexican American Female, 20-39 years (2009 - 2010)	7.97	1.17	10
Mexican American Female, 40-59 years (2005 - 2006)	24.1	4.6	6
Mexican American Female, 40-59 years (2007 - 2008)	27.9	5.5	6
Mexican American Female, 40-59 years (2009 - 2010)	22.3	1.4	9
Mexican American Female, 60+ years (2005 - 2006)	49.3	8.2	3
Mexican American Female, 60+ years (2007 - 2008)	43.7	5.7	5
Mexican American Female, 60+ years (2009 - 2010)	41.1	4.5	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (2005 – 2010)

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	8.36	1.22	11
All Hispanic Male, 20-39 years (2009 - 2010)	11.6	1.3	13
All Hispanic Male, 40-59 years (2009 - 2010)	21.5	1.7	11
All Hispanic Male, 60+ years (2009 - 2010)	36.9	5.3	7
All Hispanic Female, 12-19 years (2009 - 2010)	5.60	0.41	10
All Hispanic Female, 20-39 years (2009 - 2010)	8.27	0.84	14
All Hispanic Female, 40-59 years (2009 - 2010)	20.3	1.2	14
All Hispanic Female, 60+ years (2009 - 2010)	36.2	3.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (lipid adjusted) (1999 – 2004)

CAS Number 1746-01-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1898
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Total population (2003 - 2004)	*	< LOD	< LOD	4.10 (<LOD-4.40)	5.20 (4.30-5.80)	1876
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	658
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1240
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	4.30 (3.90-4.60)	5.30 (4.50-6.10)	1288
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	912
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	4.60 (3.80-5.30)	921
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	986
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	6.40 (<LOD-9.20)	669
Females (2003 - 2004)	*	< LOD	< LOD	4.40 (4.00-4.90)	5.50 (4.50-6.60)	955
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	630
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	3.80 (<LOD-5.50)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	404
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	7.50 (<LOD-10.0)	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	4.50 (<LOD-6.10)	6.20 (4.40-10.3)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	709
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	4.10 (<LOD-4.50)	5.20 (4.30-5.90)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.1, 5.8, and 3.8, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (lipid adjusted) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.21	0.16	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.931	0.089	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.909	0.052	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2.34	0.19	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	2.13	0.23	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.52	0.1	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.31	0.19	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.32	0.07	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.996	0.062	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.86	0.21	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2.98	0.21	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2.07	0.19	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	1.26	0.18	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1.32	0.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.781	0.074	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**3.47	1.25	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	2.04	0.45	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1.34	0.13	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.42, 0.74, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (lipid adjusted) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.712	0.117	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	1.81	0.21	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.68	0.17	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.17	0.22	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	6.40	1.64	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	4.50	0.52	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	3.54	0.37	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	1.01	0.24	4
Mexican American Male, 40-59 years (2007 - 2008)	.984	0.206	6
Mexican American Male, 40-59 years (2009 - 2010)	.957	0.071	7
Mexican American Male, 60+ years (2005 - 2006)	1.29	0.25	4
Mexican American Male, 60+ years (2007 - 2008)	1.74	0.22	5
Mexican American Male, 60+ years (2009 - 2010)	1.95	0.38	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	.925	0.133	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	1.08	0.3	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	1.06	0.09	9
Mexican American Female, 60+ years (2005 - 2006)	2.34	0.3	3
Mexican American Female, 60+ years (2007 - 2008)	2.92	0.38	5
Mexican American Female, 60+ years (2009 - 2010)	2.30	0.29	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.42, 0.74, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (lipid adjusted) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	1.00	0.1	11
All Hispanic Male, 60+ years (2009 - 2010)	1.82	0.29	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.917	0.083	14
All Hispanic Female, 60+ years (2009 - 2010)	2.30	0.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.42, 0.74, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (whole weight) (1999 – 2004)

CAS Number 1746-01-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1898
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Total population (2003 - 2004)	*	< LOD	< LOD	27.5 (<LOD-30.1)	34.1 (30.2-39.6)	1876
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	658
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1240
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	28.6 (26.4-31.2)	36.4 (31.5-42.7)	1288
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	912
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	28.8 (25.4-34.5)	921
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	986
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	50.7 (<LOD-74.3)	669
Females (2003 - 2004)	*	< LOD	< LOD	30.2 (27.4-33.1)	38.7 (32.3-44.5)	955
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	630
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	23.6 (<LOD-32.5)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	404
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	55.6 (<LOD-72.0)	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	31.1 (<LOD-42.0)	42.4 (29.5-67.8)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	709
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	28.0 (<LOD-30.0)	33.6 (31.1-38.8)	877

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (whole weight) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	9.21	1.29	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	6.91	0.75	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	6.15	0.35	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	15.8	1.1	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	13.7	1.4	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	9.20	0.58	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	10.0	1.6	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	8.72	0.54	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	6.35	0.49	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	20.7	1.4	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	19.9	1.4	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	12.4	1	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	7.96	1.02	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	8.41	0.65	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.81	0.45	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**20.7	7.7	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	12.0	2.3	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	7.13	0.65	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (whole weight) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	4.10	0.69	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	11.7	1.5	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	10.2	1.3	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	6.53	1.19	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	42.6	10.8	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	26.9	2.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	20.1	1.8	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	8.36	2.32	4
Mexican American Male, 40-59 years (2007 - 2008)	7.12	1.5	6
Mexican American Male, 40-59 years (2009 - 2010)	6.84	0.62	7
Mexican American Male, 60+ years (2005 - 2006)	9.23	1.8	4
Mexican American Male, 60+ years (2007 - 2008)	12.6	1.8	5
Mexican American Male, 60+ years (2009 - 2010)	11.9	2.3	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	5.31	0.73	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	7.85	2.09	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	6.80	0.65	9
Mexican American Female, 60+ years (2005 - 2006)	17.9	3.2	3
Mexican American Female, 60+ years (2007 - 2008)	20.1	2.9	5
Mexican American Female, 60+ years (2009 - 2010)	12.7	1.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (whole weight) (2005 – 2010)

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	7.00	0.73	11
All Hispanic Male, 60+ years (2009 - 2010)	11.0	1.8	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	5.78	0.58	14
All Hispanic Female, 60+ years (2009 - 2010)	13.6	1.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (1999 – 2004)

CAS Number 67562-39-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	14.7 (<LOD-18.0)	19.5 (17.4-23.0)	1709
Total population (2001 - 2002)	9.64 (8.53-10.9)	10.3 (8.80-11.7)	14.6 (12.7-16.7)	21.3 (18.0-25.5)	27.1 (22.5-32.0)	1219
Total population (2003 - 2004)	*	< LOD	10.6 (9.90-11.4)	14.6 (13.1-16.5)	18.7 (16.5-24.2)	1858
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	18.4 (16.2-20.9)	24.7 (20.9-28.1)	600
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	9.36 (8.60-10.2)	8.80 (<LOD-9.80)	13.4 (12.3-14.6)	19.3 (16.2-29.6)	33.2 (21.2-54.2)	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	14.2 (<LOD-17.5)	18.4 (15.0-23.8)	1109
Age 20+ years (2001 - 2002)	9.64 (8.53-10.9)	10.3 (8.80-11.7)	14.6 (12.7-16.7)	21.3 (18.0-25.5)	27.1 (22.5-32.0)	1219
Age 20+ years (2003 - 2004)	*	< LOD	10.3 (9.60-11.1)	13.8 (12.5-16.0)	18.0 (16.0-20.9)	1275
Males (1999 - 2000)	*	< LOD	< LOD	16.4 (<LOD-20.0)	21.0 (18.1-26.8)	815
Males (2001 - 2002)	10.1 (8.74-11.6)	11.0 (9.30-12.6)	15.2 (12.9-17.2)	20.8 (17.2-27.8)	28.9 (22.0-34.8)	557
Males (2003 - 2004)	*	< LOD	11.3 (10.1-12.9)	17.1 (14.3-19.1)	23.9 (18.3-30.9)	913
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	17.5 (14.3-20.3)	894
Females (2001 - 2002)	9.28 (8.20-10.5)	9.40 (8.20-11.2)	14.1 (12.4-16.6)	21.3 (17.4-25.5)	26.5 (22.3-31.9)	662
Females (2003 - 2004)	*	< LOD	9.90 (9.30-10.5)	13.0 (12.2-14.3)	16.0 (14.3-18.4)	945
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	19.7 (<LOD-25.4)	570
Mexican Americans (2001 - 2002)	7.73 (7.19-8.31)	8.20 (7.80-8.70)	11.2 (10.6-12.5)	16.5 (14.5-19.6)	20.8 (17.2-26.8)	260
Mexican Americans (2003 - 2004)	*	< LOD	9.10 (<LOD-10.6)	12.0 (10.1-16.8)	15.1 (11.6-20.0)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	22.4 (15.2-28.2)	28.2 (26.5-29.6)	359
Non-Hispanic blacks (2001 - 2002)	12.3 (10.6-14.4)	12.8 (10.9-15.2)	17.4 (15.4-21.0)	25.5 (22.4-31.2)	32.1 (25.7-37.6)	214
Non-Hispanic blacks (2003 - 2004)	*	< LOD	11.3 (10.7-12.2)	16.1 (13.4-19.0)	20.4 (16.7-26.8)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	17.5 (14.9-18.9)	636
Non-Hispanic whites (2001 - 2002)	9.50 (8.30-10.9)	10.1 (8.40-12.0)	14.4 (12.6-16.6)	20.5 (16.9-25.5)	25.8 (20.5-31.7)	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	10.5 (9.60-11.5)	14.6 (12.9-17.4)	19.0 (16.3-26.2)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.5, 7.0, and 8.6, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	12.5	1.6	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	12.0	0.8	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.93	0.59	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	7.09	0.32	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	8.07	0.6	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	6.63	0.54	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	8.33	0.86	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	7.42	0.49	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	7.00	0.59	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.16	0.85	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	7.24	0.3	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	6.32	0.41	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	7.63	0.43	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	8.52	0.32	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	7.84	0.83	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	6.94	0.58	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	8.22	0.62	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	6.26	0.84	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	6.85	0.46	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	7.00	0.51	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	4.96	0.33	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	7.74	0.6	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	8.12	0.93	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	6.30	0.64	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	10.8	1.2	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	10.0	1	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	7.62	0.66	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	8.24	1.31	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	7.61	0.91	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	5.58	0.85	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	7.85	1.02	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	7.10	0.76	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	6.14	0.73	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	10.6	2.5	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	7.78	0.88	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	5.43	0.67	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.03, 1.78, and 1.9, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	8.80	1.47	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	8.73	1.2	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	7.11	1.36	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	6.20	0.58	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	7.65	0.48	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	5.24	0.39	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	6.35	0.74	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	9.30	0.8	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	5.09	0.71	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	10.5	1.2	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	8.95	0.94	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	7.45	0.9	7
Mexican American Male, 12-19 years (2005 - 2006)	9.25	1.4	11
Mexican American Male, 12-19 years (2007 - 2008)	8.38	0.7	6
Mexican American Male, 12-19 years (2009 - 2010)	8.90	1.43	8
Mexican American Male, 20-39 years (2005 - 2006)	6.57	0.48	9
Mexican American Male, 20-39 years (2007 - 2008)	8.03	0.74	9
Mexican American Male, 20-39 years (2009 - 2010)	7.22	1.03	8
Mexican American Male, 40-59 years (2005 - 2006)	7.45	1.52	4
Mexican American Male, 40-59 years (2007 - 2008)	6.77	0.23	6
Mexican American Male, 40-59 years (2009 - 2010)	5.63	0.28	7
Mexican American Male, 60+ years (2005 - 2006)	7.18	0.99	4
Mexican American Male, 60+ years (2007 - 2008)	6.15	0.38	5
Mexican American Male, 60+ years (2009 - 2010)	7.47	0.7	5
Mexican American Female, 12-19 years (2005 - 2006)	5.61	0.33	16
Mexican American Female, 12-19 years (2007 - 2008)	8.86	0.85	5
Mexican American Female, 12-19 years (2009 - 2010)	5.49	0.39	7
Mexican American Female, 20-39 years (2005 - 2006)	6.00	0.4	9
Mexican American Female, 20-39 years (2007 - 2008)	7.42	0.67	8
Mexican American Female, 20-39 years (2009 - 2010)	6.11	0.89	10
Mexican American Female, 40-59 years (2005 - 2006)	8.74	1.09	6
Mexican American Female, 40-59 years (2007 - 2008)	6.36	0.69	6
Mexican American Female, 40-59 years (2009 - 2010)	6.64	0.57	9
Mexican American Female, 60+ years (2005 - 2006)	6.28	1.42	3
Mexican American Female, 60+ years (2007 - 2008)	6.56	0.63	5
Mexican American Female, 60+ years (2009 - 2010)	8.50	0.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.03, 1.78, and 1.9, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	9.87	1.35	11
All Hispanic Male, 20-39 years (2009 - 2010)	7.48	0.8	13
All Hispanic Male, 40-59 years (2009 - 2010)	5.43	0.28	12
All Hispanic Male, 60+ years (2009 - 2010)	7.24	0.64	8
All Hispanic Female, 12-19 years (2009 - 2010)	5.81	0.38	10
All Hispanic Female, 20-39 years (2009 - 2010)	5.76	0.63	14
All Hispanic Female, 40-59 years (2009 - 2010)	6.65	0.4	14
All Hispanic Female, 60+ years (2009 - 2010)	7.04	0.81	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.03, 1.78, and 1.9, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (1999 – 2004)

CAS Number 67562-39-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	85.3 (<LOD-95.8)	108 (95.8-120)	1709
Total population (2001 - 2002)	62.2 (55.4-69.9)	64.5 (58.0-71.6)	94.1 (82.3-110)	134 (119-165)	181 (147-206)	1219
Total population (2003 - 2004)	*	< LOD	63.6 (59.9-67.7)	88.3 (81.0-100)	116 (101-137)	1858
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	79.3 (69.5-84.2)	102 (83.4-120)	600
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	47.5 (44.0-51.3)	43.7 (<LOD-49.3)	63.7 (59.1-72.3)	102 (85.3-114)	175 (113-222)	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	85.7 (<LOD-97.7)	108 (93.6-127)	1109
Age 20+ years (2001 - 2002)	62.2 (55.4-69.9)	64.5 (58.0-71.6)	94.1 (82.3-110)	134 (119-165)	181 (147-206)	1219
Age 20+ years (2003 - 2004)	*	< LOD	63.5 (59.6-67.6)	86.5 (78.8-100)	112 (94.9-135)	1275
Males (1999 - 2000)	*	< LOD	< LOD	91.4 (<LOD-108)	112 (99.3-133)	815
Males (2001 - 2002)	66.3 (58.2-75.6)	70.4 (59.8-81.8)	99.3 (85.5-120)	143 (120-181)	182 (146-237)	557
Males (2003 - 2004)	*	< LOD	69.7 (62.9-76.0)	100 (85.9-116)	135 (113-193)	913
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	97.8 (86.2-130)	894
Females (2001 - 2002)	58.8 (52.0-66.4)	60.2 (53.5-67.6)	89.5 (74.7-107)	131 (108-165)	169 (131-225)	662
Females (2003 - 2004)	*	< LOD	58.5 (54.5-62.4)	83.5 (74.7-87.7)	102 (87.7-116)	945
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	113 (<LOD-133)	570
Mexican Americans (2001 - 2002)	49.5 (46.0-53.4)	50.4 (45.7-57.2)	76.9 (67.1-82.1)	99.7 (90.9-124)	133 (94.8-202)	260
Mexican Americans (2003 - 2004)	*	< LOD	56.0 (<LOD-64.6)	74.2 (62.6-91.4)	90.5 (76.4-107)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	117 (89.0-143)	153 (109-197)	359
Non-Hispanic blacks (2001 - 2002)	72.6 (61.9-85.2)	70.9 (62.4-85.2)	107 (91.5-128)	147 (131-177)	193 (154-259)	214
Non-Hispanic blacks (2003 - 2004)	*	< LOD	66.2 (60.2-75.5)	91.3 (80.3-112)	119 (102-151)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	97.7 (89.3-104)	636
Non-Hispanic whites (2001 - 2002)	61.8 (54.3-70.4)	65.4 (57.4-72.2)	94.3 (78.1-112)	133 (114-166)	180 (137-222)	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	63.9 (59.6-69.2)	87.8 (79.8-100)	116 (102-139)	864

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	68.5	9.8	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	59.8	4.7	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	42.3	3.3	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	51.2	3.2	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	52.5	3.2	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	43.1	3.4	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	63.0	7.1	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	54.3	3.3	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	47.1	3.6	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	55.4	5.5	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	46.4	1.9	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	38.4	2.5	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	40.7	2.6	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	40.0	2.2	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	37.5	4.3	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	45.0	3.8	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	49.0	4	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	33.4	4.6	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	50.3	3.7	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	46.4	3.8	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	31.3	2.1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	56.3	4.2	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	54.4	6.1	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	38.5	4	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	54.8	6.7	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	47.2	3.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	34.8	3.6	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	49.7	9.1	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	42.9	5.2	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	30.6	3.9	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	50.1	6.7	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	45.3	4.5	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	37.9	4.8	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	62.2	13.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	46.9	5.3	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	28.8	3.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	43.4	7.2	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	41.9	7.2	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	31.0	5.4	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	35.6	3.3	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	38.7	2.7	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	25.7	1.7	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	40.3	4.1	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	55.7	4.9	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	28.8	4.2	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	69.9	7.9	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	53.5	4.3	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	42.7	5.3	7
Mexican American Male, 12-19 years (2005 - 2006)	49.7	7.2	11
Mexican American Male, 12-19 years (2007 - 2008)	44.5	3.8	6
Mexican American Male, 12-19 years (2009 - 2010)	41.5	6.2	8
Mexican American Male, 20-39 years (2005 - 2006)	46.5	3.4	9
Mexican American Male, 20-39 years (2007 - 2008)	54.2	4.6	9
Mexican American Male, 20-39 years (2009 - 2010)	43.2	5.4	8
Mexican American Male, 40-59 years (2005 - 2006)	59.9	11.2	4
Mexican American Male, 40-59 years (2007 - 2008)	48.4	3.7	6
Mexican American Male, 40-59 years (2009 - 2010)	39.9	2.3	7
Mexican American Male, 60+ years (2005 - 2006)	50.8	4.8	4
Mexican American Male, 60+ years (2007 - 2008)	44.3	3.1	5
Mexican American Male, 60+ years (2009 - 2010)	45.9	4.2	5
Mexican American Female, 12-19 years (2005 - 2006)	30.5	1.6	16
Mexican American Female, 12-19 years (2007 - 2008)	43.7	4.8	5
Mexican American Female, 12-19 years (2009 - 2010)	25.6	1.6	7
Mexican American Female, 20-39 years (2005 - 2006)	39.8	2.8	9
Mexican American Female, 20-39 years (2007 - 2008)	42.4	3	8
Mexican American Female, 20-39 years (2009 - 2010)	32.6	4.4	10
Mexican American Female, 40-59 years (2005 - 2006)	64.2	7.8	6
Mexican American Female, 40-59 years (2007 - 2008)	42.8	5	6
Mexican American Female, 40-59 years (2009 - 2010)	41.8	2.7	9
Mexican American Female, 60+ years (2005 - 2006)	**49.6	15.4	3
Mexican American Female, 60+ years (2007 - 2008)	45.1	4.9	5
Mexican American Female, 60+ years (2009 - 2010)	47.0	2.6	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	45.9	6.2	11
All Hispanic Male, 20-39 years (2009 - 2010)	45.9	4.1	13
All Hispanic Male, 40-59 years (2009 - 2010)	37.5	2	12
All Hispanic Male, 60+ years (2009 - 2010)	46.4	5.3	8
All Hispanic Female, 12-19 years (2009 - 2010)	26.8	1.7	10
All Hispanic Female, 20-39 years (2009 - 2010)	31.1	3.2	14
All Hispanic Female, 40-59 years (2009 - 2010)	41.0	1.9	14
All Hispanic Female, 60+ years (2009 - 2010)	41.1	4.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2001 – 2004)

CAS Number 55673-89-7

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1224
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1852
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1224
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1269
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	558
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	908
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	666
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	944
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	452
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 7.0 and 8.6.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	14
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.19, 0.33, and 0.35, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.19, 0.33, and 0.35, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.19, 0.33, and 0.35, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2001 – 2004)

CAS Number 55673-89-7

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1224
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1852
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1224
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1269
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	558
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	908
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	666
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	944
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	452
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	856

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	14
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 – 2010)

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 70648-26-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1890
Total population (2001 - 2002)	*	< LOD	8.00 (6.90-9.60)	12.1 (9.40-14.9)	15.4 (12.9-18.6)	1223
Total population (2003 - 2004)	*	< LOD	< LOD	7.50 (<LOD-7.90)	8.90 (7.90-10.2)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	657
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	12.8 (<LOD-14.5)	1233
Age 20+ years (2001 - 2002)	*	< LOD	8.00 (6.90-9.60)	12.1 (9.40-14.9)	15.4 (12.9-18.6)	1223
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	7.60 (<LOD-8.20)	9.50 (8.00-10.5)	1283
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	8.20 (7.10-10.0)	12.8 (9.50-15.9)	15.9 (12.2-20.9)	562
Males (2003 - 2004)	*	< LOD	< LOD	7.40 (<LOD-8.00)	8.50 (7.80-10.0)	916
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	12.9 (<LOD-16.4)	982
Females (2001 - 2002)	*	< LOD	7.90 (6.70-9.00)	11.7 (9.40-13.8)	14.5 (12.2-18.6)	661
Females (2003 - 2004)	*	< LOD	< LOD	7.50 (<LOD-8.40)	9.30 (7.80-10.4)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	7.30 (<LOD-8.00)	8.00 (7.00-10.9)	261
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	14.3 (<LOD-15.1)	399
Non-Hispanic blacks (2001 - 2002)	*	< LOD	8.90 (7.70-10.1)	13.6 (11.1-17.1)	18.6 (14.6-22.6)	214
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	7.80 (<LOD-10.9)	10.9 (7.50-19.4)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	703
Non-Hispanic whites (2001 - 2002)	*	< LOD	8.30 (7.10-10.2)	12.5 (10.0-15.9)	15.9 (13.1-19.0)	664
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	7.60 (<LOD-8.10)	9.40 (8.00-10.2)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.5, and 7.4, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.18	0.17	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.58	0.24	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.03	0.13	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.51	0.29	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	3.13	0.17	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.50	0.13	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.55	0.3	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.78	0.14	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.11	0.28	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	5.40	0.45	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	4.80	0.21	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.34	0.25	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.71	0.15	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.74	0.14	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.61	0.16	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.36	0.1	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.29	0.11	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.09	0.09	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	3.58	0.18	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	3.24	0.16	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	2.77	0.14	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	5.54	0.34	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	5.29	0.31	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	4.06	0.46	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.79	0.17	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.83	0.15	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.45	0.11	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.61	0.23	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.68	0.13	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.59	0.21	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	3.33	0.33	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	3.69	0.53	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.52	0.19	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	5.35	0.88	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	4.49	0.44	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.36	0.25	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.51, and 0.55, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.25	0.15	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.53	0.18	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.46	0.21	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.14	0.13	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	2.12	0.43	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.76	0.17	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	3.37	0.37	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	3.61	0.41	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	2.94	0.29	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	8.98	1.22	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	6.88	0.72	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	6.00	0.67	7
Mexican American Male, 12-19 years (2005 - 2006)	1.67	0.12	11
Mexican American Male, 12-19 years (2007 - 2008)	1.30	0.36	6
Mexican American Male, 12-19 years (2009 - 2010)	1.74	0.19	8
Mexican American Male, 20-39 years (2005 - 2006)	2.29	0.22	9
Mexican American Male, 20-39 years (2007 - 2008)	2.63	0.22	9
Mexican American Male, 20-39 years (2009 - 2010)	2.52	0.23	8
Mexican American Male, 40-59 years (2005 - 2006)	3.28	0.58	4
Mexican American Male, 40-59 years (2007 - 2008)	2.97	0.24	6
Mexican American Male, 40-59 years (2009 - 2010)	2.94	0.19	7
Mexican American Male, 60+ years (2005 - 2006)	4.09	0.28	4
Mexican American Male, 60+ years (2007 - 2008)	3.41	0.23	5
Mexican American Male, 60+ years (2009 - 2010)	5.04	0.47	5
Mexican American Female, 12-19 years (2005 - 2006)	1.30	0.05	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	1.10	0.07	7
Mexican American Female, 20-39 years (2005 - 2006)	1.83	0.17	9
Mexican American Female, 20-39 years (2007 - 2008)	2.06	0.12	8
Mexican American Female, 20-39 years (2009 - 2010)	1.60	0.24	10
Mexican American Female, 40-59 years (2005 - 2006)	3.15	0.22	6
Mexican American Female, 40-59 years (2007 - 2008)	2.71	0.23	6
Mexican American Female, 40-59 years (2009 - 2010)	2.74	0.17	9
Mexican American Female, 60+ years (2005 - 2006)	4.45	0.38	3
Mexican American Female, 60+ years (2007 - 2008)	4.64	0.44	5
Mexican American Female, 60+ years (2009 - 2010)	4.68	0.44	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.51, and 0.55, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.73	0.14	11
All Hispanic Male, 20-39 years (2009 - 2010)	2.28	0.19	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.88	0.13	12
All Hispanic Male, 60+ years (2009 - 2010)	4.30	0.47	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.19	0.08	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.65	0.17	14
All Hispanic Female, 40-59 years (2009 - 2010)	2.75	0.14	14
All Hispanic Female, 60+ years (2009 - 2010)	4.35	0.28	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.51, and 0.55, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 70648-26-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1890
Total population (2001 - 2002)	*	< LOD	54.0 (46.5-63.6)	82.3 (65.5-104)	108 (88.0-138)	1223
Total population (2003 - 2004)	*	< LOD	< LOD	49.1 (<LOD-54.5)	60.1 (53.4-68.8)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	657
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	84.2 (<LOD-97.2)	1233
Age 20+ years (2001 - 2002)	*	< LOD	54.0 (46.5-63.6)	82.3 (65.5-104)	108 (88.0-138)	1223
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	51.0 (<LOD-57.2)	62.2 (56.2-72.7)	1283
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	56.9 (48.6-71.4)	90.1 (71.1-108)	108 (87.4-144)	562
Males (2003 - 2004)	*	< LOD	< LOD	49.3 (<LOD-54.9)	59.3 (52.9-68.8)	916
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	82.8 (<LOD-102)	982
Females (2001 - 2002)	*	< LOD	51.6 (43.7-59.6)	76.1 (62.6-97.0)	105 (81.6-140)	661
Females (2003 - 2004)	*	< LOD	< LOD	48.9 (<LOD-57.2)	61.9 (53.3-72.7)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	48.4 (<LOD-56.3)	65.3 (48.6-79.4)	261
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	90.8 (<LOD-105)	399
Non-Hispanic blacks (2001 - 2002)	*	< LOD	52.7 (45.0-62.7)	87.1 (63.7-108)	122 (85.2-147)	214
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	56.9 (<LOD-71.7)	71.7 (53.8-112)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	703
Non-Hispanic whites (2001 - 2002)	*	< LOD	56.0 (48.6-66.1)	84.2 (64.5-115)	112 (88.6-142)	664
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	50.6 (<LOD-56.3)	61.4 (54.0-71.8)	869

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	12.1	1.1	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	12.9	1.2	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	10.8	0.7	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	18.1	2.4	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	20.8	1.5	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	16.5	1.1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	34.3	2.6	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	27.9	1.2	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	27.6	1.7	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	36.8	2.8	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	30.6	1.2	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	26.3	1.5	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	9.07	0.73	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	8.11	0.64	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	7.66	0.78	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	15.3	0.8	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	13.7	0.8	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	11.1	0.6	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	26.5	1.9	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	21.4	1.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	17.5	1	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	40.4	2.4	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	35.5	2.2	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	24.9	2.4	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	9.18	0.88	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	8.65	0.7	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.66	0.66	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	15.5	1.5	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	15.2	1	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	8.85	0.97	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	21.2	2.1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	23.7	3.5	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	15.6	1.2	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	31.5	4.4	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	27.0	2.6	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	17.9	1.2	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	6.19	0.73	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	7.18	0.67	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.41	0.83	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	12.2	0.7	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	10.9	2.3	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	8.70	0.83	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	21.5	2.4	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	21.8	2.8	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	16.6	1.8	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	60.0	7.8	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	41.1	3.3	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	34.1	3.4	7
Mexican American Male, 12-19 years (2005 - 2006)	9.02	0.49	11
Mexican American Male, 12-19 years (2007 - 2008)	**7.21	2.2	6
Mexican American Male, 12-19 years (2009 - 2010)	8.26	1.07	8
Mexican American Male, 20-39 years (2005 - 2006)	16.0	1.1	9
Mexican American Male, 20-39 years (2007 - 2008)	18.0	1.9	9
Mexican American Male, 20-39 years (2009 - 2010)	15.5	1.8	8
Mexican American Male, 40-59 years (2005 - 2006)	27.2	5.9	4
Mexican American Male, 40-59 years (2007 - 2008)	21.4	2.6	6
Mexican American Male, 40-59 years (2009 - 2010)	20.9	1.6	7
Mexican American Male, 60+ years (2005 - 2006)	29.3	0.9	4
Mexican American Male, 60+ years (2007 - 2008)	24.4	0.9	5
Mexican American Male, 60+ years (2009 - 2010)	31.0	2.7	5
Mexican American Female, 12-19 years (2005 - 2006)	7.08	0.27	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	5.13	0.3	7
Mexican American Female, 20-39 years (2005 - 2006)	12.2	1.2	9
Mexican American Female, 20-39 years (2007 - 2008)	11.9	0.9	8
Mexican American Female, 20-39 years (2009 - 2010)	8.62	1.27	10
Mexican American Female, 40-59 years (2005 - 2006)	23.3	2.1	6
Mexican American Female, 40-59 years (2007 - 2008)	18.2	1.5	6
Mexican American Female, 40-59 years (2009 - 2010)	17.4	1	9
Mexican American Female, 60+ years (2005 - 2006)	34.2	5.3	3
Mexican American Female, 60+ years (2007 - 2008)	31.9	3.5	5
Mexican American Female, 60+ years (2009 - 2010)	25.7	1.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	8.13	0.78	11
All Hispanic Male, 20-39 years (2009 - 2010)	14.5	1.5	13
All Hispanic Male, 40-59 years (2009 - 2010)	20.0	1.2	12
All Hispanic Male, 60+ years (2009 - 2010)	26.9	2.7	8
All Hispanic Female, 12-19 years (2009 - 2010)	5.51	0.35	10
All Hispanic Female, 20-39 years (2009 - 2010)	9.02	0.91	14
All Hispanic Female, 40-59 years (2009 - 2010)	17.1	0.8	14
All Hispanic Female, 60+ years (2009 - 2010)	25.6	1.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-44-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1898
Total population (2001 - 2002)	*	< LOD	7.10 (<LOD-8.20)	10.4 (9.00-13.1)	14.0 (11.0-17.1)	1236
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	8.80 (<LOD-9.80)	1868
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	656
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1242
Age 20+ years (2001 - 2002)	*	< LOD	7.10 (<LOD-8.20)	10.4 (9.00-13.1)	14.0 (11.0-17.1)	1236
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	9.00 (8.00-10.1)	1283
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	913
Males (2001 - 2002)	*	< LOD	7.10 (<LOD-8.60)	11.3 (8.50-13.8)	15.1 (11.3-18.7)	566
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	9.10 (7.90-10.8)	918
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	985
Females (2001 - 2002)	*	< LOD	7.00 (6.20-8.00)	10.0 (9.20-11.4)	13.1 (10.5-15.6)	670
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	8.50 (<LOD-9.20)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	625
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	6.90 (<LOD-11.1)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	7.60 (6.10-9.10)	12.1 (10.0-14.1)	16.0 (12.3-21.0)	219
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	8.50 (<LOD-12.1)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	708
Non-Hispanic whites (2001 - 2002)	*	< LOD	7.40 (6.20-9.00)	10.7 (9.20-14.3)	14.8 (11.6-17.2)	670
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	9.10 (8.00-10.6)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.6, 6.1, and 7.9, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.46	0.17	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.09	0.14	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.21	0.1	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.68	0.31	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.98	0.19	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.71	0.12	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.91	0.42	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.97	0.18	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.62	0.36	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	5.44	0.36	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	4.82	0.21	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	4.41	0.29	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.91	0.12	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.68	0.36	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.70	0.15	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.43	0.11	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.44	0.12	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.30	0.12	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	3.68	0.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	3.30	0.15	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	3.08	0.15	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	5.51	0.31	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	5.04	0.28	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	4.58	0.29	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.81	0.19	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.98	0.22	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.62	0.11	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.28	0.19	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.32	0.16	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.66	0.23	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	3.00	0.32	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	3.42	0.36	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.68	0.19	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	5.27	0.86	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	4.38	0.36	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.73	0.34	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.1, 0.18, and 0.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.26	0.18	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**1.19	0.36	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.57	0.23	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.02	0.1	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	2.15	0.21	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.80	0.12	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	2.97	0.34	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	3.17	0.26	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	2.93	0.33	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	7.44	0.97	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	5.96	0.52	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	5.43	0.47	7
Mexican American Male, 12-19 years (2005 - 2006)	1.68	0.26	11
Mexican American Male, 12-19 years (2007 - 2008)	1.80	0.34	6
Mexican American Male, 12-19 years (2009 - 2010)	1.99	0.24	8
Mexican American Male, 20-39 years (2005 - 2006)	2.25	0.28	9
Mexican American Male, 20-39 years (2007 - 2008)	2.05	0.38	9
Mexican American Male, 20-39 years (2009 - 2010)	2.49	0.32	8
Mexican American Male, 40-59 years (2005 - 2006)	3.18	0.44	4
Mexican American Male, 40-59 years (2007 - 2008)	3.00	0.22	6
Mexican American Male, 40-59 years (2009 - 2010)	2.95	0.19	7
Mexican American Male, 60+ years (2005 - 2006)	4.31	0.37	4
Mexican American Male, 60+ years (2007 - 2008)	3.93	0.3	5
Mexican American Male, 60+ years (2009 - 2010)	4.80	0.31	5
Mexican American Female, 12-19 years (2005 - 2006)	1.42	0.07	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	1.47	0.06	7
Mexican American Female, 20-39 years (2005 - 2006)	1.87	0.19	9
Mexican American Female, 20-39 years (2007 - 2008)	2.13	0.13	8
Mexican American Female, 20-39 years (2009 - 2010)	1.76	0.26	10
Mexican American Female, 40-59 years (2005 - 2006)	2.88	0.13	6
Mexican American Female, 40-59 years (2007 - 2008)	2.82	0.38	6
Mexican American Female, 40-59 years (2009 - 2010)	2.88	0.21	9
Mexican American Female, 60+ years (2005 - 2006)	4.10	0.35	3
Mexican American Female, 60+ years (2007 - 2008)	4.69	0.54	5
Mexican American Female, 60+ years (2009 - 2010)	4.61	0.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.1, 0.18, and 0.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.97	0.2	11
All Hispanic Male, 20-39 years (2009 - 2010)	2.25	0.22	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.93	0.16	12
All Hispanic Male, 60+ years (2009 - 2010)	4.19	0.36	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.48	0.08	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.78	0.19	14
All Hispanic Female, 40-59 years (2009 - 2010)	2.91	0.16	14
All Hispanic Female, 60+ years (2009 - 2010)	4.27	0.25	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.1, 0.18, and 0.19, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 57117-44-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1898
Total population (2001 - 2002)	*	< LOD	46.2 (<LOD-56.5)	70.3 (58.4-90.7)	101 (77.6-120)	1236
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	59.8 (<LOD-65.4)	1868
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	656
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1242
Age 20+ years (2001 - 2002)	*	< LOD	46.2 (<LOD-56.5)	70.3 (58.4-90.7)	101 (77.6-120)	1236
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	61.0 (57.6-65.7)	1283
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	913
Males (2001 - 2002)	*	< LOD	47.9 (<LOD-60.5)	72.3 (57.5-105)	104 (73.5-133)	566
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	61.0 (54.0-67.7)	918
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	985
Females (2001 - 2002)	*	< LOD	45.0 (37.0-54.3)	66.2 (58.3-79.1)	90.7 (71.9-115)	670
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	58.1 (<LOD-65.0)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	625
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	52.7 (<LOD-65.9)	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	44.4 (37.2-57.3)	71.5 (59.8-90.9)	107 (70.7-142)	219
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	58.4 (<LOD-73.0)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	708
Non-Hispanic whites (2001 - 2002)	*	< LOD	49.6 (41.9-57.9)	72.8 (58.4-102)	103 (82.6-121)	670
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	63.4 (57.3-67.7)	871

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	13.5	1.1	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	15.4	0.5	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	11.8	0.7	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	19.4	2.6	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	19.8	1.5	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	17.8	1	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	37.2	3.6	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	29.1	1.2	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	31.0	2.1	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	37.0	2.2	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	30.7	1.1	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	26.7	1.7	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	10.1	0.6	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.82	1.67	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.12	0.79	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	15.8	0.8	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	14.6	0.8	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	12.2	0.7	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	27.2	1.9	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	21.8	1.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	19.4	0.9	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	40.2	2.3	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	33.8	2	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	27.5	1.4	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	9.30	0.95	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	9.32	0.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	7.39	0.63	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	13.6	1.3	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	13.1	1.2	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	9.30	1.16	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	19.1	2.1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	21.8	2.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	16.5	1.3	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	31.3	5	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	26.4	2.1	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	19.9	1.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	6.16	0.89	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	5.62	1.68	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.89	0.9	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	11.6	0.4	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	10.9	1.2	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	8.85	0.57	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	19.1	2.3	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	19.2	2	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	16.5	1.9	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	49.5	5.8	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	35.7	2	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	30.9	2.2	7
Mexican American Male, 12-19 years (2005 - 2006)	8.94	1.33	11
Mexican American Male, 12-19 years (2007 - 2008)	9.32	1.79	6
Mexican American Male, 12-19 years (2009 - 2010)	9.38	1.25	8
Mexican American Male, 20-39 years (2005 - 2006)	15.7	1.5	9
Mexican American Male, 20-39 years (2007 - 2008)	13.9	2.6	9
Mexican American Male, 20-39 years (2009 - 2010)	15.5	2.4	8
Mexican American Male, 40-59 years (2005 - 2006)	26.1	4.6	4
Mexican American Male, 40-59 years (2007 - 2008)	21.6	2.5	6
Mexican American Male, 40-59 years (2009 - 2010)	20.9	1.4	7
Mexican American Male, 60+ years (2005 - 2006)	30.8	1.2	4
Mexican American Male, 60+ years (2007 - 2008)	28.4	2.6	5
Mexican American Male, 60+ years (2009 - 2010)	29.5	1.8	5
Mexican American Female, 12-19 years (2005 - 2006)	7.68	0.31	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	6.84	0.19	7
Mexican American Female, 20-39 years (2005 - 2006)	12.5	1.4	9
Mexican American Female, 20-39 years (2007 - 2008)	12.2	0.6	8
Mexican American Female, 20-39 years (2009 - 2010)	9.42	1.41	10
Mexican American Female, 40-59 years (2005 - 2006)	21.3	1.5	6
Mexican American Female, 40-59 years (2007 - 2008)	19.0	2.6	6
Mexican American Female, 40-59 years (2009 - 2010)	18.2	0.9	9
Mexican American Female, 60+ years (2005 - 2006)	31.5	5	3
Mexican American Female, 60+ years (2007 - 2008)	32.3	4.2	5
Mexican American Female, 60+ years (2009 - 2010)	25.4	1.5	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	9.25	1.04	11
All Hispanic Male, 20-39 years (2009 - 2010)	14.4	1.7	13
All Hispanic Male, 40-59 years (2009 - 2010)	20.3	1.2	12
All Hispanic Male, 60+ years (2009 - 2010)	26.3	2	8
All Hispanic Female, 12-19 years (2009 - 2010)	6.86	0.32	10
All Hispanic Female, 20-39 years (2009 - 2010)	9.67	1	14
All Hispanic Female, 40-59 years (2009 - 2010)	18.0	0.8	14
All Hispanic Female, 60+ years (2009 - 2010)	25.1	0.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 72918-21-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1875
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1223
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1864
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	645
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1230
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1223
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	894
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	914
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	981
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	664
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	620
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	261
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	216
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	699
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	866

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.0, and 8.3, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	15
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.35, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.35, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.35, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 72918-21-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1875
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1223
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1864
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	645
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	583
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1230
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1223
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	894
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	559
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	914
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	981
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	664
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	620
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	261
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	216
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	699
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	866

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	15
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 60851-34-5

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1884
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	652
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	584
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1282
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	900
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	916
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	984
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	614
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	260
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	422
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	704
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	671
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.9, 5.8, and 8.2, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.555	0.142	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.743	0.084	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.882	0.14	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.782	0.172	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.960	0.086	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.40	0.17	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.08	0.14	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	1.38	0.11	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	1.31	0.07	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1.09	0.14	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.19	0.09	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.685	0.097	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.714	0.087	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.910	0.056	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.00	0.13	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.00	0.08	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	1.18	0.07	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.803	0.127	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	1.01	0.06	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.418	0.081	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.404	0.093	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**1.23	0.68	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.648	0.099	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.794	0.114	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.650	0.182	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.677	0.142	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.969	0.082	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.699	0.2	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.750	0.05	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.11, 0.2, and 0.21, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.540	0.125	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.528	0.108	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.601	0.079	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.773	0.099	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.821	0.158	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	1.11	0.18	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.955	0.139	6
Mexican American Male, 12-19 years (2005 - 2006)	.481	0.12	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.836	0.099	8
Mexican American Male, 20-39 years (2005 - 2006)	.825	0.155	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	1.13	0.15	8
Mexican American Male, 40-59 years (2005 - 2006)	1.15	0.17	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	1.08	0.1	7
Mexican American Male, 60+ years (2005 - 2006)	1.16	0.16	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	1.52	0.09	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.438	0.027	7
Mexican American Female, 20-39 years (2005 - 2006)	.784	0.102	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	.733	0.114	10
Mexican American Female, 40-59 years (2005 - 2006)	1.09	0.09	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	1.13	0.1	9
Mexican American Female, 60+ years (2005 - 2006)	.926	0.18	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	1.27	0.13	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.11, 0.2, and 0.21, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.760	0.087	11
All Hispanic Male, 20-39 years (2009 - 2010)	.971	0.12	13
All Hispanic Male, 40-59 years (2009 - 2010)	1.12	0.06	12
All Hispanic Male, 60+ years (2009 - 2010)	1.45	0.18	8
All Hispanic Female, 12-19 years (2009 - 2010)	.437	0.024	10
All Hispanic Female, 20-39 years (2009 - 2010)	.710	0.082	14
All Hispanic Female, 40-59 years (2009 - 2010)	1.07	0.08	14
All Hispanic Female, 60+ years (2009 - 2010)	1.12	0.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.11, 0.2, and 0.21, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 60851-34-5

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1884
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	652
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	584
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1282
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	900
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	916
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	984
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	665
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	614
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	260
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	422
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	704
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	671
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	869

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.03	0.8	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	4.00	0.5	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	6.39	1.09	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	5.50	1.3	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	6.38	0.62	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	10.6	1.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	7.76	1.03	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	9.29	0.69	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.97	0.52	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	6.78	0.88	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	7.29	0.58	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.27	0.48	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	4.63	0.57	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	4.80	0.31	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	7.32	0.98	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	6.35	0.54	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	8.72	0.57	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	5.25	0.82	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	6.15	0.33	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.18	0.43	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.88	0.48	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**7.38	4.18	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	3.61	0.5	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	5.11	0.79	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	4.20	1.16	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.02	0.82	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	5.80	0.53	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	4.28	1.21	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	4.02	0.29	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	2.36	0.51	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	3.05	0.64	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.95	0.36	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	4.93	0.62	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.66	0.91	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	7.48	1.3	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	5.41	0.76	6
Mexican American Male, 12-19 years (2005 - 2006)	2.60	0.65	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	3.96	0.54	8
Mexican American Male, 20-39 years (2005 - 2006)	5.74	0.94	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	6.94	1	8
Mexican American Male, 40-59 years (2005 - 2006)	9.51	1.79	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	7.67	0.72	7
Mexican American Male, 60+ years (2005 - 2006)	8.23	0.86	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	9.31	0.4	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	2.04	0.11	7
Mexican American Female, 20-39 years (2005 - 2006)	5.22	0.65	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	3.91	0.57	10
Mexican American Female, 40-59 years (2005 - 2006)	8.07	0.72	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	7.04	0.41	9
Mexican American Female, 60+ years (2005 - 2006)	7.32	1.98	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	7.00	0.57	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 – 2010)

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	3.58	0.46	11
All Hispanic Male, 20-39 years (2009 - 2010)	6.25	0.9	13
All Hispanic Male, 40-59 years (2009 - 2010)	7.78	0.52	12
All Hispanic Male, 60+ years (2009 - 2010)	9.28	1.35	8
All Hispanic Female, 12-19 years (2009 - 2010)	2.02	0.11	10
All Hispanic Female, 20-39 years (2009 - 2010)	3.85	0.41	14
All Hispanic Female, 40-59 years (2009 - 2010)	6.58	0.38	14
All Hispanic Female, 60+ years (2009 - 2010)	6.61	0.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (1999 – 2004)

CAS Number 39001-02-0

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1884
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1202
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1849
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	652
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	581
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1202
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1268
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	904
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	541
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	905
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	980
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	944
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	623
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	257
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	404
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	212
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	705
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	653
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	857

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 35.6, 21.0, and 12.0, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.27	0.88	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	1.80	0.41	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.48	0.23	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.44	0.33	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.83	0.44	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.84	0.45	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.55	0.37	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	1.95	0.38	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	3.03	0.29	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**4.10	1.97	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	2.25	0.66	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**2.72	0.93	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.37, 2.37, and 2.6, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.95	0.57	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	3.42	0.31	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	2.77	0.44	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	3.09	0.53	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	2.93	0.38	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	3.28	0.36	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	2.37	0.4	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	2.65	0.32	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	2.86	0.31	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	4
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	3.07	0.24	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	3.04	0.44	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	**2.06	0.71	6
Mexican American Female, 40-59 years (2007 - 2008)	2.78	0.46	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	2.59	0.21	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.37, 2.37, and 2.6, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	11
All Hispanic Male, 60+ years (2009 - 2010)	*	*	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Female, 60+ years (2009 - 2010)	*	*	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.37, 2.37, and 2.6, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (1999 – 2004)

CAS Number 39001-02-0

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1884
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1202
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1849
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	652
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	581
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1202
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1268
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	904
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	541
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	905
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	980
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	944
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	623
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	257
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	404
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	212
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	705
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	653
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	857

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	16.0	3.9	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	12.1	2.6	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	16.1	1.4	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	11.0	2.6	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	9.51	2.14	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	13.1	1.9	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	11.5	2.9	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	14.1	2.7	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	14.3	1.4	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	**24.1	12.1	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	14.1	4.1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	**15.7	5.1	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	14.4	2.7	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	19.7	1.7	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	13.9	2.2	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	19.7	3.4	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	17.7	2.7	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	21.7	1.8	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	14.6	2.6	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	14.5	2.4	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	19.8	2.6	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	4
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	15.1	1.4	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	17.2	1.9	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	**14.9	4.9	6
Mexican American Female, 40-59 years (2007 - 2008)	18.6	3.1	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	17.7	1.5	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (2005 – 2010)

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	11
All Hispanic Male, 60+ years (2009 - 2010)	*	*	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Female, 60+ years (2009 - 2010)	*	*	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-41-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1922
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1235
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1867
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	663
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1259
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1235
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	920
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	917
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	670
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	637
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	263
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	717
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	670
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.2, 5.8, and 7.1, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.47, 0.81, and 0.85, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.47, 0.81, and 0.85, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	11
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.47, 0.81, and 0.85, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

CAS Number 57117-41-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1922
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1235
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1867
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	663
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1259
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1235
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	920
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	565
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	917
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	670
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	637
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	263
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	717
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	670
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	869

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	7
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	12
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	11
All Hispanic Male, 60+ years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-31-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	15.9 (13.7-17.1)	1895
Total population (2001 - 2002)	*	< LOD	9.20 (7.50-11.1)	14.3 (12.3-16.2)	18.1 (16.1-21.1)	1230
Total population (2003 - 2004)	*	< LOD	6.80 (<LOD-7.20)	9.90 (8.90-10.7)	12.3 (11.0-13.3)	1871
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	656
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	12.7 (<LOD-13.9)	16.1 (14.1-17.6)	1239
Age 20+ years (2001 - 2002)	*	< LOD	9.20 (7.50-11.1)	14.3 (12.3-16.2)	18.1 (16.1-21.1)	1230
Age 20+ years (2003 - 2004)	*	< LOD	7.20 (<LOD-7.70)	10.3 (9.40-11.2)	13.0 (11.4-14.7)	1285
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	13.9 (12.8-15.4)	906
Males (2001 - 2002)	*	< LOD	9.40 (7.30-11.6)	14.1 (11.6-16.7)	16.7 (14.0-22.8)	560
Males (2003 - 2004)	*	< LOD	7.00 (<LOD-7.30)	9.80 (8.70-10.6)	12.2 (10.4-14.8)	920
Females (1999 - 2000)	*	< LOD	< LOD	13.1 (<LOD-16.1)	16.7 (14.3-19.2)	989
Females (2001 - 2002)	*	< LOD	9.10 (7.50-10.7)	14.5 (13.0-16.1)	18.5 (16.4-21.2)	670
Females (2003 - 2004)	*	< LOD	< LOD	10.3 (8.90-11.0)	12.6 (11.0-13.7)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	7.80 (6.10-9.80)	9.80 (7.80-12.5)	264
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	7.90 (<LOD-10.5)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	16.3 (13.4-19.0)	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	8.40 (6.80-9.30)	14.1 (11.7-16.4)	19.1 (15.1-23.0)	216
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	9.80 (8.00-13.9)	15.9 (9.70-23.9)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	15.6 (13.8-17.1)	706
Non-Hispanic whites (2001 - 2002)	*	5.90 (<LOD-6.90)	10.3 (8.10-12.0)	15.5 (13.0-17.6)	18.5 (16.5-22.2)	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	7.10 (<LOD-7.70)	10.3 (9.10-11.2)	12.4 (11.0-13.7)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 5.5, and 6.8, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.26	0.14	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.20	0.23	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.51	0.13	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	3.45	0.3	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	3.76	0.19	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	3.31	0.2	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	5.82	0.26	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	5.40	0.23	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	6.16	0.46	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.03	0.43	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	7.32	0.47	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	7.33	0.43	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.79	0.11	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.95	0.25	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.77	0.23	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.70	0.16	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.99	0.22	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.46	0.14	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.56	0.17	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	4.59	0.2	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	4.22	0.22	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	8.49	0.5	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	7.82	0.43	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	8.19	0.57	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.84	0.1	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.95	0.15	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.35	0.17	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	3.48	1	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.61	0.22	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	2.13	0.3	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	3.83	0.29	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	4.78	0.47	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	3.98	0.4	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	7.19	0.95	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	6.78	0.64	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	5.62	0.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.51, 0.88, and 0.92, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.19	0.1	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.41	0.09	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.39	0.4	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.13	0.15	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	2.03	0.19	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.70	0.16	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	3.98	0.4	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	4.58	0.53	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.13	0.48	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	12.7	2.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	9.57	0.86	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	9.52	0.88	7
Mexican American Male, 12-19 years (2005 - 2006)	1.67	0.24	11
Mexican American Male, 12-19 years (2007 - 2008)	2.36	0.38	6
Mexican American Male, 12-19 years (2009 - 2010)	2.01	0.18	8
Mexican American Male, 20-39 years (2005 - 2006)	2.65	0.26	9
Mexican American Male, 20-39 years (2007 - 2008)	2.97	0.28	9
Mexican American Male, 20-39 years (2009 - 2010)	2.82	0.27	8
Mexican American Male, 40-59 years (2005 - 2006)	3.82	0.39	4
Mexican American Male, 40-59 years (2007 - 2008)	4.45	0.69	6
Mexican American Male, 40-59 years (2009 - 2010)	3.92	0.25	7
Mexican American Male, 60+ years (2005 - 2006)	5.90	0.43	4
Mexican American Male, 60+ years (2007 - 2008)	5.51	0.51	5
Mexican American Male, 60+ years (2009 - 2010)	8.07	1.48	5
Mexican American Female, 12-19 years (2005 - 2006)	1.00	0.15	16
Mexican American Female, 12-19 years (2007 - 2008)	1.34	0.32	5
Mexican American Female, 12-19 years (2009 - 2010)	1.23	0.14	7
Mexican American Female, 20-39 years (2005 - 2006)	2.05	0.23	9
Mexican American Female, 20-39 years (2007 - 2008)	2.10	0.24	8
Mexican American Female, 20-39 years (2009 - 2010)	1.92	0.3	10
Mexican American Female, 40-59 years (2005 - 2006)	3.51	0.19	6
Mexican American Female, 40-59 years (2007 - 2008)	3.79	0.36	6
Mexican American Female, 40-59 years (2009 - 2010)	3.61	0.28	9
Mexican American Female, 60+ years (2005 - 2006)	6.10	0.41	3
Mexican American Female, 60+ years (2007 - 2008)	7.21	0.84	5
Mexican American Female, 60+ years (2009 - 2010)	7.10	0.82	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.51, 0.88, and 0.92, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.96	0.14	11
All Hispanic Male, 20-39 years (2009 - 2010)	2.54	0.23	13
All Hispanic Male, 40-59 years (2009 - 2010)	4.17	0.26	12
All Hispanic Male, 60+ years (2009 - 2010)	7.10	1.02	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.25	0.1	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.96	0.21	14
All Hispanic Female, 40-59 years (2009 - 2010)	3.62	0.21	14
All Hispanic Female, 60+ years (2009 - 2010)	6.83	0.49	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.51, 0.88, and 0.92, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

CAS Number 57117-31-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	103 (96.0-113)	1895
Total population (2001 - 2002)	*	< LOD	60.8 (51.3-70.6)	99.4 (83.4-114)	134 (113-152)	1230
Total population (2003 - 2004)	*	< LOD	44.2 (<LOD-46.9)	65.7 (60.5-71.1)	83.9 (74.9-92.9)	1871
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	656
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	85.2 (<LOD-96.0)	107 (98.3-125)	1239
Age 20+ years (2001 - 2002)	*	< LOD	60.8 (51.3-70.6)	99.4 (83.4-114)	134 (113-152)	1230
Age 20+ years (2003 - 2004)	*	< LOD	46.5 (<LOD-50.6)	69.3 (62.2-74.6)	86.8 (78.3-99.8)	1285
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	95.7 (80.1-101)	906
Males (2001 - 2002)	*	< LOD	62.7 (49.3-76.6)	98.5 (76.6-134)	135 (105-160)	560
Males (2003 - 2004)	*	< LOD	43.4 (<LOD-46.3)	62.0 (56.8-71.9)	83.2 (72.4-95.0)	920
Females (1999 - 2000)	*	< LOD	< LOD	90.0 (<LOD-101)	111 (97.2-129)	989
Females (2001 - 2002)	*	< LOD	59.8 (52.0-67.6)	100 (90.5-105)	126 (107-146)	670
Females (2003 - 2004)	*	< LOD	< LOD	66.9 (59.7-74.3)	84.4 (74.7-95.7)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	632
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	55.8 (48.7-69.7)	76.3 (61.9-92.4)	264
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	57.1 (<LOD-70.2)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	105 (82.7-116)	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	50.0 (41.3-60.4)	89.5 (72.3-107)	121 (92.0-154)	216
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	66.8 (48.5-93.2)	97.4 (79.1-129)	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	103 (96.8-122)	706
Non-Hispanic whites (2001 - 2002)	*	37.5 (<LOD-44.1)	65.7 (52.9-78.2)	104 (90.7-118)	136 (118-154)	665
Non-Hispanic whites (2003 - 2004)	*	< LOD	45.9 (<LOD-50.6)	68.3 (61.3-73.6)	85.0 (74.6-102)	873

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	12.4	0.9	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	15.9	1	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	13.4	0.8	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	25.6	3.2	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	24.9	1.6	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	21.8	1.6	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	43.9	2.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	39.9	2	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	41.3	2.6	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	54.6	2.6	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	46.3	2.4	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	44.4	2.6	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	9.51	0.56	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	9.09	1.25	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.50	1.2	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	17.7	1.3	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	17.7	1.3	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	13.1	0.9	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	33.7	2.2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	30.4	1.5	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	26.7	1.5	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	62.0	3.8	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	52.4	2.9	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	49.3	2.9	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	9.24	0.4	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	9.22	0.52	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.16	0.85	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	**20.7	6.2	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	14.8	1.4	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	11.9	1.4	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	24.5	2.1	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	30.6	2.9	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	24.4	2.1	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	42.9	5.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	40.9	3.6	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	30.0	2.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	5.91	0.52	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.68	0.43	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.08	1.67	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	12.2	0.9	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	10.3	1	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	8.38	0.78	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	25.4	2.5	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	28.0	4	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	23.3	2.8	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	84.3	16	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	57.2	3.5	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	54.4	4.7	7
Mexican American Male, 12-19 years (2005 - 2006)	8.95	1.21	11
Mexican American Male, 12-19 years (2007 - 2008)	12.9	2.7	6
Mexican American Male, 12-19 years (2009 - 2010)	9.43	0.92	8
Mexican American Male, 20-39 years (2005 - 2006)	18.5	1.4	9
Mexican American Male, 20-39 years (2007 - 2008)	20.4	2.3	9
Mexican American Male, 20-39 years (2009 - 2010)	17.4	2.3	8
Mexican American Male, 40-59 years (2005 - 2006)	31.2	4.2	4
Mexican American Male, 40-59 years (2007 - 2008)	31.2	4.1	6
Mexican American Male, 40-59 years (2009 - 2010)	27.9	2.2	7
Mexican American Male, 60+ years (2005 - 2006)	42.4	2.1	4
Mexican American Male, 60+ years (2007 - 2008)	39.8	4.3	5
Mexican American Male, 60+ years (2009 - 2010)	49.8	9.2	5
Mexican American Female, 12-19 years (2005 - 2006)	5.53	0.81	16
Mexican American Female, 12-19 years (2007 - 2008)	6.50	1.49	5
Mexican American Female, 12-19 years (2009 - 2010)	5.70	0.62	7
Mexican American Female, 20-39 years (2005 - 2006)	13.8	1.7	9
Mexican American Female, 20-39 years (2007 - 2008)	12.3	1.6	8
Mexican American Female, 20-39 years (2009 - 2010)	10.3	1.6	10
Mexican American Female, 40-59 years (2005 - 2006)	26.0	2	6
Mexican American Female, 40-59 years (2007 - 2008)	25.4	2.2	6
Mexican American Female, 40-59 years (2009 - 2010)	23.3	2.3	9
Mexican American Female, 60+ years (2005 - 2006)	46.7	6.2	3
Mexican American Female, 60+ years (2007 - 2008)	49.5	6.2	5
Mexican American Female, 60+ years (2009 - 2010)	39.0	3.5	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 – 2010)

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	9.18	0.73	11
All Hispanic Male, 20-39 years (2009 - 2010)	16.3	2	13
All Hispanic Male, 40-59 years (2009 - 2010)	29.1	2.2	12
All Hispanic Male, 60+ years (2009 - 2010)	44.8	6.3	8
All Hispanic Female, 12-19 years (2009 - 2010)	5.75	0.45	10
All Hispanic Female, 20-39 years (2009 - 2010)	10.7	1.2	14
All Hispanic Female, 40-59 years (2009 - 2010)	22.7	1.6	14
All Hispanic Female, 60+ years (2009 - 2010)	40.3	2.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (1999 – 2004)

CAS Number 51207-31-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1903
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1868
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1243
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1282
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	912
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	558
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	917
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	991
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	671
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	628
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	707
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	667
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	870

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 11.9, 5.2, and 6.0, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	9
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.502	0.103	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.557	0.089	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.26, 0.45, and 0.48, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	.569	0.1	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.26, 0.45, and 0.48, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	.487	0.096	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.26, 0.45, and 0.48, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (1999 – 2004)

CAS Number 51207-31-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1903
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1868
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1243
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	1282
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	912
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	558
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	917
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	991
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	671
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	628
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	262
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	707
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	667
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	870

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	9
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.65	0.72	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.81	0.62	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	14
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	3.46	0.53	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 – 2010)

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	2.96	0.55	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (1999 – 2004)

CAS Number 70362-50-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1883
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1215
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	13.4 (<LOD-16.4)	1860
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	651
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	14.7 (<LOD-16.5)	579
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1215
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	13.1 (<LOD-16.5)	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	900
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	554
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	14.4 (<LOD-17.9)	913
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	983
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	621
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	259
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	18.7 (<LOD-25.2)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	405
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	699
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	657
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	13.1 (<LOD-16.4)	867

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 68.4, 26.8, and 13.1, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2.50	0.44	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.65	0.23	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	2.21	0.2	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.86, 3.23, and 3.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	2.74	0.26	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	3.60	0.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	2.14	0.29	11
Mexican American Male, 12-19 years (2007 - 2008)	**3.33	2.08	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	2.05	0.3	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	2.10	0.11	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.86, 3.23, and 3.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.86, 3.23, and 3.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (1999 – 2004)

CAS Number 70362-50-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1883
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1215
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	80.3 (<LOD-96.2)	1860
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	651
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	71.4 (<LOD-82.8)	579
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1232
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1215
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	80.7 (<LOD-99.3)	1281
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	900
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	554
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	81.1 (<LOD-104)	913
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	983
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	661
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	621
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	259
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	103 (<LOD-199)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	405
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	218
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	699
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	657
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	80.5 (<LOD-106)	867

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	17.0	3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	*	*	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	*	*	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	19.4	1.6	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	*	*	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	13.1	0.9	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	*	*	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	18.3	1.6	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	21.8	4.5	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	11.6	1.6	11
Mexican American Male, 12-19 years (2007 - 2008)	**16.6	9.6	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	7
Mexican American Male, 60+ years (2005 - 2006)	14.6	1.9	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Male, 60+ years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	16.1	2.3	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 60+ years (2009 - 2010)	*	*	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (2005 – 2010)

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	12
All Hispanic Male, 60+ years (2009 - 2010)	*	*	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (1999 – 2004)

CAS Number 57465-28-8

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	28.5 (24.9-32.8)	53.2 (45.7-59.9)	80.5 (62.8-100)	1896
Total population (2001 - 2002)	22.7 (20.9-24.7)	24.5 (22.2-26.8)	40.8 (36.1-47.5)	69.3 (61.6-80.8)	108 (92.7-116)	1226
Total population (2003 - 2004)	16.3 (14.9-17.9)	14.7 (<LOD-16.5)	24.8 (22.4-27.4)	46.7 (41.6-51.9)	68.7 (58.1-84.4)	1860
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	24.3 (<LOD-27.5)	31.1 (26.4-36.4)	658
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	17.0 (15.2-20.2)	21.2 (17.3-25.6)	577
Age 20+ years (1999 - 2000)	*	< LOD	30.8 (27.2-36.3)	57.1 (50.5-65.8)	89.5 (66.1-110)	1238
Age 20+ years (2001 - 2002)	22.7 (20.9-24.7)	24.5 (22.2-26.8)	40.8 (36.1-47.5)	69.3 (61.6-80.8)	108 (92.7-116)	1226
Age 20+ years (2003 - 2004)	17.6 (16.0-19.3)	16.0 (14.2-18.6)	26.8 (24.2-30.3)	49.8 (43.5-59.1)	74.8 (60.2-94.4)	1283
Males (1999 - 2000)	*	< LOD	25.8 (<LOD-28.9)	41.6 (36.1-45.7)	62.0 (49.7-75.0)	911
Males (2001 - 2002)	20.3 (18.5-22.3)	23.1 (20.8-25.4)	36.6 (32.8-39.4)	52.7 (46.4-62.3)	81.9 (61.0-101)	561
Males (2003 - 2004)	14.9 (<LOD-16.4)	< LOD	21.8 (20.1-25.4)	38.5 (31.0-46.1)	51.5 (46.5-60.5)	912
Females (1999 - 2000)	*	< LOD	33.6 (27.4-41.4)	59.4 (53.0-78.7)	98.1 (69.9-120)	985
Females (2001 - 2002)	25.1 (22.9-27.4)	26.1 (23.0-28.8)	48.6 (41.4-54.4)	82.9 (71.1-96.8)	116 (98.6-128)	665
Females (2003 - 2004)	17.8 (16.0-19.7)	15.7 (<LOD-18.4)	27.6 (24.3-33.4)	57.1 (46.0-67.1)	82.5 (63.0-109)	948
Mexican Americans (1999 - 2000)	*	< LOD	23.8 (<LOD-30.3)	43.2 (37.0-52.6)	66.1 (52.4-79.2)	631
Mexican Americans (2001 - 2002)	17.8 (15.5-20.4)	19.9 (18.3-21.2)	28.5 (26.5-34.2)	47.9 (39.7-54.9)	69.2 (49.3-103)	262
Mexican Americans (2003 - 2004)	15.5 (<LOD-17.9)	14.2 (<LOD-17.5)	22.5 (18.9-26.8)	31.2 (27.4-37.8)	42.0 (33.5-48.0)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	30.6 (25.2-43.1)	67.4 (45.0-126)	126 (67.4-224)	404
Non-Hispanic blacks (2001 - 2002)	22.2 (18.2-27.0)	22.1 (19.6-25.4)	44.3 (37.9-51.5)	88.4 (59.0-111)	115 (96.1-153)	217
Non-Hispanic blacks (2003 - 2004)	16.5 (13.9-19.5)	< LOD	23.5 (18.9-34.6)	63.4 (41.5-126)	142 (52.1-292)	452
Non-Hispanic whites (1999 - 2000)	*	< LOD	28.3 (<LOD-34.0)	50.5 (41.6-57.0)	67.8 (57.0-94.1)	704
Non-Hispanic whites (2001 - 2002)	23.1 (20.9-25.4)	24.7 (22.0-27.6)	42.0 (35.4-49.6)	72.3 (63.9-82.9)	114 (91.0-128)	663
Non-Hispanic whites (2003 - 2004)	16.0 (14.3-17.8)	14.5 (<LOD-16.9)	24.3 (21.4-28.2)	46.5 (41.6-50.9)	64.0 (52.1-76.1)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 23.2, 10.8, and 13.9, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	6.23	0.47	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	5.53	0.66	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	5.67	0.45	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	8.12	0.78	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	7.73	0.54	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	7.68	0.79	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	17.6	2.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	12.3	0.8	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	12.8	1.4	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	26.8	3.3	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	27.0	2.7	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	22.7	1.5	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	5.62	0.27	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.53	0.66	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.80	0.41	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	9.55	1.07	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	10.2	1.2	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	6.76	0.53	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	16.4	2	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	14.4	1.3	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	15.2	1.4	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	35.6	2.6	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	31.5	3.3	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	32.4	4.5	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	5.76	0.42	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	5.11	0.38	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.62	0.43	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	6.77	1	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	6.42	0.67	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**8.76	2.73	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	15.0	3.4	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	13.4	2.2	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	27.2	7.7	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	30.9	5.4	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	25.0	4.5	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	26.9	5.5	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.32, 2.29, and 2.5, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	5.64	0.31	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	4.62	0.28	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	3.77	0.29	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	9.74	1.07	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	7.62	0.68	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	8.10	1.52	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	20.2	2.5	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	**23.9	7.7	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	30.8	7.7	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**83.7	31.4	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	56.2	5.1	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	58.6	5.7	7
Mexican American Male, 12-19 years (2005 - 2006)	6.00	0.34	11
Mexican American Male, 12-19 years (2007 - 2008)	6.29	0.92	6
Mexican American Male, 12-19 years (2009 - 2010)	5.01	0.33	8
Mexican American Male, 20-39 years (2005 - 2006)	8.96	0.46	9
Mexican American Male, 20-39 years (2007 - 2008)	8.95	0.61	9
Mexican American Male, 20-39 years (2009 - 2010)	6.58	0.83	8
Mexican American Male, 40-59 years (2005 - 2006)	15.9	2.2	4
Mexican American Male, 40-59 years (2007 - 2008)	17.5	3.3	6
Mexican American Male, 40-59 years (2009 - 2010)	14.7	1.6	7
Mexican American Male, 60+ years (2005 - 2006)	26.4	4.8	4
Mexican American Male, 60+ years (2007 - 2008)	28.9	5.8	5
Mexican American Male, 60+ years (2009 - 2010)	25.7	2.9	5
Mexican American Female, 12-19 years (2005 - 2006)	5.86	0.43	16
Mexican American Female, 12-19 years (2007 - 2008)	5.80	0.53	5
Mexican American Female, 12-19 years (2009 - 2010)	4.51	0.31	7
Mexican American Female, 20-39 years (2005 - 2006)	8.20	0.62	9
Mexican American Female, 20-39 years (2007 - 2008)	8.42	0.63	8
Mexican American Female, 20-39 years (2009 - 2010)	6.10	0.86	10
Mexican American Female, 40-59 years (2005 - 2006)	19.2	2.6	6
Mexican American Female, 40-59 years (2007 - 2008)	16.5	2.1	6
Mexican American Female, 40-59 years (2009 - 2010)	18.3	2	9
Mexican American Female, 60+ years (2005 - 2006)	40.2	7.1	3
Mexican American Female, 60+ years (2007 - 2008)	36.3	5.7	5
Mexican American Female, 60+ years (2009 - 2010)	39.3	2.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.32, 2.29, and 2.5, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	5.30	0.39	11
All Hispanic Male, 20-39 years (2009 - 2010)	6.93	0.82	13
All Hispanic Male, 40-59 years (2009 - 2010)	15.1	1.4	12
All Hispanic Male, 60+ years (2009 - 2010)	26.2	2.4	7
All Hispanic Female, 12-19 years (2009 - 2010)	4.49	0.33	10
All Hispanic Female, 20-39 years (2009 - 2010)	7.29	0.93	14
All Hispanic Female, 40-59 years (2009 - 2010)	17.7	1.8	14
All Hispanic Female, 60+ years (2009 - 2010)	39.0	2.7	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.32, 2.29, and 2.5, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (1999 – 2004)

CAS Number 57465-28-8

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	177 (151-212)	336 (294-404)	564 (455-663)	1896
Total population (2001 - 2002)	147 (135-160)	158 (143-175)	270 (249-298)	482 (436-541)	738 (625-840)	1226
Total population (2003 - 2004)	100 (91.0-110)	89.8 (<LOD-101)	159 (146-178)	308 (273-349)	475 (378-590)	1860
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	108 (<LOD-126)	144 (116-196)	658
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	88.2 (78.8-106)	109 (89.2-135)	577
Age 20+ years (1999 - 2000)	*	< LOD	204 (173-232)	381 (319-451)	596 (479-709)	1238
Age 20+ years (2001 - 2002)	147 (135-160)	158 (143-175)	270 (249-298)	482 (436-541)	738 (625-840)	1226
Age 20+ years (2003 - 2004)	111 (100-122)	100 (88.7-115)	176 (158-194)	326 (286-394)	534 (394-668)	1283
Males (1999 - 2000)	*	< LOD	154 (<LOD182)	260 (241-274)	382 (308-509)	911
Males (2001 - 2002)	134 (121-149)	152 (130-169)	249 (233-267)	399 (346-467)	566 (467-693)	561
Males (2003 - 2004)	92.3 (<LOD-102)	< LOD	148 (131-168)	245 (203-296)	360 (296-442)	912
Females (1999 - 2000)	*	< LOD	212 (159-250)	429 (350-531)	648 (534-744)	985
Females (2001 - 2002)	159 (146-172)	160 (149-186)	301 (270-348)	550 (483-637)	818 (658-958)	665
Females (2003 - 2004)	108 (96.2-121)	94.5 (<LOD-110)	180 (153-212)	370 (303-455)	559 (438-843)	948
Mexican Americans (1999 - 2000)	*	< LOD	146 (<LOD213)	285 (229-364)	424 (361-534)	631
Mexican Americans (2001 - 2002)	114 (97.8-133)	125 (106-150)	217 (175-257)	335 (272-460)	593 (354-784)	262
Mexican Americans (2003 - 2004)	95.3 (<LOD-111)	91.4 (<LOD-99.4)	145 (116-180)	238 (172-288)	298 (238-461)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	192 (147-258)	457 (308-691)	786 (457-1520)	404
Non-Hispanic blacks (2001 - 2002)	131 (106-161)	128 (110-158)	266 (214-304)	532 (361-662)	779 (585-1060)	217
Non-Hispanic blacks (2003 - 2004)	94.3 (79.0-112)	< LOD	143 (106-254)	483 (254-847)	976 (483-1430)	452
Non-Hispanic whites (1999 - 2000)	*	< LOD	175 (<LOD215)	311 (274-356)	508 (394-660)	704
Non-Hispanic whites (2001 - 2002)	150 (136-164)	160 (146-179)	276 (249-301)	486 (431-553)	746 (600-937)	663
Non-Hispanic whites (2003 - 2004)	98.4 (87.5-111)	89.4 (<LOD-104)	158 (142-182)	297 (260-346)	431 (365-541)	869

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	34.3	3.1	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	27.5	3.1	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	30.4	2.7	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	59.8	7.5	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	51.2	4.1	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	50.9	6	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	134	21	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	90.7	5.6	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	87.0	9.9	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	181	19	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	172	16	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	138	10	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	30.0	1.6	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	26.0	3.3	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	23.0	2.2	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	62.7	8.1	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	61.2	8.7	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	36.1	3.3	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	123	17	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	95.4	9.7	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	92.9	8.6	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	259	18	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	211	22	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	194	24	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	29.2	2.3	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	24.1	1.4	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	16.8	2.6	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	40.3	6.6	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	36.5	4.5	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	49.3	14.6	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	96.2	22.6	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	85.7	13.5	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	163	42	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	184	31	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	150	24	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	146	33	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	27.9	1.5	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	22.1	2.1	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	16.6	1.2	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	56.3	6.6	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	38.5	3.5	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	40.3	7.6	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	129	16	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	**147	51	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	171	40	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**558	211	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	338	29	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	335	33	7
Mexican American Male, 12-19 years (2005 - 2006)	32.6	1.7	11
Mexican American Male, 12-19 years (2007 - 2008)	33.4	4.9	6
Mexican American Male, 12-19 years (2009 - 2010)	23.5	1.6	8
Mexican American Male, 20-39 years (2005 - 2006)	63.0	2.2	9
Mexican American Male, 20-39 years (2007 - 2008)	62.3	7.4	9
Mexican American Male, 20-39 years (2009 - 2010)	41.1	7.2	8
Mexican American Male, 40-59 years (2005 - 2006)	131	22	4
Mexican American Male, 40-59 years (2007 - 2008)	126	24	6
Mexican American Male, 40-59 years (2009 - 2010)	105	13	7
Mexican American Male, 60+ years (2005 - 2006)	188	32	4
Mexican American Male, 60+ years (2007 - 2008)	211	48	5
Mexican American Male, 60+ years (2009 - 2010)	157	16	5
Mexican American Female, 12-19 years (2005 - 2006)	32.0	2.3	16
Mexican American Female, 12-19 years (2007 - 2008)	28.4	2.7	5
Mexican American Female, 12-19 years (2009 - 2010)	21.1	1.5	7
Mexican American Female, 20-39 years (2005 - 2006)	54.9	4.8	9
Mexican American Female, 20-39 years (2007 - 2008)	49.3	5.4	8
Mexican American Female, 20-39 years (2009 - 2010)	33.0	4.8	10
Mexican American Female, 40-59 years (2005 - 2006)	143	21	6
Mexican American Female, 40-59 years (2007 - 2008)	112	16	6
Mexican American Female, 40-59 years (2009 - 2010)	119	15	9
Mexican American Female, 60+ years (2005 - 2006)	301	54	3
Mexican American Female, 60+ years (2007 - 2008)	250	42	5
Mexican American Female, 60+ years (2009 - 2010)	219	15	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (2005 – 2010)

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	24.7	1.9	11
All Hispanic Male, 20-39 years (2009 - 2010)	46.4	8.5	13
All Hispanic Male, 40-59 years (2009 - 2010)	106	11	12
All Hispanic Male, 60+ years (2009 - 2010)	158	12	7
All Hispanic Female, 12-19 years (2009 - 2010)	20.9	1.6	10
All Hispanic Female, 20-39 years (2009 - 2010)	40.2	5.5	14
All Hispanic Female, 40-59 years (2009 - 2010)	112	12	14
All Hispanic Female, 60+ years (2009 - 2010)	232	16	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (1999 – 2004)

CAS Number 32774-16-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	34.4 (31.0-38.7)	44.9 (40.6-48.9)	1888
Total population (2001 - 2002)	17.9 (16.0-19.9)	19.0 (17.0-22.0)	33.1 (27.7-38.6)	50.0 (43.9-55.0)	60.9 (56.1-65.8)	1223
Total population (2003 - 2004)	*	< LOD	19.5 (16.8-22.7)	31.0 (27.9-36.0)	40.6 (36.5-47.3)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	648
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	581
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	36.4 (33.8-40.3)	47.8 (42.8-51.0)	1240
Age 20+ years (2001 - 2002)	17.9 (16.0-19.9)	19.0 (17.0-22.0)	33.1 (27.7-38.6)	50.0 (43.9-55.0)	60.9 (56.1-65.8)	1223
Age 20+ years (2003 - 2004)	*	< LOD	21.9 (19.0-24.2)	32.7 (28.6-37.3)	43.2 (37.3-49.5)	1285
Males (1999 - 2000)	*	< LOD	< LOD	36.2 (31.9-40.1)	44.3 (39.0-51.3)	908
Males (2001 - 2002)	20.2 (17.8-22.8)	22.1 (18.5-25.3)	36.0 (29.5-43.2)	53.7 (46.5-57.3)	60.9 (55.7-69.0)	559
Males (2003 - 2004)	*	< LOD	22.3 (17.7-24.8)	36.3 (29.3-41.1)	46.1 (38.8-52.0)	917
Females (1999 - 2000)	*	< LOD	< LOD	34.0 (29.4-38.6)	46.5 (37.9-51.1)	980
Females (2001 - 2002)	16.0 (14.2-18.1)	17.0 (14.7-19.2)	30.2 (24.5-36.5)	46.4 (40.7-51.9)	60.9 (52.2-70.0)	664
Females (2003 - 2004)	*	< LOD	18.4 (<LOD-20.4)	28.4 (27.2-30.6)	35.8 (31.0-41.1)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	31.9 (28.8-35.2)	622
Mexican Americans (2001 - 2002)	*	< LOD	15.0 (11.3-18.3)	25.4 (18.3-32.3)	32.5 (26.7-41.9)	260
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	20.9 (16.5-30.2)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	40.3 (28.7-48.6)	52.2 (44.3-63.6)	403
Non-Hispanic blacks (2001 - 2002)	17.2 (15.4-19.1)	18.5 (15.7-20.0)	31.7 (25.8-35.4)	47.5 (42.0-54.0)	57.3 (48.3-64.5)	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	17.3 (<LOD-22.6)	31.5 (26.8-36.9)	58.7 (31.5-97.9)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	34.6 (31.7-40.1)	45.3 (40.1-50.9)	709
Non-Hispanic whites (2001 - 2002)	19.5 (17.2-22.2)	21.4 (17.4-24.7)	36.0 (29.8-41.1)	53.5 (47.0-58.3)	64.3 (59.2-72.8)	662
Non-Hispanic whites (2003 - 2004)	*	< LOD	21.2 (17.4-24.5)	32.6 (27.3-38.8)	41.1 (35.9-50.2)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 27.0, 11.0, and 15.9, respectively.

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	5.13	0.42	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	4.59	0.53	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	4.17	0.38	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	8.17	0.77	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	7.16	0.34	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	6.94	0.5	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	19.9	1.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	16.6	0.7	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	17.0	1.3	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	35.7	1.8	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	32.6	1.9	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	33.9	2.3	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	3.68	0.19	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	3.10	0.58	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.26	0.5	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	6.72	0.58	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	5.05	0.45	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	4.87	0.32	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	14.2	0.7	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	14.1	0.7	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	13.5	1.1	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	31.4	2.2	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	28.1	1.6	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	30.7	2.3	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	5.18	0.31	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	3.96	0.38	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.66	0.18	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	7.95	0.57	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	6.68	0.59	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	7.35	0.62	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	17.5	0.7	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	18.8	2.1	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	18.6	2.9	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	39.1	3.8	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	31.4	3.4	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	33.5	3.1	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.33, 2.31, and 2.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	3.19	0.11	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	6.20	0.44	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	4.66	0.29	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	4.62	0.54	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	13.8	1.6	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	14.0	1.6	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	14.9	2.3	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	45.0	8.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	36.8	2.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	38.9	3.9	7
Mexican American Male, 12-19 years (2005 - 2006)	3.79	0.46	11
Mexican American Male, 12-19 years (2007 - 2008)	3.89	0.6	6
Mexican American Male, 12-19 years (2009 - 2010)	3.96	0.35	7
Mexican American Male, 20-39 years (2005 - 2006)	6.10	0.14	9
Mexican American Male, 20-39 years (2007 - 2008)	5.71	0.4	9
Mexican American Male, 20-39 years (2009 - 2010)	5.12	0.4	8
Mexican American Male, 40-59 years (2005 - 2006)	11.1	0.3	4
Mexican American Male, 40-59 years (2007 - 2008)	13.2	1.2	6
Mexican American Male, 40-59 years (2009 - 2010)	14.0	0.6	7
Mexican American Male, 60+ years (2005 - 2006)	27.2	2.5	4
Mexican American Male, 60+ years (2007 - 2008)	24.6	2.6	5
Mexican American Male, 60+ years (2009 - 2010)	28.4	2.7	5
Mexican American Female, 12-19 years (2005 - 2006)	3.17	0.15	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	4.42	0.3	9
Mexican American Female, 20-39 years (2007 - 2008)	3.90	0.25	8
Mexican American Female, 20-39 years (2009 - 2010)	3.10	0.44	10
Mexican American Female, 40-59 years (2005 - 2006)	10.2	1.5	6
Mexican American Female, 40-59 years (2007 - 2008)	10.9	1.8	6
Mexican American Female, 40-59 years (2009 - 2010)	8.88	0.81	9
Mexican American Female, 60+ years (2005 - 2006)	18.7	1.8	3
Mexican American Female, 60+ years (2007 - 2008)	21.5	3.5	5
Mexican American Female, 60+ years (2009 - 2010)	23.5	3.3	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.33, 2.31, and 2.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	4.25	0.3	10
All Hispanic Male, 20-39 years (2009 - 2010)	5.57	0.59	13
All Hispanic Male, 40-59 years (2009 - 2010)	14.6	1	12
All Hispanic Male, 60+ years (2009 - 2010)	28.1	2	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	3.85	0.49	14
All Hispanic Female, 40-59 years (2009 - 2010)	9.65	0.77	14
All Hispanic Female, 60+ years (2009 - 2010)	22.2	2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.33, 2.31, and 2.5, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (1999 – 2004)

CAS Number 32774-16-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	230 (219-244)	287 (274-319)	1888
Total population (2001 - 2002)	115 (103-129)	125 (108-146)	217 (189-253)	344 (300-376)	416 (379-490)	1223
Total population (2003 - 2004)	*	< LOD	133 (114-149)	203 (191-226)	269 (243-305)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	648
Age 12-19 years (2001 - 2002)						
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	581
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	241 (227-261)	303 (281-339)	1240
Age 20+ years (2001 - 2002)	115 (103-129)	125 (108-146)	217 (189-253)	344 (300-376)	416 (379-490)	1223
Age 20+ years (2003 - 2004)	*	< LOD	146 (130-160)	216 (198-242)	287 (245-325)	1285
Males (1999 - 2000)	*	< LOD	< LOD	229 (215-258)	286 (256-338)	908
Males (2001 - 2002)	133 (117-152)	151 (130-168)	244 (198-293)	363 (309-409)	449 (372-529)	559
Males (2003 - 2004)	*	< LOD	143 (122-159)	225 (190-259)	291 (245-334)	917
Females (1999 - 2000)	*	< LOD	< LOD	234 (197-257)	293 (261-346)	980
Females (2001 - 2002)	102 (90.0-115)	107 (91.0-123)	195 (170-234)	319 (282-368)	402 (373-462)	664
Females (2003 - 2004)	*	< LOD	120 (<LOD140)	194 (182-203)	249 (222-284)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	215 (181-261)	622
Mexican Americans (2001 - 2002)	*	< LOD	98.1 (79.3-138)	184 (143-250)	266 (179-341)	260
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	168 (109-237)	420
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	251 (190-299)	320 (262-410)	403
Non-Hispanic blacks (2001 - 2002)	101 (91.2-113)	104 (88.0-118)	190 (147-234)	299 (267-335)	362 (309-423)	217
Non-Hispanic blacks (2003 - 2004)	*	< LOD	110 (<LOD-144)	216 (162-257)	338 (221-556)	453
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	238 (222-257)	286 (267-340)	709
Non-Hispanic whites (2001 - 2002)	127 (112-144)	145 (124-157)	229 (195-275)	368 (317-388)	438 (388-515)	662
Non-Hispanic whites (2003 - 2004)	*	< LOD	141 (116-165)	210 (189-242)	277 (239-324)	873

† Data not collected for this age group for Survey year 01-02.

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	28.1	2.4	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	22.6	2.3	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	22.1	1.8	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	59.9	7.1	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	47.2	2.7	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	45.5	3.8	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	150	13	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	122	6	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	115	9	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	242	10	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	209	12	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	205	13	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	19.7	1.3	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	14.7	3.1	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	15.7	2.6	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	44.1	4.5	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	30.2	3	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	25.7	1.6	18
Non-Hispanic White Female, 40-59 years (2005 - 2006)	106	9	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	93.6	5.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	82.6	6.9	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	228	16	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	188	11	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	186	13	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	26.0	1.3	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	18.7	1.5	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	16.7	1.2	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	46.9	3.4	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	37.4	2.6	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	41.8	4	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	112	5	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	120	13	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	113	15	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	235	26	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	189	19	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	180	18	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	15.8	0.5	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	35.8	2.8	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	23.5	1.5	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	23.0	2.9	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	88.8	10.6	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	85.2	11.9	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	83.3	11.5	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	299	54	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	222	18	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	222	20	7
Mexican American Male, 12-19 years (2005 - 2006)	20.2	2.3	11
Mexican American Male, 12-19 years (2007 - 2008)	21.0	4.2	6
Mexican American Male, 12-19 years (2009 - 2010)	18.5	1.7	7
Mexican American Male, 20-39 years (2005 - 2006)	43.3	1.7	9
Mexican American Male, 20-39 years (2007 - 2008)	39.3	3.5	9
Mexican American Male, 20-39 years (2009 - 2010)	31.6	3.6	8
Mexican American Male, 40-59 years (2005 - 2006)	90.6	5.2	4
Mexican American Male, 40-59 years (2007 - 2008)	94.5	10.7	6
Mexican American Male, 40-59 years (2009 - 2010)	99.4	6.9	7
Mexican American Male, 60+ years (2005 - 2006)	194	9	4
Mexican American Male, 60+ years (2007 - 2008)	176	18	5
Mexican American Male, 60+ years (2009 - 2010)	174	15	5
Mexican American Female, 12-19 years (2005 - 2006)	17.3	0.8	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	29.6	2.4	9
Mexican American Female, 20-39 years (2007 - 2008)	22.8	2.1	8
Mexican American Female, 20-39 years (2009 - 2010)	16.7	2.4	10
Mexican American Female, 40-59 years (2005 - 2006)	75.8	11.9	6
Mexican American Female, 40-59 years (2007 - 2008)	73.3	12.2	6
Mexican American Female, 40-59 years (2009 - 2010)	57.3	6.1	9
Mexican American Female, 60+ years (2005 - 2006)	144	23	3
Mexican American Female, 60+ years (2007 - 2008)	149	27	5
Mexican American Female, 60+ years (2009 - 2010)	129	16	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 – 2010)

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	19.8	1.5	10
All Hispanic Male, 20-39 years (2009 - 2010)	37.0	6.3	13
All Hispanic Male, 40-59 years (2009 - 2010)	101	8	12
All Hispanic Male, 60+ years (2009 - 2010)	170	11	7
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	21.2	2.9	14
All Hispanic Female, 40-59 years (2009 - 2010)	60.5	5.3	14
All Hispanic Female, 60+ years (2009 - 2010)	130	10	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (1999 – 2004)

CAS Number 32598-14-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1915
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	1.20 (1.09-1.31)	1.09 (1.00-1.20)	1.90 (1.75-2.20)	4.04 (3.40-4.89)	6.24 (5.20-7.79)	1879
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	665
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.686 (.603-.781)	.700 (.600-.720)	1.00 (.900-1.11)	1.50 (1.20-2.00)	2.26 (1.50-3.50)	593
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1250
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	1.30 (1.18-1.43)	1.15 (1.04-1.30)	2.10 (1.86-2.40)	4.44 (3.80-5.20)	6.82 (5.70-8.30)	1286
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	913
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	1.02 (.923-1.12)	.980 (.850-1.08)	1.60 (1.40-1.80)	3.20 (2.76-3.42)	4.70 (3.83-5.50)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	1.40 (1.25-1.57)	1.20 (1.05-1.40)	2.30 (2.00-2.79)	5.17 (4.47-5.90)	7.70 (6.00-9.55)	942
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.719 (.624-.829)	.700 (.600-.800)	1.10 (.900-1.36)	1.90 (1.80-2.20)	2.90 (1.98-3.52)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	12.8 (<LOD-18.0)	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	1.41 (1.15-1.74)	1.14 (.980-1.32)	2.47 (1.70-3.90)	6.70 (4.09-10.1)	11.9 (6.40-18.1)	456
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	714
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	1.21 (1.08-1.36)	1.10 (1.00-1.20)	1.90 (1.74-2.28)	3.91 (3.22-4.85)	5.93 (4.98-7.79)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.507	0.097	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.577	0.046	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.671	0.134	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.808	0.058	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.999	0.208	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	**1.64	0.5	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.02	0.07	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.870	0.113	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2.15	0.26	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	3.01	0.36	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	2.54	0.42	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.482	0.041	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.555	0.065	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.437	0.046	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.598	0.044	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	1.06	0.16	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.654	0.045	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.29	0.15	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.36	0.13	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.82	0.41	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	3.84	0.41	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	4.09	0.7	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	3.34	0.39	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.524	0.041	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.517	0.083	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.580	0.117	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.619	0.138	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	1.31	0.33	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1.52	0.31	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	2.27	0.48	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	3.46	0.76	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	3.00	0.32	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.03	0.42	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.431	0.026	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.429	0.07	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.728	0.102	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.698	0.129	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.689	0.107	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	2.19	0.26	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	2.43	0.42	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	3.79	0.66	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**8.54	3.02	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	7.46	1.29	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	6.66	0.84	7
Mexican American Male, 12-19 years (2005 - 2006)	.341	0.032	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.458	0.051	8
Mexican American Male, 20-39 years (2005 - 2006)	.484	0.031	9
Mexican American Male, 20-39 years (2007 - 2008)	.745	0.085	9
Mexican American Male, 20-39 years (2009 - 2010)	.561	0.08	8
Mexican American Male, 40-59 years (2005 - 2006)	.835	0.076	4
Mexican American Male, 40-59 years (2007 - 2008)	1.45	0.34	6
Mexican American Male, 40-59 years (2009 - 2010)	.878	0.115	8
Mexican American Male, 60+ years (2005 - 2006)	1.34	0.12	4
Mexican American Male, 60+ years (2007 - 2008)	1.78	0.2	5
Mexican American Male, 60+ years (2009 - 2010)	2.26	0.27	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.421	0.043	9
Mexican American Female, 20-39 years (2007 - 2008)	.669	0.027	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	1.32	0.14	6
Mexican American Female, 40-59 years (2007 - 2008)	1.33	0.16	6
Mexican American Female, 40-59 years (2009 - 2010)	1.16	0.08	9
Mexican American Female, 60+ years (2005 - 2006)	2.81	0.51	3
Mexican American Female, 60+ years (2007 - 2008)	2.89	0.44	5
Mexican American Female, 60+ years (2009 - 2010)	2.90	0.36	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.450	0.043	11
All Hispanic Male, 20-39 years (2009 - 2010)	.663	0.072	13
All Hispanic Male, 40-59 years (2009 - 2010)	1.05	0.12	13
All Hispanic Male, 60+ years (2009 - 2010)	2.27	0.19	8
All Hispanic Female, 12-19 years (2009 - 2010)	.444	0.084	10
All Hispanic Female, 20-39 years (2009 - 2010)	.556	0.102	13
All Hispanic Female, 40-59 years (2009 - 2010)	1.24	0.13	13
All Hispanic Female, 60+ years (2009 - 2010)	3.10	0.29	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.37, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.392	0.044	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.519	0.07	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.566	0.049	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.826	0.185	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.895	0.046	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	1.15	0.18	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.57	0.12	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	1.94	0.32	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.424	0.053	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.11	0.31	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.642	0.068	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.01	0.3	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.75	0.36	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	1.21	0.14	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	2.68	0.35	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	2.99	0.42	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.517	0.104	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	**.528	0.2	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.546	0.055	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.416	0.049	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	**1.03	0.31	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	1.10	0.23	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	1.77	0.23	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	2.08	0.31	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.331	0.052	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	**.702	0.238	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.642	0.098	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.470	0.034	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	1.80	0.34	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	1.55	0.23	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	4.53	0.42	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	4.62	0.77	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.225	0.028	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.542	0.082	4
Mexican American Male, 20-39 years (2013 - 2014)	.354	0.042	5
Mexican American Male, 40-59 years (2011 - 2012)	.768	0.126	4
Mexican American Male, 40-59 years (2013 - 2014)	.629	0.066	5
Mexican American Male, 60+ years (2011 - 2012)	1.23	0.35	2
Mexican American Male, 60+ years (2013 - 2014)	2.02	0.49	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	**.323	0.11	4
Mexican American Female, 20-39 years (2013 - 2014)	.312	0.026	5
Mexican American Female, 40-59 years (2011 - 2012)	1.18	0.29	3
Mexican American Female, 40-59 years (2013 - 2014)	.757	0.109	6
Mexican American Female, 60+ years (2011 - 2012)	2.58	0.46	3
Mexican American Female, 60+ years (2013 - 2014)	2.59	0.5	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.361	0.112	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.435	0.069	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.710	0.079	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	2.01	0.32	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.500	0.192	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.776	0.081	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	2.53	0.3	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.877	0.131	3
Asian Male, 12-19 years (2013 - 2014)	.384	0.096	3
Asian Male, 20-39 years (2011 - 2012)	.939	0.175	6
Asian Male, 20-39 years (2013 - 2014)	.806	0.112	4
Asian Male, 40-59 years (2011 - 2012)	1.77	0.25	6
Asian Male, 40-59 years (2013 - 2014)	1.68	0.34	4
Asian Male, 60+ years (2011 - 2012)	1.81	0.5	4
Asian Male, 60+ years (2013 - 2014)	2.69	0.31	3
Asian Female, 12-19 years (2011 - 2012)	.533	0.036	4
Asian Female, 12-19 years (2013 - 2014)	.630	0.117	3
Asian Female, 20-39 years (2011 - 2012)	1.26	0.21	6
Asian Female, 20-39 years (2013 - 2014)	.843	0.12	5
Asian Female, 40-59 years (2011 - 2012)	1.73	0.28	6
Asian Female, 40-59 years (2013 - 2014)	1.44	0.16	7
Asian Female, 60+ years (2011 - 2012)	3.36	0.61	3
Asian Female, 60+ years (2013 - 2014)	2.60	0.49	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (1999 – 2004)

CAS Number 32598-14-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1915
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	.007 (.007-.008)	.007 (.006-.007)	.012 (.011-.014)	.027 (.023-.031)	.043 (.037-.049)	1879
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	665
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.003 (.003-.004)	.003 (.003-.004)	.005 (.005-.006)	.008 (.006-.010)	.011 (.008-.020)	593
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1250
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	.008 (.007-.009)	.007 (.006-.008)	.014 (.012-.015)	.030 (.026-.035)	.047 (.039-.053)	1286
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	913
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	.006 (.006-.007)	.006 (.005-.007)	.010 (.009-.011)	.019 (.016-.023)	.030 (.027-.039)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1002
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	.008 (.007-.010)	.007 (.006-.009)	.015 (.013-.017)	.033 (.029-.040)	.049 (.043-.067)	942
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.004 (.004-.005)	.004 (.004-.005)	.007 (.006-.009)	.014 (.011-.017)	.019 (.015-.023)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.008 (.007-.010)	.007 (.005-.008)	.015 (.010-.020)	.041 (.027-.067)	.082 (.041-.116)	456
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	714
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	.007 (.007-.008)	.007 (.006-.007)	.012 (.011-.014)	.027 (.022-.031)	.043 (.035-.049)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.003	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.005	0.001	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.005	0	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.007	0.001	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	**.013	0.004	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.007	0.001	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.006	0.001	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.014	0.001	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.019	0.002	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.016	0.003	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.003	0	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.002	0	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.004	0	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.006	0.001	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.004	0	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.010	0.001	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.009	0.001	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.011	0.002	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.028	0.003	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.027	0.005	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.020	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.003	0.001	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.003	0.001	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.004	0.001	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.008	0.002	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.010	0.002	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.014	0.003	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.020	0.005	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.018	0.002	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.016	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.002	0	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.004	0.001	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.004	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.003	0.001	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.014	0.002	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.015	0.003	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.021	0.004	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**.057	0.02	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.044	0.006	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.038	0.005	7
Mexican American Male, 12-19 years (2005 - 2006)	.002	0	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.002	0	8
Mexican American Male, 20-39 years (2005 - 2006)	.003	0	9
Mexican American Male, 20-39 years (2007 - 2008)	.005	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	.003	0	8
Mexican American Male, 40-59 years (2005 - 2006)	.007	0.001	4
Mexican American Male, 40-59 years (2007 - 2008)	.010	0.003	6
Mexican American Male, 40-59 years (2009 - 2010)	.006	0.001	8
Mexican American Male, 60+ years (2005 - 2006)	.010	0.001	4
Mexican American Male, 60+ years (2007 - 2008)	.013	0.002	5
Mexican American Male, 60+ years (2009 - 2010)	.014	0.002	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.003	0	9
Mexican American Female, 20-39 years (2007 - 2008)	.004	0	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	9
Mexican American Female, 40-59 years (2005 - 2006)	.010	0.001	6
Mexican American Female, 40-59 years (2007 - 2008)	.009	0.001	6
Mexican American Female, 40-59 years (2009 - 2010)	.008	0.001	9
Mexican American Female, 60+ years (2005 - 2006)	.021	0.003	3
Mexican American Female, 60+ years (2007 - 2008)	.020	0.003	5
Mexican American Female, 60+ years (2009 - 2010)	.016	0.002	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2005 – 2010)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.002	0	11
All Hispanic Male, 20-39 years (2009 - 2010)	.004	0.001	13
All Hispanic Male, 40-59 years (2009 - 2010)	.007	0.001	13
All Hispanic Male, 60+ years (2009 - 2010)	.014	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	.002	0	10
All Hispanic Female, 20-39 years (2009 - 2010)	.003	0.001	13
All Hispanic Female, 40-59 years (2009 - 2010)	.008	0.001	13
All Hispanic Female, 60+ years (2009 - 2010)	.018	0.002	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.002	0	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.003	0	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.004	0.001	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.006	0.001	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.007	0.001	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.009	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.011	0.002	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.002	0	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.006	0.002	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.003	0	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.005	0.001	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.011	0.003	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.007	0.001	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.016	0.002	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.018	0.003	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	**.002	0.001	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.003	0	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	**.006	0.002	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.006	0.001	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.010	0.001	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.011	0.002	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.001	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	**.003	0.001	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.004	0.001	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.002	0	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.011	0.003	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.008	0.001	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.025	0.002	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.025	0.004	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.001	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.003	0	4
Mexican American Male, 20-39 years (2013 - 2014)	.002	0	5
Mexican American Male, 40-59 years (2011 - 2012)	.006	0.001	4
Mexican American Male, 40-59 years (2013 - 2014)	.004	0	5
Mexican American Male, 60+ years (2011 - 2012)	.007	0.002	2
Mexican American Male, 60+ years (2013 - 2014)	.011	0.003	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	.002	0.001	4
Mexican American Female, 20-39 years (2013 - 2014)	.002	0	5
Mexican American Female, 40-59 years (2011 - 2012)	.007	0.002	3
Mexican American Female, 40-59 years (2013 - 2014)	.004	0.001	6
Mexican American Female, 60+ years (2011 - 2012)	.016	0.002	3
Mexican American Female, 60+ years (2013 - 2014)	.015	0.003	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.002	0.001	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.003	0	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.004	0.001	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.011	0.002	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.003	0.001	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.004	0	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.015	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2011 – 2014)

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.005	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.002	0	3
Asian Male, 20-39 years (2011 - 2012)	.005	0.001	6
Asian Male, 20-39 years (2013 - 2014)	.005	0.001	4
Asian Male, 40-59 years (2011 - 2012)	.011	0.002	6
Asian Male, 40-59 years (2013 - 2014)	.009	0.002	4
Asian Male, 60+ years (2011 - 2012)	.010	0.003	4
Asian Male, 60+ years (2013 - 2014)	.016	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.003	0	4
Asian Female, 12-19 years (2013 - 2014)	.003	0.001	3
Asian Female, 20-39 years (2011 - 2012)	.007	0.001	6
Asian Female, 20-39 years (2013 - 2014)	.004	0.001	5
Asian Female, 40-59 years (2011 - 2012)	.011	0.002	6
Asian Female, 40-59 years (2013 - 2014)	.008	0.001	7
Asian Female, 60+ years (2011 - 2012)	.019	0.003	3
Asian Female, 60+ years (2013 - 2014)	.015	0.002	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.597	0.052	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.686	0.062	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.506	0.056	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	1.22	0.09	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1.60	0.16	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.28	0.14	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.723	0.058	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.798	0.095	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.959	0.162	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	1.62	0.13	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	1.99	0.18	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	1.84	0.17	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.458	0.059	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.572	0.129	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.600	0.075	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1.52	0.18	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1.48	0.17	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1.38	0.08	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.712	0.092	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.797	0.147	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	2.83	0.57	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	2.32	0.21	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	2.44	0.28	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.689	0.113	4
Mexican American Male, 60+ years (2007 - 2008)	.934	0.076	5
Mexican American Male, 60+ years (2009 - 2010)	.911	0.114	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.361	0.059	6
Mexican American Female, 40-59 years (2007 - 2008)	.450	0.125	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.869	0.068	3
Mexican American Female, 60+ years (2007 - 2008)	.992	0.121	5
Mexican American Female, 60+ years (2009 - 2010)	1.09	0.22	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.946	0.092	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	1.15	0.13	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.567	0.078	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.572	0.06	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.990	0.074	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	1.14	0.12	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.828	0.109	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.729	0.059	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	1.54	0.13	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	1.76	0.13	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.306	0.03	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.412	0.048	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.931	0.065	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**1.87	0.75	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.588	0.054	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.587	0.087	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	1.65	0.12	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	1.96	0.15	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.323	0.054	4
Mexican American Male, 40-59 years (2013 - 2014)	.263	0.032	5
Mexican American Male, 60+ years (2011 - 2012)	.466	0.081	2
Mexican American Male, 60+ years (2013 - 2014)	1.09	0.27	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.421	0.15	3
Mexican American Female, 40-59 years (2013 - 2014)	.267	0.037	6
Mexican American Female, 60+ years (2011 - 2012)	.662	0.056	3
Mexican American Female, 60+ years (2013 - 2014)	.923	0.127	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.264	0.036	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	1.02	0.22	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.288	0.03	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.943	0.085	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.249	0.045	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.385	0.043	6
Asian Male, 40-59 years (2013 - 2014)	.356	0.093	4
Asian Male, 60+ years (2011 - 2012)	.613	0.083	4
Asian Male, 60+ years (2013 - 2014)	.818	0.1	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	.214	0.026	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.397	0.053	6
Asian Female, 40-59 years (2013 - 2014)	.404	0.031	7
Asian Female, 60+ years (2011 - 2012)	1.03	0.18	3
Asian Female, 60+ years (2013 - 2014)	**1.17	0.45	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (whole weight) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.005	0	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.005	0	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.003	0	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.008	0.001	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.010	0.001	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.008	0.001	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.005	0.001	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.005	0.001	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.006	0.001	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.012	0.001	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.013	0.001	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.011	0.001	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.003	0	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.004	0.001	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.004	0	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.009	0.001	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.009	0.001	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.007	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (whole weight) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.005	0.001	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.019	0.004	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.014	0.001	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.014	0.001	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.005	0.001	4
Mexican American Male, 60+ years (2007 - 2008)	.007	0	5
Mexican American Male, 60+ years (2009 - 2010)	.006	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.003	0	6
Mexican American Female, 40-59 years (2007 - 2008)	.003	0.001	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.007	0	3
Mexican American Female, 60+ years (2007 - 2008)	.007	0.001	5
Mexican American Female, 60+ years (2009 - 2010)	.006	0.001	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4,5'-Pentachlorobiphenyl (PCB 114) (whole weight) (2005 – 2010)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.006	0	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.007	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4,5'-Pentachlorobiphenyl (PCB 114) (whole weight) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.004	0	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.003	0	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.005	0	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.006	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.005	0.001	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.004	0	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.009	0.001	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.010	0.001	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.005	0	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.010	0.004	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.004	0	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.003	0	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.009	0.001	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.011	0.001	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4,5'-Pentachlorobiphenyl (PCB 114) (whole weight) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.002	0	4
Mexican American Male, 40-59 years (2013 - 2014)	.002	0	5
Mexican American Male, 60+ years (2011 - 2012)	.003	0	2
Mexican American Male, 60+ years (2013 - 2014)	.006	0.002	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.003	0.001	3
Mexican American Female, 40-59 years (2013 - 2014)	.002	0	6
Mexican American Female, 60+ years (2011 - 2012)	.004	0	3
Mexican American Female, 60+ years (2013 - 2014)	.005	0.001	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.002	0	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.005	0.001	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.002	0	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.006	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4,5'-Pentachlorobiphenyl (PCB 114) (whole weight) (2011 – 2014)

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.001	0	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.002	0	6
Asian Male, 40-59 years (2013 - 2014)	.002	0.001	4
Asian Male, 60+ years (2011 - 2012)	.003	0	4
Asian Male, 60+ years (2013 - 2014)	.005	0.001	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	.001	0	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.002	0	6
Asian Female, 40-59 years (2013 - 2014)	.002	0	7
Asian Female, 60+ years (2011 - 2012)	.006	0.001	3
Asian Female, 60+ years (2013 - 2014)	**.007	0.002	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (1999 – 2004)

CAS Number 31508-00-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	13.1 (<LOD-15.1)	27.0 (22.1-30.3)	40.8 (32.8-48.6)	1926
Total population (2001 - 2002)	*	< LOD	15.1 (13.0-17.5)	29.0 (26.1-33.7)	44.6 (39.6-48.9)	2307
Total population (2003 - 2004)	6.00 (5.54-6.50)	5.19 (4.80-5.61)	10.4 (9.70-11.6)	21.8 (19.3-23.8)	31.3 (28.2-36.6)	1887
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	3.06 (2.76-3.39)	2.83 (2.70-3.10)	4.15 (3.60-4.56)	6.80 (4.70-9.60)	9.60 (6.80-13.2)	596
Age 20+ years (1999 - 2000)	*	< LOD	14.9 (12.9-17.4)	28.1 (24.8-33.8)	43.8 (35.6-52.3)	1259
Age 20+ years (2001 - 2002)	*	< LOD	16.9 (15.1-19.0)	32.4 (28.3-37.3)	46.5 (41.1-51.0)	1549
Age 20+ years (2003 - 2004)	6.62 (6.10-7.18)	5.65 (5.21-6.40)	11.5 (10.2-12.6)	22.8 (20.7-25.9)	34.3 (29.6-39.6)	1291
Males (1999 - 2000)	*	< LOD	< LOD	19.6 (16.6-24.4)	28.0 (24.4-38.1)	919
Males (2001 - 2002)	*	< LOD	12.0 (<LOD-14.9)	22.0 (17.6-27.1)	32.7 (25.4-47.5)	1075
Males (2003 - 2004)	5.11 (4.70-5.57)	4.71 (4.16-5.06)	8.72 (7.30-9.70)	16.4 (14.0-18.9)	23.2 (20.7-25.1)	940
Females (1999 - 2000)	*	< LOD	16.7 (13.6-19.7)	32.0 (27.1-40.3)	46.8 (41.2-57.8)	1007
Females (2001 - 2002)	*	< LOD	18.7 (16.5-21.0)	36.4 (31.6-40.9)	48.9 (44.5-54.3)	1232
Females (2003 - 2004)	6.99 (6.32-7.73)	6.02 (5.31-6.84)	12.3 (11.1-14.4)	27.3 (22.7-30.0)	37.8 (31.3-45.0)	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	17.3 (14.5-19.6)	23.7 (20.9-27.1)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	16.8 (12.5-21.7)	26.4 (19.3-33.2)	567
Mexican Americans (2003 - 2004)	3.56 (3.04-4.18)	3.15 (2.60-3.82)	5.02 (4.26-6.66)	9.37 (7.45-11.7)	14.0 (10.0-17.6)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	19.0 (13.6-21.7)	38.7 (28.4-54.4)	59.7 (45.7-80.8)	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	15.6 (12.6-19.9)	37.3 (26.1-46.4)	54.9 (40.0-66.6)	515
Non-Hispanic blacks (2003 - 2004)	6.70 (5.52-8.14)	5.25 (4.40-6.10)	12.7 (8.80-18.0)	35.1 (21.1-45.0)	57.8 (33.5-110)	462
Non-Hispanic whites (1999 - 2000)	*	< LOD	13.1 (<LOD-15.6)	25.6 (20.8-32.0)	40.3 (30.4-46.8)	720
Non-Hispanic whites (2001 - 2002)	*	< LOD	15.9 (13.6-18.1)	31.1 (27.1-35.9)	45.3 (38.7-50.1)	1061
Non-Hispanic whites (2003 - 2004)	6.19 (5.57-6.87)	5.46 (4.85-6.20)	10.9 (9.62-12.1)	22.0 (19.3-24.4)	30.7 (26.2-36.6)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.24	0.31	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.29	0.32	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.50	0.18	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	3.30	0.67	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	3.30	0.22	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	4.03	0.66	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	7.56	1.56	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	5.16	0.23	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.65	0.55	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	13.3	1.4	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	15.5	1.6	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	13.1	1.2	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.07	0.15	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.41	0.23	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	2.04	0.18	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.99	0.19	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	4.18	0.58	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	2.97	0.18	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	7.83	0.8	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	7.56	0.73	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	10.5	2.5	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	21.9	2	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	21.5	2.8	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	19.6	2.1	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.47	0.24	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.04	0.2	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.71	0.19	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.62	0.49	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.85	0.35	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	3.89	0.9	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	7.30	1.8	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	7.31	1.3	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	11.6	2.6	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	19.9	3.6	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	16.1	1.7	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	16.3	2.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.72, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.02	0.11	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.92	0.24	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.71	0.3	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	3.70	0.44	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	3.37	0.3	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.94	0.45	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	11.7	1.3	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	11.2	1.9	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	16.9	3.4	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	45.0	13.5	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	35.1	5	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	34.0	4.3	7
Mexican American Male, 12-19 years (2005 - 2006)	1.50	0.11	11
Mexican American Male, 12-19 years (2007 - 2008)	1.52	0.18	6
Mexican American Male, 12-19 years (2009 - 2010)	1.91	0.22	8
Mexican American Male, 20-39 years (2005 - 2006)	2.17	0.14	9
Mexican American Male, 20-39 years (2007 - 2008)	2.66	0.22	9
Mexican American Male, 20-39 years (2009 - 2010)	2.41	0.25	7
Mexican American Male, 40-59 years (2005 - 2006)	4.06	0.35	4
Mexican American Male, 40-59 years (2007 - 2008)	6.03	0.93	6
Mexican American Male, 40-59 years (2009 - 2010)	4.06	0.45	8
Mexican American Male, 60+ years (2005 - 2006)	8.12	0.99	4
Mexican American Male, 60+ years (2007 - 2008)	8.69	0.8	5
Mexican American Male, 60+ years (2009 - 2010)	10.6	1.4	5
Mexican American Female, 12-19 years (2005 - 2006)	1.36	0.08	16
Mexican American Female, 12-19 years (2007 - 2008)	**1.21	0.37	5
Mexican American Female, 12-19 years (2009 - 2010)	1.43	0.31	7
Mexican American Female, 20-39 years (2005 - 2006)	1.94	0.2	9
Mexican American Female, 20-39 years (2007 - 2008)	2.50	0.17	8
Mexican American Female, 20-39 years (2009 - 2010)	2.00	0.19	10
Mexican American Female, 40-59 years (2005 - 2006)	6.79	0.67	6
Mexican American Female, 40-59 years (2007 - 2008)	6.11	0.85	6
Mexican American Female, 40-59 years (2009 - 2010)	5.80	0.44	9
Mexican American Female, 60+ years (2005 - 2006)	15.3	2.7	3
Mexican American Female, 60+ years (2007 - 2008)	14.0	2.5	5
Mexican American Female, 60+ years (2009 - 2010)	15.2	2.1	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.72, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.96	0.18	10
All Hispanic Male, 20-39 years (2009 - 2010)	2.80	0.24	12
All Hispanic Male, 40-59 years (2009 - 2010)	4.98	0.5	13
All Hispanic Male, 60+ years (2009 - 2010)	11.5	1.1	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.69	0.29	10
All Hispanic Female, 20-39 years (2009 - 2010)	2.55	0.34	14
All Hispanic Female, 40-59 years (2009 - 2010)	5.88	0.52	14
All Hispanic Female, 60+ years (2009 - 2010)	15.9	1.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.72, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.51	0.11	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	2.09	0.27	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	2.66	0.23	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	3.00	0.56	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	4.60	0.25	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	5.58	0.72	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	8.83	0.56	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	10.6	1.5	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.86	0.23	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	3.78	0.95	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	2.97	0.32	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	3.70	0.73	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	8.71	1.62	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	6.19	0.6	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	15.5	1.9	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	17.3	2	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.15	0.33	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.97	0.58	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	2.59	0.2	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	1.92	0.23	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	4.96	1.4	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	5.38	1.21	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	9.87	1.09	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	12.3	1.6	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.44	0.23	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.54	0.74	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	2.86	0.45	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	2.12	0.15	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	8.17	1.18	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	7.91	1.11	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	24.7	2.6	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	25.9	3.7	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	1.19	0.13	5
Mexican American Male, 12-19 years (2013 - 2014)	1.05	0.12	7
Mexican American Male, 20-39 years (2011 - 2012)	1.92	0.29	4
Mexican American Male, 20-39 years (2013 - 2014)	1.64	0.15	5
Mexican American Male, 40-59 years (2011 - 2012)	3.87	0.47	4
Mexican American Male, 40-59 years (2013 - 2014)	3.07	0.31	5
Mexican American Male, 60+ years (2011 - 2012)	6.51	1.91	2
Mexican American Male, 60+ years (2013 - 2014)	10.5	2.4	4
Mexican American Female, 12-19 years (2011 - 2012)	.974	0.11	4
Mexican American Female, 12-19 years (2013 - 2014)	1.20	0.14	7
Mexican American Female, 20-39 years (2011 - 2012)	1.56	0.33	4
Mexican American Female, 20-39 years (2013 - 2014)	1.44	0.11	5
Mexican American Female, 40-59 years (2011 - 2012)	**6.00	1.95	3
Mexican American Female, 40-59 years (2013 - 2014)	3.52	0.47	6
Mexican American Female, 60+ years (2011 - 2012)	11.6	1.5	3
Mexican American Female, 60+ years (2013 - 2014)	13.1	2	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.43	0.4	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	1.80	0.16	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	3.60	0.63	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	10.0	1.7	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.24	0.14	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**2.62	1.22	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	4.00	0.43	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	13.1	1.2	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	3.46	0.48	3
Asian Male, 12-19 years (2013 - 2014)	1.81	0.3	3
Asian Male, 20-39 years (2011 - 2012)	4.06	0.75	6
Asian Male, 20-39 years (2013 - 2014)	3.35	0.39	4
Asian Male, 40-59 years (2011 - 2012)	8.98	1.25	6
Asian Male, 40-59 years (2013 - 2014)	7.94	1.46	4
Asian Male, 60+ years (2011 - 2012)	**9.93	3.08	4
Asian Male, 60+ years (2013 - 2014)	14.4	1.6	3
Asian Female, 12-19 years (2011 - 2012)	2.18	0.21	4
Asian Female, 12-19 years (2013 - 2014)	2.94	0.59	3
Asian Female, 20-39 years (2011 - 2012)	5.30	0.75	6
Asian Female, 20-39 years (2013 - 2014)	3.69	0.49	5
Asian Female, 40-59 years (2011 - 2012)	8.24	1.44	6
Asian Female, 40-59 years (2013 - 2014)	7.55	0.78	7
Asian Female, 60+ years (2011 - 2012)	17.6	2.1	3
Asian Female, 60+ years (2013 - 2014)	13.5	3.2	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.19 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (1999 – 2004)

CAS Number 31508-00-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	.090 (<LOD-.100)	.180 (.150-.200)	.260 (.220-.320)	1926
Total population (2001 - 2002)	*	< LOD	.100 (.090-.110)	.190 (.160-.220)	.300 (.270-.320)	2307
Total population (2003 - 2004)	.037 (.034-.040)	.032 (.029-.036)	.066 (.061-.073)	.143 (.127-.160)	.216 (.192-.233)	1887
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.015 (.014-.017)	.014 (.013-.016)	.021 (.018-.023)	.036 (.024-.046)	.047 (.035-.076)	596
Age 20+ years (1999 - 2000)	*	< LOD	.100 (.090-.110)	.190 (.170-.220)	.280 (.230-.360)	1259
Age 20+ years (2001 - 2002)	*	< LOD	.110 (.100-.130)	.210 (.180-.250)	.310 (.280-.370)	1549
Age 20+ years (2003 - 2004)	.041 (.038-.045)	.036 (.032-.041)	.072 (.066-.081)	.159 (.137-.174)	.226 (.202-.249)	1291
Males (1999 - 2000)	*	< LOD	< LOD	.130 (.110-.140)	.190 (.160-.220)	919
Males (2001 - 2002)	*	< LOD	.080 (<LOD-.100)	.140 (.120-.170)	.210 (.160-.300)	1075
Males (2003 - 2004)	.032 (.029-.035)	.030 (.026-.033)	.054 (.046-.062)	.110 (.083-.125)	.160 (.136-.180)	940
Females (1999 - 2000)	*	< LOD	.110 (.090-.130)	.210 (.180-.260)	.320 (.260-.410)	1007
Females (2001 - 2002)	*	< LOD	.130 (.100-.140)	.240 (.210-.260)	.360 (.300-.380)	1232
Females (2003 - 2004)	.042 (.038-.047)	.036 (.030-.043)	.081 (.068-.097)	.176 (.152-.206)	.242 (.217-.290)	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	.110 (.090-.130)	.140 (.130-.180)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.120 (.080-.160)	.180 (.130-.220)	567
Mexican Americans (2003 - 2004)	.022 (.018-.026)	.019 (.016-.024)	.034 (.029-.039)	.069 (.046-.086)	.094 (.075-.117)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.120 (.080-.150)	.220 (.180-.320)	.400 (.260-.500)	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.100 (.070-.120)	.210 (.170-.270)	.320 (.230-.460)	515
Non-Hispanic blacks (2003 - 2004)	.038 (.031-.046)	.030 (.026-.034)	.074 (.054-.106)	.218 (.133-.277)	.370 (.218-.618)	462
Non-Hispanic whites (1999 - 2000)	*	< LOD	.090 (<LOD-.100)	.180 (.150-.200)	.250 (.200-.330)	720
Non-Hispanic whites (2001 - 2002)	*	< LOD	.100 (.090-.120)	.210 (.170-.240)	.300 (.270-.360)	1061
Non-Hispanic whites (2003 - 2004)	.038 (.034-.043)	.034 (.029-.040)	.067 (.062-.076)	.143 (.127-.165)	.209 (.178-.234)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.012	0.002	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.011	0.002	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.013	0.001	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.025	0.006	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.022	0.002	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.026	0.005	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.058	0.013	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.038	0.002	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.032	0.004	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.090	0.008	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.099	0.009	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.080	0.008	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.011	0.001	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.011	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.010	0.001	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.019	0.001	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.025	0.004	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.016	0.001	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.058	0.007	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.050	0.005	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.065	0.015	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.158	0.013	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.145	0.019	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.118	0.012	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.012	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.010	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.008	0.001	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.016	0.003	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.016	0.002	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.022	0.005	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.047	0.012	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.047	0.008	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.069	0.013	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.117	0.02	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.098	0.011	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.088	0.012	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.010	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.009	0.001	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.007	0.001	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.021	0.003	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.017	0.002	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.015	0.002	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.075	0.01	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.068	0.012	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.095	0.019	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	**.300	0.091	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.208	0.024	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.195	0.025	7
Mexican American Male, 12-19 years (2005 - 2006)	.008	0.001	11
Mexican American Male, 12-19 years (2007 - 2008)	.008	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.009	0.001	8
Mexican American Male, 20-39 years (2005 - 2006)	.015	0.001	9
Mexican American Male, 20-39 years (2007 - 2008)	.018	0.002	9
Mexican American Male, 20-39 years (2009 - 2010)	.015	0.002	7
Mexican American Male, 40-59 years (2005 - 2006)	.033	0.003	4
Mexican American Male, 40-59 years (2007 - 2008)	.043	0.007	6
Mexican American Male, 40-59 years (2009 - 2010)	.028	0.003	8
Mexican American Male, 60+ years (2005 - 2006)	.059	0.007	4
Mexican American Male, 60+ years (2007 - 2008)	.063	0.007	5
Mexican American Male, 60+ years (2009 - 2010)	.065	0.008	5
Mexican American Female, 12-19 years (2005 - 2006)	.007	0	16
Mexican American Female, 12-19 years (2007 - 2008)	.006	0.002	5
Mexican American Female, 12-19 years (2009 - 2010)	.007	0.001	7
Mexican American Female, 20-39 years (2005 - 2006)	.013	0.001	9
Mexican American Female, 20-39 years (2007 - 2008)	.015	0.001	8
Mexican American Female, 20-39 years (2009 - 2010)	.011	0.001	10
Mexican American Female, 40-59 years (2005 - 2006)	.050	0.005	6
Mexican American Female, 40-59 years (2007 - 2008)	.041	0.006	6
Mexican American Female, 40-59 years (2009 - 2010)	.038	0.004	9
Mexican American Female, 60+ years (2005 - 2006)	.114	0.016	3
Mexican American Female, 60+ years (2007 - 2008)	.096	0.018	5
Mexican American Female, 60+ years (2009 - 2010)	.084	0.01	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2005 – 2010)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.009	0.001	10
All Hispanic Male, 20-39 years (2009 - 2010)	.018	0.002	12
All Hispanic Male, 40-59 years (2009 - 2010)	.034	0.003	13
All Hispanic Male, 60+ years (2009 - 2010)	.072	0.006	8
All Hispanic Female, 12-19 years (2009 - 2010)	.008	0.001	10
All Hispanic Female, 20-39 years (2009 - 2010)	.014	0.002	14
All Hispanic Female, 40-59 years (2009 - 2010)	.037	0.004	14
All Hispanic Female, 60+ years (2009 - 2010)	.094	0.009	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.007	0	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.010	0.001	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.015	0.001	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.016	0.003	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.031	0.003	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.033	0.005	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.049	0.003	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.058	0.008	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.010	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.019	0.005	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.016	0.002	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.019	0.003	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.056	0.011	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.037	0.004	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.094	0.011	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.103	0.012	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.009	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.008	0.002	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.013	0.001	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.010	0.001	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.029	0.009	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.030	0.007	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.053	0.006	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.065	0.01	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.006	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.011	0.003	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.016	0.003	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.010	0.001	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.050	0.009	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.041	0.006	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.138	0.014	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.139	0.02	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.006	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.005	0.001	7
Mexican American Male, 20-39 years (2011 - 2012)	.012	0.002	4
Mexican American Male, 20-39 years (2013 - 2014)	.010	0.001	5
Mexican American Male, 40-59 years (2011 - 2012)	.030	0.002	4
Mexican American Male, 40-59 years (2013 - 2014)	.019	0.002	5
Mexican American Male, 60+ years (2011 - 2012)	.038	0.01	2
Mexican American Male, 60+ years (2013 - 2014)	.056	0.013	4
Mexican American Female, 12-19 years (2011 - 2012)	.005	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.006	0.001	7
Mexican American Female, 20-39 years (2011 - 2012)	.008	0.002	4
Mexican American Female, 20-39 years (2013 - 2014)	.008	0.001	5
Mexican American Female, 40-59 years (2011 - 2012)	**.036	0.014	3
Mexican American Female, 40-59 years (2013 - 2014)	.020	0.003	6
Mexican American Female, 60+ years (2011 - 2012)	.071	0.007	3
Mexican American Female, 60+ years (2013 - 2014)	.075	0.01	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.007	0.002	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.011	0.001	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.022	0.005	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.054	0.009	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.006	0.001	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.015	0.007	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.023	0.003	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.077	0.007	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2011 – 2014)

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.018	0.003	3
Asian Male, 12-19 years (2013 - 2014)	.009	0.001	3
Asian Male, 20-39 years (2011 - 2012)	.022	0.004	6
Asian Male, 20-39 years (2013 - 2014)	.020	0.003	4
Asian Male, 40-59 years (2011 - 2012)	.055	0.008	6
Asian Male, 40-59 years (2013 - 2014)	.045	0.009	4
Asian Male, 60+ years (2011 - 2012)	**.054	0.017	4
Asian Male, 60+ years (2013 - 2014)	.087	0.011	3
Asian Female, 12-19 years (2011 - 2012)	.010	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.014	0.003	3
Asian Female, 20-39 years (2011 - 2012)	.029	0.004	6
Asian Female, 20-39 years (2013 - 2014)	.019	0.003	5
Asian Female, 40-59 years (2011 - 2012)	.051	0.009	6
Asian Female, 40-59 years (2013 - 2014)	.044	0.005	7
Asian Female, 60+ years (2011 - 2012)	.099	0.011	3
Asian Female, 60+ years (2013 - 2014)	.079	0.015	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (whole weight) (2005 – 2008)‡‡

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (whole weight) (2005 – 2008)‡‡

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (1999 – 2004)

CAS Number 38380-08-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	12.6 (<LOD-13.8)	17.0 (15.5-18.0)	1907
Total population (2001 - 2002)	*	< LOD	< LOD	14.3 (12.1-16.0)	18.3 (15.6-21.1)	2296
Total population (2003 - 2004)	2.54 (2.36-2.74)	3.29 (2.90-3.80)	7.00 (6.20-8.07)	11.4 (10.4-12.6)	15.3 (13.8-17.5)	1880
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	665
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	.500 (<LOD-.660)	1.20 (1.00-1.43)	2.30 (2.06-2.45)	3.00 (2.37-3.60)	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	13.6 (<LOD-14.7)	17.5 (16.0-20.1)	1242
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	15.0 (13.3-17.0)	19.7 (17.0-22.1)	1540
Age 20+ years (2003 - 2004)	3.31 (3.05-3.60)	4.10 (3.40-4.66)	7.81 (6.80-8.70)	12.0 (10.9-13.5)	16.8 (14.7-18.6)	1294
Males (1999 - 2000)	*	< LOD	< LOD	12.6 (<LOD-14.0)	17.0 (14.6-18.0)	912
Males (2001 - 2002)	*	< LOD	< LOD	13.7 (11.3-16.4)	18.4 (14.3-22.1)	1069
Males (2003 - 2004)	2.57 (2.34-2.82)	3.10 (2.80-3.80)	6.92 (5.82-8.00)	11.8 (9.79-14.2)	17.1 (14.7-19.3)	940
Females (1999 - 2000)	*	< LOD	< LOD	12.8 (<LOD-14.7)	16.5 (15.4-20.7)	995
Females (2001 - 2002)	*	< LOD	< LOD	14.8 (13.2-15.5)	18.2 (16.2-21.0)	1227
Females (2003 - 2004)	2.51 (2.28-2.76)	3.42 (2.80-4.10)	7.09 (6.35-8.10)	11.1 (10.4-12.0)	14.1 (12.7-16.8)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	566
Mexican Americans (2003 - 2004)	.858 (.640-1.15)	1.00 (.700-1.40)	2.48 (1.50-3.60)	4.78 (4.00-5.68)	6.40 (5.40-7.70)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	14.6 (<LOD-20.5)	23.1 (17.2-32.1)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	15.5 (12.7-21.0)	23.5 (16.4-31.4)	511
Non-Hispanic blacks (2003 - 2004)	2.32 (1.87-2.89)	3.04 (2.40-3.60)	7.40 (5.48-9.80)	14.7 (11.5-18.6)	24.8 (15.0-33.0)	456
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	13.6 (<LOD-15.2)	17.4 (16.0-18.9)	711
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	15.0 (13.2-17.5)	19.4 (16.2-22.1)	1056
Non-Hispanic whites (2003 - 2004)	3.03 (2.70-3.39)	4.03 (3.15-4.66)	7.76 (6.51-8.79)	11.7 (10.5-13.1)	15.7 (13.5-18.5)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.822	0.123	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.985	0.283	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.827	0.082	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	1.61	0.26	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	1.73	0.21	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	1.60	0.24	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	5.40	0.36	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	5.41	0.32	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	4.41	0.36	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.93	0.48	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	11.9	1	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	9.51	0.76	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.614	0.064	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.751	0.136	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.610	0.127	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	1.08	0.09	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	1.50	0.16	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	1.16	0.08	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.72	0.39	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	5.33	0.33	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	6.03	0.88	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	9.10	0.84	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	10.5	0.7	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	9.79	0.81	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.659	0.077	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	1.35	0.23	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	1.35	0.19	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.36	0.15	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	4.39	0.48	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	5.13	0.48	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	5.19	0.55	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	13.5	1.9	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	12.5	1.4	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	11.5	0.8	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.383	0.036	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	1.17	0.17	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	1.03	0.15	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.955	0.156	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	4.73	0.62	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	5.20	0.37	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	4.84	0.48	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	17.1	3.9	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	13.0	0.7	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	13.6	1.5	7
Mexican American Male, 12-19 years (2005 - 2006)	.435	0.073	11
Mexican American Male, 12-19 years (2007 - 2008)	.436	0.091	6
Mexican American Male, 12-19 years (2009 - 2010)	.544	0.111	8
Mexican American Male, 20-39 years (2005 - 2006)	.809	0.117	9
Mexican American Male, 20-39 years (2007 - 2008)	.914	0.147	9
Mexican American Male, 20-39 years (2009 - 2010)	.633	0.073	8
Mexican American Male, 40-59 years (2005 - 2006)	2.48	0.24	4
Mexican American Male, 40-59 years (2007 - 2008)	4.17	0.83	6
Mexican American Male, 40-59 years (2009 - 2010)	2.37	0.15	8
Mexican American Male, 60+ years (2005 - 2006)	5.39	1.05	4
Mexican American Male, 60+ years (2007 - 2008)	5.80	0.39	5
Mexican American Male, 60+ years (2009 - 2010)	6.66	0.74	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.524	0.07	9
Mexican American Female, 20-39 years (2007 - 2008)	.700	0.062	8
Mexican American Female, 20-39 years (2009 - 2010)	.566	0.067	10
Mexican American Female, 40-59 years (2005 - 2006)	2.45	0.26	6
Mexican American Female, 40-59 years (2007 - 2008)	3.02	0.47	6
Mexican American Female, 40-59 years (2009 - 2010)	1.98	0.24	9
Mexican American Female, 60+ years (2005 - 2006)	4.81	0.26	3
Mexican American Female, 60+ years (2007 - 2008)	5.07	0.65	5
Mexican American Female, 60+ years (2009 - 2010)	5.71	0.81	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.496	0.084	11
All Hispanic Male, 20-39 years (2009 - 2010)	.783	0.087	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.74	0.26	13
All Hispanic Male, 60+ years (2009 - 2010)	6.78	0.58	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	.676	0.081	14
All Hispanic Female, 40-59 years (2009 - 2010)	2.12	0.21	14
All Hispanic Female, 60+ years (2009 - 2010)	5.70	0.52	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.563	0.111	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.709	0.109	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	1.00	0.08	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	1.04	0.17	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	**4.97	1.85	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	4.72	0.56	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	7.57	0.51	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	8.69	0.59	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.549	0.123	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.877	0.158	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	1.12	0.23	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.03	0.24	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	4.32	0.47	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	4.66	0.51	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	8.46	0.58	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	9.63	0.7	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.443	0.081	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.426	0.062	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.808	0.08	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.781	0.088	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	3.17	0.29	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	3.75	0.4	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	8.20	0.46	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	9.41	0.66	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.394	0.047	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.672	0.122	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.558	0.111	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	3.58	0.38	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	3.37	0.35	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	9.79	0.57	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	12.2	0.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.302	0.043	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.809	0.134	4
Mexican American Male, 20-39 years (2013 - 2014)	.476	0.048	5
Mexican American Male, 40-59 years (2011 - 2012)	2.36	0.31	4
Mexican American Male, 40-59 years (2013 - 2014)	1.67	0.23	5
Mexican American Male, 60+ years (2011 - 2012)	4.08	0.21	2
Mexican American Male, 60+ years (2013 - 2014)	7.73	1.6	4
Mexican American Female, 12-19 years (2011 - 2012)	.263	0.04	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	**.499	0.173	4
Mexican American Female, 20-39 years (2013 - 2014)	.380	0.067	5
Mexican American Female, 40-59 years (2011 - 2012)	2.31	0.62	3
Mexican American Female, 40-59 years (2013 - 2014)	1.68	0.26	6
Mexican American Female, 60+ years (2011 - 2012)	4.87	0.61	3
Mexican American Female, 60+ years (2013 - 2014)	5.14	0.56	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.486	0.037	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	1.93	0.33	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	6.92	1.14	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**1.09	0.72	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	2.05	0.26	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	5.58	0.4	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.599	0.029	3
Asian Male, 12-19 years (2013 - 2014)	.386	0.035	3
Asian Male, 20-39 years (2011 - 2012)	1.30	0.28	6
Asian Male, 20-39 years (2013 - 2014)	.824	0.036	4
Asian Male, 40-59 years (2011 - 2012)	3.02	0.37	6
Asian Male, 40-59 years (2013 - 2014)	2.45	0.43	4
Asian Male, 60+ years (2011 - 2012)	4.52	0.73	4
Asian Male, 60+ years (2013 - 2014)	5.76	0.81	3
Asian Female, 12-19 years (2011 - 2012)	.523	0.091	4
Asian Female, 12-19 years (2013 - 2014)	**1.14	0.43	3
Asian Female, 20-39 years (2011 - 2012)	1.08	0.13	6
Asian Female, 20-39 years (2013 - 2014)	.926	0.127	5
Asian Female, 40-59 years (2011 - 2012)	2.26	0.38	6
Asian Female, 40-59 years (2013 - 2014)	2.24	0.18	7
Asian Female, 60+ years (2011 - 2012)	5.81	1.33	3
Asian Female, 60+ years (2013 - 2014)	**6.67	2.72	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (1999 – 2004)

CAS Number 38380-08-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.090)	.110 (.100-.130)	1907
Total population (2001 - 2002)	*	< LOD	< LOD	.100 (.080-.110)	.130 (.110-.140)	2296
Total population (2003 - 2004)	.016 (.014-.017)	.021 (.018-.024)	.048 (.041-.052)	.075 (.069-.085)	.103 (.094-.112)	1880
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	665
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	.003 (<LOD-.003)	.006 (.005-.007)	.012 (.011-.012)	.015 (.012-.018)	586
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.120 (.100-.140)	1242
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.120)	.130 (.120-.140)	1540
Age 20+ years (2003 - 2004)	.021 (.019-.023)	.026 (.021-.030)	.051 (.045-.057)	.082 (.072-.093)	.109 (.098-.121)	1294
Males (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.110 (.090-.130)	912
Males (2001 - 2002)	*	< LOD	< LOD	.090 (.080-.120)	.120 (.110-.150)	1069
Males (2003 - 2004)	.016 (.014-.018)	.021 (.017-.025)	.045 (.037-.054)	.076 (.068-.094)	.108 (.094-.123)	940
Females (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.090)	.110 (.090-.140)	995
Females (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.100)	.130 (.110-.140)	1227
Females (2003 - 2004)	.015 (.014-.017)	.020 (.017-.025)	.049 (.044-.052)	.073 (.064-.085)	.101 (.089-.112)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	566
Mexican Americans (2003 - 2004)	.005 (.004-.007)	.007 (.004-.009)	.015 (.011-.022)	.036 (.025-.041)	.046 (.037-.070)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.120)	.150 (.110-.190)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.100 (.080-.130)	.150 (.100-.180)	511
Non-Hispanic blacks (2003 - 2004)	.013 (.010-.017)	.018 (.014-.022)	.044 (.032-.056)	.099 (.067-.127)	.166 (.108-.198)	456
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.110 (.100-.130)	711
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.120)	.130 (.120-.140)	1056
Non-Hispanic whites (2003 - 2004)	.019 (.017-.021)	.025 (.020-.031)	.051 (.044-.057)	.078 (.069-.089)	.104 (.094-.119)	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.005	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.005	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.004	0	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.012	0.002	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.012	0.002	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.010	0.001	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.041	0.003	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.039	0.002	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.030	0.003	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.061	0.003	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.075	0.006	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.057	0.004	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.004	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.003	0.001	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.007	0.001	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.009	0.001	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.006	0	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.035	0.004	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.035	0.002	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.038	0.005	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.066	0.005	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.070	0.004	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.060	0.005	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.008	0.001	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.008	0.001	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.007	0.001	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.028	0.003	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.033	0.003	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.032	0.003	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.080	0.012	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.076	0.009	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.062	0.005	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.007	0.001	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.005	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.030	0.004	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.031	0.003	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.027	0.002	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.114	0.026	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.078	0.004	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.078	0.008	7
Mexican American Male, 12-19 years (2005 - 2006)	.002	0	11
Mexican American Male, 12-19 years (2007 - 2008)	.002	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.003	0.001	8
Mexican American Male, 20-39 years (2005 - 2006)	.006	0.001	9
Mexican American Male, 20-39 years (2007 - 2008)	.006	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	.004	0.001	8
Mexican American Male, 40-59 years (2005 - 2006)	.020	0.002	4
Mexican American Male, 40-59 years (2007 - 2008)	.030	0.006	6
Mexican American Male, 40-59 years (2009 - 2010)	.016	0.001	8
Mexican American Male, 60+ years (2005 - 2006)	.039	0.007	4
Mexican American Male, 60+ years (2007 - 2008)	.042	0.003	5
Mexican American Male, 60+ years (2009 - 2010)	.041	0.004	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	.004	0.001	9
Mexican American Female, 20-39 years (2007 - 2008)	.004	0	8
Mexican American Female, 20-39 years (2009 - 2010)	.003	0	10
Mexican American Female, 40-59 years (2005 - 2006)	.018	0.002	6
Mexican American Female, 40-59 years (2007 - 2008)	.020	0.003	6
Mexican American Female, 40-59 years (2009 - 2010)	.013	0.002	9
Mexican American Female, 60+ years (2005 - 2006)	.037	0.004	3
Mexican American Female, 60+ years (2007 - 2008)	.035	0.005	5
Mexican American Female, 60+ years (2009 - 2010)	.031	0.004	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2005 – 2010)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.002	0	11
All Hispanic Male, 20-39 years (2009 - 2010)	.005	0.001	13
All Hispanic Male, 40-59 years (2009 - 2010)	.019	0.002	13
All Hispanic Male, 60+ years (2009 - 2010)	.042	0.003	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	.004	0	14
All Hispanic Female, 40-59 years (2009 - 2010)	.013	0.001	14
All Hispanic Female, 60+ years (2009 - 2010)	.034	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.003	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.006	0.001	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.006	0.001	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	**.032	0.011	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.028	0.003	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.042	0.002	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.047	0.004	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.003	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.004	0.001	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.006	0.001	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.005	0.001	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.028	0.004	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.027	0.003	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.052	0.004	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.057	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.004	0	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.004	0	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.018	0.002	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.021	0.002	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.044	0.002	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.049	0.003	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.004	0.001	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.003	0.001	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.022	0.003	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.018	0.002	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.055	0.003	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.065	0.003	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.001	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.005	0.001	4
Mexican American Male, 20-39 years (2013 - 2014)	.003	0	5
Mexican American Male, 40-59 years (2011 - 2012)	.018	0.001	4
Mexican American Male, 40-59 years (2013 - 2014)	.010	0.001	5
Mexican American Male, 60+ years (2011 - 2012)	.024	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	.041	0.009	4
Mexican American Female, 12-19 years (2011 - 2012)	.001	0	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	.003	0.001	4
Mexican American Female, 20-39 years (2013 - 2014)	.002	0	5
Mexican American Female, 40-59 years (2011 - 2012)	**.014	0.004	3
Mexican American Female, 40-59 years (2013 - 2014)	.010	0.001	6
Mexican American Female, 60+ years (2011 - 2012)	.030	0.003	3
Mexican American Female, 60+ years (2013 - 2014)	.030	0.004	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.003	0	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.012	0.002	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.037	0.006	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.006	0.004	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.012	0.002	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.033	0.003	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2011 – 2014)

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.003	0	3
Asian Male, 12-19 years (2013 - 2014)	.002	0	3
Asian Male, 20-39 years (2011 - 2012)	.007	0.002	6
Asian Male, 20-39 years (2013 - 2014)	.005	0	4
Asian Male, 40-59 years (2011 - 2012)	.018	0.002	6
Asian Male, 40-59 years (2013 - 2014)	.014	0.003	4
Asian Male, 60+ years (2011 - 2012)	.024	0.004	4
Asian Male, 60+ years (2013 - 2014)	.035	0.005	3
Asian Female, 12-19 years (2011 - 2012)	.002	0	4
Asian Female, 12-19 years (2013 - 2014)	**.005	0.002	3
Asian Female, 20-39 years (2011 - 2012)	.006	0.001	6
Asian Female, 20-39 years (2013 - 2014)	.005	0.001	5
Asian Female, 40-59 years (2011 - 2012)	.014	0.002	6
Asian Female, 40-59 years (2013 - 2014)	.013	0.001	7
Asian Female, 60+ years (2011 - 2012)	.033	0.009	3
Asian Female, 60+ years (2013 - 2014)	**.038	0.014	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (1999 – 2004)

CAS Number 69782-90-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1897
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2294
Total population (2003 - 2004)	.605 (.554-.661)	.800 (.700-.940)	1.73 (1.47-1.93)	2.80 (2.50-3.10)	3.80 (3.36-4.30)	1858
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	654
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	755
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.690 (.540-.760)	.980 (.750-1.12)	580
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1243
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1539
Age 20+ years (2003 - 2004)	.743 (.675-.817)	.980 (.800-1.10)	1.88 (1.69-2.05)	2.98 (2.68-3.30)	3.97 (3.51-4.59)	1278
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	901
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1068
Males (2003 - 2004)	.594 (.541-.653)	.750 (.700-.900)	1.65 (1.38-1.88)	2.90 (2.39-3.50)	4.00 (3.57-4.87)	928
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	996
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1226
Females (2003 - 2004)	.615 (.552-.685)	.890 (.700-1.00)	1.79 (1.60-1.99)	2.70 (2.50-2.91)	3.40 (3.20-3.93)	930
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	622
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	566
Mexican Americans (2003 - 2004)	*	< LOD	.600 (<LOD-.820)	1.12 (.960-1.32)	1.59 (1.20-1.80)	422
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	405
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	510
Non-Hispanic blacks (2003 - 2004)	.568 (.488-.662)	.720 (.600-.930)	1.80 (1.39-2.26)	3.55 (3.10-4.40)	5.35 (3.60-8.80)	448
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	716
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1055
Non-Hispanic whites (2003 - 2004)	.713 (.635-.801)	.980 (.760-1.12)	1.81 (1.58-2.06)	2.86 (2.54-3.27)	3.80 (3.27-4.73)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.367	0.055	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.15	0.07	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.31	0.09	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.928	0.079	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2.03	0.11	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	2.91	0.27	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	2.18	0.2	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.06	0.09	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.38	0.09	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.38	0.2	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.15	0.21	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2.72	0.19	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2.27	0.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.988	0.12	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1.30	0.12	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	1.26	0.21	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	3.25	0.45	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	3.26	0.39	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	2.56	0.19	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	1.13	0.16	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.38	0.11	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.19	0.12	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	4.31	1.09	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	3.41	0.19	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	3.29	0.38	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.561	0.072	4
Mexican American Male, 40-59 years (2007 - 2008)	.979	0.195	6
Mexican American Male, 40-59 years (2009 - 2010)	.563	0.035	8
Mexican American Male, 60+ years (2005 - 2006)	1.13	0.2	4
Mexican American Male, 60+ years (2007 - 2008)	1.30	0.07	5
Mexican American Male, 60+ years (2009 - 2010)	1.57	0.18	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.567	0.057	6
Mexican American Female, 40-59 years (2007 - 2008)	.756	0.101	6
Mexican American Female, 40-59 years (2009 - 2010)	.477	0.046	9
Mexican American Female, 60+ years (2005 - 2006)	1.08	0.08	3
Mexican American Female, 60+ years (2007 - 2008)	1.46	0.26	5
Mexican American Female, 60+ years (2009 - 2010)	1.36	0.21	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.643	0.064	13
All Hispanic Male, 60+ years (2009 - 2010)	1.59	0.14	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.500	0.043	14
All Hispanic Female, 60+ years (2009 - 2010)	1.37	0.13	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.249	0.025	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	**1.05	0.39	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	1.07	0.14	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.62	0.1	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	1.93	0.13	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.03	0.12	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	1.16	0.2	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	1.95	0.13	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	2.20	0.17	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.216	0.019	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.729	0.063	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.856	0.104	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	1.92	0.12	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	3.03	0.86	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.866	0.091	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.807	0.1	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	2.41	0.18	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	3.16	0.22	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.501	0.064	4
Mexican American Male, 40-59 years (2013 - 2014)	.358	0.027	5
Mexican American Male, 60+ years (2011 - 2012)	.869	0.158	2
Mexican American Male, 60+ years (2013 - 2014)	1.69	0.37	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	.519	0.151	3
Mexican American Female, 40-59 years (2013 - 2014)	.346	0.049	6
Mexican American Female, 60+ years (2011 - 2012)	1.10	0.12	3
Mexican American Female, 60+ years (2013 - 2014)	1.12	0.17	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.416	0.073	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	1.51	0.26	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.413	0.054	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	1.22	0.12	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.341	0.07	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.789	0.11	6
Asian Male, 40-59 years (2013 - 2014)	.614	0.107	4
Asian Male, 60+ years (2011 - 2012)	1.15	0.16	4
Asian Male, 60+ years (2013 - 2014)	1.41	0.17	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	.291	0.04	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.531	0.083	6
Asian Female, 40-59 years (2013 - 2014)	.551	0.052	7
Asian Female, 60+ years (2011 - 2012)	1.45	0.24	3
Asian Female, 60+ years (2013 - 2014)	**1.66	0.63	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (1999 – 2004)

CAS Number 69782-90-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1897
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2294
Total population (2003 - 2004)	.004 (.003-.004)	.005 (.004-.006)	.011 (.010-.013)	.018 (.016-.021)	.024 (.022-.027)	1858
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	654
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	755
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.004 (.003-.004)	.005 (.004-.005)	580
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1243
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1539
Age 20+ years (2003 - 2004)	.005 (.004-.005)	.006 (.005-.007)	.012 (.011-.014)	.019 (.017-.022)	.026 (.023-.031)	1278
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	901
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1068
Males (2003 - 2004)	.004 (.003-.004)	.005 (.004-.006)	.011 (.009-.012)	.018 (.016-.022)	.025 (.022-.027)	928
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	996
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1226
Females (2003 - 2004)	.004 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.017 (.016-.020)	.024 (.021-.027)	930
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	622
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	566
Mexican Americans (2003 - 2004)	*	< LOD	.004 (<LOD-.006)	.008 (.006-.009)	.011 (.009-.014)	422
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	405
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	510
Non-Hispanic blacks (2003 - 2004)	.003 (.003-.004)	.004 (.003-.006)	.011 (.008-.014)	.025 (.016-.031)	.040 (.026-.050)	448
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	716
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1055
Non-Hispanic whites (2003 - 2004)	.004 (.004-.005)	.006 (.005-.008)	.012 (.010-.014)	.018 (.016-.021)	.025 (.022-.027)	869

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.003	0	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.009	0.001	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.009	0.001	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.006	0.001	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.014	0.001	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.018	0.002	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.013	0.001	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.008	0.001	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.009	0.001	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.009	0.001	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.016	0.001	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.018	0.001	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.014	0.001	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.006	0.001	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.008	0.001	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.008	0.001	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.019	0.003	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.020	0.003	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.014	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.007	0.001	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.008	0.001	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.007	0.001	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.029	0.007	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.020	0.001	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.019	0.002	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.005	0	4
Mexican American Male, 40-59 years (2007 - 2008)	.007	0.001	6
Mexican American Male, 40-59 years (2009 - 2010)	.004	0	8
Mexican American Male, 60+ years (2005 - 2006)	.008	0.001	4
Mexican American Male, 60+ years (2007 - 2008)	.009	0	5
Mexican American Male, 60+ years (2009 - 2010)	.010	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.004	0	6
Mexican American Female, 40-59 years (2007 - 2008)	.005	0.001	6
Mexican American Female, 40-59 years (2009 - 2010)	.003	0	9
Mexican American Female, 60+ years (2005 - 2006)	.008	0	3
Mexican American Female, 60+ years (2007 - 2008)	.010	0.002	5
Mexican American Female, 60+ years (2009 - 2010)	.007	0.001	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2005 – 2010)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.004	0	13
All Hispanic Male, 60+ years (2009 - 2010)	.010	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.003	0	14
All Hispanic Female, 60+ years (2009 - 2010)	.008	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.001	0	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	**.007	0.002	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.006	0.001	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.009	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.010	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.007	0.001	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.007	0.001	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.012	0.001	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.013	0.001	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.001	0	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.004	0	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.005	0.001	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.010	0.001	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.016	0.005	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.004	0.001	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.013	0.001	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.017	0.001	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.004	0	4
Mexican American Male, 40-59 years (2013 - 2014)	.002	0	5
Mexican American Male, 60+ years (2011 - 2012)	.005	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	.009	0.002	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.003	0.001	3
Mexican American Female, 40-59 years (2013 - 2014)	.002	0	6
Mexican American Female, 60+ years (2011 - 2012)	.007	0.001	3
Mexican American Female, 60+ years (2013 - 2014)	.007	0.001	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.003	0.001	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.008	0.001	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.002	0	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.007	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2011 – 2014)

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.002	0	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.005	0.001	6
Asian Male, 40-59 years (2013 - 2014)	.003	0.001	4
Asian Male, 60+ years (2011 - 2012)	.006	0.001	4
Asian Male, 60+ years (2013 - 2014)	.008	0.001	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	.002	0	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.003	0.001	6
Asian Female, 40-59 years (2013 - 2014)	.003	0	7
Asian Female, 60+ years (2011 - 2012)	.008	0.002	3
Asian Female, 60+ years (2013 - 2014)	**.009	0.003	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (1999 – 2004)

CAS Number 52663-72-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1908
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	.494 (.441-.553)	.700 (.560-.800)	1.60 (1.40-1.70)	2.99 (2.74-3.36)	4.10 (3.80-4.47)	1864
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	666
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.640 (.500-.770)	.870 (.700-1.10)	584
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1242
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	.592 (.521-.673)	.860 (.700-1.00)	1.72 (1.55-2.03)	3.30 (2.90-3.60)	4.30 (3.90-4.81)	1280
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.423 (<LOD-.471)	.500 (.440-.600)	1.33 (1.16-1.60)	2.70 (2.25-3.50)	3.80 (3.50-4.70)	931
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1000
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	.573 (.492-.669)	.880 (.660-1.06)	1.71 (1.51-2.10)	3.21 (2.82-3.62)	4.30 (3.80-4.70)	933
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	627
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	.600 (.400-.800)	1.20 (.960-1.44)	1.70 (1.30-1.94)	419
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	411
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.521 (.432-.628)	.560 (.460-.800)	1.95 (1.25-2.40)	4.30 (3.27-6.79)	7.90 (4.70-11.8)	451
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	715
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	.538 (.458-.632)	.800 (.600-.990)	1.66 (1.42-1.90)	2.98 (2.70-3.45)	3.94 (3.62-4.47)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.397	0.087	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	16
Non-Hispanic White Male, 40-59 years (2005 - 2006)	1.07	0.12	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.967	0.07	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.772	0.078	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	2.30	0.16	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	2.73	0.23	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	2.27	0.25	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.334	0.026	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	1.19	0.12	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.30	0.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.49	0.24	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.67	0.23	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2.93	0.23	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2.77	0.25	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.346	0.065	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	1.05	0.16	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	1.28	0.2	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	1.61	0.35	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	3.71	0.57	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	3.44	0.44	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	3.03	0.27	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.388	0.047	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	1.57	0.19	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.60	0.21	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.89	0.42	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	6.11	1.71	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	4.73	0.3	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	4.92	0.64	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.589	0.034	4
Mexican American Male, 40-59 years (2007 - 2008)	1.08	0.2	6
Mexican American Male, 40-59 years (2009 - 2010)	.555	0.065	8
Mexican American Male, 60+ years (2005 - 2006)	1.35	0.26	4
Mexican American Male, 60+ years (2007 - 2008)	1.55	0.18	5
Mexican American Male, 60+ years (2009 - 2010)	1.78	0.18	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.893	0.088	6
Mexican American Female, 40-59 years (2007 - 2008)	1.00	0.13	6
Mexican American Female, 40-59 years (2009 - 2010)	.598	0.083	8
Mexican American Female, 60+ years (2005 - 2006)	1.69	0.17	3
Mexican American Female, 60+ years (2007 - 2008)	1.92	0.25	5
Mexican American Female, 60+ years (2009 - 2010)	1.98	0.27	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.676	0.076	13
All Hispanic Male, 60+ years (2009 - 2010)	1.91	0.15	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.674	0.089	13
All Hispanic Female, 60+ years (2009 - 2010)	1.97	0.17	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.283	0.033	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.309	0.073	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.819	0.124	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.795	0.089	13
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.60	0.11	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	1.84	0.19	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.326	0.063	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.288	0.031	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.339	0.092	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.05	0.15	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.972	0.12	15
Non-Hispanic White Female, 60+ years (2011 - 2012)	2.25	0.16	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	2.36	0.19	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.254	0.026	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.787	0.196	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.826	0.158	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	1.95	0.12	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**3.19	1.04	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	1.13	0.12	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	1.09	0.14	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	3.43	0.37	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	4.11	0.43	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.256	0.053	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.489	0.112	4
Mexican American Male, 40-59 years (2013 - 2014)	.463	0.068	5
Mexican American Male, 60+ years (2011 - 2012)	.949	0.214	2
Mexican American Male, 60+ years (2013 - 2014)	1.85	0.35	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.616	0.207	3
Mexican American Female, 40-59 years (2013 - 2014)	.474	0.064	6
Mexican American Female, 60+ years (2011 - 2012)	1.71	0.21	3
Mexican American Female, 60+ years (2013 - 2014)	1.57	0.13	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.496	0.128	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	1.63	0.26	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.558	0.062	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	1.65	0.11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.341	0.092	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.596	0.13	6
Asian Male, 20-39 years (2013 - 2014)	.330	0.077	4
Asian Male, 40-59 years (2011 - 2012)	1.39	0.23	6
Asian Male, 40-59 years (2013 - 2014)	1.00	0.17	4
Asian Male, 60+ years (2011 - 2012)	1.65	0.37	4
Asian Male, 60+ years (2013 - 2014)	2.13	0.4	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.423	0.084	3
Asian Female, 20-39 years (2011 - 2012)	.607	0.094	6
Asian Female, 20-39 years (2013 - 2014)	.447	0.078	5
Asian Female, 40-59 years (2011 - 2012)	1.03	0.21	6
Asian Female, 40-59 years (2013 - 2014)	.926	0.108	7
Asian Female, 60+ years (2011 - 2012)	2.41	0.05	3
Asian Female, 60+ years (2013 - 2014)	**2.51	0.92	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (1999 – 2004)

CAS Number 52663-72-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1908
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	.003 (.003-.003)	.004 (.003-.005)	.010 (.009-.012)	.020 (.018-.022)	.026 (.024-.027)	1864
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	666
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.004 (.003-.004)	.005 (.004-.005)	584
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1242
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	.004 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.021 (.019-.023)	.027 (.025-.030)	1280
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.003 (<LOD-.003)	.003 (.003-.004)	.009 (.008-.010)	.018 (.015-.021)	.023 (.021-.026)	931
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1000
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	.003 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.022 (.019-.024)	.027 (.025-.031)	933
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	627
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	.004 (.003-.004)	.009 (.007-.011)	.013 (.010-.015)	419
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	411
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.003 (.002-.004)	.003 (.003-.005)	.012 (.008-.015)	.028 (.019-.042)	.051 (.030-.072)	451
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	715
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	.003 (.003-.004)	.005 (.004-.006)	.011 (.009-.013)	.020 (.018-.022)	.025 (.023-.027)	875

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.003	0.001	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	16
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.008	0.001	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.007	0	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.005	0.001	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.016	0.001	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.017	0.001	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.014	0.001	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.002	0	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.009	0.001	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.009	0.001	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.009	0.001	16
Non-Hispanic White Female, 60+ years (2005 - 2006)	.019	0.001	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.020	0.001	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.017	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.002	0	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.007	0.001	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.008	0.001	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.010	0.002	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.022	0.003	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.021	0.003	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.016	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.002	0	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.010	0.001	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.010	0.001	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.010	0.002	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.041	0.011	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.028	0.002	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.028	0.004	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.005	0	4
Mexican American Male, 40-59 years (2007 - 2008)	.008	0.001	6
Mexican American Male, 40-59 years (2009 - 2010)	.004	0.001	8
Mexican American Male, 60+ years (2005 - 2006)	.010	0.002	4
Mexican American Male, 60+ years (2007 - 2008)	.011	0.001	5
Mexican American Male, 60+ years (2009 - 2010)	.011	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.007	0.001	6
Mexican American Female, 40-59 years (2007 - 2008)	.007	0.001	6
Mexican American Female, 40-59 years (2009 - 2010)	.004	0.001	8
Mexican American Female, 60+ years (2005 - 2006)	.013	0	3
Mexican American Female, 60+ years (2007 - 2008)	.013	0.002	5
Mexican American Female, 60+ years (2009 - 2010)	.011	0.001	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2005 – 2010)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	.005	0.001	13
All Hispanic Male, 60+ years (2009 - 2010)	.012	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.004	0.001	13
All Hispanic Female, 60+ years (2009 - 2010)	.012	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.002	0	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.002	0	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.005	0.001	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.005	0.001	13
Non-Hispanic White Male, 60+ years (2011 - 2012)	.009	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.010	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.002	0	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.002	0	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.007	0.001	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.006	0.001	15
Non-Hispanic White Female, 60+ years (2011 - 2012)	.014	0.001	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.014	0.001	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.001	0	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.004	0.001	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.005	0.001	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.011	0.001	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.017	0.006	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.007	0.001	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.006	0.001	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.019	0.002	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.022	0.002	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.002	0	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.004	0.001	4
Mexican American Male, 40-59 years (2013 - 2014)	.003	0	5
Mexican American Male, 60+ years (2011 - 2012)	.006	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	.010	0.002	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	**.004	0.001	3
Mexican American Female, 40-59 years (2013 - 2014)	.003	0	6
Mexican American Female, 60+ years (2011 - 2012)	.010	0.001	3
Mexican American Female, 60+ years (2013 - 2014)	.009	0.001	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	**.003	0.001	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.009	0.001	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.003	0	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.010	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2011 – 2014)

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.002	0.001	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	.003	0.001	6
Asian Male, 20-39 years (2013 - 2014)	.002	0	4
Asian Male, 40-59 years (2011 - 2012)	.008	0.001	6
Asian Male, 40-59 years (2013 - 2014)	.006	0.001	4
Asian Male, 60+ years (2011 - 2012)	.009	0.002	4
Asian Male, 60+ years (2013 - 2014)	.013	0.003	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	3
Asian Female, 20-39 years (2011 - 2012)	.003	0	6
Asian Female, 20-39 years (2013 - 2014)	.002	0	5
Asian Female, 40-59 years (2011 - 2012)	.006	0.001	6
Asian Female, 40-59 years (2013 - 2014)	.005	0.001	7
Asian Female, 60+ years (2011 - 2012)	.014	0.001	3
Asian Female, 60+ years (2013 - 2014)	**.014	0.005	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2001 – 2004)

CAS Number 39635-31-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	*	< LOD	< LOD	.900 (.700-1.16)	1.47 (1.10-2.18)	1817
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	752
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	1.00 (<LOD-3.09)	570
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1546
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	1.00 (.760-1.20)	1.50 (1.10-2.14)	1247
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1070
Males (2003 - 2004)	*	< LOD	< LOD	1.00 (.800-1.20)	1.54 (1.20-2.23)	903
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Females (2003 - 2004)	*	< LOD	< LOD	.830 (.600-1.14)	1.39 (.890-2.18)	914
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	.700 (<LOD-1.00)	406
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	514
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	1.20 (.840-1.60)	1.85 (1.20-2.83)	444
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1057
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	.900 (.700-1.26)	1.51 (1.04-2.19)	851

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.474	0.075	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.525	0.041	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.449	0.047	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.799	0.047	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1.04	0.06	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.977	0.07	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.386	0.05	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.479	0.049	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.615	0.059	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.856	0.056	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.791	0.059	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.423	0.022	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.626	0.056	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.631	0.058	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1.11	0.05	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1.42	0.18	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1.37	0.11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.373	0.073	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.538	0.041	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.469	0.074	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	1.24	0.24	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	1.21	0.1	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	1.23	0.18	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	.445	0.128	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.506	0.146	4
Mexican American Male, 60+ years (2007 - 2008)	.729	0.068	5
Mexican American Male, 60+ years (2009 - 2010)	.730	0.075	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.407	0.015	3
Mexican American Female, 60+ years (2007 - 2008)	**.819	0.305	5
Mexican American Female, 60+ years (2009 - 2010)	.555	0.071	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.744	0.06	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.512	0.045	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.461	0.127	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.395	0.042	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.782	0.05	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.892	0.061	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.309	0.035	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	**.534	0.254	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.680	0.056	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.778	0.073	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.426	0.069	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.423	0.053	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.964	0.057	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**1.84	0.69	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.334	0.041	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.308	0.037	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.854	0.07	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	1.26	0.18	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.314	0.058	4
Mexican American Male, 40-59 years (2013 - 2014)	*	*	5
Mexican American Male, 60+ years (2011 - 2012)	.557	0.011	2
Mexican American Male, 60+ years (2013 - 2014)	.779	0.115	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	.420	0.049	3
Mexican American Female, 60+ years (2013 - 2014)	.492	0.054	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	*	*	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.728	0.085	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.525	0.043	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.394	0.053	6
Asian Male, 40-59 years (2013 - 2014)	.371	0.04	4
Asian Male, 60+ years (2011 - 2012)	.629	0.098	4
Asian Male, 60+ years (2013 - 2014)	.695	0.063	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.272	0.051	6
Asian Female, 40-59 years (2013 - 2014)	.279	0.017	7
Asian Female, 60+ years (2011 - 2012)	.575	0.132	3
Asian Female, 60+ years (2013 - 2014)	**.688	0.228	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2001 – 2004)

CAS Number 39635-31-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	*	< LOD	< LOD	.006 (.005-.008)	.010 (.007-.014)	1817
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	752
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.005 (<LOD-.017)	570
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1546
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	.006 (.005-.008)	.010 (.007-.014)	1247
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1070
Males (2003 - 2004)	*	< LOD	< LOD	.006 (.005-.009)	.011 (.008-.014)	903
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1228
Females (2003 - 2004)	*	< LOD	< LOD	.005 (.004-.008)	.009 (.006-.014)	914
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	.005 (<LOD-.007)	406
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	514
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	.008 (.005-.010)	.012 (.007-.016)	444
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1057
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	.006 (.005-.008)	.010 (.007-.014)	851

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.004	0.001	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.004	0	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.003	0	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.005	0	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.007	0	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.006	0	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.003	0	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.003	0	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.004	0	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.006	0	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.005	0	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.003	0	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.004	0	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.004	0	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.007	0	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.009	0.001	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.007	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.002	0	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.003	0	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.003	0	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.008	0.002	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.007	0.001	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.007	0.001	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	**.003	0.001	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.004	0.001	4
Mexican American Male, 60+ years (2007 - 2008)	.005	0	5
Mexican American Male, 60+ years (2009 - 2010)	.004	0	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.003	0	3
Mexican American Female, 60+ years (2007 - 2008)	**.006	0.002	5
Mexican American Female, 60+ years (2009 - 2010)	.003	0	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2005 – 2010)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.005	0	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.003	0	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.003	0.001	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.002	0	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.004	0	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.005	0	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.002	0	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	**.003	0.002	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.004	0	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.005	0	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	*	*	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.005	0	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.010	0.004	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.002	0	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.002	0	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.005	0	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.007	0.001	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.002	0	4
Mexican American Male, 40-59 years (2013 - 2014)	*	*	5
Mexican American Male, 60+ years (2011 - 2012)	.003	0	2
Mexican American Male, 60+ years (2013 - 2014)	.004	0.001	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	*	*	5
Mexican American Female, 40-59 years (2011 - 2012)	*	*	3
Mexican American Female, 40-59 years (2013 - 2014)	*	*	6
Mexican American Female, 60+ years (2011 - 2012)	.003	0	3
Mexican American Female, 60+ years (2013 - 2014)	.003	0	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	*	*	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	*	*	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.004	0	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	*	*	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.003	0	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2011 – 2014)

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 20-39 years (2011 - 2012)	*	*	6
Asian Male, 20-39 years (2013 - 2014)	*	*	4
Asian Male, 40-59 years (2011 - 2012)	.002	0	6
Asian Male, 40-59 years (2013 - 2014)	.002	0	4
Asian Male, 60+ years (2011 - 2012)	.003	0.001	4
Asian Male, 60+ years (2013 - 2014)	.004	0.001	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 20-39 years (2011 - 2012)	*	*	6
Asian Female, 20-39 years (2013 - 2014)	*	*	5
Asian Female, 40-59 years (2011 - 2012)	.002	0	6
Asian Female, 40-59 years (2013 - 2014)	.002	0	7
Asian Female, 60+ years (2011 - 2012)	.003	0.001	3
Asian Female, 60+ years (2013 - 2014)	.004	0.001	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (1999 – 2004)

CAS Number 7012-37-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1849
Total population (2003 - 2004)	4.90 (4.60-5.22)	4.96 (4.65-5.26)	6.79 (6.40-7.31)	9.39 (8.70-10.1)	11.3 (10.7-11.8)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	647
Age 12-19 years (2003 - 2004)	5.02 (4.48-5.63)	4.88 (4.26-5.48)	7.20 (5.90-8.60)	10.2 (8.40-11.5)	11.7 (10.7-13.3)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1202
Age 20+ years (2003 - 2004)	4.88 (4.61-5.17)	4.98 (4.67-5.26)	6.78 (6.40-7.25)	9.10 (8.70-9.87)	11.1 (10.6-11.8)	1276
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	886
Males (2003 - 2004)	4.81 (4.47-5.16)	4.86 (4.45-5.20)	6.70 (6.07-7.50)	9.39 (8.34-10.4)	10.8 (10.5-11.4)	926
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	963
Females (2003 - 2004)	4.99 (4.66-5.35)	5.07 (4.73-5.37)	6.90 (6.49-7.40)	9.37 (8.72-10.1)	11.6 (10.7-13.1)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	618
Mexican Americans (2003 - 2004)	4.95 (4.55-5.38)	4.90 (4.40-5.70)	6.70 (6.07-7.90)	8.94 (8.17-9.70)	10.5 (9.02-14.7)	413
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	392
Non-Hispanic blacks (2003 - 2004)	4.95 (4.20-5.84)	5.03 (4.10-5.60)	7.20 (5.62-8.80)	10.2 (8.51-12.4)	13.1 (10.8-15.3)	459
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	687
Non-Hispanic whites (2003 - 2004)	4.89 (4.58-5.22)	4.90 (4.61-5.26)	6.76 (6.33-7.32)	9.40 (8.70-10.3)	11.1 (10.6-11.8)	876

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00 and 03-04 are 32.4 and 1.7.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.726	0.065	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	1.05	0.17	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	1.08	0.28	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1.73	0.15	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.66	0.16	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.36	0.38	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.942	0.095	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	1.12	0.1	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	1.29	0.15	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	2.93	0.33	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	2.64	0.32	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	2.69	0.36	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.865	0.089	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.940	0.103	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	2.74	0.55	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1.40	0.19	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1.92	0.35	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.54, 0.7, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.832	0.115	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.38	0.17	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.71	0.23	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	3.81	0.59	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**5.42	3.06	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	2.01	0.18	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	.715	0.091	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	.988	0.109	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	1.26	0.15	5
Mexican American Male, 60+ years (2009 - 2010)	1.36	0.2	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	1.13	0.24	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	1.04	0.06	6
Mexican American Female, 40-59 years (2009 - 2010)	1.04	0.12	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	1.69	0.19	5
Mexican American Female, 60+ years (2009 - 2010)	1.93	0.35	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.54, 0.7, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	1.31	0.15	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.955	0.087	14
All Hispanic Female, 60+ years (2009 - 2010)	1.85	0.23	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.54, 0.7, and 0.92, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.437	0.05	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.596	0.062	13
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.900	0.164	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	1.11	0.21	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.92	0.23	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	2.20	0.47	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.747	0.15	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.572	0.116	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.674	0.067	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.752	0.067	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.99	0.57	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	1.08	0.2	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	4.35	1.21	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	2.72	0.58	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.459	0.057	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.492	0.051	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.816	0.169	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.817	0.098	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	1.42	0.16	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**3.31	1.35	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.649	0.081	5
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.941	0.177	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.601	0.071	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	1.24	0.11	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.991	0.097	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	1.75	0.21	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	2.26	0.39	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.5 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.611	0.127	4
Mexican American Male, 20-39 years (2013 - 2014)	.515	0.063	5
Mexican American Male, 40-59 years (2011 - 2012)	**.947	0.287	4
Mexican American Male, 40-59 years (2013 - 2014)	.672	0.087	5
Mexican American Male, 60+ years (2011 - 2012)	.700	0.13	2
Mexican American Male, 60+ years (2013 - 2014)	.974	0.24	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	.529	0.069	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	.579	0.024	5
Mexican American Female, 40-59 years (2011 - 2012)	1.17	0.08	3
Mexican American Female, 40-59 years (2013 - 2014)	.983	0.236	6
Mexican American Female, 60+ years (2011 - 2012)	1.06	0.07	3
Mexican American Female, 60+ years (2013 - 2014)	1.12	0.13	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.341	0.046	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.566	0.057	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.669	0.06	8
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**1.87	0.94	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.552	0.054	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.519	0.028	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.902	0.144	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	1.13	0.09	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.5 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.630	0.122	3
Asian Male, 12-19 years (2013 - 2014)	**.511	0.214	3
Asian Male, 20-39 years (2011 - 2012)	.813	0.053	6
Asian Male, 20-39 years (2013 - 2014)	1.01	0.19	4
Asian Male, 40-59 years (2011 - 2012)	.996	0.173	6
Asian Male, 40-59 years (2013 - 2014)	1.13	0.2	4
Asian Male, 60+ years (2011 - 2012)	1.48	0.14	4
Asian Male, 60+ years (2013 - 2014)	1.39	0.02	3
Asian Female, 12-19 years (2011 - 2012)	.714	0.089	4
Asian Female, 12-19 years (2013 - 2014)	.572	0.075	3
Asian Female, 20-39 years (2011 - 2012)	.855	0.089	6
Asian Female, 20-39 years (2013 - 2014)	1.02	0.05	4
Asian Female, 40-59 years (2011 - 2012)	1.20	0.12	6
Asian Female, 40-59 years (2013 - 2014)	1.08	0.1	7
Asian Female, 60+ years (2011 - 2012)	1.82	0.18	3
Asian Female, 60+ years (2013 - 2014)	1.38	0.2	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.5 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (1999 – 2004)

CAS Number 7012-37-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1849
Total population (2003 - 2004)	.030 (.028-.032)	.030 (.028-.032)	.041 (.039-.043)	.057 (.055-.060)	.067 (.063-.071)	1866
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	647
Age 12-19 years (2003 - 2004)	.025 (.023-.028)	.025 (.021-.028)	.035 (.030-.042)	.051 (.042-.061)	.061 (.051-.070)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1202
Age 20+ years (2003 - 2004)	.031 (.029-.033)	.031 (.029-.032)	.042 (.040-.043)	.058 (.055-.061)	.067 (.063-.071)	1276
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	886
Males (2003 - 2004)	.030 (.028-.032)	.030 (.027-.032)	.041 (.037-.044)	.056 (.051-.061)	.065 (.061-.070)	926
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	963
Females (2003 - 2004)	.030 (.028-.032)	.030 (.028-.032)	.042 (.039-.044)	.058 (.055-.061)	.070 (.064-.075)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	618
Mexican Americans (2003 - 2004)	.030 (.028-.033)	.031 (.027-.035)	.041 (.036-.044)	.053 (.048-.059)	.063 (.054-.070)	413
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	392
Non-Hispanic blacks (2003 - 2004)	.028 (.024-.033)	.029 (.024-.033)	.039 (.034-.047)	.059 (.047-.070)	.070 (.064-.082)	459
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	687
Non-Hispanic whites (2003 - 2004)	.030 (.028-.032)	.030 (.028-.032)	.041 (.039-.043)	.058 (.055-.061)	.068 (.062-.075)	876

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.005	0	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.008	0.001	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.007	0.002	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.011	0.001	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.010	0.001	20
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.006	0.002	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.006	0.001	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.007	0.001	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.008	0.001	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.021	0.002	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.018	0.002	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.016	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.005	0.001	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.006	0.001	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.016	0.003	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.008	0.001	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.010	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.004	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.008	0.001	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.010	0.001	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.025	0.004	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**.033	0.019	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.011	0.001	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	.005	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	.007	0.001	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	.009	0.001	5
Mexican American Male, 60+ years (2009 - 2010)	.009	0.002	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	.006	0.001	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	.007	0	6
Mexican American Female, 40-59 years (2009 - 2010)	.007	0.001	9
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	.012	0.001	5
Mexican American Female, 60+ years (2009 - 2010)	.011	0.002	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2005 – 2010)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.008	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	.006	0.001	14
All Hispanic Female, 60+ years (2009 - 2010)	.011	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.003	0	13
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.006	0.001	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.007	0.001	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.011	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.012	0.003	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.004	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.003	0.001	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.004	0	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.004	0	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.012	0.004	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.006	0.001	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.027	0.008	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.016	0.003	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.005	0.001	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.005	0.001	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.008	0.001	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.017	0.007	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.003	0	5
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.003	0	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.007	0.001	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.005	0.001	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.010	0.001	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.012	0.002	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	.004	0.001	4
Mexican American Male, 20-39 years (2013 - 2014)	.003	0	5
Mexican American Male, 40-59 years (2011 - 2012)	.007	0.002	4
Mexican American Male, 40-59 years (2013 - 2014)	.004	0.001	5
Mexican American Male, 60+ years (2011 - 2012)	.004	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	.005	0.001	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	.003	0	5
Mexican American Female, 40-59 years (2011 - 2012)	.007	0	3
Mexican American Female, 40-59 years (2013 - 2014)	.006	0.001	6
Mexican American Female, 60+ years (2011 - 2012)	.006	0	3
Mexican American Female, 60+ years (2013 - 2014)	.006	0.001	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.002	0	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.003	0	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.004	0	8
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**.011	0.006	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.003	0	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.003	0	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.005	0.001	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.007	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2011 – 2014)

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.003	0.001	3
Asian Male, 12-19 years (2013 - 2014)	**.002	0.001	3
Asian Male, 20-39 years (2011 - 2012)	.005	0	6
Asian Male, 20-39 years (2013 - 2014)	.006	0.001	4
Asian Male, 40-59 years (2011 - 2012)	.006	0.001	6
Asian Male, 40-59 years (2013 - 2014)	.006	0.001	4
Asian Male, 60+ years (2011 - 2012)	.008	0.001	4
Asian Male, 60+ years (2013 - 2014)	.008	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.003	0	4
Asian Female, 12-19 years (2013 - 2014)	.003	0	3
Asian Female, 20-39 years (2011 - 2012)	.005	0.001	6
Asian Female, 20-39 years (2013 - 2014)	.005	0	4
Asian Female, 40-59 years (2011 - 2012)	.007	0.001	6
Asian Female, 40-59 years (2013 - 2014)	.006	0.001	7
Asian Female, 60+ years (2011 - 2012)	.010	0.001	3
Asian Female, 60+ years (2013 - 2014)	.008	0.001	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2003 – 2004)

CAS Number 41464-39-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	2.06 (1.93-2.19)	2.05 (1.90-2.20)	3.03 (2.90-3.20)	4.40 (4.10-4.86)	5.70 (5.40-6.10)	1890
Age 12-19 years (2003 - 2004)	2.45 (2.22-2.70)	2.44 (2.10-2.70)	3.68 (3.19-4.37)	5.78 (5.13-6.30)	7.99 (6.20-9.10)	597
Age 20+ years (2003 - 2004)	2.00 (1.88-2.13)	2.00 (1.90-2.11)	2.97 (2.80-3.20)	4.27 (3.85-4.70)	5.44 (5.00-5.89)	1293
Males (2003 - 2004)	2.12 (2.01-2.25)	2.12 (2.00-2.30)	3.11 (2.97-3.31)	4.52 (4.10-5.20)	5.89 (5.38-6.80)	942
Females (2003 - 2004)	1.99 (1.82-2.18)	1.98 (1.80-2.20)	2.94 (2.72-3.21)	4.30 (3.77-5.05)	5.60 (5.00-6.20)	948
Mexican Americans (2003 - 2004)	2.09 (1.88-2.31)	2.10 (1.90-2.39)	3.10 (2.52-3.73)	4.20 (3.30-6.10)	5.69 (3.80-7.40)	427
Non-Hispanic blacks (2003 - 2004)	2.21 (1.94-2.52)	2.12 (1.80-2.56)	3.18 (2.72-3.94)	4.90 (3.90-6.32)	6.32 (5.01-9.62)	464
Non-Hispanic whites (2003 - 2004)	2.03 (1.87-2.19)	2.01 (1.90-2.20)	3.07 (2.90-3.29)	4.40 (4.01-4.95)	5.70 (5.25-6.35)	877

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.36 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.36 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2003 – 2004)

CAS Number 41464-39-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	.013 (.012-.013)	.013 (.012-.014)	.018 (.017-.020)	.026 (.024-.028)	.032 (.030-.034)	1890
Age 12-19 years (2003 - 2004)	.012 (.011-.014)	.013 (.011-.014)	.019 (.016-.021)	.029 (.024-.031)	.037 (.030-.042)	597
Age 20+ years (2003 - 2004)	.013 (.012-.013)	.013 (.012-.014)	.018 (.017-.020)	.025 (.023-.027)	.031 (.029-.034)	1293
Males (2003 - 2004)	.013 (.012-.014)	.013 (.012-.014)	.018 (.017-.020)	.026 (.024-.028)	.034 (.030-.038)	942
Females (2003 - 2004)	.012 (.011-.013)	.012 (.011-.013)	.018 (.016-.020)	.025 (.023-.028)	.030 (.028-.032)	948
Mexican Americans (2003 - 2004)	.013 (.011-.014)	.013 (.011-.014)	.017 (.015-.020)	.023 (.018-.031)	.027 (.021-.049)	427
Non-Hispanic blacks (2003 - 2004)	.013 (.011-.014)	.012 (.010-.014)	.018 (.015-.022)	.026 (.021-.034)	.035 (.026-.040)	464
Non-Hispanic whites (2003 - 2004)	.012 (.012-.014)	.012 (.011-.014)	.019 (.017-.020)	.026 (.024-.028)	.032 (.029-.035)	877

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2003 – 2004)

CAS Number 41464-40-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	1.29 (1.20-1.39)	1.35 (1.24-1.45)	1.90 (1.80-2.10)	2.80 (2.60-3.08)	3.53 (3.33-3.80)	1876
Age 12-19 years (2003 - 2004)	1.54 (1.37-1.72)	1.59 (1.33-1.80)	2.30 (2.00-2.84)	3.60 (3.10-4.13)	4.66 (3.80-5.73)	590
Age 20+ years (2003 - 2004)	1.26 (1.17-1.35)	1.33 (1.22-1.40)	1.90 (1.78-2.03)	2.69 (2.50-2.80)	3.36 (3.15-3.63)	1286
Males (2003 - 2004)	1.36 (1.27-1.45)	1.40 (1.30-1.50)	2.00 (1.90-2.20)	3.00 (2.60-3.23)	3.79 (3.36-4.10)	932
Females (2003 - 2004)	1.23 (1.12-1.35)	1.30 (1.13-1.40)	1.80 (1.70-2.04)	2.66 (2.38-3.01)	3.39 (3.02-3.73)	944
Mexican Americans (2003 - 2004)	1.33 (1.20-1.48)	1.46 (1.20-1.57)	2.00 (1.67-2.30)	2.70 (2.17-3.80)	3.56 (2.63-4.20)	426
Non-Hispanic blacks (2003 - 2004)	1.40 (1.23-1.59)	1.40 (1.20-1.64)	2.06 (1.70-2.80)	3.23 (2.80-3.70)	3.88 (3.33-5.53)	453
Non-Hispanic whites (2003 - 2004)	1.26 (1.15-1.38)	1.32 (1.20-1.40)	1.90 (1.78-2.11)	2.77 (2.50-3.10)	3.45 (3.20-3.90)	876

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2003 – 2004)

CAS Number 41464-40-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	.008 (.007-.008)	.008 (.007-.009)	.012 (.011-.012)	.016 (.015-.017)	.019 (.018-.021)	1876
Age 12-19 years (2003 - 2004)	.008 (.007-.009)	.008 (.007-.009)	.012 (.010-.013)	.018 (.015-.019)	.022 (.018-.025)	590
Age 20+ years (2003 - 2004)	.008 (.007-.008)	.008 (.007-.009)	.012 (.011-.013)	.015 (.015-.017)	.019 (.018-.021)	1286
Males (2003 - 2004)	.008 (.008-.009)	.008 (.008-.009)	.012 (.011-.013)	.017 (.015-.018)	.021 (.019-.022)	932
Females (2003 - 2004)	.007 (.007-.008)	.008 (.007-.008)	.011 (.010-.012)	.015 (.014-.017)	.018 (.017-.019)	944
Mexican Americans (2003 - 2004)	.008 (.007-.009)	.008 (.007-.009)	.011 (.010-.014)	.015 (.012-.018)	.018 (.015-.023)	426
Non-Hispanic blacks (2003 - 2004)	.008 (.007-.009)	.008 (.007-.009)	.012 (.010-.014)	.017 (.015-.020)	.021 (.017-.026)	453
Non-Hispanic whites (2003 - 2004)	.008 (.007-.009)	.008 (.007-.009)	.012 (.011-.013)	.016 (.015-.017)	.019 (.018-.021)	876

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (1999 – 2004)

CAS Number 35693-99-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1912
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	16.5 (14.3-17.2)	1537
Total population (2003 - 2004)	2.66 (2.43-2.91)	2.74 (2.50-3.00)	4.17 (3.72-4.60)	5.91 (5.40-6.67)	7.60 (7.01-8.00)	1897
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	664
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	16.2 (<LOD-23.8)	22.9 (16.9-32.3)	291
Age 12-19 years (2003 - 2004)	3.16 (2.81-3.56)	3.22 (2.60-3.96)	5.15 (4.46-5.79)	7.60 (6.55-8.33)	9.20 (7.80-12.5)	597
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1248
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	16.0 (13.5-16.9)	1246
Age 20+ years (2003 - 2004)	2.59 (2.36-2.84)	2.70 (2.46-2.92)	4.06 (3.60-4.43)	5.70 (5.16-6.49)	7.15 (6.62-7.80)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	16.0 (<LOD-17.5)	716
Males (2003 - 2004)	2.75 (2.54-2.98)	2.80 (2.55-3.20)	4.36 (3.90-4.88)	5.94 (5.51-6.80)	7.80 (7.29-8.49)	946
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1004
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	16.6 (14.0-18.2)	821
Females (2003 - 2004)	2.57 (2.30-2.87)	2.70 (2.40-2.96)	3.96 (3.52-4.30)	5.86 (4.96-6.67)	7.15 (6.57-8.10)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	16.9 (<LOD-20.6)	366
Mexican Americans (2003 - 2004)	2.88 (2.56-3.24)	3.00 (2.70-3.30)	4.41 (3.60-5.30)	6.00 (4.71-8.11)	7.83 (5.70-12.0)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	16.6 (<LOD-20.9)	282
Non-Hispanic blacks (2003 - 2004)	2.74 (2.35-3.19)	2.58 (2.08-3.40)	4.11 (3.30-5.60)	6.92 (5.10-8.70)	8.70 (7.10-10.2)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	716
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	16.6 (14.7-17.5)	773
Non-Hispanic whites (2003 - 2004)	2.60 (2.35-2.88)	2.70 (2.40-2.98)	4.17 (3.70-4.60)	5.79 (5.20-6.75)	7.37 (6.80-7.87)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 12.4, and 0.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.348	0.071	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.562	0.135	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.807	0.149	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.33 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.33 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (1999 – 2004)

CAS Number 35693-99-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1912
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (.080-.100)	1537
Total population (2003 - 2004)	.016 (.015-.018)	.017 (.015-.019)	.024 (.022-.028)	.035 (.032-.037)	.043 (.039-.046)	1897
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	664
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	.080 (<LOD-.100)	.100 (.080-.140)	291
Age 12-19 years (2003 - 2004)	.016 (.014-.018)	.017 (.014-.019)	.026 (.022-.029)	.037 (.032-.041)	.042 (.037-.056)	597
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1248
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (.080-.090)	1246
Age 20+ years (2003 - 2004)	.016 (.015-.018)	.017 (.015-.019)	.024 (.022-.028)	.034 (.031-.036)	.043 (.038-.045)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	908
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	716
Males (2003 - 2004)	.017 (.016-.018)	.018 (.016-.020)	.025 (.023-.029)	.036 (.032-.039)	.044 (.040-.048)	946
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1004
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (.080-.100)	821
Females (2003 - 2004)	.016 (.014-.017)	.016 (.014-.018)	.024 (.021-.028)	.033 (.030-.036)	.042 (.036-.046)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	631
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	366
Mexican Americans (2003 - 2004)	.018 (.016-.020)	.018 (.016-.021)	.025 (.022-.030)	.035 (.028-.044)	.044 (.032-.064)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	282
Non-Hispanic blacks (2003 - 2004)	.016 (.014-.018)	.015 (.012-.019)	.022 (.019-.031)	.035 (.029-.043)	.043 (.035-.049)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	716
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (.080-.100)	773
Non-Hispanic whites (2003 - 2004)	.016 (.014-.018)	.017 (.014-.019)	.024 (.022-.028)	.035 (.032-.037)	.043 (.038-.047)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (2005 – 2008)‡‡

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.003	0	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.003	0.001	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.005	0.001	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (2005 – 2008)‡‡

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (1999 – 2004)

CAS Number 33025-41-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1931
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2250
Total population (2003 - 2004)	1.39 (1.32-1.47)	1.37 (1.30-1.40)	1.97 (1.90-2.10)	3.10 (2.94-3.26)	4.10 (3.90-4.55)	1898
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	671
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	724
Age 12-19 years (2003 - 2004)	1.24 (1.14-1.34)	1.20 (1.10-1.26)	1.76 (1.62-2.00)	2.40 (2.30-2.70)	3.25 (2.70-4.10)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1526
Age 20+ years (2003 - 2004)	1.42 (1.34-1.49)	1.40 (1.30-1.43)	2.00 (1.90-2.12)	3.10 (2.97-3.40)	4.20 (3.90-4.71)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1047
Males (2003 - 2004)	1.29 (1.20-1.39)	1.30 (1.20-1.38)	1.87 (1.72-2.01)	2.70 (2.50-3.00)	3.30 (2.96-3.82)	947
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1012
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1203
Females (2003 - 2004)	1.50 (1.42-1.58)	1.41 (1.38-1.50)	2.10 (1.92-2.30)	3.70 (3.20-4.00)	5.08 (4.10-5.46)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	548
Mexican Americans (2003 - 2004)	1.19 (1.09-1.30)	1.14 (1.00-1.30)	1.60 (1.48-1.73)	2.23 (1.80-3.20)	3.20 (2.46-3.60)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	414
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	495
Non-Hispanic blacks (2003 - 2004)	1.50 (1.34-1.68)	1.38 (1.21-1.50)	2.31 (1.80-2.80)	3.80 (3.10-4.80)	5.46 (4.30-8.60)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	723
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1047
Non-Hispanic whites (2003 - 2004)	1.39 (1.31-1.47)	1.39 (1.30-1.45)	1.96 (1.90-2.10)	3.01 (2.71-3.28)	4.09 (3.70-4.33)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 12.4, and 0.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.415	0.061	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.389	0.063	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.827	0.138	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.657	0.066	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	**1.42	0.44	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	1.27	0.18	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	1.24	0.12	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.421	0.04	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.605	0.146	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.471	0.054	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.629	0.157	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.671	0.091	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.750	0.066	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.768	0.072	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	1.91	0.21	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	1.84	0.21	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	1.68	0.23	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.784	0.154	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.645	0.155	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	1.25	0.3	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	1.49	0.23	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	1.29	0.18	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	1.86	0.32	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.4, 0.3, and 0.69, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.677	0.112	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	1.09	0.1	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	1.13	0.21	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	1.79	0.44	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	3.40	0.95	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	2.49	0.63	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	2.16	0.17	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	.459	0.074	9
Mexican American Male, 20-39 years (2007 - 2008)	.414	0.088	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.585	0.103	4
Mexican American Male, 40-59 years (2007 - 2008)	**.713	0.223	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.702	0.057	4
Mexican American Male, 60+ years (2007 - 2008)	.869	0.051	5
Mexican American Male, 60+ years (2009 - 2010)	.922	0.129	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	.597	0.07	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.751	0.095	6
Mexican American Female, 40-59 years (2007 - 2008)	.684	0.073	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	1.32	0.36	3
Mexican American Female, 60+ years (2007 - 2008)	1.18	0.14	5
Mexican American Female, 60+ years (2009 - 2010)	1.11	0.14	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.4, 0.3, and 0.69, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.882	0.094	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	1.13	0.11	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.4, 0.3, and 0.69, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.260	0.036	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.429	0.068	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.423	0.058	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.473	0.062	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.633	0.104	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	1.19	0.15	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	1.34	0.26	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.293	0.057	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.458	0.053	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.416	0.046	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.483	0.048	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	1.00	0.24	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.638	0.096	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	2.81	0.75	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	1.37	0.18	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.496	0.109	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.285	0.039	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.613	0.182	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.641	0.156	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.870	0.119	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**1.96	0.89	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.324	0.038	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.498	0.09	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.317	0.037	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.788	0.123	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.691	0.083	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	1.61	0.23	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	1.93	0.37	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.433	0.099	4
Mexican American Male, 40-59 years (2013 - 2014)	.322	0.029	5
Mexican American Male, 60+ years (2011 - 2012)	.508	0.145	2
Mexican American Male, 60+ years (2013 - 2014)	.646	0.134	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	.276	0.029	5
Mexican American Female, 40-59 years (2011 - 2012)	.579	0.149	3
Mexican American Female, 40-59 years (2013 - 2014)	.454	0.053	6
Mexican American Female, 60+ years (2011 - 2012)	.753	0.091	3
Mexican American Female, 60+ years (2013 - 2014)	.865	0.254	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.291	0.027	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.375	0.031	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.994	0.245	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.424	0.05	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.804	0.141	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.581	0.097	3
Asian Male, 12-19 years (2013 - 2014)	**.325	0.106	3
Asian Male, 20-39 years (2011 - 2012)	.657	0.093	6
Asian Male, 20-39 years (2013 - 2014)	.617	0.07	4
Asian Male, 40-59 years (2011 - 2012)	.945	0.128	6
Asian Male, 40-59 years (2013 - 2014)	1.18	0.2	4
Asian Male, 60+ years (2011 - 2012)	.953	0.123	4
Asian Male, 60+ years (2013 - 2014)	1.41	0.1	3
Asian Female, 12-19 years (2011 - 2012)	.381	0.04	4
Asian Female, 12-19 years (2013 - 2014)	.313	0.026	3
Asian Female, 20-39 years (2011 - 2012)	.744	0.104	6
Asian Female, 20-39 years (2013 - 2014)	.756	0.048	5
Asian Female, 40-59 years (2011 - 2012)	1.29	0.28	6
Asian Female, 40-59 years (2013 - 2014)	.931	0.129	7
Asian Female, 60+ years (2011 - 2012)	1.75	0.34	3
Asian Female, 60+ years (2013 - 2014)	1.23	0.15	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (1999 – 2004)

CAS Number 33025-41-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1931
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2250
Total population (2003 - 2004)	.008 (.008-.009)	.008 (.008-.009)	.012 (.012-.013)	.019 (.018-.021)	.025 (.024-.030)	1898
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	671
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	724
Age 12-19 years (2003 - 2004)	.006 (.006-.007)	.006 (.005-.007)	.009 (.008-.010)	.013 (.012-.014)	.017 (.013-.019)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1526
Age 20+ years (2003 - 2004)	.009 (.008-.009)	.008 (.008-.009)	.013 (.012-.013)	.020 (.019-.022)	.026 (.024-.032)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1047
Males (2003 - 2004)	.008 (.007-.009)	.008 (.007-.008)	.011 (.010-.013)	.017 (.016-.019)	.020 (.019-.022)	947
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1012
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1203
Females (2003 - 2004)	.009 (.009-.010)	.009 (.008-.009)	.013 (.012-.014)	.022 (.021-.024)	.032 (.026-.034)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	548
Mexican Americans (2003 - 2004)	.007 (.007-.008)	.007 (.006-.008)	.010 (.009-.011)	.015 (.011-.018)	.018 (.014-.020)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	414
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	495
Non-Hispanic blacks (2003 - 2004)	.009 (.008-.009)	.008 (.007-.009)	.013 (.011-.015)	.022 (.019-.030)	.036 (.024-.070)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	723
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1047
Non-Hispanic whites (2003 - 2004)	.009 (.008-.009)	.008 (.008-.009)	.012 (.012-.013)	.019 (.018-.022)	.025 (.023-.030)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.003	0.001	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.003	0	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.006	0.001	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.005	0.001	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.010	0.003	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.008	0.001	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.008	0.001	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.002	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.003	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.003	0	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.004	0.001	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.005	0.001	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.005	0	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.005	0.001	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.014	0.001	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.012	0.001	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.010	0.001	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.005	0.001	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.004	0.001	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.008	0.002	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.009	0.001	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.008	0.001	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.010	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.004	0.001	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.007	0.001	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.007	0.001	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.010	0.002	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.023	0.006	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.015	0.004	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.012	0.001	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 20-39 years (2005 - 2006)	.003	0.001	9
Mexican American Male, 20-39 years (2007 - 2008)	.003	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	*	*	8
Mexican American Male, 40-59 years (2005 - 2006)	.005	0.001	4
Mexican American Male, 40-59 years (2007 - 2008)	**.005	0.002	6
Mexican American Male, 40-59 years (2009 - 2010)	*	*	8
Mexican American Male, 60+ years (2005 - 2006)	.005	0.001	4
Mexican American Male, 60+ years (2007 - 2008)	.006	0	5
Mexican American Male, 60+ years (2009 - 2010)	.006	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	.003	0	8
Mexican American Female, 20-39 years (2009 - 2010)	*	*	10
Mexican American Female, 40-59 years (2005 - 2006)	.006	0.001	6
Mexican American Female, 40-59 years (2007 - 2008)	.005	0	6
Mexican American Female, 40-59 years (2009 - 2010)	*	*	9
Mexican American Female, 60+ years (2005 - 2006)	.010	0.002	3
Mexican American Female, 60+ years (2007 - 2008)	.008	0.001	5
Mexican American Female, 60+ years (2009 - 2010)	.006	0.001	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 – 2010)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 20-39 years (2009 - 2010)	*	*	13
All Hispanic Male, 40-59 years (2009 - 2010)	*	*	13
All Hispanic Male, 60+ years (2009 - 2010)	.006	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 20-39 years (2009 - 2010)	*	*	14
All Hispanic Female, 40-59 years (2009 - 2010)	*	*	14
All Hispanic Female, 60+ years (2009 - 2010)	.007	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.001	0	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.002	0	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.002	0	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.003	0	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.004	0.001	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.007	0.001	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.007	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.002	0	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.002	0	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.003	0	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.006	0.002	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.004	0.001	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.017	0.005	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.008	0.001	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.003	0.001	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.001	0	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.004	0.001	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.004	0.001	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.005	0.001	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	**.011	0.005	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.001	0	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.003	0.001	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.002	0	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.004	0	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.009	0.001	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.010	0.002	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 20-39 years (2011 - 2012)	*	*	4
Mexican American Male, 20-39 years (2013 - 2014)	*	*	5
Mexican American Male, 40-59 years (2011 - 2012)	.003	0	4
Mexican American Male, 40-59 years (2013 - 2014)	.002	0	5
Mexican American Male, 60+ years (2011 - 2012)	.003	0.001	2
Mexican American Male, 60+ years (2013 - 2014)	.003	0.001	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 20-39 years (2011 - 2012)	*	*	4
Mexican American Female, 20-39 years (2013 - 2014)	.001	0	5
Mexican American Female, 40-59 years (2011 - 2012)	.003	0.001	3
Mexican American Female, 40-59 years (2013 - 2014)	.003	0	6
Mexican American Female, 60+ years (2011 - 2012)	.005	0	3
Mexican American Female, 60+ years (2013 - 2014)	.005	0.001	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.002	0	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.002	0	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	**.005	0.002	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	*	*	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.002	0	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.005	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2011 – 2014)

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.003	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.002	0.001	3
Asian Male, 20-39 years (2011 - 2012)	.004	0.001	6
Asian Male, 20-39 years (2013 - 2014)	.004	0.001	4
Asian Male, 40-59 years (2011 - 2012)	.006	0.001	6
Asian Male, 40-59 years (2013 - 2014)	.007	0.001	4
Asian Male, 60+ years (2011 - 2012)	.005	0.001	4
Asian Male, 60+ years (2013 - 2014)	.009	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.002	0	4
Asian Female, 12-19 years (2013 - 2014)	.001	0	3
Asian Female, 20-39 years (2011 - 2012)	.004	0.001	6
Asian Female, 20-39 years (2013 - 2014)	.004	0	5
Asian Female, 40-59 years (2011 - 2012)	.008	0.002	6
Asian Female, 40-59 years (2013 - 2014)	.005	0.001	7
Asian Female, 60+ years (2011 - 2012)	.010	0.002	3
Asian Female, 60+ years (2013 - 2014)	.007	0.001	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (1999 – 2004)

CAS Number 32690-93-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	20.8 (17.9-23.4)	29.0 (24.5-32.3)	1924
Total population (2001 - 2002)	*	< LOD	13.2 (11.0-15.7)	23.5 (20.2-27.7)	33.0 (26.9-38.7)	2307
Total population (2003 - 2004)	4.81 (4.63-4.99)	4.36 (3.90-4.88)	8.72 (8.30-9.28)	15.8 (14.7-17.7)	22.3 (19.7-25.5)	1898
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	671
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	2.20 (2.02-2.39)	2.20 (2.03-2.33)	2.98 (2.80-3.30)	4.19 (3.60-4.73)	5.32 (4.20-6.90)	598
Age 20+ years (1999 - 2000)	*	< LOD	12.6 (<LOD-14.4)	22.4 (19.5-25.6)	30.0 (26.2-35.8)	1253
Age 20+ years (2001 - 2002)	*	< LOD	14.7 (12.4-17.1)	25.2 (21.4-28.9)	34.8 (28.8-41.4)	1549
Age 20+ years (2003 - 2004)	5.38 (5.16-5.62)	5.00 (4.60-5.50)	9.60 (8.90-10.6)	17.1 (15.7-18.5)	24.1 (20.8-27.7)	1300
Males (1999 - 2000)	*	< LOD	< LOD	15.4 (13.0-17.8)	21.6 (18.3-24.4)	915
Males (2001 - 2002)	*	< LOD	10.6 (<LOD-12.3)	20.2 (15.4-24.9)	28.8 (20.8-38.2)	1075
Males (2003 - 2004)	4.06 (3.82-4.31)	3.62 (3.30-4.00)	6.71 (6.20-7.77)	12.4 (10.8-13.1)	15.8 (14.6-18.5)	947
Females (1999 - 2000)	*	< LOD	13.9 (<LOD-16.4)	24.6 (21.9-28.5)	31.9 (28.8-40.3)	1009
Females (2001 - 2002)	*	< LOD	15.8 (13.5-18.7)	26.1 (23.2-29.3)	35.9 (31.4-41.4)	1232
Females (2003 - 2004)	5.65 (5.33-5.98)	5.38 (4.84-5.95)	10.9 (9.30-12.1)	19.1 (17.4-21.1)	27.4 (22.9-29.6)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	15.8 (12.8-18.2)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	13.3 (<LOD-18.1)	19.6 (16.2-23.0)	567
Mexican Americans (2003 - 2004)	2.43 (2.10-2.80)	2.12 (1.90-2.40)	3.34 (2.90-4.16)	6.10 (5.25-7.40)	10.4 (6.61-12.2)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	29.0 (18.6-38.4)	43.8 (35.4-64.0)	411
Non-Hispanic blacks (2001 - 2002)	*	< LOD	12.0 (<LOD-14.2)	21.7 (16.4-26.9)	31.9 (24.5-41.0)	515
Non-Hispanic blacks (2003 - 2004)	4.96 (4.21-5.83)	4.00 (3.45-4.65)	9.17 (6.80-12.4)	23.0 (14.6-35.1)	40.2 (23.0-68.2)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	21.6 (18.9-24.0)	29.0 (24.3-32.3)	719
Non-Hispanic whites (2001 - 2002)	*	< LOD	14.7 (12.2-17.3)	25.8 (21.3-30.1)	35.9 (29.0-42.5)	1061
Non-Hispanic whites (2003 - 2004)	5.23 (4.98-5.50)	4.91 (4.38-5.65)	9.30 (8.60-10.4)	16.1 (15.1-18.2)	21.9 (19.2-25.2)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.8, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.84	0.15	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.75	0.27	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.68	0.1	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.63	0.45	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.22	0.08	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.16	0.2	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	5.30	0.32	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	4.09	0.24	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.71	0.55	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	11.7	1.1	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	10.5	0.9	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	8.72	0.63	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.82	0.15	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.65	0.11	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.34	0.11	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	2.64	0.17	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.45	0.3	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	1.97	0.1	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	7.21	0.59	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	6.25	0.52	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	7.47	1.06	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	17.8	1.7	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	15.8	1.1	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	15.5	1.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.03	0.16	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.37	0.2	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.40	0.18	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.30	0.31	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	1.82	0.17	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	1.99	0.15	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	4.49	0.6	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	4.41	0.74	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	4.48	0.61	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	16.5	2.4	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	11.5	1.4	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	10.3	0.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.8, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.34	0.17	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.03	0.15	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.878	0.102	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.89	0.34	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	1.83	0.16	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	1.69	0.22	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	8.74	1.02	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	8.01	1.27	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	8.42	1.02	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	36.0	9.3	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	21.5	2.1	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	23.2	2.4	7
Mexican American Male, 12-19 years (2005 - 2006)	1.22	0.17	11
Mexican American Male, 12-19 years (2007 - 2008)	.992	0.124	6
Mexican American Male, 12-19 years (2009 - 2010)	1.06	0.14	8
Mexican American Male, 20-39 years (2005 - 2006)	1.57	0.1	9
Mexican American Male, 20-39 years (2007 - 2008)	1.55	0.14	9
Mexican American Male, 20-39 years (2009 - 2010)	1.16	0.13	8
Mexican American Male, 40-59 years (2005 - 2006)	2.94	0.34	4
Mexican American Male, 40-59 years (2007 - 2008)	3.13	0.29	6
Mexican American Male, 40-59 years (2009 - 2010)	2.20	0.16	8
Mexican American Male, 60+ years (2005 - 2006)	6.38	0.49	4
Mexican American Male, 60+ years (2007 - 2008)	6.54	0.59	5
Mexican American Male, 60+ years (2009 - 2010)	6.84	0.53	5
Mexican American Female, 12-19 years (2005 - 2006)	1.08	0.12	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.972	0.207	7
Mexican American Female, 20-39 years (2005 - 2006)	1.46	0.17	9
Mexican American Female, 20-39 years (2007 - 2008)	1.60	0.14	8
Mexican American Female, 20-39 years (2009 - 2010)	1.04	0.09	10
Mexican American Female, 40-59 years (2005 - 2006)	4.28	0.43	6
Mexican American Female, 40-59 years (2007 - 2008)	4.65	0.82	6
Mexican American Female, 40-59 years (2009 - 2010)	3.21	0.33	9
Mexican American Female, 60+ years (2005 - 2006)	11.9	2.1	3
Mexican American Female, 60+ years (2007 - 2008)	9.71	2.27	5
Mexican American Female, 60+ years (2009 - 2010)	10.0	1.8	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.8, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.17	0.18	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.29	0.09	13
All Hispanic Male, 40-59 years (2009 - 2010)	2.63	0.26	13
All Hispanic Male, 60+ years (2009 - 2010)	6.92	0.38	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.00	0.16	10
All Hispanic Female, 20-39 years (2009 - 2010)	1.24	0.11	14
All Hispanic Female, 40-59 years (2009 - 2010)	3.13	0.26	14
All Hispanic Female, 60+ years (2009 - 2010)	10.5	1.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.8, and 0.78, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.981	0.115	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.17	0.07	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	1.52	0.09	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	1.44	0.14	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	3.13	0.16	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	3.73	0.37	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	8.57	0.64	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	8.05	0.81	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.25	0.18	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.23	0.14	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	1.67	0.16	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.59	0.11	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	5.59	0.65	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	5.22	0.64	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	15.7	1.2	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	12.9	1	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.28	0.15	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.998	0.19	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	1.61	0.19	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	1.00	0.16	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	2.49	0.43	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	2.95	0.33	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	6.32	0.41	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	7.73	0.95	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.705	0.087	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.818	0.072	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	1.52	0.18	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	1.06	0.08	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	5.52	0.61	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	5.67	0.69	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	17.9	2.3	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	17.7	1.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.772	0.103	5
Mexican American Male, 12-19 years (2013 - 2014)	.574	0.048	7
Mexican American Male, 20-39 years (2011 - 2012)	.882	0.152	4
Mexican American Male, 20-39 years (2013 - 2014)	.791	0.031	5
Mexican American Male, 40-59 years (2011 - 2012)	2.35	0.38	4
Mexican American Male, 40-59 years (2013 - 2014)	1.68	0.16	5
Mexican American Male, 60+ years (2011 - 2012)	**5.46	2.04	2
Mexican American Male, 60+ years (2013 - 2014)	6.35	1.31	4
Mexican American Female, 12-19 years (2011 - 2012)	.526	0.048	4
Mexican American Female, 12-19 years (2013 - 2014)	.598	0.075	7
Mexican American Female, 20-39 years (2011 - 2012)	.885	0.26	4
Mexican American Female, 20-39 years (2013 - 2014)	.743	0.069	5
Mexican American Female, 40-59 years (2011 - 2012)	**4.15	1.52	3
Mexican American Female, 40-59 years (2013 - 2014)	2.03	0.44	6
Mexican American Female, 60+ years (2011 - 2012)	7.55	0.86	3
Mexican American Female, 60+ years (2013 - 2014)	7.97	1.29	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.646	0.077	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.894	0.068	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	1.79	0.17	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	7.01	1.05	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.625	0.059	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	.982	0.288	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	2.29	0.3	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	8.03	0.85	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.54	0.1	3
Asian Male, 12-19 years (2013 - 2014)	1.07	0.25	3
Asian Male, 20-39 years (2011 - 2012)	2.18	0.25	6
Asian Male, 20-39 years (2013 - 2014)	1.72	0.31	4
Asian Male, 40-59 years (2011 - 2012)	3.70	0.51	6
Asian Male, 40-59 years (2013 - 2014)	2.95	0.53	4
Asian Male, 60+ years (2011 - 2012)	5.53	0.88	4
Asian Male, 60+ years (2013 - 2014)	5.69	0.73	3
Asian Female, 12-19 years (2011 - 2012)	1.12	0.07	4
Asian Female, 12-19 years (2013 - 2014)	1.20	0.13	3
Asian Female, 20-39 years (2011 - 2012)	2.09	0.25	6
Asian Female, 20-39 years (2013 - 2014)	1.96	0.09	5
Asian Female, 40-59 years (2011 - 2012)	4.61	0.78	6
Asian Female, 40-59 years (2013 - 2014)	3.46	0.32	7
Asian Female, 60+ years (2011 - 2012)	8.14	0.98	3
Asian Female, 60+ years (2013 - 2014)	**8.39	2.91	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.26 and 0.27.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (1999 – 2004)

CAS Number 32690-93-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.140 (.120-.150)	.180 (.160-.220)	1924
Total population (2001 - 2002)	*	< LOD	.090 (.070-.100)	.150 (.140-.180)	.210 (.180-.270)	2307
Total population (2003 - 2004)	.029 (.028-.031)	.027 (.024-.029)	.058 (.053-.062)	.104 (.093-.121)	.153 (.135-.171)	1898
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	671
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.011 (.010-.012)	.011 (.010-.012)	.015 (.014-.018)	.021 (.019-.025)	.026 (.021-.033)	598
Age 20+ years (1999 - 2000)	*	< LOD	.080 (<LOD-.100)	.150 (.140-.160)	.200 (.170-.230)	1253
Age 20+ years (2001 - 2002)	*	< LOD	.100 (.080-.110)	.170 (.140-.190)	.230 (.200-.280)	1549
Age 20+ years (2003 - 2004)	.034 (.032-.035)	.031 (.028-.033)	.064 (.059-.068)	.115 (.103-.128)	.167 (.143-.186)	1300
Males (1999 - 2000)	*	< LOD	< LOD	.100 (.090-.120)	.150 (.130-.170)	915
Males (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.130 (.100-.170)	.190 (.140-.250)	1075
Males (2003 - 2004)	.025 (.023-.027)	.023 (.021-.027)	.043 (.040-.050)	.077 (.067-.087)	.103 (.092-.118)	947
Females (1999 - 2000)	*	< LOD	.100 (<LOD-.110)	.160 (.140-.180)	.220 (.190-.250)	1009
Females (2001 - 2002)	*	< LOD	.100 (.090-.110)	.170 (.150-.190)	.240 (.210-.290)	1232
Females (2003 - 2004)	.034 (.032-.037)	.031 (.027-.036)	.071 (.062-.085)	.130 (.120-.143)	.186 (.154-.216)	951
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	.110 (.080-.130)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.090 (<LOD-.120)	.140 (.110-.160)	567
Mexican Americans (2003 - 2004)	.015 (.013-.017)	.013 (.011-.016)	.022 (.019-.026)	.042 (.032-.054)	.071 (.049-.097)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.170 (.110-.250)	.280 (.220-.420)	411
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.130 (.100-.170)	.200 (.150-.250)	515
Non-Hispanic blacks (2003 - 2004)	.028 (.024-.033)	.022 (.019-.025)	.055 (.038-.077)	.153 (.090-.215)	.236 (.143-.337)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.150 (.130-.160)	.190 (.160-.210)	719
Non-Hispanic whites (2001 - 2002)	*	< LOD	.100 (.080-.110)	.170 (.140-.200)	.230 (.190-.280)	1061
Non-Hispanic whites (2003 - 2004)	.032 (.030-.034)	.030 (.027-.033)	.064 (.058-.067)	.113 (.096-.123)	.153 (.131-.176)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.010	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.009	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.009	0.001	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.020	0.004	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.015	0.001	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.014	0.001	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.040	0.003	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.030	0.002	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.025	0.004	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.079	0.007	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.066	0.005	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.052	0.003	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.010	0.001	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.008	0	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.006	0.001	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.017	0.001	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.015	0.002	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.010	0.001	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.054	0.006	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.041	0.004	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.047	0.007	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.129	0.011	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.106	0.007	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.094	0.007	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.010	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.006	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.007	0.001	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.014	0.002	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.010	0.001	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	.011	0.001	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.029	0.004	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.028	0.005	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.027	0.003	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.098	0.013	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.070	0.009	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.055	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.007	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.005	0.001	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.004	0	6
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.017	0.002	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.009	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.008	0.001	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.057	0.008	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.049	0.008	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.048	0.006	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.239	0.062	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.128	0.01	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.132	0.013	7
Mexican American Male, 12-19 years (2005 - 2006)	.007	0.001	11
Mexican American Male, 12-19 years (2007 - 2008)	.005	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.005	0.001	8
Mexican American Male, 20-39 years (2005 - 2006)	.011	0.001	9
Mexican American Male, 20-39 years (2007 - 2008)	.011	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	.007	0.001	8
Mexican American Male, 40-59 years (2005 - 2006)	.024	0.003	4
Mexican American Male, 40-59 years (2007 - 2008)	.022	0.002	6
Mexican American Male, 40-59 years (2009 - 2010)	.015	0.001	8
Mexican American Male, 60+ years (2005 - 2006)	.046	0.005	4
Mexican American Male, 60+ years (2007 - 2008)	.046	0.002	5
Mexican American Male, 60+ years (2009 - 2010)	.042	0.004	5
Mexican American Female, 12-19 years (2005 - 2006)	.006	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.005	0.001	7
Mexican American Female, 20-39 years (2005 - 2006)	.010	0.001	9
Mexican American Female, 20-39 years (2007 - 2008)	.009	0.001	8
Mexican American Female, 20-39 years (2009 - 2010)	.006	0.001	10
Mexican American Female, 40-59 years (2005 - 2006)	.031	0.003	6
Mexican American Female, 40-59 years (2007 - 2008)	.031	0.006	6
Mexican American Female, 40-59 years (2009 - 2010)	.021	0.002	9
Mexican American Female, 60+ years (2005 - 2006)	.088	0.008	3
Mexican American Female, 60+ years (2007 - 2008)	.067	0.016	5
Mexican American Female, 60+ years (2009 - 2010)	.055	0.009	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 – 2010)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.005	0.001	11
All Hispanic Male, 20-39 years (2009 - 2010)	.008	0.001	13
All Hispanic Male, 40-59 years (2009 - 2010)	.018	0.002	13
All Hispanic Male, 60+ years (2009 - 2010)	.044	0.003	8
All Hispanic Female, 12-19 years (2009 - 2010)	.005	0.001	10
All Hispanic Female, 20-39 years (2009 - 2010)	.007	0.001	14
All Hispanic Female, 40-59 years (2009 - 2010)	.020	0.002	14
All Hispanic Female, 60+ years (2009 - 2010)	.062	0.007	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.005	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.006	0	8
Non-Hispanic White Male, 20-39 years (2011 - 2012)	.009	0.001	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	.008	0.001	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	.021	0.001	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	.022	0.003	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	.047	0.003	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	.043	0.004	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.007	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.006	0.001	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	.009	0.001	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	.008	0.001	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	.036	0.004	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	.032	0.004	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	.096	0.007	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	.077	0.007	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.006	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.004	0.001	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	.008	0.001	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	.005	0.001	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	.014	0.003	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	.017	0.002	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	.034	0.002	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	.041	0.006	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.003	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.004	0	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	.008	0.001	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	.005	0	8
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	.033	0.004	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	.030	0.004	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	.099	0.011	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	.095	0.009	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.004	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.003	0	7
Mexican American Male, 20-39 years (2011 - 2012)	.006	0.001	4
Mexican American Male, 20-39 years (2013 - 2014)	.005	0	5
Mexican American Male, 40-59 years (2011 - 2012)	.018	0.001	4
Mexican American Male, 40-59 years (2013 - 2014)	.010	0.001	5
Mexican American Male, 60+ years (2011 - 2012)	**.032	0.011	2
Mexican American Male, 60+ years (2013 - 2014)	.034	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	.003	0	4
Mexican American Female, 12-19 years (2013 - 2014)	.003	0	7
Mexican American Female, 20-39 years (2011 - 2012)	.005	0.001	4
Mexican American Female, 20-39 years (2013 - 2014)	.004	0	5
Mexican American Female, 40-59 years (2011 - 2012)	**.025	0.01	3
Mexican American Female, 40-59 years (2013 - 2014)	.012	0.002	6
Mexican American Female, 60+ years (2011 - 2012)	.046	0.004	3
Mexican American Female, 60+ years (2013 - 2014)	.047	0.008	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.003	0	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	.005	0	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	.011	0.001	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	.038	0.006	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.003	0	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**.005	0.002	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	.013	0.002	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	.047	0.005	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2011 – 2014)

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.008	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.005	0.001	3
Asian Male, 20-39 years (2011 - 2012)	.012	0.001	6
Asian Male, 20-39 years (2013 - 2014)	.010	0.002	4
Asian Male, 40-59 years (2011 - 2012)	.023	0.003	6
Asian Male, 40-59 years (2013 - 2014)	.017	0.003	4
Asian Male, 60+ years (2011 - 2012)	.030	0.005	4
Asian Male, 60+ years (2013 - 2014)	.034	0.004	3
Asian Female, 12-19 years (2011 - 2012)	.005	0	4
Asian Female, 12-19 years (2013 - 2014)	.006	0.001	3
Asian Female, 20-39 years (2011 - 2012)	.012	0.001	6
Asian Female, 20-39 years (2013 - 2014)	.010	0	5
Asian Female, 40-59 years (2011 - 2012)	.028	0.005	6
Asian Female, 40-59 years (2013 - 2014)	.020	0.002	7
Asian Female, 60+ years (2011 - 2012)	.046	0.007	3
Asian Female, 60+ years (2013 - 2014)	**.048	0.014	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2001 – 2004)

CAS Number 41464-51-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	.656 (.579-.744)	.900 (.800-.980)	1.32 (1.24-1.46)	2.02 (1.90-2.17)	2.70 (2.40-3.03)	1892
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.706 (.629-.792)	.860 (.800-1.00)	1.56 (1.32-1.69)	2.25 (2.05-2.60)	3.44 (2.27-3.98)	596
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	.650 (.568-.742)	.900 (.800-.970)	1.30 (1.22-1.40)	2.00 (1.85-2.17)	2.60 (2.35-2.91)	1296
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.665 (.606-.730)	.900 (.800-.970)	1.40 (1.30-1.50)	2.05 (1.90-2.27)	2.70 (2.33-3.08)	945
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	.648 (.545-.771)	.870 (.780-1.00)	1.30 (1.20-1.41)	2.00 (1.84-2.23)	2.60 (2.35-3.08)	947
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	.693 (.569-.843)	.840 (.700-1.00)	1.49 (1.14-1.70)	2.00 (1.64-2.40)	2.30 (2.00-3.10)	427
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.824 (.723-.939)	1.05 (.950-1.10)	1.70 (1.32-2.10)	2.81 (2.48-3.09)	3.42 (3.00-4.14)	462
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	.625 (.531-.735)	.830 (.780-.940)	1.30 (1.20-1.40)	1.97 (1.85-2.17)	2.49 (2.30-2.80)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.416	0.073	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	**.847	0.265	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2001 – 2004)

CAS Number 41464-51-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	.004 (.004-.005)	.005 (.005-.006)	.008 (.008-.009)	.012 (.012-.013)	.017 (.015-.017)	1892
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.004 (.003-.004)	.005 (.004-.005)	.008 (.007-.008)	.011 (.010-.013)	.016 (.011-.021)	596
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	.004 (.004-.005)	.006 (.005-.006)	.008 (.008-.009)	.012 (.011-.014)	.017 (.014-.018)	1296
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.004 (.004-.005)	.006 (.005-.006)	.009 (.008-.009)	.013 (.012-.014)	.017 (.015-.018)	945
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	.004 (.003-.005)	.005 (.005-.006)	.008 (.007-.009)	.012 (.011-.013)	.016 (.014-.017)	947
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	.004 (.003-.005)	.005 (.004-.006)	.008 (.007-.010)	.011 (.009-.014)	.014 (.011-.022)	427
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.005 (.004-.005)	.006 (.006-.006)	.009 (.008-.012)	.015 (.014-.017)	.020 (.017-.027)	462
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	.004 (.003-.005)	.005 (.005-.006)	.008 (.007-.009)	.012 (.011-.013)	.016 (.014-.017)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 20-39 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 40-59 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 60+ years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 20-39 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 40-59 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.003	0	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 60+ years (2005 - 2006)	*	*	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.005	0.001	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2005 – 2008)‡‡

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 20-39 years (2005 - 2006)	*	*	9
Mexican American Male, 20-39 years (2007 - 2008)	*	*	9
Mexican American Male, 40-59 years (2005 - 2006)	*	*	4
Mexican American Male, 40-59 years (2007 - 2008)	*	*	6
Mexican American Male, 60+ years (2005 - 2006)	*	*	4
Mexican American Male, 60+ years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 20-39 years (2005 - 2006)	*	*	9
Mexican American Female, 20-39 years (2007 - 2008)	*	*	8
Mexican American Female, 40-59 years (2005 - 2006)	*	*	6
Mexican American Female, 40-59 years (2007 - 2008)	*	*	6
Mexican American Female, 60+ years (2005 - 2006)	*	*	3
Mexican American Female, 60+ years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (1999 – 2004)

CAS Number 38380-02-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	13.1 (<LOD-14.7)	19.1 (16.2-20.6)	1897
Total population (2001 - 2002)	*	< LOD	< LOD	17.6 (15.3-21.0)	26.3 (22.1-30.5)	2281
Total population (2003 - 2004)	4.16 (3.82-4.54)	3.79 (3.43-4.10)	6.53 (5.76-7.56)	13.0 (10.5-16.1)	18.0 (16.7-19.4)	1877
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	654
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	2.34 (2.08-2.64)	2.30 (2.05-2.60)	3.20 (2.80-3.86)	5.16 (3.80-6.12)	6.00 (4.77-10.0)	587
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	13.9 (<LOD-16.0)	20.0 (17.2-21.6)	1243
Age 20+ years (2001 - 2002)	*	< LOD	10.8 (<LOD-12.3)	19.4 (16.7-22.3)	29.0 (23.5-32.1)	1523
Age 20+ years (2003 - 2004)	4.52 (4.14-4.94)	4.08 (3.75-4.45)	7.10 (6.08-8.53)	14.7 (10.9-17.0)	18.6 (17.1-21.3)	1290
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	16.7 (13.8-20.5)	905
Males (2001 - 2002)	*	< LOD	< LOD	17.0 (13.8-21.0)	24.9 (19.8-30.1)	1061
Males (2003 - 2004)	3.97 (3.64-4.33)	3.69 (3.31-4.00)	6.11 (5.44-7.00)	11.1 (9.40-14.3)	16.8 (12.9-19.0)	936
Females (1999 - 2000)	*	< LOD	< LOD	13.9 (<LOD-16.2)	20.3 (17.3-23.5)	992
Females (2001 - 2002)	*	< LOD	< LOD	18.0 (15.8-22.2)	28.5 (22.5-33.2)	1220
Females (2003 - 2004)	4.35 (3.94-4.81)	3.90 (3.43-4.70)	7.05 (6.00-8.46)	15.3 (11.5-17.3)	18.9 (17.5-22.8)	941
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	624
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	13.8 (10.7-17.4)	562
Mexican Americans (2003 - 2004)	2.33 (2.08-2.62)	2.20 (1.90-2.47)	3.35 (2.80-4.02)	5.21 (4.50-6.10)	6.35 (5.53-7.55)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	21.1 (17.0-31.1)	32.0 (22.9-57.4)	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	11.7 (10.6-13.1)	22.5 (18.8-25.8)	29.0 (23.0-37.2)	510
Non-Hispanic blacks (2003 - 2004)	5.54 (4.53-6.77)	4.81 (3.80-5.80)	10.4 (7.20-15.3)	23.1 (16.7-29.7)	31.7 (24.2-49.1)	447
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	12.5 (<LOD-14.5)	18.2 (14.3-20.8)	715
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	18.5 (15.3-22.3)	28.5 (22.1-32.4)	1046
Non-Hispanic whites (2003 - 2004)	4.23 (3.80-4.72)	3.90 (3.40-4.44)	6.70 (5.70-8.00)	12.6 (9.73-15.8)	17.3 (15.5-18.1)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.51	0.17	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.47	0.16	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.64	0.1	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	2.60	0.41	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	2.29	0.19	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	2.58	0.29	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	4.29	0.4	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	3.80	0.32	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	3.58	0.49	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	8.00	0.53	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	8.46	0.78	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	6.63	0.59	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.30	0.07	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.931	0.206	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.23	0.12	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	1.86	0.1	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	2.06	0.32	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	1.83	0.11	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	4.50	0.3	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	3.93	0.29	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	5.11	0.96	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	10.0	1	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	8.84	0.87	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	8.72	0.75	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.09	0.22	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.43	0.13	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.63	0.17	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	2.46	0.25	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	2.18	0.19	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**3.45	1.19	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	5.47	0.79	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	6.22	1.22	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	8.73	1.52	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	14.2	1.8	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	11.5	1.2	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	12.8	1.6	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.37	0.09	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.20	0.16	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.05	0.14	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	2.39	0.25	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	1.94	0.26	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	2.07	0.28	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	7.60	0.79	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	6.43	0.75	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	9.98	1.58	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	21.5	5.7	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	17.9	2.9	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	15.2	2.3	7
Mexican American Male, 12-19 years (2005 - 2006)	.912	0.089	11
Mexican American Male, 12-19 years (2007 - 2008)	.810	0.143	6
Mexican American Male, 12-19 years (2009 - 2010)	1.19	0.17	8
Mexican American Male, 20-39 years (2005 - 2006)	1.46	0.09	9
Mexican American Male, 20-39 years (2007 - 2008)	1.52	0.13	9
Mexican American Male, 20-39 years (2009 - 2010)	1.38	0.12	8
Mexican American Male, 40-59 years (2005 - 2006)	2.39	0.15	4
Mexican American Male, 40-59 years (2007 - 2008)	3.19	0.52	6
Mexican American Male, 40-59 years (2009 - 2010)	2.61	0.33	8
Mexican American Male, 60+ years (2005 - 2006)	4.19	0.31	4
Mexican American Male, 60+ years (2007 - 2008)	4.50	0.45	5
Mexican American Male, 60+ years (2009 - 2010)	5.40	0.53	5
Mexican American Female, 12-19 years (2005 - 2006)	.816	0.043	16
Mexican American Female, 12-19 years (2007 - 2008)	.722	0.075	5
Mexican American Female, 12-19 years (2009 - 2010)	.666	0.161	6
Mexican American Female, 20-39 years (2005 - 2006)	1.13	0.12	9
Mexican American Female, 20-39 years (2007 - 2008)	1.27	0.07	8
Mexican American Female, 20-39 years (2009 - 2010)	.936	0.058	9
Mexican American Female, 40-59 years (2005 - 2006)	3.32	0.33	6
Mexican American Female, 40-59 years (2007 - 2008)	2.74	0.26	6
Mexican American Female, 40-59 years (2009 - 2010)	2.60	0.21	9
Mexican American Female, 60+ years (2005 - 2006)	5.65	0.74	3
Mexican American Female, 60+ years (2007 - 2008)	5.21	1.01	5
Mexican American Female, 60+ years (2009 - 2010)	5.52	0.88	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.24	0.13	11
All Hispanic Male, 20-39 years (2009 - 2010)	1.64	0.15	13
All Hispanic Male, 40-59 years (2009 - 2010)	3.14	0.37	13
All Hispanic Male, 60+ years (2009 - 2010)	5.71	0.56	8
All Hispanic Female, 12-19 years (2009 - 2010)	.858	0.169	9
All Hispanic Female, 20-39 years (2009 - 2010)	1.24	0.17	13
All Hispanic Female, 40-59 years (2009 - 2010)	2.71	0.21	14
All Hispanic Female, 60+ years (2009 - 2010)	5.79	0.54	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.977	0.079	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.32	0.14	7
Non-Hispanic White Male, 20-39 years (2011 - 2012)	1.59	0.08	12
Non-Hispanic White Male, 20-39 years (2013 - 2014)	1.56	0.19	14
Non-Hispanic White Male, 40-59 years (2011 - 2012)	2.94	0.21	12
Non-Hispanic White Male, 40-59 years (2013 - 2014)	3.97	0.47	14
Non-Hispanic White Male, 60+ years (2011 - 2012)	5.51	0.37	12
Non-Hispanic White Male, 60+ years (2013 - 2014)	5.56	0.66	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.955	0.099	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.64	0.38	6
Non-Hispanic White Female, 20-39 years (2011 - 2012)	1.60	0.21	13
Non-Hispanic White Female, 20-39 years (2013 - 2014)	1.63	0.19	15
Non-Hispanic White Female, 40-59 years (2011 - 2012)	4.21	0.68	11
Non-Hispanic White Female, 40-59 years (2013 - 2014)	3.49	0.49	16
Non-Hispanic White Female, 60+ years (2011 - 2012)	6.65	0.69	14
Non-Hispanic White Female, 60+ years (2013 - 2014)	7.34	0.73	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.51	0.21	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.37	0.37	6
Non-Hispanic Black Male, 20-39 years (2011 - 2012)	2.10	0.21	9
Non-Hispanic Black Male, 20-39 years (2013 - 2014)	1.54	0.17	7
Non-Hispanic Black Male, 40-59 years (2011 - 2012)	3.69	0.94	7
Non-Hispanic Black Male, 40-59 years (2013 - 2014)	4.11	0.78	7
Non-Hispanic Black Male, 60+ years (2011 - 2012)	7.98	0.91	9
Non-Hispanic Black Male, 60+ years (2013 - 2014)	8.46	1.17	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.825	0.141	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.12	0.15	6
Non-Hispanic Black Female, 20-39 years (2011 - 2012)	1.64	0.22	8
Non-Hispanic Black Female, 20-39 years (2013 - 2014)	1.29	0.11	7
Non-Hispanic Black Female, 40-59 years (2011 - 2012)	5.16	0.76	8
Non-Hispanic Black Female, 40-59 years (2013 - 2014)	5.17	0.55	8
Non-Hispanic Black Female, 60+ years (2011 - 2012)	14.4	1.7	8
Non-Hispanic Black Female, 60+ years (2013 - 2014)	12.9	1.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.645	0.047	5
Mexican American Male, 12-19 years (2013 - 2014)	.595	0.072	7
Mexican American Male, 20-39 years (2011 - 2012)	1.21	0.13	4
Mexican American Male, 20-39 years (2013 - 2014)	.939	0.092	5
Mexican American Male, 40-59 years (2011 - 2012)	2.25	0.2	4
Mexican American Male, 40-59 years (2013 - 2014)	1.70	0.17	5
Mexican American Male, 60+ years (2011 - 2012)	3.66	0.89	2
Mexican American Male, 60+ years (2013 - 2014)	4.81	0.63	4
Mexican American Female, 12-19 years (2011 - 2012)	.486	0.066	4
Mexican American Female, 12-19 years (2013 - 2014)	.561	0.042	7
Mexican American Female, 20-39 years (2011 - 2012)	.903	0.237	4
Mexican American Female, 20-39 years (2013 - 2014)	.674	0.036	5
Mexican American Female, 40-59 years (2011 - 2012)	3.35	0.63	3
Mexican American Female, 40-59 years (2013 - 2014)	1.86	0.45	6
Mexican American Female, 60+ years (2011 - 2012)	5.82	0.71	3
Mexican American Female, 60+ years (2013 - 2014)	4.80	0.64	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.721	0.134	10
All Hispanic Male, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Male, 20-39 years (2013 - 2014)	1.02	0.08	8
All Hispanic Male, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Male, 40-59 years (2013 - 2014)	2.09	0.38	9
All Hispanic Male, 60+ years (2011 - 2012)	*	*	6
All Hispanic Male, 60+ years (2013 - 2014)	5.13	0.57	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.620	0.083	10
All Hispanic Female, 20-39 years (2011 - 2012)	*	*	8
All Hispanic Female, 20-39 years (2013 - 2014)	**1.28	0.54	9
All Hispanic Female, 40-59 years (2011 - 2012)	*	*	7
All Hispanic Female, 40-59 years (2013 - 2014)	2.13	0.35	10
All Hispanic Female, 60+ years (2011 - 2012)	*	*	7
All Hispanic Female, 60+ years (2013 - 2014)	5.23	0.47	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.90	0.26	3
Asian Male, 12-19 years (2013 - 2014)	1.33	0.31	3
Asian Male, 20-39 years (2011 - 2012)	3.01	0.75	6
Asian Male, 20-39 years (2013 - 2014)	2.21	0.3	4
Asian Male, 40-59 years (2011 - 2012)	5.51	0.74	6
Asian Male, 40-59 years (2013 - 2014)	4.77	1.13	4
Asian Male, 60+ years (2011 - 2012)	**5.78	1.93	4
Asian Male, 60+ years (2013 - 2014)	6.38	0.27	3
Asian Female, 12-19 years (2011 - 2012)	1.13	0.09	4
Asian Female, 12-19 years (2013 - 2014)	1.78	0.25	3
Asian Female, 20-39 years (2011 - 2012)	3.03	0.5	6
Asian Female, 20-39 years (2013 - 2014)	2.24	0.25	5
Asian Female, 40-59 years (2011 - 2012)	4.56	0.91	6
Asian Female, 40-59 years (2013 - 2014)	3.83	0.43	7
Asian Female, 60+ years (2011 - 2012)	7.94	0.93	3
Asian Female, 60+ years (2013 - 2014)	**7.59	2.88	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (1999 – 2004)

CAS Number 38380-02-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.120 (.100-.150)	1897
Total population (2001 - 2002)	*	< LOD	< LOD	.120 (.100-.140)	.180 (.150-.210)	2281
Total population (2003 - 2004)	.025 (.023-.028)	.024 (.021-.026)	.042 (.038-.049)	.082 (.067-.102)	.119 (.102-.140)	1877
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	654
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.012 (.011-.013)	.012 (.010-.013)	.017 (.015-.019)	.025 (.019-.032)	.032 (.025-.045)	587
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.130 (.110-.150)	1243
Age 20+ years (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.130 (.110-.160)	.190 (.160-.210)	1523
Age 20+ years (2003 - 2004)	.028 (.026-.031)	.026 (.024-.028)	.046 (.041-.054)	.093 (.073-.110)	.127 (.110-.153)	1290
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	.110 (.090-.130)	905
Males (2001 - 2002)	*	< LOD	< LOD	.110 (.090-.140)	.160 (.120-.200)	1061
Males (2003 - 2004)	.025 (.022-.027)	.023 (.021-.025)	.040 (.036-.045)	.070 (.059-.090)	.110 (.078-.132)	936
Females (1999 - 2000)	*	< LOD	< LOD	.100 (<LOD-.110)	.130 (.100-.170)	992
Females (2001 - 2002)	*	< LOD	< LOD	.130 (.110-.160)	.200 (.160-.210)	1220
Females (2003 - 2004)	.026 (.024-.029)	.024 (.020-.028)	.045 (.040-.053)	.095 (.078-.111)	.130 (.110-.158)	941
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	624
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.100 (.070-.120)	562
Mexican Americans (2003 - 2004)	.014 (.012-.016)	.013 (.011-.016)	.022 (.019-.026)	.036 (.030-.040)	.046 (.036-.058)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.140 (.110-.180)	.210 (.150-.400)	400
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.070 (.060-.090)	.140 (.110-.150)	.190 (.140-.230)	510
Non-Hispanic blacks (2003 - 2004)	.032 (.026-.039)	.027 (.023-.033)	.060 (.042-.086)	.149 (.112-.172)	.211 (.150-.306)	447
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.090 (<LOD-.100)	.110 (.090-.150)	715
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.120 (.100-.160)	.190 (.160-.210)	1046
Non-Hispanic whites (2003 - 2004)	.026 (.023-.029)	.025 (.022-.027)	.043 (.038-.051)	.081 (.065-.102)	.112 (.098-.127)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.008	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.007	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.009	0.001	10
Non-Hispanic White Male, 20-39 years (2005 - 2006)	.019	0.004	12
Non-Hispanic White Male, 20-39 years (2007 - 2008)	.015	0.002	15
Non-Hispanic White Male, 20-39 years (2009 - 2010)	.017	0.002	17
Non-Hispanic White Male, 40-59 years (2005 - 2006)	.032	0.003	12
Non-Hispanic White Male, 40-59 years (2007 - 2008)	.028	0.002	16
Non-Hispanic White Male, 40-59 years (2009 - 2010)	.024	0.004	17
Non-Hispanic White Male, 60+ years (2005 - 2006)	.054	0.003	15
Non-Hispanic White Male, 60+ years (2007 - 2008)	.054	0.005	23
Non-Hispanic White Male, 60+ years (2009 - 2010)	.040	0.004	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.007	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.004	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.006	0.001	8
Non-Hispanic White Female, 20-39 years (2005 - 2006)	.012	0.001	16
Non-Hispanic White Female, 20-39 years (2007 - 2008)	.012	0.002	13
Non-Hispanic White Female, 20-39 years (2009 - 2010)	.010	0.001	19
Non-Hispanic White Female, 40-59 years (2005 - 2006)	.033	0.003	13
Non-Hispanic White Female, 40-59 years (2007 - 2008)	.026	0.002	17
Non-Hispanic White Female, 40-59 years (2009 - 2010)	.032	0.006	17
Non-Hispanic White Female, 60+ years (2005 - 2006)	.072	0.007	17
Non-Hispanic White Female, 60+ years (2007 - 2008)	.059	0.006	21
Non-Hispanic White Female, 60+ years (2009 - 2010)	.053	0.004	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.010	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.008	0.001	6
Non-Hispanic Black Male, 20-39 years (2005 - 2006)	.015	0.002	6
Non-Hispanic Black Male, 20-39 years (2007 - 2008)	.012	0.001	6
Non-Hispanic Black Male, 20-39 years (2009 - 2010)	**.020	0.006	6
Non-Hispanic Black Male, 40-59 years (2005 - 2006)	.035	0.005	5
Non-Hispanic Black Male, 40-59 years (2007 - 2008)	.040	0.008	6
Non-Hispanic Black Male, 40-59 years (2009 - 2010)	.053	0.008	7
Non-Hispanic Black Male, 60+ years (2005 - 2006)	.084	0.009	5
Non-Hispanic Black Male, 60+ years (2007 - 2008)	.070	0.008	8
Non-Hispanic Black Male, 60+ years (2009 - 2010)	.069	0.01	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.007	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.006	0.001	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.005	0.001	5
Non-Hispanic Black Female, 20-39 years (2005 - 2006)	.014	0.002	7
Non-Hispanic Black Female, 20-39 years (2007 - 2008)	.010	0.001	8
Non-Hispanic Black Female, 20-39 years (2009 - 2010)	.010	0.001	7
Non-Hispanic Black Female, 40-59 years (2005 - 2006)	.049	0.006	7
Non-Hispanic Black Female, 40-59 years (2007 - 2008)	.039	0.005	8
Non-Hispanic Black Female, 40-59 years (2009 - 2010)	.056	0.008	7
Non-Hispanic Black Female, 60+ years (2005 - 2006)	.144	0.039	5
Non-Hispanic Black Female, 60+ years (2007 - 2008)	.106	0.014	7
Non-Hispanic Black Female, 60+ years (2009 - 2010)	.088	0.014	7
Mexican American Male, 12-19 years (2005 - 2006)	.005	0	11
Mexican American Male, 12-19 years (2007 - 2008)	.004	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.006	0.001	8
Mexican American Male, 20-39 years (2005 - 2006)	.010	0.001	9
Mexican American Male, 20-39 years (2007 - 2008)	.010	0.001	9
Mexican American Male, 20-39 years (2009 - 2010)	.008	0.001	8
Mexican American Male, 40-59 years (2005 - 2006)	.019	0.002	4
Mexican American Male, 40-59 years (2007 - 2008)	.023	0.004	6
Mexican American Male, 40-59 years (2009 - 2010)	.018	0.003	8
Mexican American Male, 60+ years (2005 - 2006)	.031	0.004	4
Mexican American Male, 60+ years (2007 - 2008)	.032	0.003	5
Mexican American Male, 60+ years (2009 - 2010)	.033	0.003	5
Mexican American Female, 12-19 years (2005 - 2006)	.004	0	16
Mexican American Female, 12-19 years (2007 - 2008)	.003	0	5
Mexican American Female, 12-19 years (2009 - 2010)	.003	0.001	6
Mexican American Female, 20-39 years (2005 - 2006)	.008	0.001	9
Mexican American Female, 20-39 years (2007 - 2008)	.007	0.001	8
Mexican American Female, 20-39 years (2009 - 2010)	.005	0	9
Mexican American Female, 40-59 years (2005 - 2006)	.024	0.002	6
Mexican American Female, 40-59 years (2007 - 2008)	.019	0.002	6
Mexican American Female, 40-59 years (2009 - 2010)	.017	0.002	9
Mexican American Female, 60+ years (2005 - 2006)	.042	0.005	3
Mexican American Female, 60+ years (2007 - 2008)	.036	0.007	5
Mexican American Female, 60+ years (2009 - 2010)	.030	0.004	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 – 2010)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.006	0.001	11
All Hispanic Male, 20-39 years (2009 - 2010)	.010	0.001	13
All Hispanic Male, 40-59 years (2009 - 2010)	.021	0.003	13
All Hispanic Male, 60+ years (2009 - 2010)	.036	0.003	8
All Hispanic Female, 12-19 years (2009 - 2010)	.004	0.001	9
All Hispanic Female, 20-39 years (2009 - 2010)	.007	0.001	13
All Hispanic Female, 40-59 years (2009 - 2010)	.017	0.002	14
All Hispanic Female, 60+ years (2009 - 2010)	.034	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.005	0	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.006	0.001	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.009	0	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.008	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.019	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.024	0.003	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.030	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.030	0.003	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.005	0	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.008	0.002	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.009	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.009	0.001	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.027	0.005	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.021	0.003	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.040	0.004	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.043	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.007	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.006	0.001	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.011	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.008	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.021	0.006	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.023	0.005	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.044	0.006	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.045	0.007	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.004	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.005	0.001	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.009	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.006	0.001	7
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.032	0.006	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.027	0.003	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.069	0.009	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.003	0	5
Mexican American Male, 12-19 years (2013 - 2014)	.003	0	7
Mexican American Male, 12-19 years (2011 - 2012)	.008	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.006	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.018	0.002	4
Mexican American Male, 12-19 years (2013 - 2014)	.010	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.022	0.005	2
Mexican American Male, 12-19 years (2013 - 2014)	.026	0.003	4
Mexican American Female, 12-19 years (2011 - 2012)	.002	0	4
Mexican American Female, 12-19 years (2013 - 2014)	.003	0	7
Mexican American Female, 12-19 years (2011 - 2012)	.005	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.004	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.020	0.004	3
Mexican American Female, 12-19 years (2013 - 2014)	.011	0.003	6
Mexican American Female, 12-19 years (2011 - 2012)	.036	0.004	3
Mexican American Female, 12-19 years (2013 - 2014)	.028	0.004	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.004	0.001	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.006	0	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.013	0.003	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.028	0.003	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.003	0	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.007	0.003	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.012	0.002	10
All Hispanic Female, 12-19 years (2013 - 2014)	.031	0.003	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2011 – 2014)

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.010	0.002	3
Asian Male, 12-19 years (2013 - 2014)	.006	0.001	3
Asian Male, 12-19 years (2011 - 2012)	.017	0.004	6
Asian Male, 12-19 years (2013 - 2014)	.013	0.002	4
Asian Male, 12-19 years (2011 - 2012)	.033	0.005	6
Asian Male, 12-19 years (2013 - 2014)	.027	0.007	4
Asian Male, 12-19 years (2011 - 2012)	**.031	0.01	4
Asian Male, 12-19 years (2013 - 2014)	.039	0.003	3
Asian Female, 12-19 years (2011 - 2012)	.005	0	4
Asian Female, 12-19 years (2013 - 2014)	.008	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.017	0.003	6
Asian Female, 12-19 years (2013 - 2014)	.011	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.028	0.006	6
Asian Female, 12-19 years (2013 - 2014)	.022	0.002	7
Asian Female, 12-19 years (2013 - 2014)	**.043	0.015	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (1999 – 2004)

CAS Number 37680-73-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1929
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	1.65 (1.51-1.81)	1.70 (1.50-1.80)	2.70 (2.50-2.94)	4.40 (3.97-4.82)	5.83 (5.29-6.66)	1897
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	1.93 (1.76-2.11)	1.73 (1.51-2.10)	3.20 (3.00-3.60)	5.05 (4.23-5.87)	7.25 (5.10-8.30)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	1.62 (1.46-1.78)	1.67 (1.50-1.80)	2.64 (2.40-2.90)	4.40 (3.88-4.75)	5.51 (5.00-6.60)	1299
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	918
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	1.71 (1.59-1.84)	1.75 (1.60-1.90)	2.80 (2.60-3.10)	4.50 (3.97-5.06)	6.00 (5.35-6.75)	947
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1011
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	1.60 (1.41-1.81)	1.61 (1.41-1.82)	2.57 (2.30-2.98)	4.40 (3.71-4.94)	5.60 (4.88-7.25)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	634
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	1.72 (1.55-1.92)	1.70 (1.50-1.96)	3.00 (2.30-3.80)	4.40 (3.56-5.38)	5.38 (4.10-6.60)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	1.69 (1.38-2.07)	1.70 (1.50-2.16)	3.00 (2.57-3.80)	5.88 (3.88-7.39)	7.68 (6.60-11.9)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	724
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	1.61 (1.46-1.79)	1.61 (1.41-1.80)	2.60 (2.37-2.90)	4.40 (3.75-4.61)	5.50 (5.00-6.15)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 25.7, 10.5, and 0.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.632	0.15	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	**.608	0.187	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**.954	0.346	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.59 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.59 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (1999 – 2004)

CAS Number 37680-73-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1929
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	.010 (.009-.011)	.010 (.009-.012)	.016 (.015-.018)	.027 (.024-.028)	.033 (.031-.037)	1897
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.010 (.009-.011)	.009 (.008-.011)	.016 (.014-.018)	.024 (.021-.028)	.030 (.025-.044)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	.010 (.009-.011)	.011 (.009-.012)	.016 (.015-.018)	.027 (.024-.029)	.034 (.031-.037)	1299
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	918
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	.011 (.010-.011)	.011 (.010-.012)	.017 (.016-.019)	.025 (.024-.029)	.037 (.031-.041)	947
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1011
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	.010 (.009-.011)	.010 (.009-.011)	.015 (.014-.018)	.027 (.022-.029)	.032 (.030-.036)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	634
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.011 (.009-.012)	.011 (.009-.012)	.018 (.014-.021)	.024 (.020-.030)	.029 (.022-.052)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.010 (.008-.012)	.011 (.008-.013)	.016 (.013-.022)	.032 (.023-.041)	.045 (.032-.059)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	724
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	.010 (.009-.011)	.010 (.009-.011)	.016 (.014-.018)	.025 (.024-.027)	.031 (.029-.037)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (2005 – 2008)‡‡

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.005	0.001	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.004	0.001	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**.006	0.002	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (2005 – 2008)‡‡

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2001 – 2004)

CAS Number 74472-35-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	1.22 (1.11-1.33)	1.20 (1.10-1.36)	1.96 (1.80-2.20)	3.40 (3.10-3.57)	4.42 (3.88-4.95)	1882
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	1.44 (1.30-1.59)	1.30 (1.20-1.50)	2.50 (2.19-2.91)	4.13 (3.40-4.90)	5.40 (4.30-7.68)	593
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	1.19 (1.08-1.30)	1.20 (1.09-1.33)	1.88 (1.71-2.11)	3.30 (2.95-3.50)	4.18 (3.66-4.94)	1289
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	1.26 (1.18-1.35)	1.30 (1.19-1.40)	2.05 (1.80-2.30)	3.42 (3.07-3.70)	4.61 (3.80-5.00)	939
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	1.17 (1.04-1.32)	1.20 (1.00-1.36)	1.82 (1.70-2.20)	3.40 (2.77-3.57)	4.40 (3.57-5.54)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	1.33 (1.18-1.51)	1.29 (1.13-1.50)	2.30 (1.80-2.95)	3.40 (2.70-4.30)	4.10 (3.30-5.50)	420
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	1.36 (1.20-1.53)	1.30 (1.14-1.50)	2.10 (1.72-3.00)	4.19 (2.91-5.10)	5.32 (4.40-6.89)	464
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	1.17 (1.05-1.31)	1.20 (1.00-1.33)	1.86 (1.70-2.16)	3.40 (2.93-3.57)	4.19 (3.69-4.95)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.8.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 74472-35-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.374	0.077	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 74472-35-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2001 – 2004)

CAS Number 74472-35-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	.007 (.007-.008)	.007 (.007-.008)	.012 (.011-.013)	.019 (.018-.021)	.026 (.023-.028)	1882
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.007 (.007-.008)	.007 (.006-.008)	.013 (.010-.015)	.020 (.017-.022)	.026 (.019-.037)	593
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	.007 (.007-.008)	.007 (.007-.008)	.012 (.011-.013)	.019 (.017-.021)	.025 (.023-.028)	1289
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.008 (.007-.008)	.008 (.007-.009)	.013 (.011-.014)	.019 (.018-.021)	.028 (.022-.031)	939
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	.007 (.006-.008)	.007 (.006-.008)	.011 (.010-.013)	.019 (.016-.022)	.024 (.021-.027)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	.008 (.007-.009)	.008 (.007-.010)	.014 (.011-.016)	.019 (.016-.022)	.022 (.017-.043)	420
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.008 (.007-.009)	.008 (.006-.009)	.012 (.010-.016)	.023 (.017-.028)	.028 (.023-.032)	464
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.013)	.019 (.017-.021)	.026 (.022-.029)	877

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2005 – 2008)‡‡

CAS Number 74472-35-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.002	0	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2005 – 2008)‡‡

CAS Number 74472-35-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (1999 – 2004)

CAS Number 38380-07-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1927
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	.600 (.500-.700)	1877
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.510 (<LOD-.700)	589
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1259
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	.620 (.490-.800)	1288
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	917
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	.600 (.420-.770)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1010
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	.630 (.500-.800)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	.670 (.500-.800)	1.00 (.770-2.10)	455
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	725
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	.500 (.420-.600)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.410	0.103	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	**.822	0.258	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (1999 – 2004)

CAS Number 38380-07-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1927
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2298
Total population (2003 - 2004)	*	< LOD	< LOD	< LOD	.004 (.003-.004)	1877
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.003 (<LOD-.004)	589
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1259
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1540
Age 20+ years (2003 - 2004)	*	< LOD	< LOD	< LOD	.004 (.004-.005)	1288
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	917
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	*	< LOD	< LOD	< LOD	.004 (.003-.005)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1010
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1229
Females (2003 - 2004)	*	< LOD	< LOD	< LOD	.004 (.003-.005)	940
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	564
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	< LOD	< LOD	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	*	< LOD	< LOD	.004 (.003-.005)	.006 (.005-.013)	455
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	725
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1056
Non-Hispanic whites (2003 - 2004)	*	< LOD	< LOD	< LOD	.003 (.002-.004)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (2005 – 2008)‡‡

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0.001	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.005	0.001	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (2005 – 2008)‡‡

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (1999 – 2004)

CAS Number 52712-04-6 and 74472-42-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	49.3 (42.9-55.8)	71.2 (59.8-82.7)	1930
Total population (2001 - 2002)	19.9 (18.0-22.0)	20.2 (18.2-23.1)	40.4 (35.3-45.1)	70.1 (61.8-78.8)	94.6 (82.5-107)	2293
Total population (2003 - 2004)	15.1 (14.1-16.1)	15.1 (13.6-16.6)	30.5 (28.1-34.0)	55.4 (47.3-63.3)	75.3 (69.0-81.8)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	17.0 (13.7-20.2)	23.1 (17.7-41.2)	748
Age 12-19 years (2003 - 2004)	4.97 (4.45-5.55)	4.57 (4.10-5.02)	7.39 (6.35-8.63)	12.7 (10.4-14.5)	15.2 (13.1-21.3)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	54.7 (47.4-60.8)	72.8 (66.0-88.9)	1261
Age 20+ years (2001 - 2002)	23.3 (21.1-25.8)	24.0 (21.4-26.8)	44.6 (40.4-49.2)	73.9 (66.2-83.0)	100 (88.8-109)	1545
Age 20+ years (2003 - 2004)	17.7 (16.5-19.0)	17.6 (15.5-20.4)	34.3 (30.0-38.8)	59.6 (50.6-66.9)	77.4 (72.3-87.7)	1298
Males (1999 - 2000)	*	< LOD	< LOD	47.2 (<LOD-55.7)	68.2 (55.7-83.8)	918
Males (2001 - 2002)	20.1 (17.9-22.6)	20.5 (17.6-23.5)	39.2 (32.2-46.0)	69.2 (58.1-82.5)	94.6 (77.8-109)	1066
Males (2003 - 2004)	14.9 (13.8-15.9)	14.4 (12.9-15.8)	29.6 (26.6-33.8)	56.3 (45.3-62.3)	75.8 (63.3-87.7)	947
Females (1999 - 2000)	*	< LOD	< LOD	53.7 (44.7-61.2)	72.1 (61.2-88.9)	1012
Females (2001 - 2002)	19.7 (17.8-21.7)	20.2 (18.2-23.1)	41.8 (37.5-45.9)	70.1 (63.4-78.5)	93.9 (80.2-109)	1227
Females (2003 - 2004)	15.3 (14.0-16.8)	15.8 (14.2-17.8)	31.8 (28.3-36.6)	54.6 (47.3-64.4)	72.5 (68.4-80.9)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	18.6 (13.6-23.4)	33.3 (26.5-44.2)	51.8 (42.3-57.6)	559
Mexican Americans (2003 - 2004)	7.06 (6.02-8.28)	6.52 (5.20-7.60)	12.3 (8.91-16.0)	23.6 (18.9-28.3)	29.2 (24.7-36.1)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	72.6 (61.7-89.4)	122 (86.5-185)	412
Non-Hispanic blacks (2001 - 2002)	22.3 (19.3-25.6)	22.0 (18.4-27.1)	46.5 (38.0-55.6)	91.5 (70.1-112)	122 (91.5-169)	513
Non-Hispanic blacks (2003 - 2004)	17.8 (14.9-21.3)	15.9 (12.5-21.0)	41.2 (30.6-57.3)	86.5 (69.4-110)	153 (94.6-191)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	49.3 (41.4-55.8)	70.1 (55.7-85.2)	727
Non-Hispanic whites (2001 - 2002)	21.5 (19.2-24.0)	22.1 (19.6-24.9)	43.0 (37.7-48.0)	70.7 (62.3-79.7)	96.1 (79.1-110)	1057
Non-Hispanic whites (2003 - 2004)	16.0 (14.5-17.7)	15.8 (14.6-18.4)	31.4 (28.2-36.6)	55.1 (47.2-62.3)	71.6 (64.0-75.8)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 41.1, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	4.13	0.65	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	4.81	0.89	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	4.60	0.42	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	7.98	1.5	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	8.74	0.84	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.79	1.02	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	19.6	2.5	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	20.7	1.6	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	20.0	2.4	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	32.6	1.5	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	47.5	3.9	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	36.4	3.3	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	3.24	0.3	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	3.53	0.73	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.72	0.7	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	5.23	0.28	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.85	1.28	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	6.31	0.4	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	16.5	1.2	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	21.5	1.2	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	21.5	3.2	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	33.5	3.1	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	45.0	3.3	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	38.1	2.9	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	4.83	0.62	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	4.63	0.64	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	4.55	0.72	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	7.69	1.17	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	7.95	0.77	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	10.8	2.6	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	20.9	2.4	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	28.6	4.5	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	29.8	4.2	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	56.5	7.5	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	56.5	6.2	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.97	0.19	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	3.25	0.5	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	2.68	0.24	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	6.94	0.87	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	7.16	0.93	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.56	0.92	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	25.5	2.5	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	28.2	2.8	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	31.7	4.8	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	81.1	23.7	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	79.9	7.1	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	66.3	10	7
Mexican American Male, 12-19 years (2005 - 2006)	2.68	0.35	11
Mexican American Male, 12-19 years (2007 - 2008)	2.58	0.55	6
Mexican American Male, 12-19 years (2009 - 2010)	3.09	0.41	8
Mexican American Male, 12-19 years (2005 - 2006)	4.46	0.27	9
Mexican American Male, 12-19 years (2007 - 2008)	5.67	0.55	9
Mexican American Male, 12-19 years (2009 - 2010)	4.11	0.53	8
Mexican American Male, 12-19 years (2005 - 2006)	9.75	0.58	4
Mexican American Male, 12-19 years (2007 - 2008)	15.2	2	6
Mexican American Male, 12-19 years (2009 - 2010)	11.1	0.8	8
Mexican American Male, 12-19 years (2005 - 2006)	19.6	3	4
Mexican American Male, 12-19 years (2007 - 2008)	23.9	3.3	5
Mexican American Male, 12-19 years (2009 - 2010)	26.3	3.1	5
Mexican American Female, 12-19 years (2005 - 2006)	1.92	0.19	16
Mexican American Female, 12-19 years (2007 - 2008)	1.84	0.53	5
Mexican American Female, 12-19 years (2009 - 2010)	2.31	0.39	7
Mexican American Female, 12-19 years (2005 - 2006)	3.22	0.4	9
Mexican American Female, 12-19 years (2007 - 2008)	4.41	0.22	8
Mexican American Female, 12-19 years (2009 - 2010)	4.02	0.33	10
Mexican American Female, 12-19 years (2005 - 2006)	12.5	1	6
Mexican American Female, 12-19 years (2007 - 2008)	14.6	1.9	6
Mexican American Female, 12-19 years (2009 - 2010)	12.4	1.1	9
Mexican American Female, 12-19 years (2005 - 2006)	21.7	2.3	3
Mexican American Female, 12-19 years (2009 - 2010)	32.2	4.6	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	3.17	0.3	11
All Hispanic Male, 12-19 years (2009 - 2010)	5.09	0.55	13
All Hispanic Male, 12-19 years (2009 - 2010)	13.8	1.6	13
All Hispanic Male, 12-19 years (2009 - 2010)	30.2	3.6	8
All Hispanic Female, 12-19 years (2009 - 2010)	2.53	0.33	10
All Hispanic Female, 12-19 years (2009 - 2010)	4.45	0.38	14
All Hispanic Female, 12-19 years (2009 - 2010)	29.8	2.8	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	2.94	0.25	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	3.60	0.53	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.15	0.3	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.93	0.83	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	16.6	3.4	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	14.7	1.7	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	25.0	1.5	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	29.1	2.6	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	3.25	0.44	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.39	0.9	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	5.74	0.88	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	5.35	1.12	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	19.1	2.8	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	14.2	1.6	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	28.9	2.3	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	31.6	2.5	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	3.64	0.44	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	3.21	0.57	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	5.67	0.39	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	4.62	0.53	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	15.4	3.2	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	16.7	3.1	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	41.5	3.7	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	34.0	3.1	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.88	0.33	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.58	0.35	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	4.87	0.78	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	3.45	0.43	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	20.1	2.6	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	18.8	2	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	58.6	5	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	2.12	0.27	5
Mexican American Male, 12-19 years (2013 - 2014)	1.65	0.14	7
Mexican American Male, 12-19 years (2011 - 2012)	4.78	0.82	4
Mexican American Male, 12-19 years (2013 - 2014)	2.82	0.26	5
Mexican American Male, 12-19 years (2011 - 2012)	9.84	1.11	4
Mexican American Male, 12-19 years (2013 - 2014)	7.15	0.79	5
Mexican American Male, 12-19 years (2011 - 2012)	16.8	3.4	2
Mexican American Male, 12-19 years (2013 - 2014)	24.6	3.7	4
Mexican American Female, 12-19 years (2011 - 2012)	1.33	0.18	4
Mexican American Female, 12-19 years (2013 - 2014)	1.49	0.14	7
Mexican American Female, 12-19 years (2011 - 2012)	3.17	0.93	4
Mexican American Female, 12-19 years (2013 - 2014)	2.31	0.26	5
Mexican American Female, 12-19 years (2011 - 2012)	11.9	2.4	3
Mexican American Female, 12-19 years (2013 - 2014)	7.65	1.25	6
Mexican American Female, 12-19 years (2011 - 2012)	25.3	2.5	3
Mexican American Female, 12-19 years (2013 - 2014)	21.5	3.5	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	2.26	0.56	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	3.03	0.23	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	8.23	1.34	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	23.8	3	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.57	0.23	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**7.54	5.17	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	8.84	1.23	10
All Hispanic Female, 12-19 years (2013 - 2014)	24.2	2.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	5.18	0.13	3
Asian Male, 12-19 years (2013 - 2014)	3.72	0.71	3
Asian Male, 12-19 years (2011 - 2012)	9.47	2.38	6
Asian Male, 12-19 years (2013 - 2014)	6.31	0.73	4
Asian Male, 12-19 years (2011 - 2012)	21.6	2.9	6
Asian Male, 12-19 years (2013 - 2014)	17.2	4.2	4
Asian Male, 12-19 years (2011 - 2012)	24.4	6	4
Asian Male, 12-19 years (2013 - 2014)	26.9	1.7	3
Asian Female, 12-19 years (2011 - 2012)	3.64	0.51	4
Asian Female, 12-19 years (2013 - 2014)	5.92	1.15	3
Asian Female, 12-19 years (2011 - 2012)	9.61	1.28	6
Asian Female, 12-19 years (2013 - 2014)	6.62	0.66	5
Asian Female, 12-19 years (2011 - 2012)	16.6	3.3	6
Asian Female, 12-19 years (2013 - 2014)	14.1	1.2	7
Asian Female, 12-19 years (2013 - 2014)	**36.9	15.1	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (1999 – 2004)

CAS Number 52712-04-6 and 74472-42-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.340 (.300-.370)	.460 (.390-.530)	1930
Total population (2001 - 2002)	.122 (.110-.135)	.120 (.110-.140)	.270 (.230-.290)	.460 (.410-.510)	.650 (.560-.700)	2293
Total population (2003 - 2004)	.092 (.086-.099)	.095 (.082-.105)	.206 (.180-.231)	.359 (.326-.392)	.477 (.450-.528)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	.090 (.060-.110)	.110 (.090-.210)	748
Age 12-19 years (2003 - 2004)	.025 (.023-.028)	.023 (.020-.027)	.037 (.030-.047)	.062 (.049-.074)	.079 (.067-.103)	598
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.360 (.320-.390)	.490 (.400-.560)	1261
Age 20+ years (2001 - 2002)	.148 (.133-.163)	.150 (.140-.170)	.290 (.270-.320)	.510 (.450-.550)	.680 (.610-.720)	1545
Age 20+ years (2003 - 2004)	.111 (.103-.120)	.114 (.099-.128)	.232 (.204-.256)	.383 (.354-.416)	.506 (.467-.594)	1298
Males (1999 - 2000)	*	< LOD	< LOD	.320 (<LOD-.370)	.420 (.370-.530)	918
Males (2001 - 2002)	.125 (.112-.140)	.130 (.110-.140)	.260 (.230-.290)	.460 (.370-.540)	.630 (.510-.710)	1066
Males (2003 - 2004)	.092 (.085-.099)	.091 (.079-.103)	.198 (.172-.229)	.354 (.316-.379)	.474 (.389-.562)	947
Females (1999 - 2000)	*	< LOD	< LOD	.340 (.300-.370)	.490 (.390-.540)	1012
Females (2001 - 2002)	.119 (.107-.132)	.120 (.110-.150)	.270 (.230-.300)	.460 (.420-.500)	.660 (.590-.700)	1227
Females (2003 - 2004)	.093 (.084-.102)	.098 (.085-.115)	.212 (.178-.244)	.373 (.325-.417)	.482 (.450-.568)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	636
Mexican Americans (2001 - 2002)	*	< LOD	.110 (.090-.150)	.240 (.170-.330)	.350 (.270-.430)	559
Mexican Americans (2003 - 2004)	.043 (.036-.051)	.040 (.032-.049)	.080 (.068-.100)	.148 (.122-.203)	.239 (.147-.346)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.470 (.360-.670)	.830 (.530-1.22)	412
Non-Hispanic blacks (2001 - 2002)	.125 (.108-.146)	.130 (.090-.160)	.290 (.230-.350)	.560 (.420-.680)	.770 (.560-1.06)	513
Non-Hispanic blacks (2003 - 2004)	.101 (.084-.122)	.087 (.068-.113)	.239 (.186-.326)	.568 (.424-.811)	.965 (.698-1.09)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.340 (.300-.370)	.440 (.370-.530)	727
Non-Hispanic whites (2001 - 2002)	.133 (.119-.149)	.140 (.120-.160)	.280 (.250-.300)	.460 (.420-.530)	.650 (.550-.720)	1057
Non-Hispanic whites (2003 - 2004)	.099 (.089-.109)	.104 (.091-.121)	.216 (.179-.252)	.355 (.320-.390)	.467 (.410-.520)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.023	0.003	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.024	0.004	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.025	0.002	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.060	0.013	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.058	0.006	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.050	0.006	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.150	0.022	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.150	0.01	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.136	0.018	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.221	0.008	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.303	0.023	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.222	0.021	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.017	0.002	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.017	0.004	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.018	0.004	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.034	0.002	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.047	0.009	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.034	0.002	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.123	0.011	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.143	0.009	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.133	0.019	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.242	0.02	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.302	0.022	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.232	0.018	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.024	0.003	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.022	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.021	0.004	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.046	0.007	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.045	0.005	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.060	0.014	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.133	0.016	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.183	0.028	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.182	0.024	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.335	0.042	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.305	0.036	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.015	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.016	0.003	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.012	0.001	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.040	0.005	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.036	0.005	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.033	0.005	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.165	0.019	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.171	0.02	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.177	0.024	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.541	0.16	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.477	0.035	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.380	0.058	7
Mexican American Male, 12-19 years (2005 - 2006)	.014	0.002	11
Mexican American Male, 12-19 years (2007 - 2008)	.014	0.003	6
Mexican American Male, 12-19 years (2009 - 2010)	.015	0.002	8
Mexican American Male, 12-19 years (2005 - 2006)	.032	0.003	9
Mexican American Male, 12-19 years (2007 - 2008)	.039	0.004	9
Mexican American Male, 12-19 years (2009 - 2010)	.025	0.004	8
Mexican American Male, 12-19 years (2005 - 2006)	.079	0.004	4
Mexican American Male, 12-19 years (2007 - 2008)	.108	0.015	6
Mexican American Male, 12-19 years (2009 - 2010)	.076	0.008	8
Mexican American Male, 12-19 years (2005 - 2006)	.142	0.023	4
Mexican American Male, 12-19 years (2007 - 2008)	.174	0.025	5
Mexican American Male, 12-19 years (2009 - 2010)	.161	0.016	5
Mexican American Female, 12-19 years (2005 - 2006)	.010	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	.009	0.002	5
Mexican American Female, 12-19 years (2009 - 2010)	.011	0.002	7
Mexican American Female, 12-19 years (2005 - 2006)	.022	0.003	9
Mexican American Female, 12-19 years (2007 - 2008)	.026	0.001	8
Mexican American Female, 12-19 years (2009 - 2010)	.022	0.002	10
Mexican American Female, 12-19 years (2005 - 2006)	.091	0.007	6
Mexican American Female, 12-19 years (2007 - 2008)	.099	0.014	6
Mexican American Female, 12-19 years (2009 - 2010)	.080	0.008	9
Mexican American Female, 12-19 years (2005 - 2006)	.162	0.011	3
Mexican American Female, 12-19 years (2009 - 2010)	.177	0.023	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2005 – 2010)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.015	0.001	11
All Hispanic Male, 12-19 years (2009 - 2010)	.033	0.004	13
All Hispanic Male, 12-19 years (2009 - 2010)	.094	0.011	13
All Hispanic Male, 12-19 years (2009 - 2010)	.189	0.02	8
All Hispanic Female, 12-19 years (2009 - 2010)	.012	0.001	10
All Hispanic Female, 12-19 years (2009 - 2010)	.025	0.002	14
All Hispanic Female, 12-19 years (2009 - 2010)	.175	0.014	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.014	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.017	0.002	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.030	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.026	0.004	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.110	0.021	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.089	0.012	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.138	0.007	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.158	0.015	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.018	0.003	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.022	0.005	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.031	0.005	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.027	0.005	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.124	0.021	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.084	0.009	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.177	0.014	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.186	0.015	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.016	0.002	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.014	0.002	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.029	0.002	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.023	0.003	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.087	0.02	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.094	0.018	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.225	0.021	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.177	0.018	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.008	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.011	0.002	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.027	0.005	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.017	0.002	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.124	0.021	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.099	0.012	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.313	0.026	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.010	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.008	0.001	7
Mexican American Male, 12-19 years (2011 - 2012)	.029	0.004	4
Mexican American Male, 12-19 years (2013 - 2014)	.018	0.002	5
Mexican American Male, 12-19 years (2011 - 2012)	.077	0.006	4
Mexican American Male, 12-19 years (2013 - 2014)	.044	0.005	5
Mexican American Male, 12-19 years (2011 - 2012)	.099	0.017	2
Mexican American Male, 12-19 years (2013 - 2014)	.133	0.022	4
Mexican American Female, 12-19 years (2011 - 2012)	.007	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.007	0.001	7
Mexican American Female, 12-19 years (2011 - 2012)	.017	0.005	4
Mexican American Female, 12-19 years (2013 - 2014)	.012	0.001	5
Mexican American Female, 12-19 years (2011 - 2012)	.071	0.017	3
Mexican American Female, 12-19 years (2013 - 2014)	.044	0.007	6
Mexican American Female, 12-19 years (2011 - 2012)	.156	0.016	3
Mexican American Female, 12-19 years (2013 - 2014)	.127	0.024	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.011	0.003	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.018	0.001	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.051	0.01	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.128	0.016	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.007	0.001	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.043	0.03	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.051	0.007	10
All Hispanic Female, 12-19 years (2013 - 2014)	.144	0.016	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2011 – 2014)

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.027	0.002	3
Asian Male, 12-19 years (2013 - 2014)	.017	0.003	3
Asian Male, 12-19 years (2011 - 2012)	.052	0.013	6
Asian Male, 12-19 years (2013 - 2014)	.038	0.006	4
Asian Male, 12-19 years (2011 - 2012)	.131	0.018	6
Asian Male, 12-19 years (2013 - 2014)	.098	0.025	4
Asian Male, 12-19 years (2011 - 2012)	.133	0.034	4
Asian Male, 12-19 years (2013 - 2014)	.164	0.015	3
Asian Female, 12-19 years (2011 - 2012)	.017	0.002	4
Asian Female, 12-19 years (2013 - 2014)	.028	0.005	3
Asian Female, 12-19 years (2011 - 2012)	.053	0.007	6
Asian Female, 12-19 years (2013 - 2014)	.034	0.003	5
Asian Female, 12-19 years (2011 - 2012)	.102	0.021	6
Asian Female, 12-19 years (2013 - 2014)	.082	0.007	7
Asian Female, 12-19 years (2013 - 2014)	**.211	0.077	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (1999 – 2004)

CAS Number 51908-16-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	13.3 (<LOD-16.1)	1923
Total population (2001 - 2002)	*	< LOD	< LOD	11.0 (<LOD-12.5)	15.4 (13.6-16.9)	2299
Total population (2003 - 2004)	2.17 (2.02-2.32)	2.21 (2.03-2.54)	4.80 (4.38-5.21)	8.27 (7.10-9.50)	11.7 (10.2-13.3)	1894
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.620 (.562-.685)	.600 (.520-.690)	1.02 (.870-1.20)	1.67 (1.50-1.80)	2.30 (1.79-2.97)	594
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	14.3 (<LOD-17.1)	1256
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	11.8 (10.7-13.5)	16.5 (14.6-18.1)	1541
Age 20+ years (2003 - 2004)	2.60 (2.41-2.79)	2.60 (2.40-2.90)	5.27 (4.82-5.88)	8.81 (8.00-9.80)	12.7 (10.7-15.2)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	13.1 (<LOD-17.1)	915
Males (2001 - 2002)	*	< LOD	< LOD	11.0 (<LOD-13.0)	15.4 (13.0-17.2)	1069
Males (2003 - 2004)	2.16 (1.97-2.37)	2.10 (1.90-2.50)	4.80 (4.09-5.30)	8.30 (6.90-10.1)	12.4 (10.0-14.9)	945
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	13.9 (<LOD-16.3)	1008
Females (2001 - 2002)	*	< LOD	< LOD	11.0 (<LOD-12.2)	15.2 (13.2-17.3)	1230
Females (2003 - 2004)	2.17 (2.02-2.34)	2.35 (2.04-2.63)	4.83 (4.47-5.37)	8.00 (7.04-9.10)	11.3 (9.95-13.2)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	633
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.940 (.826-1.07)	.820 (.780-1.00)	1.74 (1.21-2.60)	3.31 (2.80-4.00)	4.60 (3.47-6.00)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	17.0 (13.4-22.9)	29.8 (20.2-42.2)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	16.6 (12.8-21.4)	23.8 (16.9-31.6)	515
Non-Hispanic blacks (2003 - 2004)	2.81 (2.37-3.34)	2.60 (2.05-3.50)	7.10 (4.97-8.90)	16.8 (11.5-23.2)	28.5 (17.8-41.6)	463
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	723
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	10.8 (<LOD-12.0)	15.2 (12.8-16.8)	1054
Non-Hispanic whites (2003 - 2004)	2.25 (2.06-2.45)	2.35 (2.10-2.60)	4.82 (4.37-5.41)	7.76 (6.94-8.70)	10.5 (9.51-11.3)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.633	0.079	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.760	0.108	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.41	0.24	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.21	0.11	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.21	0.15	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.69	0.22	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.32	0.21	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	3.12	0.37	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	7.11	0.38	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	7.67	0.73	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	6.47	0.65	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.514	0.05	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.597	0.157	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.908	0.06	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.09	0.25	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.938	0.059	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	3.13	0.19	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	3.20	0.16	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.74	0.39	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	7.04	0.65	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	7.10	0.53	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	7.54	0.71	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.890	0.147	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.694	0.182	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.687	0.185	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.73	0.33	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.26	0.15	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	2.25	0.63	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	5.46	0.74	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	5.79	0.97	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	8.20	1.68	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	14.3	1.5	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	14.1	1.4	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.517	0.047	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	4
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.36	0.19	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.17	0.13	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.23	0.24	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	5.30	0.61	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	4.78	0.53	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	7.16	1.77	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	21.0	5.7	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	15.5	1.5	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	16.6	2.5	7
Mexican American Male, 12-19 years (2005 - 2006)	.358	0.042	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.569	0.128	7
Mexican American Male, 12-19 years (2005 - 2006)	.828	0.059	9
Mexican American Male, 12-19 years (2007 - 2008)	.841	0.079	9
Mexican American Male, 12-19 years (2009 - 2010)	.662	0.063	8
Mexican American Male, 12-19 years (2005 - 2006)	1.94	0.1	4
Mexican American Male, 12-19 years (2007 - 2008)	3.10	0.43	6
Mexican American Male, 12-19 years (2009 - 2010)	2.04	0.18	8
Mexican American Male, 12-19 years (2005 - 2006)	4.17	0.84	4
Mexican American Male, 12-19 years (2007 - 2008)	4.91	0.43	5
Mexican American Male, 12-19 years (2009 - 2010)	5.26	0.41	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.538	0.075	9
Mexican American Female, 12-19 years (2007 - 2008)	.610	0.092	8
Mexican American Female, 12-19 years (2009 - 2010)	.462	0.07	10
Mexican American Female, 12-19 years (2005 - 2006)	2.21	0.19	6
Mexican American Female, 12-19 years (2007 - 2008)	2.49	0.31	6
Mexican American Female, 12-19 years (2009 - 2010)	1.65	0.16	9
Mexican American Female, 12-19 years (2005 - 2006)	4.29	0.14	3
Mexican American Female, 12-19 years (2009 - 2010)	4.82	0.6	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.565	0.092	10
All Hispanic Male, 12-19 years (2009 - 2010)	.878	0.109	12
All Hispanic Male, 12-19 years (2009 - 2010)	2.73	0.38	13
All Hispanic Male, 12-19 years (2009 - 2010)	6.22	0.8	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Female, 12-19 years (2009 - 2010)	.626	0.1	14
All Hispanic Female, 12-19 years (2009 - 2010)	5.18	0.41	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.491	0.111	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.577	0.073	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.803	0.06	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.782	0.084	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	3.13	0.89	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	2.85	0.31	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.29	0.33	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	6.07	0.52	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.418	0.08	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.594	0.061	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.784	0.119	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.704	0.099	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	2.97	0.32	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	2.53	0.23	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	5.85	0.46	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	6.45	0.5	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.587	0.044	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.519	0.093	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.19	0.07	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.942	0.133	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	4.19	1.1	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	4.14	0.83	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	8.81	0.44	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	10.1	1.1	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.406	0.1	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.378	0.037	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.864	0.179	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.668	0.091	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	4.09	0.53	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	3.78	0.55	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	14.7	1.4	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.286	0.03	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.786	0.157	4
Mexican American Male, 12-19 years (2013 - 2014)	.447	0.043	5
Mexican American Male, 12-19 years (2011 - 2012)	1.77	0.28	4
Mexican American Male, 12-19 years (2013 - 2014)	1.44	0.2	5
Mexican American Male, 12-19 years (2011 - 2012)	3.20	0.33	2
Mexican American Male, 12-19 years (2013 - 2014)	5.24	0.78	4
Mexican American Female, 12-19 years (2011 - 2012)	.197	0.023	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.477	0.135	4
Mexican American Female, 12-19 years (2013 - 2014)	.372	0.048	5
Mexican American Female, 12-19 years (2011 - 2012)	1.68	0.39	3
Mexican American Female, 12-19 years (2013 - 2014)	1.29	0.22	6
Mexican American Female, 12-19 years (2011 - 2012)	4.17	0.45	3
Mexican American Female, 12-19 years (2013 - 2014)	4.02	0.46	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.539	0.074	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**2.08	0.81	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	5.21	0.56	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**1.47	1.05	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.80	0.33	10
All Hispanic Female, 12-19 years (2013 - 2014)	4.74	0.55	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.23	0.29	3
Asian Male, 12-19 years (2013 - 2014)	**.968	0.298	3
Asian Male, 12-19 years (2011 - 2012)	**2.67	1	6
Asian Male, 12-19 years (2013 - 2014)	1.70	0.11	4
Asian Male, 12-19 years (2011 - 2012)	6.50	1.12	6
Asian Male, 12-19 years (2013 - 2014)	4.75	1.26	4
Asian Male, 12-19 years (2011 - 2012)	7.62	1.65	4
Asian Male, 12-19 years (2013 - 2014)	9.26	1.46	3
Asian Female, 12-19 years (2011 - 2012)	.758	0.114	4
Asian Female, 12-19 years (2013 - 2014)	1.11	0.13	3
Asian Female, 12-19 years (2011 - 2012)	2.78	0.58	6
Asian Female, 12-19 years (2013 - 2014)	1.81	0.17	5
Asian Female, 12-19 years (2011 - 2012)	4.58	1.06	6
Asian Female, 12-19 years (2013 - 2014)	3.64	0.44	7
Asian Female, 12-19 years (2013 - 2014)	**10.7	4.6	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (1999 – 2004)

CAS Number 51908-16-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	.080 (<LOD-.110)	1923
Total population (2001 - 2002)	*	< LOD	< LOD	.070 (<LOD-.080)	.110 (.090-.120)	2299
Total population (2003 - 2004)	.013 (.012-.014)	.014 (.013-.016)	.032 (.028-.035)	.054 (.047-.062)	.077 (.069-.090)	1894
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.003 (.003-.003)	.003 (.003-.003)	.006 (.004-.007)	.008 (.007-.010)	.011 (.009-.014)	594
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	.090 (<LOD-.120)	1256
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	.080 (.070-.090)	.110 (.100-.120)	1541
Age 20+ years (2003 - 2004)	.016 (.015-.018)	.017 (.015-.020)	.035 (.032-.038)	.058 (.053-.064)	.084 (.073-.099)	1300
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	.080 (<LOD-.110)	915
Males (2001 - 2002)	*	< LOD	< LOD	.070 (<LOD-.090)	.100 (.090-.120)	1069
Males (2003 - 2004)	.013 (.012-.015)	.014 (.012-.016)	.032 (.027-.036)	.054 (.045-.063)	.074 (.064-.096)	945
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	1008
Females (2001 - 2002)	*	< LOD	< LOD	.070 (<LOD-.080)	.110 (.090-.120)	1230
Females (2003 - 2004)	.013 (.012-.014)	.015 (.013-.016)	.032 (.028-.036)	.054 (.047-.065)	.079 (.069-.088)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	633
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.006 (.005-.007)	.005 (.004-.007)	.012 (.008-.016)	.024 (.017-.033)	.034 (.024-.046)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.110 (.080-.130)	.180 (.120-.270)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.100 (.080-.130)	.150 (.110-.200)	515
Non-Hispanic blacks (2003 - 2004)	.016 (.013-.019)	.016 (.012-.019)	.041 (.030-.061)	.100 (.069-.167)	.180 (.126-.224)	463
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	723
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.070 (<LOD-.080)	.100 (.090-.120)	1054
Non-Hispanic whites (2003 - 2004)	.014 (.013-.015)	.015 (.013-.018)	.033 (.028-.036)	.053 (.047-.057)	.069 (.064-.075)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.004	0	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.004	0.001	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.010	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.008	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.008	0.001	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.028	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.024	0.001	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.021	0.003	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.048	0.002	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.049	0.004	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.039	0.004	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.003	0.001	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.006	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.007	0.002	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.005	0	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.023	0.002	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.021	0.001	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.023	0.002	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.051	0.004	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.048	0.003	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.046	0.005	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.004	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.003	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	**.003	0.001	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.010	0.002	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.013	0.003	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.035	0.005	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.037	0.006	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.049	0.009	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.086	0.009	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.076	0.009	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	4
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.008	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.006	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.006	0.001	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.034	0.004	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.029	0.004	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.040	0.009	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.140	0.038	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.093	0.009	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.095	0.014	7
Mexican American Male, 12-19 years (2005 - 2006)	.002	0	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.003	0.001	7
Mexican American Male, 12-19 years (2005 - 2006)	.006	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	.006	0.001	9
Mexican American Male, 12-19 years (2009 - 2010)	.004	0	8
Mexican American Male, 12-19 years (2005 - 2006)	.016	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.022	0.003	6
Mexican American Male, 12-19 years (2009 - 2010)	.014	0.002	8
Mexican American Male, 12-19 years (2005 - 2006)	.030	0.006	4
Mexican American Male, 12-19 years (2007 - 2008)	.035	0.002	5
Mexican American Male, 12-19 years (2009 - 2010)	.032	0.002	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.004	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.004	0.001	8
Mexican American Female, 12-19 years (2009 - 2010)	.003	0	10
Mexican American Female, 12-19 years (2005 - 2006)	.016	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.017	0.002	6
Mexican American Female, 12-19 years (2009 - 2010)	.011	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.033	0.003	3
Mexican American Female, 12-19 years (2009 - 2010)	.027	0.003	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 – 2010)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.003	0	10
All Hispanic Male, 12-19 years (2009 - 2010)	.006	0.001	12
All Hispanic Male, 12-19 years (2009 - 2010)	.019	0.003	13
All Hispanic Male, 12-19 years (2009 - 2010)	.039	0.004	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Female, 12-19 years (2009 - 2010)	.004	0.001	14
All Hispanic Female, 12-19 years (2009 - 2010)	.031	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.002	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.005	0	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.004	0	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.020	0.005	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.017	0.002	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.029	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.033	0.003	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.002	0	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.003	0	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.004	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.004	0	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.019	0.002	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.015	0.001	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.036	0.003	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.038	0.003	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.003	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.006	0	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.005	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.024	0.007	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.023	0.005	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.048	0.002	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.053	0.006	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.025	0.004	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.020	0.003	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.079	0.007	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.001	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.005	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.003	0	5
Mexican American Male, 12-19 years (2011 - 2012)	.014	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.009	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.019	0.001	2
Mexican American Male, 12-19 years (2013 - 2014)	.028	0.003	4
Mexican American Female, 12-19 years (2011 - 2012)	.001	0	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.003	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.010	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.007	0.001	6
Mexican American Female, 12-19 years (2011 - 2012)	.026	0.002	3
Mexican American Female, 12-19 years (2013 - 2014)	.024	0.003	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.003	0	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.013	0.006	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.028	0.002	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.008	0.006	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.010	0.002	10
All Hispanic Female, 12-19 years (2013 - 2014)	.028	0.003	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2011 – 2014)

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.006	0.002	3
Asian Male, 12-19 years (2013 - 2014)	.005	0.001	3
Asian Male, 12-19 years (2011 - 2012)	**.015	0.006	6
Asian Male, 12-19 years (2013 - 2014)	.010	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.039	0.007	6
Asian Male, 12-19 years (2013 - 2014)	.027	0.007	4
Asian Male, 12-19 years (2011 - 2012)	.041	0.009	4
Asian Male, 12-19 years (2013 - 2014)	.057	0.012	3
Asian Female, 12-19 years (2011 - 2012)	.004	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.005	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.015	0.003	6
Asian Female, 12-19 years (2013 - 2014)	.009	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.028	0.007	6
Asian Female, 12-19 years (2013 - 2014)	.021	0.003	7
Asian Female, 12-19 years (2013 - 2014)	**.061	0.024	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2001 – 2004)

CAS Number 38380-04-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	.598 (.556-.642)	.600 (.550-.680)	.900 (.830-1.00)	1.45 (1.28-1.60)	1.90 (1.68-2.20)	1873
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.650 (.605-.698)	.640 (.600-.700)	1.00 (.900-1.10)	1.70 (1.40-2.15)	2.40 (1.80-2.98)	590
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	.590 (.546-.638)	.600 (.540-.680)	.900 (.800-1.00)	1.40 (1.20-1.60)	1.89 (1.60-2.17)	1283
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	.623 (.578-.671)	.650 (.600-.700)	.960 (.880-1.06)	1.50 (1.30-1.66)	1.90 (1.60-2.40)	930
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	.575 (.521-.634)	.600 (.500-.620)	.890 (.800-.950)	1.40 (1.20-1.67)	1.90 (1.69-2.20)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.549 (.496-.608)	.530 (.500-.600)	.900 (.700-1.04)	1.28 (1.03-1.60)	1.60 (1.26-2.30)	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.760 (.678-.853)	.800 (.700-.880)	1.20 (1.00-1.58)	1.98 (1.70-2.59)	2.90 (2.20-4.20)	463
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	.574 (.524-.628)	.600 (.510-.670)	.880 (.800-.950)	1.33 (1.19-1.50)	1.80 (1.50-2.02)	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2001 – 2004)

CAS Number 38380-04-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	.004 (.003-.004)	.004 (.004-.004)	.006 (.005-.006)	.009 (.008-.009)	.011 (.010-.013)	1873
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.003 (.003-.004)	.003 (.003-.003)	.005 (.004-.006)	.008 (.007-.009)	.012 (.008-.016)	590
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	.004 (.003-.004)	.004 (.004-.004)	.006 (.005-.006)	.009 (.007-.010)	.011 (.010-.013)	1283
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	.004 (.004-.004)	.004 (.004-.004)	.006 (.005-.007)	.009 (.008-.010)	.011 (.010-.013)	930
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	.003 (.003-.004)	.004 (.003-.004)	.005 (.005-.006)	.008 (.007-.010)	.011 (.009-.013)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.003 (.003-.004)	.003 (.003-.004)	.005 (.004-.006)	.007 (.006-.008)	.009 (.007-.014)	408
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.004 (.004-.005)	.004 (.004-.005)	.007 (.006-.008)	.012 (.010-.013)	.019 (.013-.022)	463
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	.004 (.003-.004)	.004 (.003-.004)	.005 (.005-.006)	.008 (.007-.009)	.010 (.009-.012)	881

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2005 – 2008)‡‡

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2005 – 2008)‡‡

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2001 – 2004)

CAS Number 52663-63-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	*	< LOD	.420 (.400-.500)	.700 (.640-.820)	1.00 (.840-1.30)	1870
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	.400 (<LOD-.470)	.700 (.510-.820)	.880 (.700-1.10)	588
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	*	< LOD	.440 (.400-.500)	.720 (.650-.850)	1.02 (.850-1.40)	1282
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	*	< LOD	.430 (.400-.500)	.720 (.620-.900)	1.10 (.830-1.50)	931
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	*	< LOD	.410 (.400-.500)	.700 (.600-.820)	1.00 (.830-1.20)	939
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	.500 (.400-.700)	.700 (.530-.700)	426
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	*	.400 (<LOD-.500)	.700 (.500-.900)	1.30 (.900-1.90)	2.20 (1.40-4.55)	461
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	*	< LOD	.400 (<LOD-.450)	.650 (.590-.700)	.850 (.750-1.00)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.439	0.048	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.580	0.148	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2001 – 2004)

CAS Number 52663-63-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2307
Total population (2003 - 2004)	*	< LOD	.003 (.002-.003)	.004 (.004-.005)	.006 (.005-.008)	1870
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	.002 (<LOD-.002)	.003 (.003-.004)	.004 (.003-.006)	588
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	*	< LOD	.003 (.003-.003)	.004 (.004-.006)	.007 (.005-.010)	1282
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1075
Males (2003 - 2004)	*	< LOD	.003 (.003-.003)	.005 (.004-.006)	.006 (.005-.010)	931
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	*	< LOD	.003 (.002-.003)	.004 (.004-.005)	.006 (.005-.008)	939
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	.003 (.003-.004)	.004 (.003-.005)	426
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	*	.002 (<LOD-.003)	.004 (.003-.006)	.008 (.006-.010)	.013 (.008-.028)	461
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	*	< LOD	.003 (<LOD-.003)	.004 (.004-.004)	.005 (.004-.006)	864

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.004	0.001	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	4
Mexican American Male, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	6
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (1999 – 2004)

CAS Number 35065-27-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	77.8 (70.2-87.3)	114 (93.0-133)	1926
Total population (2001 - 2002)	27.2 (24.7-30.1)	30.1 (26.1-34.3)	57.8 (52.1-63.2)	94.7 (86.5-104)	126 (109-142)	2306
Total population (2003 - 2004)	19.8 (18.8-20.9)	20.8 (18.4-22.2)	43.3 (39.1-46.9)	71.8 (64.4-82.8)	97.1 (88.8-111)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	12.5 (11.1-14.1)	21.2 (17.4-26.7)	31.9 (23.1-64.7)	757
Age 12-19 years (2003 - 2004)	5.86 (5.25-6.55)	5.40 (4.70-6.21)	8.50 (7.80-9.85)	15.7 (12.9-18.4)	20.7 (16.9-28.3)	596
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	83.2 (75.9-91.8)	122 (100-139)	1258
Age 20+ years (2001 - 2002)	32.6 (29.5-36.1)	35.1 (31.1-39.0)	62.8 (57.6-68.0)	99.5 (90.7-110)	132 (116-146)	1549
Age 20+ years (2003 - 2004)	23.7 (22.3-25.1)	24.2 (21.8-27.4)	47.1 (43.3-50.5)	77.5 (68.0-87.9)	101 (92.9-119)	1300
Males (1999 - 2000)	*	< LOD	< LOD	75.0 (66.7-86.2)	111 (87.7-128)	917
Males (2001 - 2002)	28.5 (25.5-32.0)	31.5 (26.7-35.2)	57.7 (48.3-66.2)	97.5 (82.1-110)	126 (104-150)	1074
Males (2003 - 2004)	20.0 (18.7-21.3)	19.7 (17.7-21.2)	42.9 (37.4-47.6)	72.7 (60.4-88.8)	107 (86.8-122)	947
Females (1999 - 2000)	*	< LOD	< LOD	79.0 (70.2-92.0)	119 (91.4-142)	1009
Females (2001 - 2002)	26.1 (23.6-28.8)	29.0 (25.1-33.4)	57.9 (52.1-62.9)	94.3 (87.8-98.2)	128 (105-145)	1232
Females (2003 - 2004)	19.7 (18.4-21.1)	21.9 (19.0-24.1)	43.8 (39.4-47.7)	70.9 (63.0-81.5)	93.3 (83.8-100)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	67.5 (59.5-71.8)	634
Mexican Americans (2001 - 2002)	12.5 (10.8-14.4)	11.1 (<LOD-13.3)	24.5 (18.2-33.9)	47.4 (36.2-60.3)	66.7 (55.2-72.3)	567
Mexican Americans (2003 - 2004)	8.75 (7.39-10.4)	7.86 (6.17-9.40)	15.6 (11.4-22.2)	30.3 (25.2-34.9)	37.8 (31.1-45.2)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	59.4 (<LOD-82.0)	121 (90.3-159)	176 (130-287)	412
Non-Hispanic blacks (2001 - 2002)	30.0 (26.2-34.4)	31.0 (25.8-36.4)	65.1 (54.2-82.7)	127 (97.1-152)	170 (126-246)	515
Non-Hispanic blacks (2003 - 2004)	22.8 (19.1-27.2)	20.9 (17.0-28.7)	54.1 (37.3-69.2)	126 (92.9-158)	194 (126-294)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	76.4 (69.3-83.9)	102 (87.8-127)	725
Non-Hispanic whites (2001 - 2002)	29.9 (26.8-33.4)	33.0 (28.7-37.1)	61.2 (55.8-66.7)	96.3 (86.5-109)	126 (104-142)	1061
Non-Hispanic whites (2003 - 2004)	21.3 (19.7-23.1)	22.2 (20.4-25.9)	44.9 (39.7-49.5)	70.9 (60.4-82.1)	91.3 (82.1-103)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.6, 10.5, and 1.1, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	6.27	1.11	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	5.80	1.04	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.32	0.76	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	13.2	2.6	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	11.0	1	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	11.3	1.1	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	36.4	5.1	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	28.2	1.6	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	29.4	3.6	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	60.4	2.7	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	63.9	4.8	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	57.7	4.8	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	4.59	0.49	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	4.34	0.99	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.76	0.99	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	8.47	0.59	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	9.36	1.4	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.59	0.56	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	27.8	1.4	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	27.7	1.3	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	35.1	4.9	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	58.0	5.1	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	56.4	3.7	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	63.1	5	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	7.42	1	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	5.74	0.81	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	5.86	0.63	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	13.8	2.1	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	10.3	0.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	15.3	4.1	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	38.8	4.2	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	41.0	5.5	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	53.2	8.4	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	103	13	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	97.9	8.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.59, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	4.20	0.29	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	3.76	0.52	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	3.36	0.27	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	10.8	1.4	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	8.99	1.17	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	8.93	1.48	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	41.2	4	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	35.7	3.2	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	48.6	10	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	130	33	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	102	8	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	118	17	7
Mexican American Male, 12-19 years (2005 - 2006)	3.70	0.45	11
Mexican American Male, 12-19 years (2007 - 2008)	3.32	0.69	6
Mexican American Male, 12-19 years (2009 - 2010)	4.63	0.7	8
Mexican American Male, 12-19 years (2005 - 2006)	6.93	0.31	9
Mexican American Male, 12-19 years (2007 - 2008)	6.85	0.64	9
Mexican American Male, 12-19 years (2009 - 2010)	6.00	0.64	8
Mexican American Male, 12-19 years (2005 - 2006)	16.5	0.8	4
Mexican American Male, 12-19 years (2007 - 2008)	22.4	2.5	6
Mexican American Male, 12-19 years (2009 - 2010)	18.2	1.3	8
Mexican American Male, 12-19 years (2005 - 2006)	37.3	6.8	4
Mexican American Male, 12-19 years (2007 - 2008)	39.5	4.1	5
Mexican American Male, 12-19 years (2009 - 2010)	46.6	4.1	5
Mexican American Female, 12-19 years (2005 - 2006)	2.83	0.2	16
Mexican American Female, 12-19 years (2007 - 2008)	**2.88	1.29	5
Mexican American Female, 12-19 years (2009 - 2010)	2.46	0.38	7
Mexican American Female, 12-19 years (2005 - 2006)	4.75	0.67	9
Mexican American Female, 12-19 years (2007 - 2008)	5.58	0.41	8
Mexican American Female, 12-19 years (2009 - 2010)	4.64	0.37	10
Mexican American Female, 12-19 years (2005 - 2006)	19.1	1.5	6
Mexican American Female, 12-19 years (2007 - 2008)	20.9	2.8	6
Mexican American Female, 12-19 years (2009 - 2010)	15.1	1.6	9
Mexican American Female, 12-19 years (2005 - 2006)	36.2	1.6	3
Mexican American Female, 12-19 years (2009 - 2010)	41.2	5.3	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.59, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	4.74	0.51	11
All Hispanic Male, 12-19 years (2009 - 2010)	7.57	0.83	13
All Hispanic Male, 12-19 years (2009 - 2010)	21.7	2.3	13
All Hispanic Male, 12-19 years (2009 - 2010)	49.8	4.4	8
All Hispanic Female, 12-19 years (2009 - 2010)	2.93	0.44	10
All Hispanic Female, 12-19 years (2009 - 2010)	5.70	0.64	14
All Hispanic Female, 12-19 years (2009 - 2010)	42.3	3.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.59, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	4.47	0.41	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	5.06	0.59	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	7.72	0.5	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	6.85	0.74	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	26.5	5.8	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	25.3	2.4	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	46.7	2.7	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	54.4	4.1	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.19	0.69	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.52	0.41	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	7.82	1.12	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	6.92	0.78	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	26.9	2.8	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	24.4	2.1	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	51.5	3.5	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	56.6	3.7	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	4.93	0.43	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	4.13	0.55	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	9.12	0.47	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	7.60	0.98	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	31.9	6.5	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	30.4	4.8	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	66.8	2.5	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	65.6	6.6	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	2.95	0.65	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	3.02	0.18	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	6.95	1.17	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	5.30	0.52	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	32.6	4.1	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	30.4	3.4	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	103	9	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	2.77	0.33	5
Mexican American Male, 12-19 years (2013 - 2014)	2.25	0.22	7
Mexican American Male, 12-19 years (2011 - 2012)	6.69	1.02	4
Mexican American Male, 12-19 years (2013 - 2014)	4.13	0.39	5
Mexican American Male, 12-19 years (2011 - 2012)	15.9	2	4
Mexican American Male, 12-19 years (2013 - 2014)	13.2	1.9	5
Mexican American Male, 12-19 years (2011 - 2012)	28.9	5.2	2
Mexican American Male, 12-19 years (2013 - 2014)	46.1	5.5	4
Mexican American Female, 12-19 years (2011 - 2012)	1.87	0.19	4
Mexican American Female, 12-19 years (2013 - 2014)	1.98	0.21	7
Mexican American Female, 12-19 years (2011 - 2012)	4.78	1.25	4
Mexican American Female, 12-19 years (2013 - 2014)	3.30	0.25	5
Mexican American Female, 12-19 years (2011 - 2012)	16.9	3.6	3
Mexican American Female, 12-19 years (2013 - 2014)	12.4	2.3	6
Mexican American Female, 12-19 years (2011 - 2012)	39.2	3.8	3
Mexican American Female, 12-19 years (2013 - 2014)	35.6	3.9	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	2.93	0.66	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	4.72	0.51	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	16.3	4.2	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	43.3	4.8	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.22	0.34	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**10.6	7.1	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	16.3	2.5	10
All Hispanic Female, 12-19 years (2013 - 2014)	41.2	4.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	7.63	0.79	3
Asian Male, 12-19 years (2013 - 2014)	5.54	1.41	3
Asian Male, 12-19 years (2011 - 2012)	16.1	4.8	6
Asian Male, 12-19 years (2013 - 2014)	11.3	0.7	4
Asian Male, 12-19 years (2011 - 2012)	39.5	6.1	6
Asian Male, 12-19 years (2013 - 2014)	30.0	6.7	4
Asian Male, 12-19 years (2011 - 2012)	45.8	10.2	4
Asian Male, 12-19 years (2013 - 2014)	55.7	6.8	3
Asian Female, 12-19 years (2011 - 2012)	5.49	0.85	4
Asian Female, 12-19 years (2013 - 2014)	7.47	0.81	3
Asian Female, 12-19 years (2011 - 2012)	16.0	2.7	6
Asian Female, 12-19 years (2013 - 2014)	11.5	1.2	5
Asian Female, 12-19 years (2011 - 2012)	29.6	6.9	6
Asian Female, 12-19 years (2013 - 2014)	24.2	2.7	7
Asian Female, 12-19 years (2013 - 2014)	**69.2	29.7	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (1999 – 2004)

CAS Number 35065-27-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.530 (.490-.560)	.750 (.610-.840)	1926
Total population (2001 - 2002)	.167 (.151-.185)	.190 (.170-.210)	.380 (.340-.410)	.620 (.560-.690)	.860 (.760-.950)	2306
Total population (2003 - 2004)	.121 (.114-.128)	.135 (.120-.144)	.283 (.258-.310)	.477 (.439-.518)	.624 (.575-.733)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	.060 (.050-.070)	.110 (.080-.140)	.150 (.110-.310)	757
Age 12-19 years (2003 - 2004)	.030 (.027-.033)	.027 (.025-.031)	.044 (.039-.055)	.076 (.062-.098)	.101 (.079-.129)	596
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.560 (.510-.610)	.790 (.670-.880)	1258
Age 20+ years (2001 - 2002)	.206 (.187-.228)	.220 (.200-.250)	.410 (.380-.450)	.670 (.600-.740)	.900 (.820-1.04)	1549
Age 20+ years (2003 - 2004)	.148 (.139-.158)	.156 (.141-.179)	.313 (.283-.339)	.512 (.452-.563)	.671 (.603-.756)	1300
Males (1999 - 2000)	*	< LOD	< LOD	.530 (.470-.560)	.690 (.580-.850)	917
Males (2001 - 2002)	.177 (.159-.198)	.200 (.170-.220)	.380 (.340-.430)	.610 (.510-.730)	.850 (.700-1.04)	1074
Males (2003 - 2004)	.123 (.115-.133)	.127 (.111-.146)	.277 (.253-.310)	.474 (.413-.522)	.608 (.533-.794)	947
Females (1999 - 2000)	*	< LOD	< LOD	.530 (.480-.590)	.770 (.610-.880)	1009
Females (2001 - 2002)	.158 (.142-.175)	.180 (.150-.210)	.380 (.340-.400)	.630 (.570-.710)	.860 (.760-.950)	1232
Females (2003 - 2004)	.119 (.110-.128)	.138 (.113-.149)	.291 (.253-.319)	.492 (.439-.541)	.624 (.578-.689)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	.470 (.380-.540)	634
Mexican Americans (2001 - 2002)	.075 (.063-.089)	.060 (<LOD-.080)	.150 (.120-.210)	.330 (.270-.420)	.470 (.380-.550)	567
Mexican Americans (2003 - 2004)	.053 (.044-.064)	.047 (.038-.057)	.100 (.078-.144)	.205 (.164-.241)	.323 (.213-.435)	425
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.370 (<LOD-.510)	.750 (.620-.890)	1.27 (.820-1.64)	412
Non-Hispanic blacks (2001 - 2002)	.169 (.146-.195)	.180 (.140-.200)	.390 (.330-.490)	.780 (.580-.950)	1.05 (.830-1.43)	515
Non-Hispanic blacks (2003 - 2004)	.129 (.108-.156)	.126 (.098-.149)	.330 (.236-.425)	.734 (.562-1.06)	1.26 (.892-1.60)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.520 (.480-.560)	.740 (.580-.850)	725
Non-Hispanic whites (2001 - 2002)	.185 (.165-.207)	.210 (.180-.230)	.390 (.370-.430)	.640 (.570-.720)	.840 (.740-.990)	1061
Non-Hispanic whites (2003 - 2004)	.131 (.121-.143)	.144 (.127-.170)	.295 (.268-.329)	.474 (.412-.518)	.600 (.519-.689)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.034	0.006	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.028	0.005	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.039	0.004	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.099	0.023	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.074	0.008	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.073	0.007	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.279	0.045	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.205	0.011	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.201	0.026	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.409	0.015	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.407	0.028	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.349	0.03	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.025	0.003	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.021	0.005	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.023	0.005	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.055	0.004	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.057	0.009	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.046	0.003	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.207	0.016	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.184	0.01	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.219	0.029	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.420	0.033	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.378	0.024	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.385	0.032	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.037	0.005	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.027	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.026	0.004	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.082	0.013	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.058	0.006	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.087	0.021	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.247	0.027	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.263	0.037	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.323	0.044	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.614	0.073	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.527	0.052	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.021	0.002	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.018	0.003	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.015	0.001	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.062	0.009	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.045	0.006	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.045	0.008	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.264	0.029	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.216	0.023	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.270	0.05	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.865	0.218	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.614	0.045	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.675	0.1	7
Mexican American Male, 12-19 years (2005 - 2006)	.020	0.002	11
Mexican American Male, 12-19 years (2007 - 2008)	.018	0.004	6
Mexican American Male, 12-19 years (2009 - 2010)	.022	0.003	8
Mexican American Male, 12-19 years (2005 - 2006)	.049	0.003	9
Mexican American Male, 12-19 years (2007 - 2008)	.047	0.005	9
Mexican American Male, 12-19 years (2009 - 2010)	.037	0.005	8
Mexican American Male, 12-19 years (2005 - 2006)	.134	0.01	4
Mexican American Male, 12-19 years (2007 - 2008)	.160	0.02	6
Mexican American Male, 12-19 years (2009 - 2010)	.126	0.012	8
Mexican American Male, 12-19 years (2005 - 2006)	.268	0.045	4
Mexican American Male, 12-19 years (2007 - 2008)	.281	0.022	5
Mexican American Male, 12-19 years (2009 - 2010)	.286	0.023	5
Mexican American Female, 12-19 years (2005 - 2006)	.015	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	**.014	0.006	5
Mexican American Female, 12-19 years (2009 - 2010)	.011	0.002	7
Mexican American Female, 12-19 years (2005 - 2006)	.032	0.005	9
Mexican American Female, 12-19 years (2007 - 2008)	.033	0.003	8
Mexican American Female, 12-19 years (2009 - 2010)	.026	0.003	10
Mexican American Female, 12-19 years (2005 - 2006)	.140	0.01	6
Mexican American Female, 12-19 years (2007 - 2008)	.141	0.018	6
Mexican American Female, 12-19 years (2009 - 2010)	.099	0.013	9
Mexican American Female, 12-19 years (2005 - 2006)	.274	0.023	3
Mexican American Female, 12-19 years (2009 - 2010)	.227	0.026	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 – 2010)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.022	0.002	11
All Hispanic Male, 12-19 years (2009 - 2010)	.050	0.008	13
All Hispanic Male, 12-19 years (2009 - 2010)	.148	0.016	13
All Hispanic Male, 12-19 years (2009 - 2010)	.311	0.021	8
All Hispanic Female, 12-19 years (2009 - 2010)	.014	0.002	10
All Hispanic Female, 12-19 years (2009 - 2010)	.032	0.004	14
All Hispanic Female, 12-19 years (2009 - 2010)	.251	0.02	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.021	0.002	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.024	0.002	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.045	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.037	0.004	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.173	0.035	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.150	0.016	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.257	0.012	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.293	0.023	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.023	0.004	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.022	0.002	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.042	0.006	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.036	0.004	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.173	0.021	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.143	0.012	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.316	0.021	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.333	0.023	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.022	0.002	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.018	0.002	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.047	0.003	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.038	0.005	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.181	0.04	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.171	0.028	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.362	0.015	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.339	0.036	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.013	0.003	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.013	0.001	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.038	0.007	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.026	0.003	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.201	0.033	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.160	0.02	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.547	0.045	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.013	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.011	0.001	7
Mexican American Male, 12-19 years (2011 - 2012)	.041	0.007	4
Mexican American Male, 12-19 years (2013 - 2014)	.026	0.003	5
Mexican American Male, 12-19 years (2011 - 2012)	.124	0.008	4
Mexican American Male, 12-19 years (2013 - 2014)	.081	0.011	5
Mexican American Male, 12-19 years (2011 - 2012)	.171	0.026	2
Mexican American Male, 12-19 years (2013 - 2014)	.245	0.025	4
Mexican American Female, 12-19 years (2011 - 2012)	.009	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.009	0.001	7
Mexican American Female, 12-19 years (2011 - 2012)	.026	0.006	4
Mexican American Female, 12-19 years (2013 - 2014)	.017	0.001	5
Mexican American Female, 12-19 years (2011 - 2012)	.101	0.025	3
Mexican American Female, 12-19 years (2013 - 2014)	.071	0.012	6
Mexican American Female, 12-19 years (2011 - 2012)	.241	0.022	3
Mexican American Female, 12-19 years (2013 - 2014)	.209	0.028	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.014	0.004	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.028	0.003	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.101	0.03	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.232	0.022	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.010	0.002	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.061	0.042	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.094	0.015	10
All Hispanic Female, 12-19 years (2013 - 2014)	.244	0.024	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2011 – 2014)

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.040	0.006	3
Asian Male, 12-19 years (2013 - 2014)	.026	0.007	3
Asian Male, 12-19 years (2011 - 2012)	.089	0.026	6
Asian Male, 12-19 years (2013 - 2014)	.067	0.007	4
Asian Male, 12-19 years (2011 - 2012)	.240	0.037	6
Asian Male, 12-19 years (2013 - 2014)	.171	0.04	4
Asian Male, 12-19 years (2011 - 2012)	.248	0.056	4
Asian Male, 12-19 years (2013 - 2014)	.341	0.055	3
Asian Female, 12-19 years (2011 - 2012)	.026	0.003	4
Asian Female, 12-19 years (2013 - 2014)	.035	0.003	3
Asian Female, 12-19 years (2011 - 2012)	.088	0.015	6
Asian Female, 12-19 years (2013 - 2014)	.059	0.006	5
Asian Female, 12-19 years (2011 - 2012)	.182	0.042	6
Asian Female, 12-19 years (2013 - 2014)	.141	0.015	7
Asian Female, 12-19 years (2013 - 2014)	**.394	0.153	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (1999 – 2004)

CAS Number 35065-30-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	23.6 (22.0-25.4)	30.9 (28.1-35.1)	1798
Total population (2001 - 2002)	*	< LOD	17.5 (15.7-19.3)	26.7 (24.9-29.0)	35.0 (32.4-37.3)	2301
Total population (2003 - 2004)	5.46 (5.22-5.71)	6.30 (5.96-7.10)	12.9 (12.3-13.9)	21.7 (19.2-23.5)	28.2 (25.8-29.8)	1888
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	645
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	1.12 (.974-1.30)	1.12 (1.00-1.30)	1.90 (1.70-2.50)	4.00 (3.53-4.37)	5.60 (4.35-6.69)	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	24.9 (23.3-26.4)	33.9 (29.6-37.5)	1153
Age 20+ years (2001 - 2002)	10.5 (<LOD-11.3)	11.1 (<LOD-12.2)	19.1 (17.3-20.9)	28.4 (26.2-30.9)	36.8 (33.4-39.4)	1545
Age 20+ years (2003 - 2004)	6.86 (6.48-7.26)	7.83 (6.87-8.70)	14.2 (13.1-14.9)	22.7 (20.7-24.9)	29.5 (26.7-32.2)	1296
Males (1999 - 2000)	*	< LOD	< LOD	24.1 (22.0-27.0)	32.6 (28.1-37.0)	863
Males (2001 - 2002)	*	10.9 (<LOD-11.9)	18.4 (16.3-20.9)	28.1 (24.7-31.9)	36.1 (32.1-38.3)	1073
Males (2003 - 2004)	5.81 (5.43-6.22)	6.40 (5.61-7.68)	13.8 (12.4-14.4)	23.4 (20.4-25.6)	29.4 (26.0-32.7)	942
Females (1999 - 2000)	*	< LOD	< LOD	22.4 (20.7-25.4)	29.7 (25.8-36.3)	935
Females (2001 - 2002)	*	< LOD	16.4 (15.0-18.0)	25.9 (24.0-28.4)	34.0 (30.6-38.4)	1228
Females (2003 - 2004)	5.14 (4.82-5.48)	6.28 (5.81-7.18)	12.5 (11.5-13.8)	19.2 (17.9-21.7)	26.1 (24.0-29.8)	946
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	23.2 (20.3-26.5)	606
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	15.4 (11.4-18.7)	21.1 (17.1-25.1)	565
Mexican Americans (2003 - 2004)	2.34 (1.91-2.86)	2.20 (1.54-3.20)	4.91 (3.40-8.17)	10.4 (8.40-13.5)	13.9 (10.8-20.1)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	30.9 (23.1-36.3)	41.9 (33.7-59.1)	382
Non-Hispanic blacks (2001 - 2002)	*	< LOD	19.0 (14.9-23.2)	32.5 (25.5-43.9)	44.4 (32.5-61.7)	514
Non-Hispanic blacks (2003 - 2004)	5.42 (4.63-6.35)	6.28 (5.11-7.75)	14.3 (10.7-18.3)	31.7 (23.1-40.7)	48.5 (32.1-66.1)	461
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	24.1 (22.1-25.9)	31.0 (26.8-37.3)	658
Non-Hispanic whites (2001 - 2002)	*	10.9 (<LOD-12.0)	18.4 (16.8-20.4)	27.7 (25.4-30.2)	35.0 (32.3-38.1)	1059
Non-Hispanic whites (2003 - 2004)	6.13 (5.74-6.56)	7.40 (6.40-8.18)	13.8 (12.6-14.6)	21.7 (19.2-24.2)	27.0 (24.9-29.5)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 17.2, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.41	0.32	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.52	0.29	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.54	0.18	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.93	0.94	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.36	0.28	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.80	0.31	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	13.7	2.6	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	10.3	0.4	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	9.16	1.17	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	20.5	1.3	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	22.4	1.4	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	18.0	1.2	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.896	0.155	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.14	0.32	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.00	0.23	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.28	0.35	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.75	0.41	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	2.02	0.13	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	8.44	0.46	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	9.09	0.45	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	9.44	0.96	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	17.2	1.4	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	18.1	0.9	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	17.1	1.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.44	0.28	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.12	0.28	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.07	0.1	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	3.71	0.52	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.82	0.3	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.03	0.5	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	11.4	1	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	13.1	1.5	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	12.7	1.1	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	30.9	3.4	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	26.5	2.2	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.589	0.099	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.828	0.105	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.539	0.081	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.15	0.52	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.29	0.35	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	2.08	0.43	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	11.1	1.2	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	10.8	1	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	10.5	1.8	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	33.3	6.7	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	29.0	1.7	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	29.0	3.1	7
Mexican American Male, 12-19 years (2005 - 2006)	.575	0.138	11
Mexican American Male, 12-19 years (2007 - 2008)	.891	0.17	6
Mexican American Male, 12-19 years (2009 - 2010)	1.07	0.18	8
Mexican American Male, 12-19 years (2005 - 2006)	2.01	0.11	9
Mexican American Male, 12-19 years (2007 - 2008)	2.19	0.24	9
Mexican American Male, 12-19 years (2009 - 2010)	1.48	0.17	8
Mexican American Male, 12-19 years (2005 - 2006)	6.41	0.43	4
Mexican American Male, 12-19 years (2007 - 2008)	8.71	0.91	6
Mexican American Male, 12-19 years (2009 - 2010)	5.80	0.37	8
Mexican American Male, 12-19 years (2005 - 2006)	14.0	3.2	4
Mexican American Male, 12-19 years (2007 - 2008)	16.1	1.9	5
Mexican American Male, 12-19 years (2009 - 2010)	15.7	1.2	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.559	0.071	7
Mexican American Female, 12-19 years (2005 - 2006)	1.39	0.21	9
Mexican American Female, 12-19 years (2007 - 2008)	1.62	0.11	8
Mexican American Female, 12-19 years (2009 - 2010)	1.33	0.2	9
Mexican American Female, 12-19 years (2005 - 2006)	5.93	0.46	6
Mexican American Female, 12-19 years (2007 - 2008)	7.50	1.08	6
Mexican American Female, 12-19 years (2009 - 2010)	4.21	0.55	9
Mexican American Female, 12-19 years (2005 - 2006)	11.7	0.1	3
Mexican American Female, 12-19 years (2009 - 2010)	12.5	1.7	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.05	0.13	11
All Hispanic Male, 12-19 years (2009 - 2010)	1.88	0.23	13
All Hispanic Male, 12-19 years (2009 - 2010)	6.69	0.68	13
All Hispanic Male, 12-19 years (2009 - 2010)	15.9	1	8
All Hispanic Female, 12-19 years (2009 - 2010)	.622	0.088	10
All Hispanic Female, 12-19 years (2009 - 2010)	1.57	0.2	13
All Hispanic Female, 12-19 years (2009 - 2010)	12.2	1.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.11	0.15	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.04	0.1	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.96	0.21	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.82	0.16	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	8.87	2.24	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	7.71	0.69	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	15.9	0.9	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	17.8	0.9	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.974	0.192	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.926	0.116	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.86	0.26	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.74	0.24	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	7.56	0.8	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	7.34	0.75	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	15.4	1.2	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	16.8	0.9	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.865	0.105	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.777	0.06	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.89	0.1	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.94	0.32	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	9.80	2.2	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	8.98	1.03	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	20.3	1	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	22.1	1.3	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.508	0.104	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.522	0.054	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.55	0.29	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.16	0.14	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	8.00	0.81	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	7.22	0.65	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	27.4	2	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.589	0.137	5
Mexican American Male, 12-19 years (2013 - 2014)	.496	0.039	7
Mexican American Male, 12-19 years (2011 - 2012)	1.77	0.3	4
Mexican American Male, 12-19 years (2013 - 2014)	1.08	0.13	5
Mexican American Male, 12-19 years (2011 - 2012)	4.94	0.86	4
Mexican American Male, 12-19 years (2013 - 2014)	4.61	0.8	5
Mexican American Male, 12-19 years (2011 - 2012)	10.1	1.6	2
Mexican American Male, 12-19 years (2013 - 2014)	15.8	1.8	4
Mexican American Female, 12-19 years (2011 - 2012)	.392	0.099	4
Mexican American Female, 12-19 years (2013 - 2014)	.461	0.059	7
Mexican American Female, 12-19 years (2011 - 2012)	1.14	0.33	4
Mexican American Female, 12-19 years (2013 - 2014)	.987	0.111	5
Mexican American Female, 12-19 years (2011 - 2012)	4.53	0.76	3
Mexican American Female, 12-19 years (2013 - 2014)	3.70	0.72	6
Mexican American Female, 12-19 years (2011 - 2012)	11.3	1.2	3
Mexican American Female, 12-19 years (2013 - 2014)	11.4	1.3	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.639	0.137	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	1.23	0.14	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	5.20	1.05	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	14.6	1.5	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.506	0.061	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**3.19	2.2	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	4.95	0.79	10
All Hispanic Female, 12-19 years (2013 - 2014)	12.4	1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	1.27	0.1	3
Asian Male, 12-19 years (2013 - 2014)	1.01	0.15	3
Asian Male, 12-19 years (2011 - 2012)	**3.29	1.09	6
Asian Male, 12-19 years (2013 - 2014)	2.34	0.21	4
Asian Male, 12-19 years (2011 - 2012)	8.13	0.88	6
Asian Male, 12-19 years (2013 - 2014)	7.02	1.13	4
Asian Male, 12-19 years (2011 - 2012)	11.9	1.9	4
Asian Male, 12-19 years (2013 - 2014)	13.6	1.4	3
Asian Female, 12-19 years (2011 - 2012)	1.05	0.17	4
Asian Female, 12-19 years (2013 - 2014)	1.37	0.2	3
Asian Female, 12-19 years (2011 - 2012)	3.02	0.57	6
Asian Female, 12-19 years (2013 - 2014)	2.40	0.24	5
Asian Female, 12-19 years (2011 - 2012)	6.50	1.47	6
Asian Female, 12-19 years (2013 - 2014)	5.62	0.44	7
Asian Female, 12-19 years (2013 - 2014)	**17.2	7.5	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (1999 – 2004)

CAS Number 35065-30-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.160 (.140-.180)	.210 (.200-.230)	1798
Total population (2001 - 2002)	*	< LOD	.110 (.110-.120)	.180 (.170-.200)	.250 (.210-.270)	2301
Total population (2003 - 2004)	.033 (.032-.035)	.041 (.037-.045)	.087 (.080-.092)	.144 (.134-.149)	.188 (.173-.202)	1888
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	645
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	.006 (.005-.006)	.006 (.005-.007)	.010 (.009-.012)	.020 (.017-.022)	.029 (.022-.033)	592
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.170 (.150-.190)	.220 (.200-.250)	1153
Age 20+ years (2001 - 2002)	.067 (<LOD-.072)	.070 (<LOD-.080)	.120 (.110-.130)	.200 (.180-.210)	.250 (.230-.290)	1545
Age 20+ years (2003 - 2004)	.043 (.040-.046)	.051 (.045-.054)	.093 (.089-.099)	.149 (.141-.160)	.199 (.180-.223)	1296
Males (1999 - 2000)	*	< LOD	< LOD	.170 (.140-.200)	.220 (.200-.250)	863
Males (2001 - 2002)	*	.070 (<LOD-.080)	.120 (.110-.130)	.190 (.170-.210)	.250 (.210-.280)	1073
Males (2003 - 2004)	.036 (.033-.039)	.043 (.036-.051)	.089 (.080-.093)	.148 (.132-.164)	.200 (.173-.225)	942
Females (1999 - 2000)	*	< LOD	< LOD	.150 (.130-.170)	.210 (.190-.230)	935
Females (2001 - 2002)	*	< LOD	.110 (.100-.120)	.180 (.160-.200)	.250 (.210-.280)	1228
Females (2003 - 2004)	.031 (.029-.033)	.040 (.034-.044)	.083 (.075-.092)	.140 (.121-.149)	.176 (.160-.194)	946
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	.170 (.130-.190)	606
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.110 (.080-.130)	.150 (.120-.190)	565
Mexican Americans (2003 - 2004)	.014 (.012-.018)	.015 (.010-.018)	.032 (.025-.047)	.073 (.054-.113)	.119 (.078-.134)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	.190 (.150-.210)	.260 (.190-.370)	382
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.110 (.090-.140)	.210 (.150-.270)	.290 (.210-.390)	514
Non-Hispanic blacks (2003 - 2004)	.031 (.026-.037)	.038 (.027-.044)	.087 (.069-.117)	.210 (.136-.280)	.338 (.221-.380)	461
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.160 (.140-.200)	.210 (.200-.240)	658
Non-Hispanic whites (2001 - 2002)	*	.070 (<LOD-.080)	.120 (.110-.130)	.190 (.170-.210)	.250 (.210-.280)	1059
Non-Hispanic whites (2003 - 2004)	.038 (.035-.041)	.046 (.042-.052)	.091 (.083-.096)	.145 (.132-.151)	.180 (.164-.207)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.008	0.002	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.007	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.008	0.001	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.030	0.008	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.022	0.002	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.018	0.002	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.105	0.022	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.075	0.003	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.062	0.008	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.139	0.008	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.143	0.008	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.109	0.007	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.005	0.001	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.006	0.002	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.005	0.001	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.015	0.002	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.017	0.003	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.011	0.001	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.063	0.005	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.060	0.003	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.059	0.006	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.125	0.009	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.122	0.006	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.105	0.007	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.007	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.005	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.005	0.001	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.022	0.003	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.016	0.002	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.017	0.003	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.072	0.007	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.084	0.009	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.079	0.008	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.185	0.021	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.142	0.012	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.004	0.001	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.012	0.003	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.011	0.002	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.010	0.002	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.071	0.008	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.066	0.007	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.059	0.009	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.222	0.044	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.175	0.011	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.166	0.018	7
Mexican American Male, 12-19 years (2005 - 2006)	.003	0.001	11
Mexican American Male, 12-19 years (2007 - 2008)	.005	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.005	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.014	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	.015	0.002	9
Mexican American Male, 12-19 years (2009 - 2010)	.009	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.052	0.005	4
Mexican American Male, 12-19 years (2007 - 2008)	.062	0.007	6
Mexican American Male, 12-19 years (2009 - 2010)	.040	0.004	8
Mexican American Male, 12-19 years (2005 - 2006)	.100	0.021	4
Mexican American Male, 12-19 years (2007 - 2008)	.115	0.01	5
Mexican American Male, 12-19 years (2009 - 2010)	.097	0.007	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	.003	0	7
Mexican American Female, 12-19 years (2005 - 2006)	.009	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.010	0.001	8
Mexican American Female, 12-19 years (2009 - 2010)	.007	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.043	0.003	6
Mexican American Female, 12-19 years (2007 - 2008)	.050	0.007	6
Mexican American Female, 12-19 years (2009 - 2010)	.027	0.004	9
Mexican American Female, 12-19 years (2005 - 2006)	.089	0.009	3
Mexican American Female, 12-19 years (2009 - 2010)	.069	0.009	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 – 2010)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.005	0.001	11
All Hispanic Male, 12-19 years (2009 - 2010)	.013	0.002	13
All Hispanic Male, 12-19 years (2009 - 2010)	.046	0.005	13
All Hispanic Male, 12-19 years (2009 - 2010)	.100	0.005	8
All Hispanic Female, 12-19 years (2009 - 2010)	.003	0	10
All Hispanic Female, 12-19 years (2009 - 2010)	.009	0.001	13
All Hispanic Female, 12-19 years (2009 - 2010)	.072	0.006	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.005	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.005	0	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.011	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.010	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.058	0.014	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.045	0.005	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.088	0.005	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.096	0.006	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.005	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.005	0.001	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.010	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.009	0.001	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.049	0.006	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.043	0.004	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.095	0.007	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.099	0.006	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.004	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.010	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.010	0.002	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.055	0.013	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.050	0.006	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.110	0.006	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.114	0.005	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.009	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.006	0.001	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.049	0.006	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.038	0.004	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.146	0.009	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.003	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Male, 12-19 years (2011 - 2012)	.011	0.002	4
Mexican American Male, 12-19 years (2013 - 2014)	.007	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.038	0.004	4
Mexican American Male, 12-19 years (2013 - 2014)	.028	0.005	5
Mexican American Male, 12-19 years (2011 - 2012)	.060	0.008	2
Mexican American Male, 12-19 years (2013 - 2014)	.084	0.009	4
Mexican American Female, 12-19 years (2011 - 2012)	.002	0	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Female, 12-19 years (2011 - 2012)	.006	0.002	4
Mexican American Female, 12-19 years (2013 - 2014)	.005	0.001	5
Mexican American Female, 12-19 years (2011 - 2012)	.027	0.005	3
Mexican American Female, 12-19 years (2013 - 2014)	.021	0.004	6
Mexican American Female, 12-19 years (2011 - 2012)	.069	0.007	3
Mexican American Female, 12-19 years (2013 - 2014)	.067	0.009	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.003	0.001	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.007	0.001	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.032	0.007	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.078	0.007	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.002	0	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.018	0.013	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.029	0.005	10
All Hispanic Female, 12-19 years (2013 - 2014)	.074	0.006	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2011 – 2014)

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.007	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.005	0.001	3
Asian Male, 12-19 years (2011 - 2012)	**.018	0.006	6
Asian Male, 12-19 years (2013 - 2014)	.014	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.049	0.005	6
Asian Male, 12-19 years (2013 - 2014)	.040	0.006	4
Asian Male, 12-19 years (2011 - 2012)	.065	0.011	4
Asian Male, 12-19 years (2013 - 2014)	.083	0.011	3
Asian Female, 12-19 years (2011 - 2012)	.005	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.006	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.016	0.003	6
Asian Female, 12-19 years (2013 - 2014)	.012	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.040	0.009	6
Asian Female, 12-19 years (2013 - 2014)	.033	0.003	7
Asian Female, 12-19 years (2013 - 2014)	**.098	0.039	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (1999 – 2004)

CAS Number 52663-74-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1901
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2199
Total population (2003 - 2004)	.647 (.606-.691)	.900 (.800-1.00)	1.80 (1.69-1.90)	2.98 (2.70-3.30)	4.16 (3.65-4.55)	1878
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	679
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.610 (.460-.840)	1.10 (.700-1.43)	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1241
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1520
Age 20+ years (2003 - 2004)	.805 (.746-.869)	1.08 (1.00-1.16)	1.95 (1.80-2.10)	3.20 (2.87-3.60)	4.38 (3.79-5.00)	1293
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	911
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1027
Males (2003 - 2004)	.668 (.612-.730)	.900 (.800-1.01)	1.82 (1.70-2.00)	3.30 (2.80-3.80)	4.43 (3.76-5.50)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	990
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1172
Females (2003 - 2004)	.627 (.581-.678)	.900 (.800-1.03)	1.72 (1.51-1.90)	2.80 (2.50-3.11)	3.70 (3.37-4.26)	941
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	630
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	519
Mexican Americans (2003 - 2004)	*	< LOD	.700 (.470-1.20)	1.40 (1.20-1.95)	2.00 (1.40-2.91)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	494
Non-Hispanic blacks (2003 - 2004)	.688 (.579-.818)	.900 (.700-1.10)	2.20 (1.70-2.60)	5.00 (3.38-6.53)	7.60 (5.00-11.3)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	706
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1027
Non-Hispanic whites (2003 - 2004)	.720 (.665-.781)	1.00 (.870-1.10)	1.80 (1.69-2.00)	2.94 (2.70-3.20)	3.90 (3.53-4.20)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.480	0.126	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.57	0.18	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.29	0.07	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.61	0.16	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.98	0.2	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.03	0.06	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.13	0.06	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.19	0.17	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.31	0.13	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.404	0.074	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.57	0.11	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.85	0.24	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	4.64	0.61	8

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.48	0.16	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.48	0.15	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	4.61	0.95	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	4.09	0.3	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	.808	0.073	4
Mexican American Male, 12-19 years (2007 - 2008)	1.32	0.18	6
Mexican American Male, 12-19 years (2005 - 2006)	1.86	0.45	4
Mexican American Male, 12-19 years (2007 - 2008)	2.34	0.29	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	.789	0.059	6
Mexican American Female, 12-19 years (2007 - 2008)	.967	0.118	6
Mexican American Female, 12-19 years (2007 - 2008)	1.90	0.37	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (1999 – 2004)

CAS Number 52663-74-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1901
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2199
Total population (2003 - 2004)	.004 (.004-.004)	.006 (.005-.006)	.012 (.011-.012)	.021 (.019-.022)	.027 (.024-.031)	1878
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	660
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	679
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.003 (.002-.004)	.005 (.004-.009)	585
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1241
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1520
Age 20+ years (2003 - 2004)	.005 (.005-.005)	.007 (.006-.007)	.013 (.012-.014)	.022 (.020-.024)	.028 (.025-.033)	1293
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	911
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1027
Males (2003 - 2004)	.004 (.004-.005)	.006 (.005-.007)	.012 (.011-.013)	.021 (.018-.024)	.029 (.024-.036)	937
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	990
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1172
Females (2003 - 2004)	.004 (.003-.004)	.006 (.005-.006)	.012 (.010-.012)	.019 (.017-.021)	.026 (.023-.028)	941
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	630
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	519
Mexican Americans (2003 - 2004)	*	< LOD	.005 (.003-.007)	.010 (.007-.015)	.017 (.011-.022)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	409
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	494
Non-Hispanic blacks (2003 - 2004)	.004 (.003-.005)	.006 (.004-.006)	.013 (.010-.017)	.030 (.020-.048)	.052 (.028-.067)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	706
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1027
Non-Hispanic whites (2003 - 2004)	.004 (.004-.005)	.006 (.005-.007)	.012 (.011-.013)	.020 (.018-.022)	.026 (.023-.029)	877

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.004	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.012	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.009	0.001	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.018	0.001	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.019	0.001	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.008	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.007	0	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.016	0.001	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.015	0.001	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.010	0.001	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.012	0.002	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.025	0.002	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.028	0.004	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.009	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.009	0.001	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.025	0.002	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	.007	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.009	0.001	6
Mexican American Male, 12-19 years (2005 - 2006)	.013	0.003	4
Mexican American Male, 12-19 years (2007 - 2008)	.017	0.002	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	.006	0	6
Mexican American Female, 12-19 years (2007 - 2008)	.007	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.013	0.003	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (1999 – 2004)

CAS Number 40186-70-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1873
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2287
Total population (2003 - 2004)	1.13 (1.07-1.20)	1.30 (1.20-1.40)	2.77 (2.50-3.09)	5.30 (4.70-5.90)	7.20 (6.38-8.50)	1882
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	653
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	.600 (.500-.720)	1.04 (.800-1.40)	1.70 (1.20-1.95)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1220
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1531
Age 20+ years (2003 - 2004)	1.40 (1.30-1.50)	1.50 (1.40-1.71)	3.10 (2.80-3.44)	5.70 (4.99-6.22)	7.80 (6.50-9.50)	1294
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	887
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1065
Males (2003 - 2004)	1.12 (1.03-1.21)	1.30 (1.17-1.41)	2.70 (2.40-3.00)	5.30 (4.72-5.80)	7.82 (6.22-9.50)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	986
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1222
Females (2003 - 2004)	1.15 (1.06-1.23)	1.30 (1.18-1.49)	2.80 (2.57-3.19)	5.30 (4.50-6.06)	6.97 (6.15-7.92)	942
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	622
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	562
Mexican Americans (2003 - 2004)	.500 (<LOD-.649)	.550 (.400-.700)	1.36 (1.00-1.63)	2.40 (1.86-3.30)	3.40 (2.33-4.63)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	399
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	10.6 (<LOD-12.4)	515
Non-Hispanic blacks (2003 - 2004)	1.52 (1.25-1.84)	1.56 (1.29-2.05)	4.40 (3.20-5.70)	9.80 (6.30-13.3)	15.8 (10.0-25.7)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	698
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1048
Non-Hispanic whites (2003 - 2004)	1.16 (1.08-1.25)	1.34 (1.20-1.50)	2.74 (2.41-3.09)	5.00 (4.57-5.56)	6.50 (5.98-7.40)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.606	0.123	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.469	0.065	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.59	0.2	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.26	0.07	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.92	0.19	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.26	0.37	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.369	0.022	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.24	0.1	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.16	0.08	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.65	0.21	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.81	0.2	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.684	0.098	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.553	0.065	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.09	0.29	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.36	0.33	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	5.62	0.59	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	5.17	0.63	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.556	0.07	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.36	0.22	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.18	0.31	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.47	0.57	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	.420	0.032	9
Mexican American Male, 12-19 years (2007 - 2008)	.360	0.068	9
Mexican American Male, 12-19 years (2005 - 2006)	1.02	0.13	4
Mexican American Male, 12-19 years (2007 - 2008)	1.48	0.22	6
Mexican American Male, 12-19 years (2005 - 2006)	2.10	0.4	4
Mexican American Male, 12-19 years (2007 - 2008)	2.34	0.27	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	1.20	0.08	6
Mexican American Female, 12-19 years (2007 - 2008)	1.23	0.15	6
Mexican American Female, 12-19 years (2007 - 2008)	2.64	0.53	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (1999 – 2004)

CAS Number 40186-70-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1873
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2287
Total population (2003 - 2004)	.007 (.007-.007)	.008 (.008-.009)	.018 (.016-.021)	.034 (.031-.037)	.047 (.043-.056)	1882
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	653
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	*	< LOD	.003 (.003-.004)	.006 (.005-.007)	.007 (.006-.011)	588
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1220
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1531
Age 20+ years (2003 - 2004)	.009 (.008-.009)	.010 (.009-.011)	.021 (.018-.023)	.036 (.033-.041)	.053 (.045-.058)	1294
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	887
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1065
Males (2003 - 2004)	.007 (.006-.007)	.009 (.008-.009)	.018 (.016-.021)	.032 (.030-.036)	.045 (.039-.062)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	986
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1222
Females (2003 - 2004)	.007 (.006-.008)	.008 (.007-.009)	.018 (.017-.021)	.035 (.032-.042)	.051 (.043-.056)	942
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	622
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	562
Mexican Americans (2003 - 2004)	.003 (<LOD-.004)	.003 (.002-.005)	.008 (.006-.011)	.018 (.012-.025)	.025 (.018-.032)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	399
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	.070 (<LOD-.100)	515
Non-Hispanic blacks (2003 - 2004)	.009 (.007-.011)	.009 (.007-.012)	.026 (.018-.036)	.057 (.044-.090)	.105 (.058-.143)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	698
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1048
Non-Hispanic whites (2003 - 2004)	.007 (.007-.008)	.009 (.008-.010)	.018 (.016-.021)	.032 (.029-.036)	.044 (.040-.052)	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (2005 – 2008)‡‡

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.005	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.003	0	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.012	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.009	0.001	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.020	0.001	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.021	0.002	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.002	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.009	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.008	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.019	0.001	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.019	0.001	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.004	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.013	0.002	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.015	0.002	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.033	0.003	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.032	0.004	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.015	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.013	0.002	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.039	0.004	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (2005 – 2008)‡‡

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	.003	0	9
Mexican American Male, 12-19 years (2007 - 2008)	.002	0	9
Mexican American Male, 12-19 years (2005 - 2006)	.008	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.010	0.002	6
Mexican American Male, 12-19 years (2005 - 2006)	.015	0.003	4
Mexican American Male, 12-19 years (2007 - 2008)	.016	0.002	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	.009	0	6
Mexican American Female, 12-19 years (2007 - 2008)	.008	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.018	0.004	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (1999 – 2004)

CAS Number 52663-67-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1932
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2299
Total population (2003 - 2004)	.933 (.894-.974)	1.20 (1.10-1.30)	2.50 (2.30-2.67)	4.24 (3.90-4.47)	6.10 (5.13-7.10)	1887
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	.400 (<LOD-.480)	.850 (.620-1.04)	1.12 (1.00-1.32)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1263
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1541
Age 20+ years (2003 - 2004)	1.18 (1.11-1.25)	1.46 (1.30-1.60)	2.74 (2.60-2.90)	4.41 (4.10-4.80)	6.50 (5.69-7.58)	1297
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.991 (.918-1.07)	1.20 (1.10-1.37)	2.66 (2.45-2.80)	4.50 (3.80-5.10)	6.40 (5.30-7.70)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1013
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Females (2003 - 2004)	.881 (.835-.930)	1.20 (1.10-1.30)	2.30 (2.20-2.59)	4.01 (3.71-4.34)	5.40 (4.47-6.70)	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	*	< LOD	.900 (.600-1.34)	1.99 (1.37-2.60)	3.10 (2.00-3.60)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	415
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	1.09 (.911-1.30)	1.30 (.910-1.65)	3.10 (2.30-4.21)	7.10 (5.13-10.1)	11.4 (6.80-16.5)	460
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	724
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1054
Non-Hispanic whites (2003 - 2004)	1.03 (.963-1.10)	1.30 (1.19-1.50)	2.61 (2.40-2.80)	4.20 (3.80-4.40)	5.33 (4.58-6.30)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.735	0.151	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.591	0.067	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.447	0.047	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.39	0.22	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.81	0.09	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.14	0.3	14
Non-Hispanic White Male, 12-19 years (2005 - 2006)	4.18	0.26	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	4.07	0.3	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	4.06	0.31	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.460	0.036	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.59	0.12	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.49	0.08	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.69	0.14	16
Non-Hispanic White Female, 12-19 years (2005 - 2006)	3.55	0.29	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	3.44	0.17	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	3.67	0.32	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.351	0.049	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.854	0.136	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.564	0.098	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.543	0.056	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.78	0.15	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.85	0.3	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.30	0.47	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	7.22	0.75	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	7.03	0.67	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.545	0.092	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.39	0.27	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.11	0.23	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	2.58	0.73	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	7.83	1.63	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.33	0.56	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.41	1.07	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	.382	0.039	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	1.14	0.08	4
Mexican American Male, 12-19 years (2007 - 2008)	1.58	0.21	6
Mexican American Male, 12-19 years (2009 - 2010)	1.24	0.12	8
Mexican American Male, 12-19 years (2005 - 2006)	2.79	0.67	4
Mexican American Male, 12-19 years (2007 - 2008)	3.23	0.45	5
Mexican American Male, 12-19 years (2009 - 2010)	3.58	0.22	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2009 - 2010)	*	*	10
Mexican American Female, 12-19 years (2005 - 2006)	1.12	0.08	6
Mexican American Female, 12-19 years (2007 - 2008)	1.37	0.23	6
Mexican American Female, 12-19 years (2009 - 2010)	.746	0.13	9
Mexican American Female, 12-19 years (2005 - 2006)	2.42	0.2	3
Mexican American Female, 12-19 years (2009 - 2010)	2.40	0.35	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	12
All Hispanic Male, 12-19 years (2009 - 2010)	1.57	0.23	12
All Hispanic Male, 12-19 years (2009 - 2010)	3.71	0.3	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	14
All Hispanic Female, 12-19 years (2009 - 2010)	2.51	0.22	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.255	0.043	5
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.348	0.017	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.331	0.03	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.62	0.27	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.43	0.11	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	3.28	0.21	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	3.46	0.24	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.354	0.046	12
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.301	0.032	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.46	0.13	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.26	0.12	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	3.27	0.29	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	3.54	0.26	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.529	0.061	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.392	0.074	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.80	0.78	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	2.08	0.29	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	4.78	0.27	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	6.03	0.71	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.275	0.053	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.82	0.18	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.57	0.19	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	6.38	0.46	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.361	0.087	4
Mexican American Male, 12-19 years (2013 - 2014)	*	*	5
Mexican American Male, 12-19 years (2011 - 2012)	.881	0.237	4
Mexican American Male, 12-19 years (2013 - 2014)	.902	0.191	5
Mexican American Male, 12-19 years (2011 - 2012)	2.04	0.48	2
Mexican American Male, 12-19 years (2013 - 2014)	3.00	0.35	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	5
Mexican American Female, 12-19 years (2011 - 2012)	.758	0.141	3
Mexican American Female, 12-19 years (2013 - 2014)	.668	0.136	6
Mexican American Female, 12-19 years (2011 - 2012)	2.35	0.17	3
Mexican American Female, 12-19 years (2013 - 2014)	2.16	0.26	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**1.07	0.34	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	2.92	0.28	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.530	0.325	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.849	0.142	10
All Hispanic Female, 12-19 years (2013 - 2014)	2.35	0.21	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.430	0.094	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 12-19 years (2011 - 2012)	**.779	0.298	6
Asian Male, 12-19 years (2013 - 2014)	.642	0.091	4
Asian Male, 12-19 years (2011 - 2012)	2.80	0.47	6
Asian Male, 12-19 years (2013 - 2014)	1.84	0.4	4
Asian Male, 12-19 years (2011 - 2012)	3.58	0.51	4
Asian Male, 12-19 years (2013 - 2014)	4.31	0.67	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.260	0.03	3
Asian Female, 12-19 years (2011 - 2012)	.904	0.19	6
Asian Female, 12-19 years (2013 - 2014)	.726	0.09	4
Asian Female, 12-19 years (2011 - 2012)	1.86	0.5	6
Asian Female, 12-19 years (2013 - 2014)	1.52	0.17	7
Asian Female, 12-19 years (2013 - 2014)	**4.94	2.38	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (1999 – 2004)

CAS Number 52663-67-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1932
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2299
Total population (2003 - 2004)	.006 (.005-.006)	.008 (.007-.008)	.016 (.015-.018)	.029 (.026-.032)	.041 (.035-.045)	1887
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	669
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	*	< LOD	.002 (<LOD-.002)	.004 (.003-.005)	.006 (.004-.007)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1263
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1541
Age 20+ years (2003 - 2004)	.007 (.007-.008)	.009 (.008-.010)	.018 (.017-.019)	.031 (.028-.034)	.043 (.038-.048)	1297
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1069
Males (2003 - 2004)	.006 (.006-.007)	.008 (.007-.009)	.017 (.016-.018)	.030 (.025-.034)	.042 (.034-.050)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1013
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1230
Females (2003 - 2004)	.005 (.005-.006)	.008 (.006-.008)	.016 (.014-.017)	.028 (.025-.031)	.040 (.034-.045)	947
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	*	< LOD	.005 (.004-.008)	.013 (.009-.020)	.022 (.014-.028)	424
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	415
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	515
Non-Hispanic blacks (2003 - 2004)	.006 (.005-.008)	.008 (.006-.008)	.019 (.016-.027)	.044 (.032-.061)	.077 (.045-.089)	460
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	724
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1054
Non-Hispanic whites (2003 - 2004)	.006 (.006-.007)	.008 (.007-.010)	.017 (.015-.018)	.028 (.025-.031)	.037 (.033-.045)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.006	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.004	0	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.018	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.013	0.001	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.015	0.002	14
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.028	0.002	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.026	0.002	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.025	0.002	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.012	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.010	0.001	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.011	0.001	16
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.026	0.002	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.023	0.001	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.022	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.002	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.005	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.003	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.018	0.001	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.018	0.002	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.020	0.003	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.043	0.005	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.038	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.015	0.002	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.013	0.002	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.014	0.004	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.052	0.011	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.038	0.004	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.037	0.006	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	.003	0	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2009 - 2010)	*	*	7
Mexican American Male, 12-19 years (2005 - 2006)	.009	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.011	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.009	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.020	0.004	4
Mexican American Male, 12-19 years (2007 - 2008)	.023	0.002	5
Mexican American Male, 12-19 years (2009 - 2010)	.022	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2009 - 2010)	*	*	10
Mexican American Female, 12-19 years (2005 - 2006)	.008	0	6
Mexican American Female, 12-19 years (2007 - 2008)	.009	0.002	6
Mexican American Female, 12-19 years (2009 - 2010)	.005	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.019	0.003	3
Mexican American Female, 12-19 years (2009 - 2010)	.013	0.002	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 – 2010)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	9
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	12
All Hispanic Male, 12-19 years (2009 - 2010)	.011	0.002	12
All Hispanic Male, 12-19 years (2009 - 2010)	.023	0.001	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	14
All Hispanic Female, 12-19 years (2009 - 2010)	.015	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.001	0	5
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.002	0	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.011	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.008	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.018	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.019	0.001	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.002	0	12
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.009	0.001	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.007	0.001	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.020	0.002	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.021	0.002	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.003	0	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.016	0.005	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.012	0.002	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.026	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.031	0.004	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.002	0	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.011	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.008	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.034	0.002	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.002	0	4
Mexican American Male, 12-19 years (2013 - 2014)	*	*	5
Mexican American Male, 12-19 years (2011 - 2012)	.007	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.006	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.012	0.003	2
Mexican American Male, 12-19 years (2013 - 2014)	.016	0.002	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	5
Mexican American Female, 12-19 years (2011 - 2012)	.004	0.001	3
Mexican American Female, 12-19 years (2013 - 2014)	.004	0.001	6
Mexican American Female, 12-19 years (2011 - 2012)	.014	0.001	3
Mexican American Female, 12-19 years (2013 - 2014)	.013	0.002	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.007	0.002	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.016	0.001	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.003	0.002	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.005	0.001	10
All Hispanic Female, 12-19 years (2013 - 2014)	.014	0.001	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2011 – 2014)

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.002	0.001	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 12-19 years (2011 - 2012)	**.004	0.002	6
Asian Male, 12-19 years (2013 - 2014)	.004	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.017	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.011	0.002	4
Asian Male, 12-19 years (2011 - 2012)	.019	0.003	4
Asian Male, 12-19 years (2013 - 2014)	.027	0.005	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.001	0	3
Asian Female, 12-19 years (2011 - 2012)	.005	0.001	6
Asian Female, 12-19 years (2013 - 2014)	.004	0.001	4
Asian Female, 12-19 years (2011 - 2012)	.011	0.003	6
Asian Female, 12-19 years (2013 - 2014)	.009	0.001	7
Asian Female, 12-19 years (2013 - 2014)	**.028	0.012	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (1999 – 2004)

CAS Number 35065-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	37.5 (32.7-41.8)	62.0 (56.6-66.6)	79.3 (72.1-89.2)	1924
Total population (2001 - 2002)	19.2 (17.4-21.1)	21.8 (19.0-24.6)	42.2 (38.3-47.5)	69.7 (63.7-75.9)	87.3 (83.3-93.0)	2302
Total population (2003 - 2004)	15.1 (14.5-15.7)	18.0 (16.4-18.9)	37.1 (34.9-39.5)	63.7 (56.2-68.2)	81.5 (75.8-89.9)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	12.2 (<LOD-14.8)	21.3 (14.2-26.0)	755
Age 12-19 years (2003 - 2004)	3.06 (2.65-3.54)	2.97 (2.57-3.41)	5.00 (4.20-5.80)	11.1 (8.70-13.0)	14.7 (13.0-18.8)	598
Age 20+ years (1999 - 2000)	*	< LOD	41.1 (37.6-45.2)	65.6 (60.6-69.4)	84.8 (75.6-96.1)	1257
Age 20+ years (2001 - 2002)	23.0 (20.8-25.5)	26.5 (22.7-28.6)	46.7 (41.4-51.3)	74.5 (66.7-79.8)	91.4 (85.0-99.5)	1547
Age 20+ years (2003 - 2004)	19.0 (17.9-20.1)	21.5 (18.9-24.3)	40.4 (37.9-42.8)	66.7 (61.0-70.1)	88.0 (77.8-96.7)	1298
Males (1999 - 2000)	*	< LOD	40.6 (34.5-45.0)	65.1 (58.6-71.4)	83.8 (75.8-96.3)	919
Males (2001 - 2002)	21.1 (18.8-23.7)	25.1 (21.2-30.0)	46.7 (39.8-51.8)	73.8 (63.2-79.8)	86.9 (78.0-99.4)	1073
Males (2003 - 2004)	16.1 (14.8-17.4)	18.5 (15.8-21.3)	39.6 (35.8-41.7)	68.6 (63.7-75.0)	88.3 (76.8-96.7)	947
Females (1999 - 2000)	*	< LOD	34.4 (29.8-39.3)	56.7 (52.2-62.6)	74.6 (66.6-90.5)	1005
Females (2001 - 2002)	17.5 (15.9-19.3)	18.5 (16.0-21.6)	39.7 (34.8-43.9)	64.3 (58.0-74.8)	87.9 (79.1-98.1)	1229
Females (2003 - 2004)	14.2 (13.4-15.0)	17.8 (15.8-19.2)	35.4 (31.8-38.5)	55.7 (51.2-59.9)	74.3 (64.8-87.6)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	41.7 (33.2-50.5)	57.8 (49.7-63.8)	633
Mexican Americans (2001 - 2002)	*	< LOD	18.0 (11.5-22.7)	36.9 (28.2-45.7)	54.2 (42.2-60.0)	566
Mexican Americans (2003 - 2004)	6.14 (4.91-7.67)	5.80 (3.80-7.50)	12.6 (8.97-21.5)	27.2 (22.3-35.4)	38.8 (27.2-60.7)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	39.3 (32.2-48.4)	78.4 (64.3-93.7)	117 (89.6-144)	414
Non-Hispanic blacks (2001 - 2002)	19.5 (16.5-23.1)	21.0 (16.9-23.8)	48.4 (36.7-57.9)	90.5 (73.7-101)	116 (96.1-167)	514
Non-Hispanic blacks (2003 - 2004)	15.1 (12.8-17.7)	18.1 (12.6-20.8)	39.0 (29.7-51.1)	89.9 (64.4-122)	137 (91.4-206)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	39.9 (34.5-45.3)	62.3 (56.5-68.6)	79.0 (71.3-91.4)	719
Non-Hispanic whites (2001 - 2002)	21.4 (19.1-23.9)	24.8 (21.5-28.1)	45.6 (40.2-51.0)	72.4 (63.8-78.0)	87.9 (83.8-94.3)	1059
Non-Hispanic whites (2003 - 2004)	16.9 (15.9-18.0)	19.8 (18.4-23.1)	39.3 (35.8-42.0)	63.7 (55.0-69.1)	79.8 (70.1-89.3)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 28.2, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	4.20	0.71	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.50	0.65	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	3.75	0.42	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	10.7	2.6	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	8.43	0.64	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.12	0.75	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	37.8	6.8	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	25.8	1	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	25.4	3.1	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	58.6	3.4	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	57.6	3.4	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	51.3	3.5	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.70	0.27	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.82	0.82	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	2.51	0.54	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	6.45	0.74	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	6.65	0.93	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	5.24	0.34	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	22.4	1.2	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	22.3	1.1	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	23.2	2.2	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	48.3	3.7	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	45.7	2.2	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	46.0	3.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	4.06	0.56	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	3.54	0.68	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.08	0.21	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	10.5	1.3	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	7.36	0.82	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	7.98	1.11	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	32.8	2.3	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	34.2	3.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	35.0	3.2	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	88.0	8.6	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	78.4	6.2	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.10	0.16	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.02	0.3	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.45	0.1	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	6.93	1.06	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	5.69	0.88	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	4.76	0.81	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	30.5	3.1	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	26.4	2.5	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	27.5	5.4	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	88.6	17.3	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	73.1	4.2	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	79.3	9.7	7
Mexican American Male, 12-19 years (2005 - 2006)	2.04	0.29	11
Mexican American Male, 12-19 years (2007 - 2008)	2.24	0.37	6
Mexican American Male, 12-19 years (2009 - 2010)	3.05	0.49	8
Mexican American Male, 12-19 years (2005 - 2006)	5.12	0.28	9
Mexican American Male, 12-19 years (2007 - 2008)	5.47	0.6	9
Mexican American Male, 12-19 years (2009 - 2010)	4.06	0.49	8
Mexican American Male, 12-19 years (2005 - 2006)	15.9	1.3	4
Mexican American Male, 12-19 years (2007 - 2008)	20.9	2.6	6
Mexican American Male, 12-19 years (2009 - 2010)	15.0	1	8
Mexican American Male, 12-19 years (2005 - 2006)	39.3	10.1	4
Mexican American Male, 12-19 years (2007 - 2008)	42.0	5.5	5
Mexican American Male, 12-19 years (2009 - 2010)	44.8	3.6	5
Mexican American Female, 12-19 years (2005 - 2006)	1.78	0.18	16
Mexican American Female, 12-19 years (2007 - 2008)	**2.10	1.27	5
Mexican American Female, 12-19 years (2009 - 2010)	1.31	0.12	7
Mexican American Female, 12-19 years (2005 - 2006)	3.45	0.6	9
Mexican American Female, 12-19 years (2007 - 2008)	3.88	0.21	8
Mexican American Female, 12-19 years (2009 - 2010)	3.22	0.4	10
Mexican American Female, 12-19 years (2005 - 2006)	15.5	1.4	6
Mexican American Female, 12-19 years (2007 - 2008)	18.2	2.6	6
Mexican American Female, 12-19 years (2009 - 2010)	10.8	1.4	9
Mexican American Female, 12-19 years (2005 - 2006)	30.9	0.3	3
Mexican American Female, 12-19 years (2009 - 2010)	34.8	5	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	2.90	0.36	11
All Hispanic Male, 12-19 years (2009 - 2010)	4.87	0.51	13
All Hispanic Male, 12-19 years (2009 - 2010)	17.7	2	13
All Hispanic Male, 12-19 years (2009 - 2010)	45.0	3.1	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.49	0.18	10
All Hispanic Female, 12-19 years (2009 - 2010)	3.68	0.41	14
All Hispanic Female, 12-19 years (2009 - 2010)	32.9	3.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	3.05	0.44	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	2.46	0.24	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.21	0.42	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.39	0.33	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	21.9	3.5	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	19.1	1.6	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	45.3	2.7	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	50.0	2.5	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	2.47	0.56	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	2.04	0.22	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.79	0.59	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.12	0.44	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	19.6	1.9	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	18.3	1.9	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	42.3	3.3	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	44.5	2.5	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.33	0.25	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.92	0.15	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	5.03	0.31	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	5.01	0.83	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	28.8	7.6	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	24.3	2.9	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	58.5	2.7	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	60.6	5	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.34	0.27	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.22	0.11	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	3.84	0.75	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.87	0.32	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	20.8	2.3	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	19.5	1.9	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	73.6	5.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	1.48	0.22	5
Mexican American Male, 12-19 years (2013 - 2014)	1.20	0.07	7
Mexican American Male, 12-19 years (2011 - 2012)	4.56	0.84	4
Mexican American Male, 12-19 years (2013 - 2014)	2.51	0.31	5
Mexican American Male, 12-19 years (2011 - 2012)	12.8	2.3	4
Mexican American Male, 12-19 years (2013 - 2014)	12.4	2.3	5
Mexican American Male, 12-19 years (2011 - 2012)	26.9	4.5	2
Mexican American Male, 12-19 years (2013 - 2014)	41.7	4.4	4
Mexican American Female, 12-19 years (2011 - 2012)	.900	0.212	4
Mexican American Female, 12-19 years (2013 - 2014)	1.12	0.09	7
Mexican American Female, 12-19 years (2011 - 2012)	2.82	0.75	4
Mexican American Female, 12-19 years (2013 - 2014)	2.27	0.39	5
Mexican American Female, 12-19 years (2011 - 2012)	10.8	2.2	3
Mexican American Female, 12-19 years (2013 - 2014)	9.26	1.81	6
Mexican American Female, 12-19 years (2011 - 2012)	29.8	3.4	3
Mexican American Female, 12-19 years (2013 - 2014)	29.9	3.4	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.45	0.28	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	2.92	0.34	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	13.5	2.8	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	38.8	3.9	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.24	0.14	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**6.32	4	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	12.2	1.9	10
All Hispanic Female, 12-19 years (2013 - 2014)	32.2	2.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	3.56	0.51	3
Asian Male, 12-19 years (2013 - 2014)	2.48	0.51	3
Asian Male, 12-19 years (2011 - 2012)	**8.69	3.21	6
Asian Male, 12-19 years (2013 - 2014)	6.10	0.51	4
Asian Male, 12-19 years (2011 - 2012)	24.0	3.3	6
Asian Male, 12-19 years (2013 - 2014)	19.3	3.2	4
Asian Male, 12-19 years (2011 - 2012)	35.2	5.8	4
Asian Male, 12-19 years (2013 - 2014)	40.0	5.7	3
Asian Female, 12-19 years (2011 - 2012)	2.77	0.52	4
Asian Female, 12-19 years (2013 - 2014)	2.75	0.15	3
Asian Female, 12-19 years (2011 - 2012)	7.50	1.42	6
Asian Female, 12-19 years (2013 - 2014)	7.01	0.68	5
Asian Female, 12-19 years (2011 - 2012)	17.9	4.3	6
Asian Female, 12-19 years (2013 - 2014)	14.9	1.4	7
Asian Female, 12-19 years (2013 - 2014)	**46.6	20.2	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.21 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (1999 – 2004)

CAS Number 35065-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	.250 (.220-.270)	.410 (.370-.450)	.540 (.490-.600)	1924
Total population (2001 - 2002)	.118 (.106-.130)	.140 (.120-.160)	.280 (.250-.300)	.460 (.400-.510)	.610 (.540-.690)	2302
Total population (2003 - 2004)	.092 (.088-.096)	.114 (.102-.127)	.246 (.230-.253)	.409 (.386-.438)	.534 (.495-.598)	1896
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	.060 (<LOD-.080)	.090 (.070-.140)	755
Age 12-19 years (2003 - 2004)	.016 (.014-.018)	.015 (.013-.017)	.025 (.022-.030)	.050 (.046-.056)	.076 (.056-.096)	598
Age 20+ years (1999 - 2000)	*	< LOD	.270 (.240-.300)	.440 (.410-.480)	.560 (.500-.620)	1257
Age 20+ years (2001 - 2002)	.146 (.131-.162)	.170 (.150-.190)	.300 (.280-.340)	.490 (.430-.560)	.640 (.570-.740)	1547
Age 20+ years (2003 - 2004)	.119 (.112-.126)	.138 (.125-.151)	.270 (.249-.284)	.433 (.402-.474)	.572 (.511-.635)	1298
Males (1999 - 2000)	*	< LOD	.260 (.220-.300)	.460 (.370-.510)	.570 (.500-.650)	919
Males (2001 - 2002)	.131 (.117-.147)	.170 (.140-.200)	.300 (.260-.340)	.480 (.410-.550)	.620 (.530-.720)	1073
Males (2003 - 2004)	.099 (.091-.108)	.117 (.098-.148)	.250 (.231-.274)	.422 (.388-.495)	.596 (.499-.654)	947
Females (1999 - 2000)	*	< LOD	.230 (.200-.270)	.380 (.340-.410)	.510 (.430-.560)	1005
Females (2001 - 2002)	.106 (.096-.117)	.120 (.100-.140)	.260 (.230-.280)	.420 (.380-.470)	.610 (.520-.700)	1229
Females (2003 - 2004)	.085 (.080-.092)	.110 (.094-.123)	.230 (.209-.252)	.386 (.349-.421)	.494 (.459-.541)	949
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	.280 (.200-.320)	.390 (.320-.450)	633
Mexican Americans (2001 - 2002)	*	< LOD	.110 (.080-.160)	.260 (.200-.310)	.360 (.280-.420)	566
Mexican Americans (2003 - 2004)	.037 (.030-.047)	.035 (.024-.051)	.086 (.059-.118)	.191 (.138-.313)	.343 (.191-.405)	427
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.250 (.190-.300)	.500 (.350-.660)	.730 (.530-1.04)	414
Non-Hispanic blacks (2001 - 2002)	.110 (.092-.131)	.120 (.090-.140)	.290 (.220-.350)	.580 (.440-.650)	.720 (.520-1.01)	514
Non-Hispanic blacks (2003 - 2004)	.086 (.072-.102)	.098 (.070-.126)	.248 (.194-.327)	.580 (.373-.824)	.919 (.592-1.12)	464
Non-Hispanic whites (1999 - 2000)	*	< LOD	.260 (.240-.300)	.430 (.380-.470)	.540 (.480-.600)	719
Non-Hispanic whites (2001 - 2002)	.132 (.118-.148)	.160 (.140-.180)	.290 (.260-.330)	.470 (.410-.530)	.620 (.530-.730)	1059
Non-Hispanic whites (2003 - 2004)	.104 (.097-.112)	.132 (.115-.151)	.253 (.235-.280)	.409 (.382-.449)	.512 (.478-.572)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.023	0.004	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.017	0.003	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.020	0.002	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.081	0.023	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.056	0.005	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.047	0.005	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.288	0.058	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.188	0.008	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.173	0.022	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.397	0.02	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.369	0.021	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.311	0.021	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.014	0.002	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	**.014	0.004	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.012	0.003	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.042	0.005	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.040	0.006	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.028	0.002	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.167	0.014	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.147	0.008	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.146	0.013	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.350	0.025	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.306	0.015	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.281	0.02	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.020	0.003	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.017	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.014	0.001	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.062	0.008	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.041	0.004	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.045	0.006	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.209	0.015	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.219	0.025	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.216	0.02	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.527	0.054	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.420	0.035	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.010	0.001	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.010	0.002	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.006	0.001	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.040	0.006	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.029	0.005	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.024	0.004	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.196	0.021	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.160	0.018	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.153	0.027	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.589	0.113	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.439	0.028	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.454	0.055	7
Mexican American Male, 12-19 years (2005 - 2006)	.011	0.001	11
Mexican American Male, 12-19 years (2007 - 2008)	.012	0.002	6
Mexican American Male, 12-19 years (2009 - 2010)	.014	0.002	8
Mexican American Male, 12-19 years (2005 - 2006)	.036	0.002	9
Mexican American Male, 12-19 years (2007 - 2008)	.037	0.004	9
Mexican American Male, 12-19 years (2009 - 2010)	.025	0.004	8
Mexican American Male, 12-19 years (2005 - 2006)	.130	0.015	4
Mexican American Male, 12-19 years (2007 - 2008)	.148	0.018	6
Mexican American Male, 12-19 years (2009 - 2010)	.104	0.01	8
Mexican American Male, 12-19 years (2005 - 2006)	.281	0.066	4
Mexican American Male, 12-19 years (2007 - 2008)	.298	0.029	5
Mexican American Male, 12-19 years (2009 - 2010)	.275	0.019	5
Mexican American Female, 12-19 years (2005 - 2006)	.010	0.001	16
Mexican American Female, 12-19 years (2007 - 2008)	**.010	0.006	5
Mexican American Female, 12-19 years (2009 - 2010)	.006	0.001	7
Mexican American Female, 12-19 years (2005 - 2006)	.023	0.004	9
Mexican American Female, 12-19 years (2007 - 2008)	.023	0.002	8
Mexican American Female, 12-19 years (2009 - 2010)	.018	0.003	10
Mexican American Female, 12-19 years (2005 - 2006)	.113	0.009	6
Mexican American Female, 12-19 years (2007 - 2008)	.122	0.017	6
Mexican American Female, 12-19 years (2009 - 2010)	.070	0.011	9
Mexican American Female, 12-19 years (2005 - 2006)	.236	0.025	3
Mexican American Female, 12-19 years (2009 - 2010)	.192	0.026	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 – 2010)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.014	0.002	11
All Hispanic Male, 12-19 years (2009 - 2010)	.032	0.005	13
All Hispanic Male, 12-19 years (2009 - 2010)	.121	0.014	13
All Hispanic Male, 12-19 years (2009 - 2010)	.281	0.013	8
All Hispanic Female, 12-19 years (2009 - 2010)	.007	0.001	10
All Hispanic Female, 12-19 years (2009 - 2010)	.021	0.003	14
All Hispanic Female, 12-19 years (2009 - 2010)	.194	0.017	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.015	0.002	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.012	0.001	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.030	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.024	0.002	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.144	0.022	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.112	0.011	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.251	0.014	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.270	0.016	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.013	0.003	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.010	0.001	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.026	0.003	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.021	0.002	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.126	0.014	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.108	0.011	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.259	0.02	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.262	0.017	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.010	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.008	0.001	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.026	0.002	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.025	0.004	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.163	0.045	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.137	0.017	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.317	0.014	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.310	0.021	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.006	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.005	0.001	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.021	0.004	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.014	0.002	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.127	0.017	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.102	0.011	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.392	0.024	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.007	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.006	0	7
Mexican American Male, 12-19 years (2011 - 2012)	.028	0.004	4
Mexican American Male, 12-19 years (2013 - 2014)	.016	0.002	5
Mexican American Male, 12-19 years (2011 - 2012)	.098	0.011	4
Mexican American Male, 12-19 years (2013 - 2014)	.075	0.013	5
Mexican American Male, 12-19 years (2011 - 2012)	.159	0.023	2
Mexican American Male, 12-19 years (2013 - 2014)	.222	0.021	4
Mexican American Female, 12-19 years (2011 - 2012)	.004	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.005	0	7
Mexican American Female, 12-19 years (2011 - 2012)	.015	0.004	4
Mexican American Female, 12-19 years (2013 - 2014)	.012	0.002	5
Mexican American Female, 12-19 years (2011 - 2012)	.064	0.014	3
Mexican American Female, 12-19 years (2013 - 2014)	.053	0.01	6
Mexican American Female, 12-19 years (2011 - 2012)	.183	0.019	3
Mexican American Female, 12-19 years (2013 - 2014)	.176	0.024	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.007	0.001	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.017	0.002	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.083	0.019	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.208	0.018	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.006	0.001	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.036	0.023	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.070	0.011	10
All Hispanic Female, 12-19 years (2013 - 2014)	.191	0.017	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2011 – 2014)

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.018	0.003	3
Asian Male, 12-19 years (2013 - 2014)	.012	0.002	3
Asian Male, 12-19 years (2011 - 2012)	**.048	0.018	6
Asian Male, 12-19 years (2013 - 2014)	.036	0.003	4
Asian Male, 12-19 years (2011 - 2012)	.146	0.019	6
Asian Male, 12-19 years (2013 - 2014)	.110	0.017	4
Asian Male, 12-19 years (2011 - 2012)	.192	0.035	4
Asian Male, 12-19 years (2013 - 2014)	.244	0.042	3
Asian Female, 12-19 years (2011 - 2012)	.013	0.002	4
Asian Female, 12-19 years (2013 - 2014)	.013	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.041	0.007	6
Asian Female, 12-19 years (2013 - 2014)	.035	0.002	5
Asian Female, 12-19 years (2011 - 2012)	.109	0.026	6
Asian Female, 12-19 years (2013 - 2014)	.088	0.009	7
Asian Female, 12-19 years (2013 - 2014)	**.265	0.104	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (1999 – 2004)

CAS Number 52663-69-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1928
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2306
Total population (2003 - 2004)	1.45 (1.38-1.54)	1.60 (1.50-1.77)	3.29 (3.15-3.54)	5.86 (5.50-6.29)	7.90 (7.50-8.74)	1886
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	757
Age 12-19 years (2003 - 2004)	*	.440 (<LOD-.500)	.730 (.660-.840)	1.30 (.990-1.62)	1.91 (1.50-2.24)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	1.77 (1.67-1.88)	1.88 (1.73-2.09)	3.70 (3.34-4.00)	6.25 (5.71-6.83)	8.40 (7.70-9.55)	1296
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1074
Males (2003 - 2004)	1.47 (1.34-1.61)	1.54 (1.40-1.77)	3.29 (3.10-3.54)	5.80 (5.30-6.50)	7.90 (7.20-9.20)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1009
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	1.44 (1.34-1.55)	1.69 (1.50-1.82)	3.30 (3.05-3.80)	5.88 (5.21-6.30)	7.90 (7.31-9.24)	946
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.703 (.579-.854)	.700 (.600-.890)	1.40 (1.19-1.90)	2.62 (2.20-3.47)	3.73 (2.60-5.60)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	12.7 (<LOD-23.1)	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	13.0 (<LOD-14.9)	514
Non-Hispanic blacks (2003 - 2004)	1.64 (1.41-1.90)	1.60 (1.20-2.00)	4.31 (3.25-5.63)	11.0 (6.69-13.7)	14.8 (11.3-17.4)	459
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	722
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	1.56 (1.43-1.69)	1.74 (1.55-1.90)	3.30 (3.14-3.73)	5.71 (5.20-6.29)	7.59 (6.70-8.04)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.443	0.059	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.493	0.043	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.17	0.31	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.964	0.069	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.750	0.074	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.14	0.76	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.15	0.08	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.27	0.39	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	4.82	0.23	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	5.17	0.41	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	4.08	0.32	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.311	0.03	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.694	0.043	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.839	0.194	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.716	0.05	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.04	0.11	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.08	0.12	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	2.55	0.19	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	4.13	0.34	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	4.20	0.26	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.50	0.34	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.598	0.087	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	4
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.10	0.13	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.927	0.087	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	**1.68	0.51	3
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	3.05	0.33	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	3.92	0.7	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	5.12	0.78	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	7.74	0.74	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	9.17	1.11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.335	0.035	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.861	0.111	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.801	0.164	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.08	0.17	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	3.48	0.24	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	3.14	0.33	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	4.52	0.95	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	9.38	2.28	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	9.22	0.69	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	9.71	1.49	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.479	0.055	7
Mexican American Male, 12-19 years (2005 - 2006)	.686	0.053	9
Mexican American Male, 12-19 years (2007 - 2008)	.781	0.056	9
Mexican American Male, 12-19 years (2009 - 2010)	.629	0.08	8
Mexican American Male, 12-19 years (2005 - 2006)	1.52	0.12	4
Mexican American Male, 12-19 years (2007 - 2008)	2.22	0.34	6
Mexican American Male, 12-19 years (2009 - 2010)	1.62	0.14	8
Mexican American Male, 12-19 years (2005 - 2006)	3.05	0.58	4
Mexican American Male, 12-19 years (2007 - 2008)	3.84	0.67	5
Mexican American Male, 12-19 years (2009 - 2010)	4.15	0.48	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	.476	0.076	9
Mexican American Female, 12-19 years (2007 - 2008)	.475	0.087	8
Mexican American Female, 12-19 years (2009 - 2010)	.452	0.063	10
Mexican American Female, 12-19 years (2005 - 2006)	1.86	0.13	6
Mexican American Female, 12-19 years (2007 - 2008)	2.09	0.25	6
Mexican American Female, 12-19 years (2009 - 2010)	1.28	0.15	9
Mexican American Female, 12-19 years (2005 - 2006)	3.36	0.07	3
Mexican American Female, 12-19 years (2009 - 2010)	3.51	0.68	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.458	0.042	10
All Hispanic Male, 12-19 years (2009 - 2010)	.695	0.059	13
All Hispanic Male, 12-19 years (2009 - 2010)	1.84	0.21	13
All Hispanic Male, 12-19 years (2009 - 2010)	4.23	0.36	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	.566	0.072	14
All Hispanic Female, 12-19 years (2009 - 2010)	3.62	0.39	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.377	0.046	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.605	0.059	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.572	0.062	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.83	0.24	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.86	0.15	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	3.54	0.23	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.00	0.28	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.368	0.036	4
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.382	0.036	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.587	0.084	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.545	0.069	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	2.06	0.21	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.58	0.14	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	3.63	0.24	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.09	0.34	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.506	0.092	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.336	0.03	5
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.764	0.027	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.579	0.097	5
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.96	0.69	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	2.52	0.46	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	5.43	0.28	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	5.97	0.63	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.608	0.108	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.468	0.04	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	2.69	0.28	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.57	0.28	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	8.20	0.69	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.301	0.073	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.617	0.072	4
Mexican American Male, 12-19 years (2013 - 2014)	.428	0.06	5
Mexican American Male, 12-19 years (2011 - 2012)	1.26	0.23	4
Mexican American Male, 12-19 years (2013 - 2014)	1.33	0.19	5
Mexican American Male, 12-19 years (2011 - 2012)	2.44	0.47	2
Mexican American Male, 12-19 years (2013 - 2014)	3.80	0.23	4
Mexican American Female, 12-19 years (2011 - 2012)	.202	0.03	4
Mexican American Female, 12-19 years (2013 - 2014)	.273	0.032	7
Mexican American Female, 12-19 years (2011 - 2012)	.461	0.114	4
Mexican American Female, 12-19 years (2013 - 2014)	.335	0.03	5
Mexican American Female, 12-19 years (2011 - 2012)	1.59	0.35	3
Mexican American Female, 12-19 years (2013 - 2014)	1.30	0.25	6
Mexican American Female, 12-19 years (2011 - 2012)	3.86	0.36	3
Mexican American Female, 12-19 years (2013 - 2014)	3.27	0.33	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.269	0.037	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.489	0.058	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.52	0.27	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	3.44	0.29	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.279	0.035	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.925	0.575	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.52	0.24	10
All Hispanic Female, 12-19 years (2013 - 2014)	3.47	0.31	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.755	0.099	3
Asian Male, 12-19 years (2013 - 2014)	.397	0.088	3
Asian Male, 12-19 years (2011 - 2012)	**1.51	0.64	6
Asian Male, 12-19 years (2013 - 2014)	.983	0.091	4
Asian Male, 12-19 years (2011 - 2012)	3.38	0.51	6
Asian Male, 12-19 years (2013 - 2014)	2.57	0.59	4
Asian Male, 12-19 years (2011 - 2012)	3.65	0.86	4
Asian Male, 12-19 years (2013 - 2014)	4.32	0.41	3
Asian Female, 12-19 years (2011 - 2012)	.442	0.07	4
Asian Female, 12-19 years (2013 - 2014)	.491	0.082	3
Asian Female, 12-19 years (2011 - 2012)	1.52	0.35	6
Asian Female, 12-19 years (2013 - 2014)	.956	0.05	5
Asian Female, 12-19 years (2011 - 2012)	2.60	0.7	6
Asian Female, 12-19 years (2013 - 2014)	2.12	0.21	7
Asian Female, 12-19 years (2013 - 2014)	**5.52	2.27	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (1999 – 2004)

CAS Number 52663-69-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1928
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2306
Total population (2003 - 2004)	.009 (.008-.009)	.010 (.009-.011)	.021 (.019-.024)	.039 (.036-.042)	.054 (.048-.059)	1886
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	668
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	757
Age 12-19 years (2003 - 2004)	*	.002 (<LOD-.003)	.004 (.004-.004)	.007 (.005-.009)	.009 (.007-.010)	590
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1260
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1549
Age 20+ years (2003 - 2004)	.011 (.010-.012)	.012 (.011-.014)	.024 (.022-.027)	.042 (.038-.045)	.057 (.052-.064)	1296
Males (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1074
Males (2003 - 2004)	.009 (.008-.010)	.010 (.009-.011)	.022 (.019-.025)	.038 (.035-.042)	.052 (.043-.064)	940
Females (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	1009
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1232
Females (2003 - 2004)	.009 (.008-.009)	.010 (.009-.012)	.021 (.019-.023)	.042 (.036-.044)	.055 (.049-.061)	946
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	635
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	567
Mexican Americans (2003 - 2004)	.004 (.003-.005)	.005 (.004-.006)	.009 (.007-.013)	.019 (.013-.029)	.029 (.017-.044)	423
Non-Hispanic blacks (1999 - 2000)	*	< LOD	< LOD	< LOD	.070 (<LOD-.150)	413
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	.080 (<LOD-.110)	514
Non-Hispanic blacks (2003 - 2004)	.009 (.008-.011)	.009 (.008-.012)	.027 (.019-.037)	.065 (.043-.084)	.090 (.058-.120)	459
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	722
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1061
Non-Hispanic whites (2003 - 2004)	.010 (.009-.010)	.011 (.010-.012)	.022 (.019-.025)	.038 (.035-.042)	.049 (.046-.055)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.002	0	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0	9
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**.009	0.003	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.006	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.005	0.001	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.024	0.006	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.016	0.001	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.016	0.003	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.033	0.001	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.033	0.003	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.025	0.002	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.002	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.005	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.005	0.001	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.004	0	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.015	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.014	0.001	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.016	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.030	0.002	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.028	0.002	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.027	0.002	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	4
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.005	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.009	0.003	3
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.019	0.002	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.025	0.005	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.031	0.005	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.046	0.004	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.049	0.006	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.005	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.004	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.005	0.001	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.022	0.002	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.019	0.002	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.025	0.005	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.063	0.015	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.055	0.004	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.056	0.009	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.002	0	7
Mexican American Male, 12-19 years (2005 - 2006)	.005	0	9
Mexican American Male, 12-19 years (2007 - 2008)	.005	0	9
Mexican American Male, 12-19 years (2009 - 2010)	.004	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.012	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.016	0.002	6
Mexican American Male, 12-19 years (2009 - 2010)	.011	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.022	0.004	4
Mexican American Male, 12-19 years (2007 - 2008)	.027	0.004	5
Mexican American Male, 12-19 years (2009 - 2010)	.026	0.003	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	.003	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.003	0	8
Mexican American Female, 12-19 years (2009 - 2010)	.003	0	10
Mexican American Female, 12-19 years (2005 - 2006)	.014	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.014	0.002	6
Mexican American Female, 12-19 years (2009 - 2010)	.008	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.026	0.003	3
Mexican American Female, 12-19 years (2009 - 2010)	.019	0.004	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 – 2010)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.002	0	10
All Hispanic Male, 12-19 years (2009 - 2010)	.005	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.013	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.026	0.002	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	.003	0	14
All Hispanic Female, 12-19 years (2009 - 2010)	.021	0.002	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.004	0	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.003	0	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.012	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.011	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.019	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.022	0.002	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.002	0	4
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.003	0	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.003	0	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.013	0.002	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.009	0.001	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.022	0.001	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.024	0.002	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.001	0	5
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.004	0	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.003	0.001	5
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.017	0.004	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.014	0.003	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.030	0.002	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.031	0.004	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.003	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.016	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.013	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.044	0.004	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	**.001	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.004	0	4
Mexican American Male, 12-19 years (2013 - 2014)	.003	0	5
Mexican American Male, 12-19 years (2011 - 2012)	.010	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.008	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.014	0.002	2
Mexican American Male, 12-19 years (2013 - 2014)	.020	0.001	4
Mexican American Female, 12-19 years (2011 - 2012)	.001	0	4
Mexican American Female, 12-19 years (2013 - 2014)	.001	0	7
Mexican American Female, 12-19 years (2011 - 2012)	.002	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.009	0.002	3
Mexican American Female, 12-19 years (2013 - 2014)	.007	0.001	6
Mexican American Female, 12-19 years (2011 - 2012)	.024	0.002	3
Mexican American Female, 12-19 years (2013 - 2014)	.019	0.002	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.001	0	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.003	0	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.009	0.002	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.019	0.001	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.001	0	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.005	0.003	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.009	0.001	10
All Hispanic Female, 12-19 years (2013 - 2014)	.021	0.002	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2011 – 2014)

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.004	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.002	0	3
Asian Male, 12-19 years (2011 - 2012)	**.008	0.004	6
Asian Male, 12-19 years (2013 - 2014)	.006	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.021	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.015	0.003	4
Asian Male, 12-19 years (2011 - 2012)	.020	0.005	4
Asian Male, 12-19 years (2013 - 2014)	.026	0.003	3
Asian Female, 12-19 years (2011 - 2012)	.002	0	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	3
Asian Female, 12-19 years (2011 - 2012)	.008	0.002	6
Asian Female, 12-19 years (2013 - 2014)	.005	0	5
Asian Female, 12-19 years (2011 - 2012)	.016	0.004	6
Asian Female, 12-19 years (2013 - 2014)	.012	0.001	7
Asian Female, 12-19 years (2013 - 2014)	**.031	0.012	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (1999 – 2004)

CAS Number 52663-68-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	17.7 (15.6-20.4)	24.8 (22.0-27.7)	1930
Total population (2001 - 2002)	*	< LOD	12.2 (10.6-13.8)	21.7 (19.6-23.7)	28.1 (26.8-29.7)	2307
Total population (2003 - 2004)	4.23 (3.96-4.50)	4.60 (4.20-5.23)	10.1 (9.42-10.5)	17.2 (16.1-18.1)	24.3 (20.5-27.8)	1889
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	1.00 (.859-1.17)	1.00 (.880-1.10)	1.66 (1.50-1.99)	3.20 (2.50-4.34)	5.00 (3.70-6.07)	594
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	19.3 (16.8-21.8)	26.0 (24.1-29.0)	1263
Age 20+ years (2001 - 2002)	*	< LOD	13.3 (12.0-15.2)	23.0 (20.9-24.7)	29.2 (27.3-32.0)	1549
Age 20+ years (2003 - 2004)	5.20 (4.83-5.60)	5.71 (5.01-6.19)	10.9 (10.3-11.7)	18.1 (16.9-19.5)	25.9 (22.1-32.1)	1295
Males (1999 - 2000)	*	< LOD	< LOD	17.8 (15.8-19.6)	25.9 (21.6-29.8)	917
Males (2001 - 2002)	*	< LOD	12.7 (<LOD-15.8)	22.5 (19.4-24.1)	27.7 (25.2-30.3)	1075
Males (2003 - 2004)	4.34 (3.97-4.75)	4.50 (4.00-5.40)	10.4 (9.21-10.9)	17.9 (16.1-19.5)	25.1 (20.4-30.9)	939
Females (1999 - 2000)	*	< LOD	< LOD	17.7 (15.1-21.7)	24.2 (21.6-27.0)	1013
Females (2001 - 2002)	*	< LOD	11.9 (<LOD-13.0)	21.3 (18.5-23.5)	28.5 (26.2-31.3)	1232
Females (2003 - 2004)	4.12 (3.84-4.41)	4.67 (4.10-5.30)	9.85 (8.83-10.5)	16.4 (15.3-17.9)	24.2 (19.1-27.8)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	17.6 (15.1-19.1)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	10.8 (<LOD-13.4)	15.7 (12.7-18.2)	567
Mexican Americans (2003 - 2004)	1.79 (1.47-2.20)	1.58 (1.26-2.00)	3.96 (2.70-5.90)	7.86 (5.96-10.3)	11.6 (9.41-14.9)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	15.5 (<LOD-21.1)	31.6 (26.0-39.0)	47.1 (36.6-72.1)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	16.5 (12.3-21.0)	30.3 (22.9-40.6)	44.8 (30.3-61.9)	515
Non-Hispanic blacks (2003 - 2004)	5.09 (4.39-5.90)	5.40 (4.20-6.21)	13.9 (10.6-17.7)	31.7 (22.7-46.4)	51.5 (31.7-76.5)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	16.8 (14.9-18.6)	22.0 (19.1-25.2)	727
Non-Hispanic whites (2001 - 2002)	*	< LOD	12.5 (10.8-14.6)	21.7 (18.9-23.7)	27.4 (25.2-29.5)	1061
Non-Hispanic whites (2003 - 2004)	4.47 (4.17-4.79)	5.00 (4.40-5.70)	10.1 (9.26-10.8)	16.5 (15.3-17.9)	21.1 (19.1-24.2)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.15	0.17	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.986	0.243	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.23	0.15	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.08	0.71	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.65	0.22	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.07	0.21	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	8.32	0.66	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	6.81	0.33	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.31	1.06	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	16.6	1	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	16.8	1.3	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	13.8	1.2	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.832	0.069	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.852	0.205	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.77	0.13	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.19	0.54	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.91	0.13	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	6.07	0.42	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.76	0.32	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	6.30	0.44	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	14.0	1.1	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	13.8	0.8	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	15.1	1.4	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.68	0.29	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.56	0.3	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.27	0.2	4
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	3.61	0.61	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.73	0.31	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	**4.18	1.32	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	12.3	1	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	12.8	1.9	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	16.6	2.5	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	32.1	3.5	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	32.4	3.9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.956	0.08	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.872	0.162	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**.512	0.163	3
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.57	0.42	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.20	0.31	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	2.41	0.51	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	11.3	1.1	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	9.55	1.07	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	12.5	3.5	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	37.6	9.4	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	32.7	3.2	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	31.7	5.3	7
Mexican American Male, 12-19 years (2005 - 2006)	.633	0.083	11
Mexican American Male, 12-19 years (2007 - 2008)	.656	0.133	6
Mexican American Male, 12-19 years (2009 - 2010)	1.05	0.28	6
Mexican American Male, 12-19 years (2005 - 2006)	1.72	0.15	9
Mexican American Male, 12-19 years (2007 - 2008)	1.92	0.22	9
Mexican American Male, 12-19 years (2009 - 2010)	1.44	0.13	8
Mexican American Male, 12-19 years (2005 - 2006)	4.78	0.5	4
Mexican American Male, 12-19 years (2007 - 2008)	6.80	0.92	6
Mexican American Male, 12-19 years (2009 - 2010)	5.04	0.42	8
Mexican American Male, 12-19 years (2005 - 2006)	10.6	2.5	4
Mexican American Male, 12-19 years (2007 - 2008)	13.1	1.9	5
Mexican American Male, 12-19 years (2009 - 2010)	13.9	1.2	5
Mexican American Female, 12-19 years (2005 - 2006)	.615	0.063	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	6
Mexican American Female, 12-19 years (2005 - 2006)	1.05	0.2	9
Mexican American Female, 12-19 years (2007 - 2008)	1.40	0.13	8
Mexican American Female, 12-19 years (2009 - 2010)	1.02	0.12	10
Mexican American Female, 12-19 years (2005 - 2006)	4.80	0.3	6
Mexican American Female, 12-19 years (2007 - 2008)	5.66	0.8	6
Mexican American Female, 12-19 years (2009 - 2010)	3.70	0.48	9
Mexican American Female, 12-19 years (2005 - 2006)	10.4	0.6	3
Mexican American Female, 12-19 years (2009 - 2010)	11.0	1.4	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	1.10	0.19	9
All Hispanic Male, 12-19 years (2009 - 2010)	1.79	0.2	13
All Hispanic Male, 12-19 years (2009 - 2010)	6.30	0.78	13
All Hispanic Male, 12-19 years (2009 - 2010)	15.3	1.5	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	1.29	0.18	14
All Hispanic Female, 12-19 years (2009 - 2010)	11.3	0.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.847	0.222	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.901	0.117	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.65	0.14	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.34	0.11	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	6.05	0.99	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	5.45	0.52	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	12.5	0.8	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	13.9	1	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.802	0.148	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.694	0.08	5
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.63	0.19	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.40	0.14	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	6.06	0.54	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.62	0.38	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	12.9	1.1	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	13.8	1.3	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.10	0.15	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.811	0.08	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.34	0.18	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	2.02	0.36	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	12.6	3.6	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	9.24	1.42	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	21.3	0.9	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	21.8	2.2	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.653	0.143	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.491	0.056	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.73	0.35	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.25	0.2	7
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	8.89	0.96	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	8.01	0.99	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	30.8	2.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.548	0.111	5
Mexican American Male, 12-19 years (2013 - 2014)	.433	0.031	7
Mexican American Male, 12-19 years (2011 - 2012)	1.76	0.44	4
Mexican American Male, 12-19 years (2013 - 2014)	.940	0.109	4
Mexican American Male, 12-19 years (2011 - 2012)	4.49	0.65	4
Mexican American Male, 12-19 years (2013 - 2014)	3.82	0.73	5
Mexican American Male, 12-19 years (2011 - 2012)	7.78	1.52	2
Mexican American Male, 12-19 years (2013 - 2014)	12.8	1.6	4
Mexican American Female, 12-19 years (2011 - 2012)	.384	0.068	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	**1.01	0.33	4
Mexican American Female, 12-19 years (2013 - 2014)	.775	0.124	5
Mexican American Female, 12-19 years (2011 - 2012)	3.80	0.82	3
Mexican American Female, 12-19 years (2013 - 2014)	3.13	0.61	6
Mexican American Female, 12-19 years (2011 - 2012)	10.0	0.8	3
Mexican American Female, 12-19 years (2013 - 2014)	9.76	1.07	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.502	0.108	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	1.16	0.17	7
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**4.75	1.49	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	12.4	1.1	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.474	0.103	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**2.53	1.69	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	4.10	0.7	10
All Hispanic Female, 12-19 years (2013 - 2014)	10.9	1.1	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	2.16	0.51	3
Asian Male, 12-19 years (2013 - 2014)	**1.46	0.47	3
Asian Male, 12-19 years (2011 - 2012)	**4.67	2.12	6
Asian Male, 12-19 years (2013 - 2014)	3.32	0.43	4
Asian Male, 12-19 years (2011 - 2012)	12.7	2.3	6
Asian Male, 12-19 years (2013 - 2014)	9.47	2.35	4
Asian Male, 12-19 years (2011 - 2012)	15.6	3.1	4
Asian Male, 12-19 years (2013 - 2014)	19.5	3.7	3
Asian Female, 12-19 years (2011 - 2012)	1.40	0.23	4
Asian Female, 12-19 years (2013 - 2014)	1.32	0.21	3
Asian Female, 12-19 years (2011 - 2012)	5.00	1.05	6
Asian Female, 12-19 years (2013 - 2014)	3.42	0.27	5
Asian Female, 12-19 years (2011 - 2012)	9.59	2.62	6
Asian Female, 12-19 years (2013 - 2014)	7.29	0.84	7
Asian Female, 12-19 years (2013 - 2014)	**23.6	11	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (1999 – 2004)

CAS Number 52663-68-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (1999 - 2000)	*	< LOD	< LOD	.120 (.110-.130)	.170 (.140-.180)	1930
Total population (2001 - 2002)	*	< LOD	.080 (.070-.090)	.140 (.130-.160)	.200 (.180-.220)	2307
Total population (2003 - 2004)	.026 (.024-.028)	.029 (.027-.032)	.065 (.061-.069)	.115 (.106-.125)	.167 (.139-.197)	1889
Age 12-19 years (1999 - 2000)	*	< LOD	< LOD	< LOD	< LOD	667
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	758
Age 12-19 years (2003 - 2004)	.005 (.004-.006)	.005 (.004-.006)	.009 (.007-.010)	.016 (.013-.019)	.023 (.016-.029)	594
Age 20+ years (1999 - 2000)	*	< LOD	< LOD	.130 (.110-.140)	.180 (.160-.190)	1263
Age 20+ years (2001 - 2002)	*	< LOD	.090 (.080-.100)	.150 (.130-.180)	.210 (.190-.230)	1549
Age 20+ years (2003 - 2004)	.033 (.030-.035)	.036 (.032-.040)	.071 (.067-.075)	.124 (.112-.139)	.172 (.143-.215)	1295
Males (1999 - 2000)	*	< LOD	< LOD	.120 (.100-.140)	.180 (.140-.200)	917
Males (2001 - 2002)	*	< LOD	.080 (<LOD-.100)	.150 (.130-.160)	.190 (.170-.230)	1075
Males (2003 - 2004)	.027 (.024-.030)	.030 (.026-.035)	.067 (.061-.072)	.116 (.102-.137)	.160 (.137-.215)	939
Females (1999 - 2000)	*	< LOD	< LOD	.120 (.110-.130)	.160 (.140-.180)	1013
Females (2001 - 2002)	*	< LOD	.080 (<LOD-.090)	.140 (.120-.150)	.200 (.180-.220)	1232
Females (2003 - 2004)	.025 (.023-.027)	.029 (.026-.033)	.063 (.056-.070)	.115 (.104-.125)	.168 (.141-.191)	950
Mexican Americans (1999 - 2000)	*	< LOD	< LOD	< LOD	.120 (.100-.130)	636
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	.080 (<LOD-.100)	.100 (.090-.120)	567
Mexican Americans (2003 - 2004)	.011 (.009-.013)	.010 (.007-.015)	.025 (.018-.038)	.057 (.042-.079)	.094 (.059-.110)	426
Non-Hispanic blacks (1999 - 2000)	*	< LOD	.090 (<LOD-.130)	.200 (.160-.230)	.290 (.210-.530)	412
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.100 (.070-.120)	.190 (.150-.260)	.290 (.190-.380)	515
Non-Hispanic blacks (2003 - 2004)	.029 (.025-.034)	.032 (.024-.037)	.083 (.070-.109)	.191 (.140-.273)	.330 (.228-.468)	458
Non-Hispanic whites (1999 - 2000)	*	< LOD	< LOD	.110 (.100-.130)	.150 (.130-.170)	727
Non-Hispanic whites (2001 - 2002)	*	< LOD	.080 (.070-.090)	.140 (.120-.160)	.190 (.170-.220)	1061
Non-Hispanic whites (2003 - 2004)	.028 (.026-.030)	.032 (.029-.036)	.065 (.061-.071)	.111 (.101-.124)	.153 (.132-.172)	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.006	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.005	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.007	0.001	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.023	0.006	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.018	0.002	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.014	0.001	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.063	0.005	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.049	0.002	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.050	0.008	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.112	0.006	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.107	0.008	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.083	0.008	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.004	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.004	0.001	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.011	0.001	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.013	0.004	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.010	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.045	0.004	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.038	0.002	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.040	0.003	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.102	0.008	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.093	0.005	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.091	0.008	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.008	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.006	0.001	4
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.021	0.004	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.015	0.002	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.023	0.007	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.078	0.006	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.082	0.012	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.101	0.014	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.191	0.02	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.174	0.023	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.005	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.004	0.001	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**.002	0.001	3
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.015	0.003	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.011	0.002	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.012	0.003	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.072	0.007	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.058	0.008	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.069	0.017	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.251	0.063	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.197	0.021	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.182	0.031	7
Mexican American Male, 12-19 years (2005 - 2006)	.003	0	11
Mexican American Male, 12-19 years (2007 - 2008)	.004	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.005	0.001	6
Mexican American Male, 12-19 years (2005 - 2006)	.012	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	.013	0.002	9
Mexican American Male, 12-19 years (2009 - 2010)	.009	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.039	0.006	4
Mexican American Male, 12-19 years (2007 - 2008)	.048	0.007	6
Mexican American Male, 12-19 years (2009 - 2010)	.035	0.004	8
Mexican American Male, 12-19 years (2005 - 2006)	.076	0.017	4
Mexican American Male, 12-19 years (2007 - 2008)	.092	0.01	5
Mexican American Male, 12-19 years (2009 - 2010)	.085	0.007	5
Mexican American Female, 12-19 years (2005 - 2006)	.003	0	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	6
Mexican American Female, 12-19 years (2005 - 2006)	.007	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.008	0.001	8
Mexican American Female, 12-19 years (2009 - 2010)	.006	0.001	10
Mexican American Female, 12-19 years (2005 - 2006)	.035	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.038	0.005	6
Mexican American Female, 12-19 years (2009 - 2010)	.024	0.004	9
Mexican American Female, 12-19 years (2005 - 2006)	.080	0.012	3
Mexican American Female, 12-19 years (2009 - 2010)	.061	0.007	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 – 2010)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.005	0.001	9
All Hispanic Male, 12-19 years (2009 - 2010)	.012	0.002	13
All Hispanic Male, 12-19 years (2009 - 2010)	.043	0.005	13
All Hispanic Male, 12-19 years (2009 - 2010)	.096	0.007	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	8
All Hispanic Female, 12-19 years (2009 - 2010)	.007	0.001	14
All Hispanic Female, 12-19 years (2009 - 2010)	.067	0.005	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.004	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.004	0.001	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.010	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.007	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.040	0.006	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.032	0.004	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.070	0.005	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.075	0.005	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.004	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.003	0	5
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.009	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.007	0.001	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.039	0.004	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.027	0.002	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.079	0.007	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.081	0.008	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.005	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.004	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.012	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.010	0.002	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	**.072	0.022	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.052	0.008	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.115	0.005	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.113	0.012	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.003	0.001	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.010	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.006	0.001	7
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.054	0.008	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.042	0.006	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.165	0.013	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.003	0.001	5
Mexican American Male, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Male, 12-19 years (2011 - 2012)	.011	0.002	4
Mexican American Male, 12-19 years (2013 - 2014)	.006	0.001	4
Mexican American Male, 12-19 years (2011 - 2012)	.035	0.003	4
Mexican American Male, 12-19 years (2013 - 2014)	.023	0.004	5
Mexican American Male, 12-19 years (2011 - 2012)	.046	0.008	2
Mexican American Male, 12-19 years (2013 - 2014)	.068	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	.002	0	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	**.005	0.002	4
Mexican American Female, 12-19 years (2013 - 2014)	.004	0.001	5
Mexican American Female, 12-19 years (2011 - 2012)	.022	0.004	3
Mexican American Female, 12-19 years (2013 - 2014)	.018	0.003	6
Mexican American Female, 12-19 years (2011 - 2012)	.062	0.007	3
Mexican American Female, 12-19 years (2013 - 2014)	.057	0.007	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.002	0.001	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.007	0.001	7
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	**.030	0.011	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.066	0.005	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.002	0.001	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.014	0.01	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.024	0.004	10
All Hispanic Female, 12-19 years (2013 - 2014)	.064	0.006	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2011 – 2014)

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.011	0.003	3
Asian Male, 12-19 years (2013 - 2014)	**.007	0.002	3
Asian Male, 12-19 years (2011 - 2012)	**.026	0.012	6
Asian Male, 12-19 years (2013 - 2014)	.020	0.003	4
Asian Male, 12-19 years (2011 - 2012)	.077	0.014	6
Asian Male, 12-19 years (2013 - 2014)	.054	0.014	4
Asian Male, 12-19 years (2011 - 2012)	.085	0.018	4
Asian Male, 12-19 years (2013 - 2014)	.120	0.028	3
Asian Female, 12-19 years (2011 - 2012)	.007	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.006	0.001	3
Asian Female, 12-19 years (2011 - 2012)	.028	0.006	6
Asian Female, 12-19 years (2013 - 2014)	.018	0.002	5
Asian Female, 12-19 years (2011 - 2012)	.059	0.016	6
Asian Female, 12-19 years (2013 - 2014)	.043	0.005	7
Asian Female, 12-19 years (2013 - 2014)	**.134	0.057	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2001 – 2004)

CAS Number 35694-08-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	11.1 (<LOD-11.9)	18.2 (16.5-19.5)	23.7 (21.0-27.0)	2279
Total population (2003 - 2004)	2.69 (2.53-2.85)	4.19 (3.55-4.70)	8.47 (7.79-9.06)	14.3 (13.3-16.0)	19.1 (17.6-20.8)	1835
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	746
Age 12-19 years (2003 - 2004)	*	< LOD	1.11 (.700-1.57)	2.40 (1.70-3.57)	5.18 (2.80-6.81)	572
Age 20+ years (2001 - 2002)	*	< LOD	12.0 (11.0-13.3)	19.1 (17.7-20.5)	25.3 (22.7-28.0)	1533
Age 20+ years (2003 - 2004)	3.64 (3.40-3.89)	4.95 (4.56-5.42)	9.30 (8.62-9.90)	15.3 (13.9-17.1)	20.1 (18.1-21.9)	1263
Males (2001 - 2002)	*	< LOD	12.3 (10.6-14.1)	19.2 (17.2-21.2)	25.2 (21.7-29.0)	1059
Males (2003 - 2004)	2.95 (2.61-3.35)	4.47 (3.55-5.20)	9.60 (8.30-10.9)	17.1 (14.2-18.8)	21.8 (19.8-25.6)	913
Females (2001 - 2002)	*	< LOD	< LOD	17.0 (14.7-18.8)	21.9 (19.3-26.2)	1220
Females (2003 - 2004)	2.45 (2.28-2.64)	4.00 (3.39-4.49)	7.50 (7.01-8.39)	12.7 (11.2-13.6)	16.6 (13.7-18.6)	922
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	14.3 (10.5-17.6)	561
Mexican Americans (2003 - 2004)	.845 (.582-1.23)	.900 (.640-1.49)	2.90 (1.79-4.76)	7.21 (4.80-8.90)	9.50 (7.40-15.0)	410
Non-Hispanic blacks (2001 - 2002)	*	< LOD	12.3 (<LOD-15.3)	22.6 (18.0-27.5)	29.8 (23.7-41.1)	508
Non-Hispanic blacks (2003 - 2004)	2.45 (1.94-3.08)	3.62 (2.70-4.49)	8.83 (6.80-11.2)	18.1 (13.0-23.2)	28.3 (18.9-35.6)	450
Non-Hispanic whites (2001 - 2002)	*	< LOD	11.9 (10.9-13.1)	18.8 (17.1-20.2)	24.1 (20.9-28.0)	1048
Non-Hispanic whites (2003 - 2004)	3.25 (2.97-3.56)	4.90 (4.19-5.42)	9.08 (8.36-9.80)	14.7 (13.5-16.6)	19.1 (17.4-21.2)	861

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.599	0.081	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.622	0.099	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.530	0.073	7
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.31	0.63	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.91	0.2	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.46	0.15	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	8.60	1.06	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	7.17	0.32	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	6.67	0.72	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	15.1	0.9	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	15.5	0.7	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	14.7	0.8	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.386	0.061	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.691	0.184	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.447	0.076	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.30	0.16	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.64	0.16	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.08	0.08	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	4.30	0.54	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.43	0.35	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	5.07	0.42	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	11.3	0.8	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	11.7	0.6	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	11.4	0.8	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.604	0.084	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.678	0.125	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.19	0.28	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.75	0.2	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.25	0.21	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	8.55	0.39	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	8.95	0.86	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	9.34	1.17	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	21.6	2.2	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	20.5	1.9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.362	0.042	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.30	0.2	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.11	0.26	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.06	0.2	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	6.26	0.84	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.00	0.7	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	5.54	0.96	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	18.1	3.4	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	16.9	1	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	17.4	2	7
Mexican American Male, 12-19 years (2005 - 2006)	.501	0.138	11
Mexican American Male, 12-19 years (2007 - 2008)	.465	0.077	6
Mexican American Male, 12-19 years (2009 - 2010)	.539	0.068	8
Mexican American Male, 12-19 years (2005 - 2006)	.988	0.082	9
Mexican American Male, 12-19 years (2007 - 2008)	**1.76	0.57	9
Mexican American Male, 12-19 years (2009 - 2010)	.805	0.112	8
Mexican American Male, 12-19 years (2005 - 2006)	3.83	0.39	4
Mexican American Male, 12-19 years (2007 - 2008)	5.26	0.76	6
Mexican American Male, 12-19 years (2009 - 2010)	3.65	0.29	8
Mexican American Male, 12-19 years (2005 - 2006)	9.53	2.54	4
Mexican American Male, 12-19 years (2007 - 2008)	12.2	1.7	5
Mexican American Male, 12-19 years (2009 - 2010)	11.5	1.1	5
Mexican American Female, 12-19 years (2005 - 2006)	.331	0.038	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.641	0.109	9
Mexican American Female, 12-19 years (2007 - 2008)	.943	0.049	8
Mexican American Female, 12-19 years (2009 - 2010)	.629	0.094	9
Mexican American Female, 12-19 years (2005 - 2006)	3.25	0.45	6
Mexican American Female, 12-19 years (2007 - 2008)	3.73	0.95	6
Mexican American Female, 12-19 years (2009 - 2010)	2.38	0.4	9
Mexican American Female, 12-19 years (2005 - 2006)	6.74	0.23	3
Mexican American Female, 12-19 years (2009 - 2010)	7.96	1.28	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.526	0.049	11
All Hispanic Male, 12-19 years (2009 - 2010)	.942	0.102	13
All Hispanic Male, 12-19 years (2009 - 2010)	4.20	0.42	13
All Hispanic Male, 12-19 years (2009 - 2010)	11.6	0.8	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.688	0.079	13
All Hispanic Female, 12-19 years (2009 - 2010)	7.53	0.81	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.501	0.085	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.446	0.044	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.03	0.1	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.972	0.051	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.40	0.41	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.87	0.33	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	12.4	0.8	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	13.0	0.7	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.503	0.14	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.329	0.043	5
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.932	0.109	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.810	0.08	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.54	0.43	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.41	0.51	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	10.8	1	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	11.2	0.6	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.443	0.072	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.406	0.033	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.16	0.08	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.16	0.21	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	7.34	1.47	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	6.49	0.74	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	16.7	1.2	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	17.7	1.4	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.289	0.062	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.732	0.13	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.571	0.066	7
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	4.65	0.54	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	4.20	0.32	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	17.2	1.5	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.267	0.056	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.965	0.156	4
Mexican American Male, 12-19 years (2013 - 2014)	.590	0.073	5
Mexican American Male, 12-19 years (2011 - 2012)	3.31	0.59	4
Mexican American Male, 12-19 years (2013 - 2014)	3.14	0.71	5
Mexican American Male, 12-19 years (2011 - 2012)	6.28	0.46	2
Mexican American Male, 12-19 years (2013 - 2014)	11.1	0.9	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.622	0.177	4
Mexican American Female, 12-19 years (2013 - 2014)	.506	0.097	5
Mexican American Female, 12-19 years (2011 - 2012)	2.20	0.48	3
Mexican American Female, 12-19 years (2013 - 2014)	2.26	0.51	6
Mexican American Female, 12-19 years (2011 - 2012)	6.67	0.52	3
Mexican American Female, 12-19 years (2013 - 2014)	8.01	0.93	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.627	0.056	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	3.24	0.61	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	10.2	0.8	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.951	0.46	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.66	0.4	10
All Hispanic Female, 12-19 years (2013 - 2014)	7.85	0.65	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.723	0.191	3
Asian Male, 12-19 years (2013 - 2014)	.387	0.062	3
Asian Male, 12-19 years (2011 - 2012)	**1.54	0.53	6
Asian Male, 12-19 years (2013 - 2014)	1.10	0.09	4
Asian Male, 12-19 years (2011 - 2012)	4.95	0.44	6
Asian Male, 12-19 years (2013 - 2014)	4.42	0.78	4
Asian Male, 12-19 years (2011 - 2012)	9.17	1.67	4
Asian Male, 12-19 years (2013 - 2014)	9.90	1.73	3
Asian Female, 12-19 years (2011 - 2012)	.431	0.072	4
Asian Female, 12-19 years (2013 - 2014)	.416	0.036	3
Asian Female, 12-19 years (2011 - 2012)	1.34	0.29	6
Asian Female, 12-19 years (2013 - 2014)	1.07	0.17	5
Asian Female, 12-19 years (2011 - 2012)	3.53	0.79	6
Asian Female, 12-19 years (2013 - 2014)	3.03	0.32	7
Asian Female, 12-19 years (2013 - 2014)	**10.1	4.5	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2001 – 2004)

CAS Number 35694-08-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.120 (.110-.140)	.160 (.150-.190)	2279
Total population (2003 - 2004)	.016 (.015-.017)	.026 (.022-.028)	.056 (.052-.060)	.096 (.091-.103)	.129 (.116-.139)	1835
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	746
Age 12-19 years (2003 - 2004)	*	< LOD	.006 (.004-.008)	.013 (.009-.020)	.023 (.013-.035)	572
Age 20+ years (2001 - 2002)	*	< LOD	.080 (.070-.090)	.130 (.110-.150)	.170 (.150-.200)	1533
Age 20+ years (2003 - 2004)	.023 (.021-.024)	.031 (.027-.035)	.061 (.057-.065)	.103 (.094-.113)	.133 (.122-.145)	1263
Males (2001 - 2002)	*	< LOD	.080 (.070-.090)	.140 (.110-.160)	.170 (.150-.210)	1059
Males (2003 - 2004)	.018 (.016-.021)	.027 (.023-.034)	.061 (.054-.069)	.106 (.095-.121)	.142 (.129-.166)	913
Females (2001 - 2002)	*	< LOD	< LOD	.110 (.090-.130)	.150 (.130-.180)	1220
Females (2003 - 2004)	.015 (.014-.016)	.024 (.020-.027)	.051 (.047-.056)	.088 (.080-.096)	.112 (.103-.117)	922
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.100 (.080-.110)	561
Mexican Americans (2003 - 2004)	.005 (.004-.008)	.006 (.004-.010)	.019 (.012-.031)	.049 (.033-.064)	.081 (.051-.118)	410
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.080 (<LOD-.090)	.150 (.100-.180)	.200 (.140-.250)	508
Non-Hispanic blacks (2003 - 2004)	.014 (.011-.018)	.020 (.014-.026)	.054 (.045-.063)	.120 (.081-.155)	.172 (.123-.202)	450
Non-Hispanic whites (2001 - 2002)	*	< LOD	.080 (.070-.090)	.130 (.110-.150)	.170 (.150-.190)	1048
Non-Hispanic whites (2003 - 2004)	.020 (.018-.022)	.029 (.026-.034)	.061 (.056-.066)	.099 (.090-.106)	.132 (.116-.143)	861

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.003	0	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.003	0	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0	7
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**.018	0.005	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.013	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.010	0.001	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.065	0.008	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.052	0.003	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.045	0.005	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.102	0.005	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.100	0.005	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.089	0.005	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.002	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	**.003	0.001	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.002	0	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.008	0.001	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.010	0.001	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.006	0	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.032	0.005	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.036	0.003	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.032	0.003	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.082	0.006	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.079	0.004	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.070	0.005	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.003	0.001	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.013	0.002	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.010	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.054	0.003	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.057	0.006	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.057	0.005	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.131	0.017	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.110	0.011	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.007	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.006	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.040	0.005	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.036	0.005	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.031	0.005	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.120	0.022	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.102	0.007	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.100	0.011	7
Mexican American Male, 12-19 years (2005 - 2006)	.003	0.001	11
Mexican American Male, 12-19 years (2007 - 2008)	.002	0	6
Mexican American Male, 12-19 years (2009 - 2010)	.003	0	8
Mexican American Male, 12-19 years (2005 - 2006)	.007	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	**.012	0.004	9
Mexican American Male, 12-19 years (2009 - 2010)	.005	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.031	0.004	4
Mexican American Male, 12-19 years (2007 - 2008)	.037	0.005	6
Mexican American Male, 12-19 years (2009 - 2010)	.025	0.003	8
Mexican American Male, 12-19 years (2005 - 2006)	.069	0.018	4
Mexican American Male, 12-19 years (2007 - 2008)	.086	0.009	5
Mexican American Male, 12-19 years (2009 - 2010)	.070	0.005	5
Mexican American Female, 12-19 years (2005 - 2006)	.002	0	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.004	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.005	0	8
Mexican American Female, 12-19 years (2009 - 2010)	.003	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.024	0.003	6
Mexican American Female, 12-19 years (2007 - 2008)	.025	0.006	6
Mexican American Female, 12-19 years (2009 - 2010)	.016	0.003	9
Mexican American Female, 12-19 years (2005 - 2006)	.052	0.007	3
Mexican American Female, 12-19 years (2009 - 2010)	.044	0.007	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2005 – 2010)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.002	0	11
All Hispanic Male, 12-19 years (2009 - 2010)	.006	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.029	0.003	13
All Hispanic Male, 12-19 years (2009 - 2010)	.073	0.004	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.004	0.001	13
All Hispanic Female, 12-19 years (2009 - 2010)	.044	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.002	0	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.006	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.005	0	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.036	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.029	0.002	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.069	0.005	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.071	0.005	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.003	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	5
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.005	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.004	0	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.029	0.003	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.026	0.003	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.066	0.006	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.066	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.006	0	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.006	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.041	0.009	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.037	0.004	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.090	0.006	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.091	0.005	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.001	0	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.004	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.003	0	7
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.028	0.004	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.022	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.092	0.006	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.001	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.006	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.004	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.025	0.003	4
Mexican American Male, 12-19 years (2013 - 2014)	.019	0.004	5
Mexican American Male, 12-19 years (2011 - 2012)	.037	0.002	2
Mexican American Male, 12-19 years (2013 - 2014)	.060	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.003	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.003	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.013	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.013	0.003	6
Mexican American Female, 12-19 years (2011 - 2012)	.041	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.047	0.006	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.004	0	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.020	0.004	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.055	0.004	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.005	0.003	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.015	0.002	10
All Hispanic Female, 12-19 years (2013 - 2014)	.046	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2011 – 2014)

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.004	0.001	3
Asian Male, 12-19 years (2013 - 2014)	.002	0	3
Asian Male, 12-19 years (2011 - 2012)	**.009	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.006	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.030	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.025	0.004	4
Asian Male, 12-19 years (2011 - 2012)	.050	0.01	4
Asian Male, 12-19 years (2013 - 2014)	.061	0.013	3
Asian Female, 12-19 years (2011 - 2012)	.002	0	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	3
Asian Female, 12-19 years (2011 - 2012)	.007	0.001	6
Asian Female, 12-19 years (2013 - 2014)	.005	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.022	0.005	6
Asian Female, 12-19 years (2013 - 2014)	.018	0.002	7
Asian Female, 12-19 years (2013 - 2014)	**.057	0.023	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2001 – 2004)

CAS Number 52663-78-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2230
Total population (2003 - 2004)	*	.900 (<LOD-1.01)	1.98 (1.80-2.10)	3.40 (3.10-3.60)	4.51 (3.90-5.18)	1820
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	716
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	1.74 (.720-3.82)	567
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1514
Age 20+ years (2003 - 2004)	.800 (.721-.888)	1.10 (.980-1.20)	2.10 (2.00-2.30)	3.53 (3.20-3.74)	4.68 (4.12-5.19)	1253
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1035
Males (2003 - 2004)	*	.800 (<LOD-1.00)	2.08 (1.82-2.20)	3.50 (3.12-3.70)	4.60 (3.82-5.40)	904
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1195
Females (2003 - 2004)	*	.970 (<LOD-1.10)	1.85 (1.64-2.09)	3.30 (2.86-3.60)	4.50 (3.57-5.25)	916
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	544
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	1.80 (1.11-2.40)	2.40 (1.80-3.50)	407
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic blacks (2003 - 2004)	.709 (<LOD-.870)	.820 (<LOD-1.14)	2.00 (1.65-2.57)	4.18 (3.16-5.30)	6.90 (4.18-8.10)	444
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1037
Non-Hispanic whites (2003 - 2004)	.749 (<LOD-.850)	1.00 (.800-1.18)	2.10 (1.90-2.30)	3.40 (3.10-3.61)	4.44 (3.80-5.19)	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.487	0.129	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.50	0.29	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.25	0.05	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.52	0.16	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.74	0.16	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.936	0.067	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.14	0.08	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.04	0.16	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.38	0.13	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.435	0.047	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.35	0.13	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.80	0.23	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	3.40	0.27	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	3.99	0.53	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.348	0.044	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.41	0.15	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.35	0.17	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	3.94	0.26	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2005 – 2008)‡‡

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	.766	0.083	4
Mexican American Male, 12-19 years (2007 - 2008)	1.02	0.11	6
Mexican American Male, 12-19 years (2005 - 2006)	1.69	0.4	4
Mexican American Male, 12-19 years (2007 - 2008)	2.24	0.29	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	.780	0.083	6
Mexican American Female, 12-19 years (2007 - 2008)	.986	0.187	6
Mexican American Female, 12-19 years (2007 - 2008)	1.98	0.39	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2001 – 2004)

CAS Number 52663-78-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2230
Total population (2003 - 2004)	*	.005 (<LOD-.006)	.012 (.012-.013)	.022 (.020-.025)	.031 (.027-.034)	1820
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	716
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	< LOD	.007 (.004-.017)	567
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1514
Age 20+ years (2003 - 2004)	.005 (.004-.006)	.007 (.006-.007)	.014 (.012-.015)	.023 (.021-.026)	.032 (.028-.035)	1253
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1035
Males (2003 - 2004)	*	.005 (<LOD-.006)	.013 (.012-.014)	.022 (.020-.025)	.031 (.025-.035)	904
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1195
Females (2003 - 2004)	*	.006 (<LOD-.007)	.012 (.011-.013)	.021 (.019-.025)	.031 (.026-.035)	916
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	544
Mexican Americans (2003 - 2004)	*	< LOD	< LOD	.012 (.008-.018)	.018 (.013-.025)	407
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic blacks (2003 - 2004)	.004 (<LOD-.005)	.004 (<LOD-.006)	.012 (.010-.016)	.027 (.019-.034)	.041 (.029-.048)	444
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1037
Non-Hispanic whites (2003 - 2004)	.005 (<LOD-.005)	.006 (.005-.007)	.013 (.012-.014)	.022 (.020-.025)	.030 (.027-.033)	856

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.004	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	15
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.011	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.009	0	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.017	0.001	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.018	0.001	23
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	13
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.007	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.008	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.015	0.001	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.016	0.001	21
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.009	0.001	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.012	0.002	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.020	0.001	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.024	0.004	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.009	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.008	0.001	8
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.024	0.002	7

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2005 – 2008)‡‡

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2005 - 2006)	*	*	9
Mexican American Male, 12-19 years (2007 - 2008)	*	*	9
Mexican American Male, 12-19 years (2005 - 2006)	.006	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.007	0.001	6
Mexican American Male, 12-19 years (2005 - 2006)	.012	0.003	4
Mexican American Male, 12-19 years (2007 - 2008)	.016	0.001	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2005 - 2006)	.006	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.006	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.014	0.003	5

‡‡Not measured after Survey years 2007-2008.

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2001 – 2004)

CAS Number 42740-50-1 and 52663-76-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	14.2 (13.0-15.7)	19.2 (17.4-20.9)	2299
Total population (2003 - 2004)	2.61 (2.44-2.79)	3.40 (3.01-3.80)	6.70 (6.16-7.23)	11.8 (10.8-12.7)	15.0 (13.2-17.4)	1878
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	755
Age 12-19 years (2003 - 2004)	.437 (<LOD-.546)	.520 (.400-.700)	1.10 (.900-1.42)	2.41 (1.86-3.19)	3.59 (2.93-4.20)	587
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	15.0 (13.7-17.0)	19.9 (18.2-21.4)	1544
Age 20+ years (2003 - 2004)	3.37 (3.15-3.61)	4.07 (3.74-4.46)	7.30 (6.79-8.20)	12.4 (11.5-13.2)	15.9 (13.4-19.5)	1291
Males (2001 - 2002)	*	< LOD	< LOD	14.6 (13.3-16.5)	19.4 (16.3-21.2)	1071
Males (2003 - 2004)	2.77 (2.49-3.08)	3.45 (3.07-3.98)	6.92 (6.12-7.71)	12.5 (11.2-13.7)	16.3 (13.7-23.1)	935
Females (2001 - 2002)	*	< LOD	< LOD	13.8 (11.9-15.9)	19.1 (17.0-21.3)	1228
Females (2003 - 2004)	2.46 (2.27-2.66)	3.32 (2.83-3.80)	6.68 (6.12-7.20)	11.1 (9.74-12.3)	13.4 (12.8-14.9)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	11.1 (<LOD-12.5)	565
Mexican Americans (2003 - 2004)	.947 (.689-1.30)	1.00 (.700-1.50)	2.80 (1.60-4.30)	5.90 (4.30-7.40)	8.35 (6.00-12.3)	424
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	17.6 (14.2-21.0)	23.1 (19.6-30.2)	513
Non-Hispanic blacks (2003 - 2004)	2.45 (2.06-2.90)	2.90 (2.33-3.80)	7.18 (5.80-9.00)	13.8 (11.5-16.8)	21.6 (14.0-32.3)	453
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	14.7 (13.6-16.5)	19.6 (18.1-21.3)	1058
Non-Hispanic whites (2003 - 2004)	3.01 (2.76-3.27)	3.88 (3.44-4.20)	7.10 (6.32-8.20)	11.8 (10.8-13.1)	15.4 (12.9-19.0)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.793	0.071	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.667	0.151	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.650	0.099	7
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.63	0.69	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.15	0.14	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.48	0.14	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	8.33	0.94	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	6.45	0.25	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	5.79	0.63	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	15.4	0.8	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	15.3	0.8	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	12.3	0.7	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.593	0.046	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.459	0.071	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.49	0.12	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.72	0.21	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.13	0.08	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	5.23	0.24	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.27	0.3	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	4.80	0.36	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	12.6	1	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	12.2	0.7	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	11.3	0.9	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.937	0.103	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.788	0.207	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.34	0.22	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.79	0.18	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	2.21	0.34	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	8.31	0.66	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	8.17	0.91	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	8.79	1.13	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	20.9	2.2	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	19.2	2.4	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.557	0.039	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.61	0.22	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.40	0.21	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.09	0.2	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	7.01	0.65	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.50	0.73	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	5.81	1.06	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	21.2	4.7	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	18.1	1.4	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	17.4	2.1	7
Mexican American Male, 12-19 years (2005 - 2006)	.500	0.047	11
Mexican American Male, 12-19 years (2007 - 2008)	.514	0.087	6
Mexican American Male, 12-19 years (2009 - 2010)	.662	0.096	8
Mexican American Male, 12-19 years (2005 - 2006)	1.16	0.1	9
Mexican American Male, 12-19 years (2007 - 2008)	**1.97	0.7	9
Mexican American Male, 12-19 years (2009 - 2010)	.946	0.138	8
Mexican American Male, 12-19 years (2005 - 2006)	3.85	0.42	4
Mexican American Male, 12-19 years (2007 - 2008)	4.71	0.62	6
Mexican American Male, 12-19 years (2009 - 2010)	3.49	0.26	8
Mexican American Male, 12-19 years (2005 - 2006)	9.56	2.38	4
Mexican American Male, 12-19 years (2007 - 2008)	10.6	1.8	5
Mexican American Male, 12-19 years (2009 - 2010)	10.6	0.7	5
Mexican American Female, 12-19 years (2005 - 2006)	.464	0.05	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.770	0.121	9
Mexican American Female, 12-19 years (2007 - 2008)	1.02	0.04	8
Mexican American Female, 12-19 years (2009 - 2010)	.765	0.085	10
Mexican American Female, 12-19 years (2005 - 2006)	3.87	0.54	6
Mexican American Female, 12-19 years (2007 - 2008)	4.02	0.61	6
Mexican American Female, 12-19 years (2009 - 2010)	2.49	0.41	9
Mexican American Female, 12-19 years (2005 - 2006)	7.87	0.44	3
Mexican American Female, 12-19 years (2009 - 2010)	8.01	1.18	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.632	0.073	11
All Hispanic Male, 12-19 years (2009 - 2010)	1.07	0.12	12
All Hispanic Male, 12-19 years (2009 - 2010)	3.83	0.37	13
All Hispanic Male, 12-19 years (2009 - 2010)	10.6	0.5	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.809	0.071	14
All Hispanic Female, 12-19 years (2009 - 2010)	7.66	0.77	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.745	0.096	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.568	0.064	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.23	0.12	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.02	0.06	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	4.83	0.29	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.50	0.26	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	10.8	0.5	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	11.4	0.7	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.625	0.14	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.449	0.059	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.11	0.11	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.916	0.106	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.83	0.5	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.07	0.34	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	10.6	1	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	10.9	0.6	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.685	0.107	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.603	0.063	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.33	0.09	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.25	0.2	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	7.23	1.48	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	5.94	0.69	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	14.5	0.6	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	15.0	1	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.376	0.05	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.315	0.045	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.964	0.158	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.701	0.061	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	5.41	0.64	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	4.45	0.46	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	17.5	1.9	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.432	0.016	5
Mexican American Male, 12-19 years (2013 - 2014)	.357	0.027	7
Mexican American Male, 12-19 years (2011 - 2012)	1.23	0.17	4
Mexican American Male, 12-19 years (2013 - 2014)	.639	0.101	5
Mexican American Male, 12-19 years (2011 - 2012)	3.30	0.74	4
Mexican American Male, 12-19 years (2013 - 2014)	3.07	0.73	5
Mexican American Male, 12-19 years (2011 - 2012)	6.43	1.43	2
Mexican American Male, 12-19 years (2013 - 2014)	9.93	1.01	4
Mexican American Female, 12-19 years (2011 - 2012)	.300	0.034	4
Mexican American Female, 12-19 years (2013 - 2014)	.335	0.036	7
Mexican American Female, 12-19 years (2011 - 2012)	.791	0.129	4
Mexican American Female, 12-19 years (2013 - 2014)	.564	0.093	5
Mexican American Female, 12-19 years (2011 - 2012)	2.53	0.48	3
Mexican American Female, 12-19 years (2013 - 2014)	2.23	0.48	6
Mexican American Female, 12-19 years (2011 - 2012)	6.80	0.34	3
Mexican American Female, 12-19 years (2013 - 2014)	7.82	0.99	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.380	0.042	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.709	0.085	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	3.21	0.57	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	9.09	0.87	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.370	0.044	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.875	0.335	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.76	0.41	10
All Hispanic Female, 12-19 years (2013 - 2014)	7.65	0.81	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**1.02	0.38	3
Asian Male, 12-19 years (2013 - 2014)	.593	0.088	3
Asian Male, 12-19 years (2011 - 2012)	**1.84	0.71	6
Asian Male, 12-19 years (2013 - 2014)	1.33	0.14	4
Asian Male, 12-19 years (2011 - 2012)	5.21	0.79	6
Asian Male, 12-19 years (2013 - 2014)	4.24	0.53	4
Asian Male, 12-19 years (2011 - 2012)	7.83	1.19	4
Asian Male, 12-19 years (2013 - 2014)	8.70	1.02	3
Asian Female, 12-19 years (2011 - 2012)	.632	0.09	4
Asian Female, 12-19 years (2013 - 2014)	.486	0.065	3
Asian Female, 12-19 years (2011 - 2012)	2.01	0.44	6
Asian Female, 12-19 years (2013 - 2014)	1.21	0.19	5
Asian Female, 12-19 years (2011 - 2012)	3.48	0.83	6
Asian Female, 12-19 years (2013 - 2014)	3.26	0.38	7
Asian Female, 12-19 years (2013 - 2014)	**9.25	4.22	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2001 – 2004)

CAS Number 42740-50-1 and 52663-76-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.110)	.130 (.110-.140)	2299
Total population (2003 - 2004)	.016 (.015-.017)	.022 (.019-.025)	.044 (.042-.048)	.082 (.071-.087)	.101 (.091-.112)	1878
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	755
Age 12-19 years (2003 - 2004)	.002 (<LOD-.003)	.003 (.002-.004)	.006 (.005-.007)	.013 (.009-.016)	.016 (.014-.025)	587
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.110)	.130 (.120-.150)	1544
Age 20+ years (2003 - 2004)	.021 (.020-.023)	.026 (.024-.028)	.049 (.045-.052)	.084 (.077-.090)	.104 (.092-.123)	1291
Males (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.120)	.130 (.110-.150)	1071
Males (2003 - 2004)	.017 (.015-.019)	.023 (.020-.026)	.045 (.042-.050)	.084 (.077-.091)	.106 (.093-.127)	935
Females (2001 - 2002)	*	< LOD	< LOD	.090 (.080-.100)	.130 (.110-.140)	1228
Females (2003 - 2004)	.015 (.014-.016)	.020 (.017-.023)	.043 (.038-.047)	.076 (.066-.084)	.093 (.085-.111)	943
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.070 (<LOD-.090)	565
Mexican Americans (2003 - 2004)	.006 (.004-.008)	.007 (.004-.010)	.017 (.011-.026)	.038 (.028-.054)	.058 (.035-.087)	424
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	.110 (.090-.140)	.150 (.110-.210)	513
Non-Hispanic blacks (2003 - 2004)	.014 (.012-.017)	.017 (.012-.022)	.046 (.038-.054)	.090 (.065-.111)	.141 (.094-.209)	453
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.100 (.090-.110)	.130 (.110-.140)	1058
Non-Hispanic whites (2003 - 2004)	.019 (.017-.020)	.025 (.022-.028)	.048 (.043-.052)	.084 (.070-.090)	.100 (.090-.120)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.004	0	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.003	0.001	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0.001	7
Non-Hispanic White Male, 12-19 years (2005 - 2006)	**.020	0.006	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.014	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.010	0.001	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.063	0.008	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.047	0.002	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.039	0.004	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.104	0.004	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.098	0.005	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.074	0.004	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.002	0	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.010	0.001	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.010	0.001	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.006	0	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.039	0.003	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.035	0.002	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.030	0.002	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.091	0.007	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.082	0.005	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.068	0.005	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.005	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.004	0.001	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.014	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.010	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.013	0.002	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.053	0.004	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.053	0.006	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.053	0.005	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.125	0.013	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.103	0.014	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.009	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.007	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.045	0.004	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.039	0.005	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.032	0.005	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.140	0.031	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.108	0.008	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.100	0.012	7
Mexican American Male, 12-19 years (2005 - 2006)	.003	0	11
Mexican American Male, 12-19 years (2007 - 2008)	.003	0	6
Mexican American Male, 12-19 years (2009 - 2010)	.003	0	8
Mexican American Male, 12-19 years (2005 - 2006)	.008	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	**.013	0.005	9
Mexican American Male, 12-19 years (2009 - 2010)	.006	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.032	0.004	4
Mexican American Male, 12-19 years (2007 - 2008)	.033	0.004	6
Mexican American Male, 12-19 years (2009 - 2010)	.024	0.003	8
Mexican American Male, 12-19 years (2005 - 2006)	.069	0.017	4
Mexican American Male, 12-19 years (2007 - 2008)	.075	0.011	5
Mexican American Male, 12-19 years (2009 - 2010)	.065	0.004	5
Mexican American Female, 12-19 years (2005 - 2006)	.003	0	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.005	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.006	0	8
Mexican American Female, 12-19 years (2009 - 2010)	.004	0.001	10
Mexican American Female, 12-19 years (2005 - 2006)	.028	0.003	6
Mexican American Female, 12-19 years (2007 - 2008)	.027	0.004	6
Mexican American Female, 12-19 years (2009 - 2010)	.016	0.003	9
Mexican American Female, 12-19 years (2005 - 2006)	.060	0.008	3
Mexican American Female, 12-19 years (2009 - 2010)	.044	0.006	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2005 – 2010)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.003	0	11
All Hispanic Male, 12-19 years (2009 - 2010)	.007	0.001	12
All Hispanic Male, 12-19 years (2009 - 2010)	.026	0.003	13
All Hispanic Male, 12-19 years (2009 - 2010)	.067	0.003	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.005	0	14
All Hispanic Female, 12-19 years (2009 - 2010)	.045	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.004	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.007	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.006	0	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.032	0.002	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.027	0.002	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.060	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.062	0.004	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.003	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.006	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.005	0.001	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.031	0.004	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.024	0.002	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.065	0.006	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.064	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.003	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.007	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.006	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.041	0.009	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.033	0.004	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.079	0.004	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.077	0.005	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.002	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.001	0	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.033	0.004	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.023	0.003	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.093	0.009	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Mexican American Male, 12-19 years (2011 - 2012)	.002	0	5
Mexican American Male, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Male, 12-19 years (2011 - 2012)	.008	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.004	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.025	0.004	4
Mexican American Male, 12-19 years (2013 - 2014)	.019	0.004	5
Mexican American Male, 12-19 years (2011 - 2012)	.038	0.008	2
Mexican American Male, 12-19 years (2013 - 2014)	.054	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	.001	0	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	7
Mexican American Female, 12-19 years (2011 - 2012)	.004	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.003	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.015	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.013	0.003	6
Mexican American Female, 12-19 years (2011 - 2012)	.042	0.004	3
Mexican American Female, 12-19 years (2013 - 2014)	.046	0.007	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.002	0	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.004	0.001	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.020	0.004	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.049	0.005	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.002	0	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.005	0.002	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.016	0.002	10
All Hispanic Female, 12-19 years (2013 - 2014)	.045	0.005	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2011 – 2014)

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**.005	0.002	3
Asian Male, 12-19 years (2013 - 2014)	.003	0	3
Asian Male, 12-19 years (2011 - 2012)	**.010	0.004	6
Asian Male, 12-19 years (2013 - 2014)	.008	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.032	0.005	6
Asian Male, 12-19 years (2013 - 2014)	.024	0.003	4
Asian Male, 12-19 years (2011 - 2012)	.043	0.007	4
Asian Male, 12-19 years (2013 - 2014)	.053	0.008	3
Asian Female, 12-19 years (2011 - 2012)	.003	0	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	3
Asian Female, 12-19 years (2011 - 2012)	.011	0.002	6
Asian Female, 12-19 years (2013 - 2014)	.006	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.021	0.005	6
Asian Female, 12-19 years (2013 - 2014)	.019	0.002	7
Asian Female, 12-19 years (2013 - 2014)	**.052	0.022	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2001 – 2004)

CAS Number 52663-73-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	17.0 (15.4-18.1)	22.4 (19.9-25.9)	2292
Total population (2003 - 2004)	2.81 (2.64-3.00)	3.80 (3.26-4.26)	8.30 (7.70-9.08)	14.9 (13.8-15.7)	18.9 (17.9-21.3)	1861
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	.416 (<LOD-.522)	.500 (<LOD-.700)	1.17 (.890-1.59)	2.43 (2.02-2.73)	3.92 (2.90-4.10)	579
Age 20+ years (2001 - 2002)	*	< LOD	10.6 (<LOD-11.8)	17.9 (16.2-19.2)	24.4 (20.7-27.4)	1536
Age 20+ years (2003 - 2004)	3.71 (3.41-4.02)	4.60 (4.10-5.08)	9.40 (8.73-10.0)	15.7 (14.7-16.9)	20.6 (18.3-23.6)	1282
Males (2001 - 2002)	*	< LOD	< LOD	17.3 (15.4-18.7)	21.3 (19.3-24.6)	1066
Males (2003 - 2004)	3.01 (2.68-3.39)	3.95 (3.30-4.67)	9.10 (7.60-9.94)	16.6 (14.0-17.3)	22.1 (18.1-27.4)	925
Females (2001 - 2002)	*	< LOD	< LOD	16.2 (14.5-17.9)	22.9 (19.4-27.3)	1226
Females (2003 - 2004)	2.63 (2.49-2.79)	3.70 (3.20-4.00)	7.70 (6.92-8.81)	14.0 (11.6-15.3)	17.0 (15.7-18.9)	936
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	12.3 (<LOD-14.2)	565
Mexican Americans (2003 - 2004)	.943 (.664-1.34)	1.00 (.600-1.50)	3.35 (1.50-5.33)	7.37 (5.10-10.2)	10.2 (7.40-13.5)	418
Non-Hispanic blacks (2001 - 2002)	*	< LOD	12.5 (<LOD-15.3)	21.9 (17.0-28.1)	30.7 (22.4-37.4)	513
Non-Hispanic blacks (2003 - 2004)	3.03 (2.46-3.74)	3.60 (2.70-4.70)	10.0 (7.70-13.7)	21.3 (15.9-30.4)	35.1 (21.3-43.3)	452
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	17.3 (15.9-18.9)	22.7 (19.8-26.3)	1051
Non-Hispanic whites (2003 - 2004)	3.24 (3.03-3.47)	4.19 (3.78-4.69)	9.08 (7.88-9.86)	14.8 (13.5-16.3)	18.6 (16.9-21.7)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.629	0.101	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.578	0.067	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	2.45	0.63	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	2.12	0.18	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.36	0.14	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	8.40	0.83	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	6.73	0.4	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	5.87	0.64	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	17.5	1.1	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	16.9	1	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	13.1	0.7	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.540	0.058	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.37	0.12	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.61	0.18	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.09	0.08	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	5.45	0.34	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	5.27	0.38	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	5.05	0.42	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	15.1	1.2	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	14.7	0.9	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	13.2	1.2	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.851	0.108	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	2.43	0.32	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.70	0.17	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	1.74	0.24	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	10.7	0.9	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	9.25	1.05	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	11.3	1.6	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	28.0	3.6	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	24.9	2.7	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.490	0.051	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	1.59	0.24	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	1.36	0.17	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	1.21	0.29	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	8.16	1.04	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	6.94	0.87	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	6.46	1.32	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	27.6	6	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	22.0	1.8	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	21.8	2.5	7
Mexican American Male, 12-19 years (2005 - 2006)	.395	0.045	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.643	0.107	8
Mexican American Male, 12-19 years (2005 - 2006)	1.03	0.11	9
Mexican American Male, 12-19 years (2007 - 2008)	**1.92	0.79	9
Mexican American Male, 12-19 years (2009 - 2010)	.848	0.114	7
Mexican American Male, 12-19 years (2005 - 2006)	4.23	0.49	4
Mexican American Male, 12-19 years (2007 - 2008)	5.47	0.92	6
Mexican American Male, 12-19 years (2009 - 2010)	3.64	0.29	8
Mexican American Male, 12-19 years (2005 - 2006)	10.1	2.6	4
Mexican American Male, 12-19 years (2007 - 2008)	11.4	1.6	5
Mexican American Male, 12-19 years (2009 - 2010)	11.9	1	5
Mexican American Female, 12-19 years (2005 - 2006)	.386	0.052	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.634	0.11	9
Mexican American Female, 12-19 years (2007 - 2008)	.843	0.031	8
Mexican American Female, 12-19 years (2009 - 2010)	.609	0.079	9
Mexican American Female, 12-19 years (2005 - 2006)	3.67	0.52	6
Mexican American Female, 12-19 years (2007 - 2008)	4.09	0.69	6
Mexican American Female, 12-19 years (2009 - 2010)	2.58	0.43	9
Mexican American Female, 12-19 years (2005 - 2006)	8.79	0.55	3
Mexican American Female, 12-19 years (2009 - 2010)	8.93	1.52	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.584	0.083	11
All Hispanic Male, 12-19 years (2009 - 2010)	1.00	0.1	12
All Hispanic Male, 12-19 years (2009 - 2010)	4.16	0.45	13
All Hispanic Male, 12-19 years (2009 - 2010)	12.6	0.8	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.694	0.081	13
All Hispanic Female, 12-19 years (2009 - 2010)	8.71	0.98	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.675	0.12	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.497	0.058	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.16	0.16	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.978	0.069	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	4.99	0.35	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.68	0.3	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	12.2	0.8	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	13.2	0.8	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.554	0.153	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.437	0.073	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.10	0.13	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.911	0.118	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	4.98	0.5	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	4.29	0.42	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	12.5	1.4	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	12.4	0.9	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.602	0.113	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.533	0.083	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	1.28	0.1	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	1.45	0.26	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	9.15	2.29	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	6.66	0.71	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	18.6	1.2	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	18.7	1.5	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.318	0.065	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.870	0.166	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.621	0.089	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	5.80	0.79	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	4.95	0.43	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	21.8	2.6	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.356	0.045	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	1.09	0.19	4
Mexican American Male, 12-19 years (2013 - 2014)	.563	0.075	5
Mexican American Male, 12-19 years (2011 - 2012)	3.42	1.01	4
Mexican American Male, 12-19 years (2013 - 2014)	3.05	0.7	5
Mexican American Male, 12-19 years (2011 - 2012)	7.63	1.74	2
Mexican American Male, 12-19 years (2013 - 2014)	11.2	1	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.665	0.149	4
Mexican American Female, 12-19 years (2013 - 2014)	.459	0.095	5
Mexican American Female, 12-19 years (2011 - 2012)	2.19	0.47	3
Mexican American Female, 12-19 years (2013 - 2014)	2.15	0.48	6
Mexican American Female, 12-19 years (2011 - 2012)	6.95	0.27	3
Mexican American Female, 12-19 years (2013 - 2014)	8.97	1.47	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.272	0.04	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.602	0.076	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	3.29	0.75	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	10.6	0.9	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.927	0.426	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	2.66	0.4	10
All Hispanic Female, 12-19 years (2013 - 2014)	9.09	1.11	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.991	0.218	3
Asian Male, 12-19 years (2013 - 2014)	.514	0.144	3
Asian Male, 12-19 years (2011 - 2012)	**1.89	0.71	6
Asian Male, 12-19 years (2013 - 2014)	1.49	0.2	4
Asian Male, 12-19 years (2011 - 2012)	6.79	1.15	6
Asian Male, 12-19 years (2013 - 2014)	5.14	0.69	4
Asian Male, 12-19 years (2011 - 2012)	10.4	1.4	4
Asian Male, 12-19 years (2013 - 2014)	11.6	1.6	3
Asian Female, 12-19 years (2011 - 2012)	.691	0.155	4
Asian Female, 12-19 years (2013 - 2014)	.507	0.074	2
Asian Female, 12-19 years (2011 - 2012)	2.06	0.48	6
Asian Female, 12-19 years (2013 - 2014)	1.39	0.23	5
Asian Female, 12-19 years (2011 - 2012)	4.05	0.93	6
Asian Female, 12-19 years (2013 - 2014)	3.95	0.49	7
Asian Female, 12-19 years (2013 - 2014)	**15.1	7.4	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2001 – 2004)

CAS Number 52663-73-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	.110 (.100-.130)	.150 (.140-.170)	2292
Total population (2003 - 2004)	.017 (.016-.018)	.023 (.020-.027)	.056 (.053-.060)	.100 (.091-.106)	.127 (.119-.144)	1861
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	756
Age 12-19 years (2003 - 2004)	.002 (<LOD-.003)	.002 (<LOD-.003)	.006 (.005-.008)	.012 (.009-.015)	.016 (.015-.019)	579
Age 20+ years (2001 - 2002)	*	< LOD	.070 (<LOD-.080)	.120 (.110-.140)	.160 (.140-.180)	1536
Age 20+ years (2003 - 2004)	.023 (.021-.025)	.029 (.026-.033)	.062 (.058-.067)	.106 (.097-.113)	.135 (.120-.158)	1282
Males (2001 - 2002)	*	< LOD	< LOD	.110 (.100-.130)	.150 (.130-.180)	1066
Males (2003 - 2004)	.019 (.016-.021)	.025 (.020-.030)	.059 (.053-.068)	.105 (.090-.113)	.138 (.120-.162)	925
Females (2001 - 2002)	*	< LOD	< LOD	.110 (.100-.130)	.150 (.130-.170)	1226
Females (2003 - 2004)	.016 (.015-.017)	.022 (.019-.025)	.054 (.047-.058)	.094 (.085-.105)	.120 (.108-.133)	936
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	.090 (<LOD-.110)	565
Mexican Americans (2003 - 2004)	.006 (.004-.008)	.007 (.004-.010)	.019 (.011-.031)	.051 (.029-.079)	.079 (.051-.093)	418
Non-Hispanic blacks (2001 - 2002)	*	< LOD	.070 (<LOD-.090)	.140 (.100-.180)	.190 (.130-.300)	513
Non-Hispanic blacks (2003 - 2004)	.017 (.014-.021)	.021 (.015-.026)	.064 (.054-.073)	.135 (.102-.173)	.207 (.147-.297)	452
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	.120 (.100-.130)	.150 (.130-.180)	1051
Non-Hispanic whites (2003 - 2004)	.020 (.019-.022)	.027 (.023-.030)	.059 (.054-.065)	.101 (.087-.108)	.125 (.108-.144)	871

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.003	0.001	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.003	0	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.019	0.006	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.014	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.009	0.001	16
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.063	0.005	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.049	0.003	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.040	0.004	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.118	0.006	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.109	0.006	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.079	0.004	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.003	0	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.009	0.001	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.010	0.001	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.006	0	18
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.041	0.004	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.035	0.003	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.032	0.003	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.110	0.009	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.099	0.006	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.080	0.007	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.004	0.001	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.014	0.002	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.010	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.009	0.001	5
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.069	0.006	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.059	0.007	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.068	0.007	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.168	0.024	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.134	0.015	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	5
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.009	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.007	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.006	0.002	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.052	0.006	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.042	0.006	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.036	0.007	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.183	0.039	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.132	0.011	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.125	0.014	7
Mexican American Male, 12-19 years (2005 - 2006)	.002	0	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	.003	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.007	0.001	9
Mexican American Male, 12-19 years (2007 - 2008)	**.013	0.005	9
Mexican American Male, 12-19 years (2009 - 2010)	.005	0.001	7
Mexican American Male, 12-19 years (2005 - 2006)	.035	0.005	4
Mexican American Male, 12-19 years (2007 - 2008)	.038	0.006	6
Mexican American Male, 12-19 years (2009 - 2010)	.025	0.003	8
Mexican American Male, 12-19 years (2005 - 2006)	.073	0.02	4
Mexican American Male, 12-19 years (2007 - 2008)	.081	0.009	5
Mexican American Male, 12-19 years (2009 - 2010)	.073	0.006	5
Mexican American Female, 12-19 years (2005 - 2006)	.002	0	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.004	0.001	9
Mexican American Female, 12-19 years (2007 - 2008)	.005	0	8
Mexican American Female, 12-19 years (2009 - 2010)	.003	0.001	9
Mexican American Female, 12-19 years (2005 - 2006)	.027	0.003	6
Mexican American Female, 12-19 years (2007 - 2008)	.028	0.004	6
Mexican American Female, 12-19 years (2009 - 2010)	.017	0.003	9
Mexican American Female, 12-19 years (2005 - 2006)	.068	0.01	3
Mexican American Female, 12-19 years (2009 - 2010)	.049	0.008	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2005 – 2010)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	.003	0	11
All Hispanic Male, 12-19 years (2009 - 2010)	.007	0.001	12
All Hispanic Male, 12-19 years (2009 - 2010)	.028	0.003	13
All Hispanic Male, 12-19 years (2009 - 2010)	.079	0.005	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.004	0.001	13
All Hispanic Female, 12-19 years (2009 - 2010)	.051	0.005	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.003	0.001	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.007	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.005	0	13
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.033	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.027	0.002	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.068	0.005	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.071	0.005	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.003	0.001	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.006	0.001	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.005	0.001	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.032	0.003	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.025	0.002	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.077	0.008	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.073	0.006	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.003	0.001	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.007	0.001	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.007	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.052	0.014	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.037	0.004	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.101	0.006	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.097	0.008	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.001	0	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.005	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.003	0	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.035	0.005	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.026	0.003	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.115	0.012	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	.002	0	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.007	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.004	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.026	0.006	4
Mexican American Male, 12-19 years (2013 - 2014)	.019	0.004	5
Mexican American Male, 12-19 years (2011 - 2012)	.045	0.009	2
Mexican American Male, 12-19 years (2013 - 2014)	.060	0.006	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	.004	0.001	4
Mexican American Female, 12-19 years (2013 - 2014)	.002	0	5
Mexican American Female, 12-19 years (2011 - 2012)	.013	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.012	0.003	6
Mexican American Female, 12-19 years (2011 - 2012)	.043	0.003	3
Mexican American Female, 12-19 years (2013 - 2014)	.052	0.009	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.001	0	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.004	0	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.020	0.005	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.057	0.004	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	**.005	0.003	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.015	0.002	10
All Hispanic Female, 12-19 years (2013 - 2014)	.053	0.006	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2011 – 2014)

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	.005	0.001	3
Asian Male, 12-19 years (2013 - 2014)	**.002	0.001	3
Asian Male, 12-19 years (2011 - 2012)	**.010	0.004	6
Asian Male, 12-19 years (2013 - 2014)	.009	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.041	0.007	6
Asian Male, 12-19 years (2013 - 2014)	.029	0.004	4
Asian Male, 12-19 years (2011 - 2012)	.057	0.009	4
Asian Male, 12-19 years (2013 - 2014)	.071	0.013	3
Asian Female, 12-19 years (2011 - 2012)	.003	0.001	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	2
Asian Female, 12-19 years (2011 - 2012)	.011	0.003	6
Asian Female, 12-19 years (2013 - 2014)	.007	0.001	5
Asian Female, 12-19 years (2011 - 2012)	.025	0.006	6
Asian Female, 12-19 years (2013 - 2014)	.023	0.003	7
Asian Female, 12-19 years (2013 - 2014)	**.085	0.039	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2001 – 2004)

CAS Number 40186-72-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2208
Total population (2003 - 2004)	2.13 (1.97-2.31)	2.34 (2.00-2.60)	5.00 (4.69-5.50)	9.20 (8.55-9.79)	13.7 (11.5-15.6)	1867
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	723
Age 12-19 years (2003 - 2004)	*	< LOD	.900 (.750-1.20)	1.75 (1.23-2.92)	3.12 (1.60-6.91)	585
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1485
Age 20+ years (2003 - 2004)	2.59 (2.37-2.83)	2.80 (2.42-3.06)	5.53 (5.10-6.10)	9.61 (9.03-11.0)	14.2 (12.2-17.1)	1282
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1033
Males (2003 - 2004)	2.23 (2.03-2.45)	2.30 (1.90-2.70)	5.10 (4.78-5.53)	9.31 (8.18-10.8)	13.8 (10.8-15.7)	933
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1175
Females (2003 - 2004)	2.05 (1.86-2.25)	2.34 (1.95-2.78)	5.00 (4.30-5.70)	9.00 (8.00-9.79)	13.6 (11.2-16.5)	934
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	533
Mexican Americans (2003 - 2004)	.861 (<LOD-1.15)	.730 (<LOD-1.10)	1.70 (1.00-3.14)	4.40 (2.61-6.20)	6.20 (4.40-8.40)	421
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	483
Non-Hispanic blacks (2003 - 2004)	2.27 (1.98-2.60)	2.26 (1.85-2.51)	5.60 (4.30-7.40)	11.5 (9.49-16.5)	20.9 (12.1-31.7)	456
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1034
Non-Hispanic whites (2003 - 2004)	2.40 (2.19-2.63)	2.70 (2.37-3.01)	5.37 (4.88-6.06)	9.20 (8.65-10.1)	13.8 (11.2-16.6)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.392	0.038	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.24	0.26	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.19	0.09	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.833	0.054	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	3.97	0.23	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	3.46	0.26	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	2.79	0.25	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	10.3	0.7	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	8.72	0.48	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	7.40	0.49	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.486	0.089	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.778	0.066	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.970	0.116	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.645	0.041	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	2.94	0.22	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	2.93	0.21	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	2.68	0.17	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	11.2	1.3	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	9.65	0.75	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.60	0.91	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.519	0.052	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.427	0.112	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.603	0.068	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	1.27	0.13	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	1.10	0.13	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.907	0.113	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	6.34	0.29	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	4.69	0.43	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	6.39	1.41	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	17.8	3.2	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	14.3	1.5	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.333	0.028	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.953	0.119	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.861	0.122	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.933	0.181	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	4.56	0.47	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	3.75	0.52	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	3.73	0.87	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	21.1	4.7	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	14.9	1.7	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	13.9	1.9	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.528	0.046	9
Mexican American Male, 12-19 years (2007 - 2008)	**1.32	0.61	9
Mexican American Male, 12-19 years (2009 - 2010)	.611	0.081	8
Mexican American Male, 12-19 years (2005 - 2006)	2.01	0.24	4
Mexican American Male, 12-19 years (2007 - 2008)	2.47	0.34	6
Mexican American Male, 12-19 years (2009 - 2010)	1.88	0.11	8
Mexican American Male, 12-19 years (2005 - 2006)	5.50	1.47	4
Mexican American Male, 12-19 years (2007 - 2008)	5.60	0.7	5
Mexican American Male, 12-19 years (2009 - 2010)	6.03	0.57	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.351	0.047	9
Mexican American Female, 12-19 years (2007 - 2008)	.509	0.087	8
Mexican American Female, 12-19 years (2009 - 2010)	.443	0.036	10
Mexican American Female, 12-19 years (2005 - 2006)	1.91	0.28	6
Mexican American Female, 12-19 years (2007 - 2008)	2.01	0.29	6
Mexican American Female, 12-19 years (2009 - 2010)	1.49	0.24	9
Mexican American Female, 12-19 years (2005 - 2006)	5.76	0.27	3
Mexican American Female, 12-19 years (2009 - 2010)	5.56	1.15	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 12-19 years (2009 - 2010)	.650	0.055	13
All Hispanic Male, 12-19 years (2009 - 2010)	2.07	0.15	13
All Hispanic Male, 12-19 years (2009 - 2010)	6.91	0.7	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.500	0.038	14
All Hispanic Female, 12-19 years (2009 - 2010)	5.64	0.75	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.311	0.035	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.623	0.041	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	2.57	0.11	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	2.31	0.1	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	6.36	0.44	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	6.34	0.42	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.539	0.036	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	3.09	0.44	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	2.27	0.25	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	7.71	0.95	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	6.96	0.61	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.466	0.087	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.833	0.106	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	3.68	0.36	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	3.32	0.39	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	10.3	0.8	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	10.5	1.7	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.497	0.06	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	3.12	0.4	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	2.71	0.36	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	13.2	1.5	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.1 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	*	*	4
Mexican American Male, 12-19 years (2013 - 2014)	.392	0.058	5
Mexican American Male, 12-19 years (2011 - 2012)	**1.91	0.59	4
Mexican American Male, 12-19 years (2013 - 2014)	1.57	0.34	5
Mexican American Male, 12-19 years (2011 - 2012)	3.41	0.68	2
Mexican American Male, 12-19 years (2013 - 2014)	5.57	0.49	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	.507	0.11	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	3
Mexican American Female, 12-19 years (2013 - 2014)	.964	0.182	6
Mexican American Female, 12-19 years (2011 - 2012)	3.52	0.27	3
Mexican American Female, 12-19 years (2013 - 2014)	5.01	1.1	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.437	0.051	7
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	1.59	0.29	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	5.01	0.44	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	.497	0.083	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	1.12	0.16	10
All Hispanic Female, 12-19 years (2013 - 2014)	5.14	0.75	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.1 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	**.326	0.102	3
Asian Male, 12-19 years (2011 - 2012)	*	*	6
Asian Male, 12-19 years (2013 - 2014)	.883	0.156	4
Asian Male, 12-19 years (2011 - 2012)	2.98	0.49	6
Asian Male, 12-19 years (2013 - 2014)	2.19	0.27	4
Asian Male, 12-19 years (2011 - 2012)	3.96	0.98	4
Asian Male, 12-19 years (2013 - 2014)	5.85	0.68	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.325	0.025	3
Asian Female, 12-19 years (2011 - 2012)	*	*	6
Asian Female, 12-19 years (2013 - 2014)	.704	0.08	5
Asian Female, 12-19 years (2011 - 2012)	1.76	0.36	6
Asian Female, 12-19 years (2013 - 2014)	1.55	0.22	7
Asian Female, 12-19 years (2013 - 2014)	**6.38	3.03	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 1.1 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2001 – 2004)

CAS Number 40186-72-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	2208
Total population (2003 - 2004)	.013 (.012-.014)	.015 (.012-.017)	.034 (.031-.037)	.060 (.054-.068)	.086 (.077-.104)	1867
Age 12-19 years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	723
Age 12-19 years (2003 - 2004)	*	< LOD	.005 (.004-.006)	.010 (.006-.013)	.014 (.008-.035)	585
Age 20+ years (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1485
Age 20+ years (2003 - 2004)	.016 (.015-.018)	.017 (.016-.020)	.038 (.034-.042)	.066 (.059-.074)	.090 (.081-.112)	1282
Males (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1033
Males (2003 - 2004)	.014 (.012-.015)	.015 (.012-.018)	.034 (.032-.038)	.060 (.051-.070)	.082 (.070-.097)	933
Females (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1175
Females (2003 - 2004)	.012 (.011-.014)	.014 (.012-.016)	.035 (.029-.038)	.061 (.054-.069)	.088 (.078-.118)	934
Mexican Americans (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	533
Mexican Americans (2003 - 2004)	.005 (<LOD-.007)	.005 (<LOD-.007)	.011 (.008-.018)	.031 (.019-.044)	.044 (.030-.062)	421
Non-Hispanic blacks (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	483
Non-Hispanic blacks (2003 - 2004)	.013 (.011-.015)	.012 (.010-.014)	.035 (.028-.045)	.078 (.052-.107)	.128 (.080-.213)	456
Non-Hispanic whites (2001 - 2002)	*	< LOD	< LOD	< LOD	< LOD	1034
Non-Hispanic whites (2003 - 2004)	.015 (.013-.016)	.017 (.015-.020)	.036 (.033-.040)	.063 (.058-.069)	.088 (.077-.107)	872

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.002	0	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.009	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.008	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.005	0	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.030	0.002	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.025	0.002	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.019	0.002	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.070	0.004	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.056	0.003	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.045	0.003	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.002	0	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.005	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.006	0.001	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.003	0	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.022	0.002	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.019	0.001	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.017	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.081	0.009	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.065	0.005	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.052	0.005	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.003	0	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.007	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.006	0.001	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.040	0.003	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.030	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.038	0.007	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.107	0.02	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.077	0.009	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	Weighted arithmetic mean	Unadjusted standard Error	Number of pools ‡
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.002	0	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.005	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.004	0.001	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.005	0.001	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.029	0.003	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.023	0.004	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.021	0.004	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.140	0.03	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.090	0.01	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.079	0.01	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.004	0	9
Mexican American Male, 12-19 years (2007 - 2008)	**.009	0.004	9
Mexican American Male, 12-19 years (2009 - 2010)	.004	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.016	0.002	4
Mexican American Male, 12-19 years (2007 - 2008)	.017	0.002	6
Mexican American Male, 12-19 years (2009 - 2010)	.013	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	.040	0.012	4
Mexican American Male, 12-19 years (2007 - 2008)	.040	0.004	5
Mexican American Male, 12-19 years (2009 - 2010)	.037	0.003	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	.002	0	9
Mexican American Female, 12-19 years (2007 - 2008)	.003	0	8
Mexican American Female, 12-19 years (2009 - 2010)	.002	0	10
Mexican American Female, 12-19 years (2005 - 2006)	.014	0.002	6
Mexican American Female, 12-19 years (2007 - 2008)	.014	0.002	6
Mexican American Female, 12-19 years (2009 - 2010)	.010	0.002	9
Mexican American Female, 12-19 years (2005 - 2006)	.044	0.005	3
Mexican American Female, 12-19 years (2009 - 2010)	.030	0.006	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2005 – 2010)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 12-19 years (2009 - 2010)	.004	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.014	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.044	0.006	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	.003	0	14
All Hispanic Female, 12-19 years (2009 - 2010)	.033	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.001	0	7
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.003	0	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.017	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.014	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.036	0.003	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.034	0.002	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.003	0	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.020	0.003	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.013	0.001	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.047	0.006	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.041	0.004	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.004	0.001	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.020	0.002	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.019	0.002	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.056	0.005	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.054	0.009	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.002	0	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.019	0.003	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.014	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.070	0.007	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	*	*	4
Mexican American Male, 12-19 years (2013 - 2014)	.002	0	5
Mexican American Male, 12-19 years (2011 - 2012)	.014	0.004	4
Mexican American Male, 12-19 years (2013 - 2014)	.010	0.002	5
Mexican American Male, 12-19 years (2011 - 2012)	.020	0.003	2
Mexican American Male, 12-19 years (2013 - 2014)	.030	0.003	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	.003	0.001	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	3
Mexican American Female, 12-19 years (2013 - 2014)	.005	0.001	6
Mexican American Female, 12-19 years (2011 - 2012)	.022	0.002	3
Mexican American Female, 12-19 years (2013 - 2014)	.029	0.006	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	.003	0	7
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.010	0.002	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.027	0.002	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	.003	0	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.006	0.001	10
All Hispanic Female, 12-19 years (2013 - 2014)	.030	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2011 – 2014)

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	*	*	3
Asian Male, 12-19 years (2013 - 2014)	.002	0	3
Asian Male, 12-19 years (2011 - 2012)	*	*	6
Asian Male, 12-19 years (2013 - 2014)	.005	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.018	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.013	0.002	4
Asian Male, 12-19 years (2011 - 2012)	.022	0.005	4
Asian Male, 12-19 years (2013 - 2014)	.036	0.006	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	.002	0	3
Asian Female, 12-19 years (2011 - 2012)	*	*	6
Asian Female, 12-19 years (2013 - 2014)	.004	0	5
Asian Female, 12-19 years (2011 - 2012)	.011	0.002	6
Asian Female, 12-19 years (2013 - 2014)	.009	0.001	7
Asian Female, 12-19 years (2013 - 2014)	**.036	0.016	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2003 – 2004)

CAS Number 2051-24-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	1.40 (1.21-1.61)	1.18 (1.00-1.48)	3.20 (2.67-4.01)	7.58 (6.20-8.81)	11.1 (9.00-15.7)	1854
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	1.12 (.800-4.60)	3.49 (1.12-6.64)	578
Age 20+ years (2003 - 2004)	1.63 (1.42-1.88)	1.40 (1.18-1.70)	3.80 (3.04-4.44)	8.09 (6.60-9.30)	12.3 (9.05-18.0)	1276
Males (2003 - 2004)	1.37 (1.18-1.60)	1.15 (1.00-1.50)	3.00 (2.70-3.58)	6.22 (4.97-8.20)	9.10 (7.09-13.0)	925
Females (2003 - 2004)	1.42 (1.22-1.66)	1.20 (1.00-1.50)	3.46 (2.45-4.61)	8.78 (7.45-9.47)	13.9 (10.0-18.7)	929
Mexican Americans (2003 - 2004)	*	< LOD	1.10 (.770-1.60)	2.40 (1.60-3.60)	3.71 (2.40-4.97)	416
Non-Hispanic blacks (2003 - 2004)	1.56 (1.37-1.78)	1.35 (1.10-1.52)	3.40 (2.62-4.82)	9.83 (6.70-13.6)	18.0 (11.8-27.7)	455
Non-Hispanic whites (2003 - 2004)	1.53 (1.31-1.79)	1.30 (1.09-1.70)	3.89 (3.04-4.50)	7.95 (6.49-9.09)	11.3 (9.07-16.3)	864

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.7.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.664	0.144	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.654	0.097	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	1.78	0.14	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	1.86	0.18	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	1.56	0.16	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	7.07	0.6	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	7.12	0.68	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	5.69	0.52	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.374	0.033	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.420	0.073	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	1.36	0.12	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	1.64	0.16	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	1.28	0.09	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	11.2	1.5	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	11.0	1.2	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	8.47	1.19	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.797	0.226	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.500	0.107	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.638	0.124	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	4.04	0.4	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	2.72	0.39	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	3.74	0.75	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	14.7	2.6	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	13.0	1.9	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.570	0.093	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	2.80	0.3	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	2.36	0.38	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**3.33	1.43	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	21.6	4.9	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	16.0	2.5	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	14.3	3.1	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.317	0.029	9
Mexican American Male, 12-19 years (2007 - 2008)	.330	0.075	9
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.846	0.084	4
Mexican American Male, 12-19 years (2007 - 2008)	1.21	0.17	6
Mexican American Male, 12-19 years (2009 - 2010)	1.10	0.09	8
Mexican American Male, 12-19 years (2005 - 2006)	**3.91	1.65	4
Mexican American Male, 12-19 years (2007 - 2008)	4.41	0.65	5
Mexican American Male, 12-19 years (2009 - 2010)	4.44	0.85	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2009 - 2010)	*	*	10
Mexican American Female, 12-19 years (2005 - 2006)	1.01	0.15	6
Mexican American Female, 12-19 years (2007 - 2008)	1.44	0.39	6
Mexican American Female, 12-19 years (2009 - 2010)	.699	0.125	8
Mexican American Female, 12-19 years (2005 - 2006)	4.98	0.24	3
Mexican American Female, 12-19 years (2009 - 2010)	5.71	1.51	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	13
All Hispanic Male, 12-19 years (2009 - 2010)	1.21	0.1	13
All Hispanic Male, 12-19 years (2009 - 2010)	5.54	1.1	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	14
All Hispanic Female, 12-19 years (2009 - 2010)	6.14	1.02	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.3, and 0.44, respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.347	0.037	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	1.32	0.12	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	1.17	0.08	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	5.12	0.63	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	4.60	0.45	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	1.25	0.12	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	1.17	0.2	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	7.67	1.48	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	6.34	0.8	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.421	0.045	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.394	0.037	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	2.03	0.28	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	2.12	0.3	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	8.98	0.96	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	8.88	0.94	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	1.73	0.17	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	1.68	0.36	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	11.3	1.2	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.271	0.038	4
Mexican American Male, 12-19 years (2013 - 2014)	*	*	5
Mexican American Male, 12-19 years (2011 - 2012)	.938	0.167	4
Mexican American Male, 12-19 years (2013 - 2014)	.747	0.147	5
Mexican American Male, 12-19 years (2011 - 2012)	1.98	0.05	2
Mexican American Male, 12-19 years (2013 - 2014)	4.28	0.71	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	5
Mexican American Female, 12-19 years (2011 - 2012)	.723	0.054	3
Mexican American Female, 12-19 years (2013 - 2014)	.539	0.086	6
Mexican American Female, 12-19 years (2011 - 2012)	2.83	0.2	3
Mexican American Female, 12-19 years (2013 - 2014)	3.51	0.76	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.867	0.182	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	3.94	0.48	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.653	0.093	9
All Hispanic Female, 12-19 years (2013 - 2014)	4.37	0.85	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**.440	0.163	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 12-19 years (2011 - 2012)	.727	0.167	6
Asian Male, 12-19 years (2013 - 2014)	.677	0.149	4
Asian Male, 12-19 years (2011 - 2012)	1.77	0.42	6
Asian Male, 12-19 years (2013 - 2014)	1.53	0.29	4
Asian Male, 12-19 years (2011 - 2012)	2.81	0.35	4
Asian Male, 12-19 years (2013 - 2014)	4.19	0.69	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	.617	0.135	6
Asian Female, 12-19 years (2013 - 2014)	.490	0.062	5
Asian Female, 12-19 years (2011 - 2012)	.997	0.189	6
Asian Female, 12-19 years (2013 - 2014)	1.05	0.14	7
Asian Female, 12-19 years (2013 - 2014)	**5.33	2.03	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12 and 13-14 are 0.18 and 0.26.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2003 – 2004)

CAS Number 2051-24-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Categories (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2003 - 2004)	.009 (.007-.010)	.008 (.006-.009)	.021 (.017-.026)	.049 (.040-.058)	.073 (.059-.097)	1854
Age 12-19 years (2003 - 2004)	*	< LOD	< LOD	.006 (.004-.018)	.017 (.005-.033)	578
Age 20+ years (2003 - 2004)	.010 (.009-.012)	.009 (.008-.011)	.024 (.020-.028)	.053 (.044-.063)	.077 (.065-.105)	1276
Males (2003 - 2004)	.008 (.007-.010)	.008 (.006-.010)	.019 (.017-.023)	.039 (.032-.051)	.063 (.042-.077)	925
Females (2003 - 2004)	.009 (.007-.010)	.008 (.006-.009)	.024 (.016-.032)	.057 (.049-.064)	.092 (.068-.134)	929
Mexican Americans (2003 - 2004)	*	< LOD	.007 (.005-.010)	.018 (.010-.023)	.024 (.018-.035)	416
Non-Hispanic blacks (2003 - 2004)	.009 (.008-.010)	.008 (.006-.009)	.022 (.018-.027)	.065 (.039-.077)	.097 (.065-.144)	455
Non-Hispanic whites (2003 - 2004)	.009 (.008-.011)	.009 (.007-.011)	.024 (.020-.029)	.053 (.044-.061)	.076 (.063-.099)	864

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2005 - 2006)	*	*	9
Non-Hispanic White Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	10
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.005	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.004	0.001	15
Non-Hispanic White Male, 12-19 years (2009 - 2010)	*	*	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.013	0.001	12
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.014	0.001	16
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.011	0.001	17
Non-Hispanic White Male, 12-19 years (2005 - 2006)	.048	0.004	15
Non-Hispanic White Male, 12-19 years (2007 - 2008)	.045	0.004	23
Non-Hispanic White Male, 12-19 years (2009 - 2010)	.034	0.003	21
Non-Hispanic White Female, 12-19 years (2005 - 2006)	*	*	10
Non-Hispanic White Female, 12-19 years (2007 - 2008)	*	*	7
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	8
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.002	0	16
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.003	0	13
Non-Hispanic White Female, 12-19 years (2009 - 2010)	*	*	19
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.010	0.001	13
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.011	0.001	17
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.008	0.001	17
Non-Hispanic White Female, 12-19 years (2005 - 2006)	.080	0.01	17
Non-Hispanic White Female, 12-19 years (2007 - 2008)	.074	0.008	21
Non-Hispanic White Female, 12-19 years (2009 - 2010)	.050	0.007	22
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	*	*	13
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	*	*	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.005	0.001	6
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.003	0	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.004	0.001	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.026	0.003	5
Non-Hispanic Black Male, 12-19 years (2007 - 2008)	.017	0.003	6
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.023	0.004	7
Non-Hispanic Black Male, 12-19 years (2005 - 2006)	.089	0.017	5
Non-Hispanic Black Male, 12-19 years (2009 - 2010)	.069	0.01	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	*	*	14
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	5
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	6
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.003	0.001	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	*	*	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	*	*	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.018	0.002	7
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.014	0.003	8
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	**.018	0.007	7
Non-Hispanic Black Female, 12-19 years (2005 - 2006)	.142	0.03	5
Non-Hispanic Black Female, 12-19 years (2007 - 2008)	.096	0.015	7
Non-Hispanic Black Female, 12-19 years (2009 - 2010)	.081	0.017	7
Mexican American Male, 12-19 years (2005 - 2006)	*	*	11
Mexican American Male, 12-19 years (2007 - 2008)	*	*	6
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.002	0	9
Mexican American Male, 12-19 years (2007 - 2008)	.002	0.001	9
Mexican American Male, 12-19 years (2009 - 2010)	*	*	8
Mexican American Male, 12-19 years (2005 - 2006)	.007	0.001	4
Mexican American Male, 12-19 years (2007 - 2008)	.008	0.001	6
Mexican American Male, 12-19 years (2009 - 2010)	.008	0.001	8
Mexican American Male, 12-19 years (2005 - 2006)	**.030	0.014	4
Mexican American Male, 12-19 years (2007 - 2008)	.031	0.004	5
Mexican American Male, 12-19 years (2009 - 2010)	.027	0.005	5
Mexican American Female, 12-19 years (2005 - 2006)	*	*	16
Mexican American Female, 12-19 years (2007 - 2008)	*	*	5
Mexican American Female, 12-19 years (2009 - 2010)	*	*	7
Mexican American Female, 12-19 years (2005 - 2006)	*	*	9
Mexican American Female, 12-19 years (2007 - 2008)	*	*	8
Mexican American Female, 12-19 years (2009 - 2010)	*	*	10
Mexican American Female, 12-19 years (2005 - 2006)	.007	0.001	6
Mexican American Female, 12-19 years (2007 - 2008)	.010	0.003	6
Mexican American Female, 12-19 years (2009 - 2010)	.005	0.001	8
Mexican American Female, 12-19 years (2005 - 2006)	.038	0.002	3
Mexican American Female, 12-19 years (2009 - 2010)	.031	0.008	6

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2005 – 2010)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	11
All Hispanic Male, 12-19 years (2009 - 2010)	*	*	13
All Hispanic Male, 12-19 years (2009 - 2010)	.008	0.001	13
All Hispanic Male, 12-19 years (2009 - 2010)	.036	0.009	8
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	10
All Hispanic Female, 12-19 years (2009 - 2010)	*	*	14
All Hispanic Female, 12-19 years (2009 - 2010)	.036	0.006	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the previous page for data from earlier NHANES Survey periods.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Non-Hispanic White Male, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.002	0	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	*	*	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.009	0.001	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.007	0.001	14
Non-Hispanic White Male, 12-19 years (2011 - 2012)	.029	0.004	12
Non-Hispanic White Male, 12-19 years (2013 - 2014)	.025	0.002	17
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	5
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic White Female, 12-19 years (2011 - 2012)	*	*	13
Non-Hispanic White Female, 12-19 years (2013 - 2014)	*	*	15
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.008	0.001	11
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.007	0.001	16
Non-Hispanic White Female, 12-19 years (2011 - 2012)	.047	0.009	14
Non-Hispanic White Female, 12-19 years (2013 - 2014)	.038	0.005	20
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	*	*	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.002	0	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.002	0	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.011	0.002	7
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.012	0.002	7
Non-Hispanic Black Male, 12-19 years (2011 - 2012)	.049	0.005	9
Non-Hispanic Black Male, 12-19 years (2013 - 2014)	.046	0.004	9
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	6
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	6
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	*	*	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	*	*	8
Non-Hispanic Black Female, 12-19 years (2011 - 2012)	.011	0.001	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.009	0.002	8
Non-Hispanic Black Female, 12-19 years (2013 - 2014)	.060	0.006	8

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Mexican American Male, 12-19 years (2011 - 2012)	*	*	5
Mexican American Male, 12-19 years (2013 - 2014)	*	*	7
Mexican American Male, 12-19 years (2011 - 2012)	.002	0	4
Mexican American Male, 12-19 years (2013 - 2014)	*	*	5
Mexican American Male, 12-19 years (2011 - 2012)	.007	0.001	4
Mexican American Male, 12-19 years (2013 - 2014)	.005	0.001	5
Mexican American Male, 12-19 years (2011 - 2012)	.012	0	2
Mexican American Male, 12-19 years (2013 - 2014)	.023	0.004	4
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	7
Mexican American Female, 12-19 years (2011 - 2012)	*	*	4
Mexican American Female, 12-19 years (2013 - 2014)	*	*	5
Mexican American Female, 12-19 years (2011 - 2012)	.004	0.001	3
Mexican American Female, 12-19 years (2013 - 2014)	.003	0	6
Mexican American Female, 12-19 years (2011 - 2012)	.017	0.002	3
Mexican American Female, 12-19 years (2013 - 2014)	.020	0.004	5
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Male, 12-19 years (2013 - 2014)	*	*	8
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Male, 12-19 years (2013 - 2014)	.005	0.001	9
All Hispanic Male, 12-19 years (2011 - 2012)	*	*	6
All Hispanic Male, 12-19 years (2013 - 2014)	.021	0.003	7
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	10
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	8
All Hispanic Female, 12-19 years (2013 - 2014)	*	*	9
All Hispanic Female, 12-19 years (2011 - 2012)	*	*	7
All Hispanic Female, 12-19 years (2013 - 2014)	.004	0.001	9
All Hispanic Female, 12-19 years (2013 - 2014)	.026	0.004	9

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2011 – 2014)

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations† (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Category (Survey Years)	**Weighted arithmetic mean**	**Unadjusted standard Error**	**Number of pools ‡**
Asian Male, 12-19 years (2011 - 2012)	**.002	0.001	3
Asian Male, 12-19 years (2013 - 2014)	*	*	3
Asian Male, 12-19 years (2011 - 2012)	.004	0.001	6
Asian Male, 12-19 years (2013 - 2014)	.004	0.001	4
Asian Male, 12-19 years (2011 - 2012)	.011	0.003	6
Asian Male, 12-19 years (2013 - 2014)	.009	0.002	4
Asian Male, 12-19 years (2011 - 2012)	.015	0.002	4
Asian Male, 12-19 years (2013 - 2014)	.026	0.006	3
Asian Female, 12-19 years (2011 - 2012)	*	*	4
Asian Female, 12-19 years (2013 - 2014)	*	*	3
Asian Female, 12-19 years (2011 - 2012)	.003	0.001	6
Asian Female, 12-19 years (2013 - 2014)	.003	0	5
Asian Female, 12-19 years (2011 - 2012)	.006	0.001	6
Asian Female, 12-19 years (2013 - 2014)	.006	0.001	7
Asian Female, 12-19 years (2013 - 2014)	**.030	0.01	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.

‡ Each pool was composed of serum from 8 persons.

Weighted arithmetic means are not comparable to weighted geometric means.

Unadjusted standard errors do not incorporate survey design effects.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

** Standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Background

The Family Smoking Prevention and Tobacco Control Act of 2009 gave the Food and Drug Administration regulatory authority over tobacco products. In Section 907(a), the Act states that the Secretary of Health and Human Services shall establish tobacco product standards. These product standards will include provisions for the testing of tobacco products. To determine the effectiveness of these product standards, surveillance systems need to be in place before the standards are enacted to determine their impact on exposure among people who continue to use tobacco products. NHANES is an ideal source of human samples for assessing smokers in multiple locations around the country. NHANES will provide a robust dataset for identifying changes in exposure of smokers that follow enactment of tobacco product standards.

Special Sample in NHANES

Beginning with NHANES 2011-2012, a Special Sample was selected for measurement of certain groups of chemicals associated with tobacco smoke exposure. The Special Sample consists of: 1) a nationally representative sample of adults; and 2) all adults who reported being current cigarette smokers. For this sample, adults were defined as ages 20 years and older in 2011-2012 and 18 years and older beginning in 2013.

Cigarette smokers were defined by their responses to the Smoking-Cigarette Use (SMQ_G) questionnaire: "Have you smoked at least 100 cigarettes in your life?" (SMQ020=1), and then, confirmed that they smoke every day (SMQ040=1) or some days (SMQ040=2). The nonsmoker category was comprised of the remaining adults in the Special Sample who were not categorized as smokers of any tobacco products. Excluded from the nonsmoker category was any adult who reported that they used any of the following non-cigarette tobacco products: cigars; pipes; chewing tobacco; snuff; or nicotine patch, gum or other replacement product. This resulted in exclusion of 3.54% (weighted) from the total sample for NHANES 2011-2012, 4.85% (weighted) in NHANES 2013-2014, and 4.18% (weighted) in NHANES 2015-2016. Too few adults reported use of non-cigarette tobacco products to allow separate categories for these products. We did not use serum cotinine concentrations to distinguish between smokers and nonsmokers because not all adults in the sample had results: for example, 4.17% (weighted) and 3.68% (weighted) of the 2011-2012 and 2013-2014 samples, respectively, were missing serum cotinine results. In 2013-2014 and 2015-2016 four additional non-cigarette tobacco products were included in the NHANES questionnaire, but in order to maintain consistency across surveys, users of these products were not included in the nonsmoker category in the later surveys. If these products had been included in the later surveys, the weighted percentages of subjects in the non-smoker category would have changed by only 1.3% and 2.0%, respectively, for the 2013-2014 and 2015-2016 surveys; and the smoker category would have changed by only 0.04% and 0.24%, respectively.

Results are displayed separately for adult cigarette smokers and nonsmokers. Each data table shows geometric mean and selected percentiles by three categories: total; age group (20-49 or 18-49 years, 50 years and older); and sex (male, female). Racial/ethnic categories are not presented because the sample sizes were too small in one or more of the categories. Future *Updated Tables* will present data tables for additional chemical groups that were measured in the Special Sample.

Urinary Antimony (2011 – 2016)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.061 (.052-.071)	.056 (.043-.071)	.098 (.080-.117)	.168 (.137-.184)	.233 (.173-.306)	876
Total population (2013 - 2014)	.052 (.048-.058)	.051 (.045-.056)	.094 (.084-.103)	.164 (.139-.183)	.225 (.186-.261)	957
Total population (2015 - 2016)	.054 (.049-.058)	.053 (.047-.057)	.092 (.083-.102)	.161 (.133-.195)	.238 (.174-.297)	834
Age 20-49 years (2011 - 2012)	.066 (.057-.075)	.062 (.051-.073)	.109 (.085-.125)	.170 (.140-.184)	.236 (.180-.301)	522
Age 18-49 years (2013 - 2014)	.054 (.049-.060)	.054 (.048-.058)	.097 (.086-.111)	.166 (.136-.189)	.223 (.182-.271)	583
Age 18-49 years (2015 - 2016)	.058 (.051-.066)	.057 (.049-.067)	.102 (.084-.110)	.187 (.145-.238)	.242 (.217-.456)	457
Age 50+ years (2011 - 2012)	*	.046 (<LOD-.065)	.089 (.059-.114)	.153 (.110-.233)	.233 (.137-.406)	354
Age 50+ years (2013 - 2014)	.049 (.042-.057)	.044 (.040-.055)	.085 (.068-.099)	.160 (.127-.186)	.227 (.167-.485)	374
Age 50+ years (2015 - 2016)	.047 (.042-.054)	.045 (.038-.055)	.087 (.065-.103)	.113 (.092-.161)	.204 (.133-.246)	377
Males (2011 - 2012)	.065 (.054-.078)	.059 (.043-.079)	.110 (.084-.142)	.170 (.142-.200)	.243 (.177-.329)	527
Males (2013 - 2014)	.057 (.052-.062)	.056 (.050-.061)	.097 (.080-.118)	.178 (.132-.210)	.227 (.182-.270)	512
Males (2015 - 2016)	.058 (.052-.065)	.057 (.051-.067)	.102 (.087-.113)	.173 (.142-.189)	.244 (.194-.292)	487
Females (2011 - 2012)	.056 (.048-.066)	.052 (<LOD-.066)	.081 (.069-.109)	.141 (.109-.206)	.207 (.129-.429)	349
Females (2013 - 2014)	.049 (.042-.056)	.044 (.037-.055)	.092 (.074-.106)	.153 (.130-.183)	.204 (.178-.309)	445
Females (2015 - 2016)	.049 (.044-.053)	.046 (.039-.053)	.081 (.075-.092)	.152 (.103-.238)	.238 (.132-.530)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.041, 0.022, and 0.022, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	.042 (<LOD-.047)	.072 (.062-.081)	.122 (.108-.135)	.159 (.149-.199)	1343
Total population (2013 - 2014)	.040 (.036-.044)	.037 (.031-.043)	.069 (.063-.074)	.116 (.103-.134)	.168 (.146-.210)	1487
Total population (2015 - 2016)	.042 (.040-.044)	.042 (.038-.045)	.072 (.068-.077)	.118 (.106-.134)	.174 (.156-.203)	1470
Age 20-49 years (2011 - 2012)	*	.045 (<LOD-.053)	.078 (.065-.091)	.137 (.118-.153)	.194 (.149-.309)	671
Age 18-49 years (2013 - 2014)	.042 (.037-.047)	.040 (.032-.046)	.072 (.065-.086)	.131 (.113-.146)	.181 (.153-.228)	778
Age 18-49 years (2015 - 2016)	.046 (.043-.049)	.045 (.041-.051)	.077 (.072-.085)	.137 (.106-.160)	.196 (.156-.216)	750
Age 50+ years (2011 - 2012)	*	< LOD	.064 (.055-.074)	.103 (.092-.122)	.149 (.118-.224)	672
Age 50+ years (2013 - 2014)	.038 (.034-.042)	.036 (.028-.042)	.064 (.057-.069)	.099 (.093-.108)	.158 (.110-.195)	709
Age 50+ years (2015 - 2016)	.038 (.035-.042)	.039 (.035-.042)	.062 (.053-.076)	.102 (.086-.131)	.157 (.116-.203)	720
Males (2011 - 2012)	*	.046 (<LOD-.053)	.080 (.066-.091)	.133 (.103-.158)	.179 (.152-.273)	635
Males (2013 - 2014)	.046 (.041-.051)	.043 (.038-.050)	.078 (.068-.092)	.144 (.121-.164)	.213 (.159-.278)	663
Males (2015 - 2016)	.047 (.043-.051)	.047 (.044-.051)	.078 (.072-.088)	.144 (.116-.156)	.175 (.149-.225)	663
Females (2011 - 2012)	*	< LOD	.064 (.057-.074)	.116 (.095-.131)	.159 (.131-.194)	708
Females (2013 - 2014)	.036 (.032-.040)	.032 (.027-.040)	.062 (.051-.070)	.097 (.088-.112)	.136 (.116-.162)	824
Females (2015 - 2016)	.038 (.036-.041)	.037 (.034-.042)	.067 (.059-.071)	.105 (.092-.122)	.167 (.134-.199)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.041, 0.022, and 0.022, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Antimony (creatinine corrected) (2011 – 2016)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.067 (.062-.073)	.064 (.056-.071)	.100 (.091-.110)	.171 (.138-.200)	.242 (.181-.279)	876
Total population (2013 - 2014)	.054 (.048-.060)	.051 (.044-.058)	.076 (.067-.090)	.114 (.096-.145)	.164 (.133-.223)	956
Total population (2015 - 2016)	.053 (.050-.057)	.050 (.046-.053)	.077 (.068-.085)	.126 (.103-.151)	.174 (.138-.233)	834
Age 20-49 years (2011 - 2012)	.068 (.063-.074)	.066 (.059-.073)	.101 (.092-.110)	.171 (.124-.207)	.242 (.171-.291)	522
Age 18-49 years (2013 - 2014)	.051 (.045-.057)	.047 (.042-.057)	.071 (.063-.085)	.100 (.090-.122)	.133 (.100-.181)	582
Age 18-49 years (2015 - 2016)	.054 (.048-.061)	.050 (.046-.056)	.078 (.067-.092)	.123 (.105-.174)	.187 (.115-.324)	457
Age 50+ years (2011 - 2012)	*	.059 (<LOD-.071)	.096 (.074-.137)	.171 (.134-.215)	.242 (.171-.344)	354
Age 50+ years (2013 - 2014)	.060 (.054-.067)	.057 (.053-.061)	.085 (.070-.108)	.164 (.119-.239)	.255 (.148-.429)	374
Age 50+ years (2015 - 2016)	.053 (.048-.058)	.048 (.043-.052)	.074 (.062-.092)	.130 (.082-.164)	.151 (.085-.189)	377
Males (2011 - 2012)	.061 (.057-.066)	.056 (.051-.064)	.091 (.075-.101)	.164 (.122-.214)	.256 (.166-.282)	527
Males (2013 - 2014)	.050 (.046-.055)	.047 (.044-.049)	.068 (.060-.080)	.103 (.089-.123)	.133 (.109-.200)	511
Males (2015 - 2016)	.050 (.046-.055)	.047 (.044-.052)	.074 (.065-.090)	.127 (.094-.151)	.151 (.100-.282)	487
Females (2011 - 2012)	.075 (.067-.085)	.073 (<LOD-.086)	.110 (.094-.138)	.175 (.141-.207)	.210 (.158-.344)	349
Females (2013 - 2014)	.057 (.049-.067)	.057 (.045-.066)	.085 (.070-.097)	.133 (.096-.221)	.221 (.145-.309)	445
Females (2015 - 2016)	.057 (.053-.063)	.052 (.047-.058)	.081 (.066-.093)	.126 (.101-.187)	.187 (.115-.283)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	.056 (<LOD-.060)	.088 (.076-.101)	.153 (.127-.171)	.215 (.179-.240)	1342
Total population (2013 - 2014)	.048 (.043-.052)	.045 (.042-.048)	.069 (.063-.075)	.104 (.094-.117)	.151 (.127-.172)	1486
Total population (2015 - 2016)	.047 (.045-.050)	.045 (.042-.048)	.069 (.062-.078)	.107 (.100-.117)	.140 (.127-.169)	1468
Age 20-49 years (2011 - 2012)	*	.055 (<LOD-.060)	.088 (.072-.107)	.161 (.126-.214)	.224 (.179-.297)	670
Age 18-49 years (2013 - 2014)	.046 (.042-.050)	.043 (.039-.048)	.064 (.059-.070)	.100 (.089-.113)	.155 (.133-.173)	778
Age 18-49 years (2015 - 2016)	.048 (.044-.053)	.044 (.041-.049)	.070 (.061-.083)	.108 (.092-.130)	.137 (.119-.172)	748
Age 50+ years (2011 - 2012)	*	< LOD	.088 (.076-.103)	.135 (.121-.155)	.183 (.152-.224)	672
Age 50+ years (2013 - 2014)	.050 (.045-.056)	.047 (.044-.051)	.073 (.066-.084)	.109 (.096-.127)	.147 (.122-.178)	708
Age 50+ years (2015 - 2016)	.047 (.043-.051)	.046 (.042-.051)	.067 (.060-.080)	.104 (.089-.117)	.149 (.115-.187)	720
Males (2011 - 2012)	*	.047 (<LOD-.049)	.069 (.062-.076)	.118 (.100-.128)	.170 (.125-.224)	634
Males (2013 - 2014)	.044 (.040-.049)	.041 (.037-.046)	.059 (.052-.068)	.100 (.086-.122)	.162 (.114-.229)	662
Males (2015 - 2016)	.043 (.039-.048)	.040 (.037-.044)	.061 (.057-.070)	.100 (.088-.112)	.154 (.109-.184)	663
Females (2011 - 2012)	*	< LOD	.104 (.088-.116)	.171 (.143-.207)	.224 (.181-.284)	708
Females (2013 - 2014)	.051 (.046-.055)	.048 (.045-.052)	.075 (.069-.081)	.109 (.097-.122)	.147 (.123-.167)	824
Females (2015 - 2016)	.051 (.047-.055)	.049 (.045-.052)	.077 (.065-.085)	.115 (.100-.125)	.138 (.123-.166)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Total Arsenic (2011 – 2016)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	6.08 (4.78-7.73)	5.38 (3.98-6.74)	12.0 (8.59-18.2)	31.8 (20.8-43.3)	48.4 (33.2-112)	876
Total population (2013 - 2014)	6.04 (5.08-7.17)	5.85 (4.91-7.10)	11.4 (9.83-13.6)	22.7 (18.2-29.1)	40.2 (27.9-64.7)	976
Total population (2015 - 2016)	6.00 (5.31-6.78)	5.52 (4.87-6.38)	11.6 (9.20-15.4)	24.3 (20.8-29.9)	40.8 (29.2-52.4)	834
Age 20-49 years (2011 - 2012)	6.15 (4.86-7.79)	5.70 (3.96-7.23)	12.0 (8.59-18.5)	26.8 (20.3-38.7)	43.3 (32.0-82.1)	522
Age 18-49 years (2013 - 2014)	6.34 (5.15-7.80)	6.15 (5.09-7.91)	11.7 (9.88-14.6)	23.9 (17.7-30.7)	40.2 (27.9-63.0)	591
Age 18-49 years (2015 - 2016)	6.20 (5.09-7.54)	5.80 (4.72-7.39)	13.3 (9.34-18.7)	23.2 (19.8-34.7)	39.2 (25.7-49.1)	457
Age 50+ years (2011 - 2012)	5.97 (4.28-8.31)	4.69 (3.68-6.86)	12.2 (6.86-21.1)	35.9 (15.1-121)	80.5 (29.0-144)	354
Age 50+ years (2013 - 2014)	5.45 (4.72-6.28)	5.28 (4.41-6.10)	10.6 (8.07-12.4)	20.4 (15.5-34.2)	39.3 (23.9-108)	385
Age 50+ years (2015 - 2016)	5.71 (4.92-6.62)	5.32 (4.16-6.44)	9.42 (8.27-11.4)	26.1 (16.3-33.9)	44.6 (30.0-60.3)	377
Males (2011 - 2012)	6.65 (5.05-8.74)	5.71 (4.33-8.55)	14.8 (9.40-19.9)	33.2 (22.3-44.1)	44.1 (37.7-94.5)	527
Males (2013 - 2014)	6.95 (5.65-8.55)	6.86 (5.82-7.91)	12.7 (10.4-15.2)	27.9 (15.3-51.7)	55.5 (24.4-99.0)	524
Males (2015 - 2016)	6.76 (5.71-8.01)	6.26 (5.15-8.31)	11.9 (9.97-15.6)	25.2 (20.8-32.0)	46.2 (27.8-60.3)	487
Females (2011 - 2012)	5.43 (4.40-6.71)	4.69 (3.38-5.95)	9.67 (6.86-15.0)	30.5 (15.7-48.4)	62.1 (22.4-209)	349
Females (2013 - 2014)	5.21 (4.26-6.38)	5.09 (4.02-6.15)	10.2 (7.44-14.2)	18.9 (16.5-25.4)	31.0 (23.9-40.2)	452
Females (2015 - 2016)	5.22 (4.67-5.83)	4.74 (4.01-5.38)	10.1 (7.39-16.7)	24.3 (17.2-38.2)	40.6 (25.7-54.3)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.25, 0.26, and 0.26, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	7.34 (6.27-8.60)	6.66 (5.39-8.11)	13.7 (11.4-18.6)	34.2 (25.9-41.9)	55.8 (41.5-82.2)	1343
Total population (2013 - 2014)	6.54 (5.66-7.56)	6.13 (5.02-7.32)	12.5 (10.8-14.5)	29.3 (24.7-33.6)	48.5 (38.2-56.6)	1549
Total population (2015 - 2016)	6.44 (5.93-6.99)	6.10 (5.36-6.69)	11.9 (10.8-14.0)	29.1 (24.0-35.5)	51.1 (41.0-62.7)	1470
Age 20-49 years (2011 - 2012)	7.37 (6.29-8.65)	6.79 (5.42-7.99)	13.3 (11.2-18.6)	35.7 (26.3-43.9)	56.4 (45.9-89.5)	671
Age 18-49 years (2013 - 2014)	6.35 (5.59-7.22)	5.94 (5.43-6.76)	11.5 (9.99-13.4)	24.9 (20.2-30.5)	42.8 (30.2-58.3)	821
Age 18-49 years (2015 - 2016)	6.10 (5.36-6.95)	5.50 (4.82-6.45)	11.8 (9.47-14.4)	30.1 (22.1-37.4)	51.3 (35.7-70.3)	750
Age 50+ years (2011 - 2012)	7.31 (5.97-8.96)	6.57 (5.22-8.57)	14.4 (10.7-20.5)	34.2 (21.1-50.6)	55.8 (35.8-82.8)	672
Age 50+ years (2013 - 2014)	6.77 (5.45-8.42)	6.31 (4.28-9.08)	13.7 (10.8-19.1)	36.0 (23.8-45.6)	52.2 (39.5-68.0)	728
Age 50+ years (2015 - 2016)	6.84 (6.07-7.71)	6.60 (5.56-7.41)	12.0 (10.7-14.4)	28.3 (18.2-46.3)	49.7 (32.1-111)	720
Males (2011 - 2012)	8.18 (6.66-10.0)	7.41 (5.62-9.98)	15.8 (11.8-21.0)	36.5 (26.3-42.7)	56.0 (39.0-82.8)	635
Males (2013 - 2014)	7.12 (6.25-8.11)	6.86 (5.86-7.83)	12.7 (10.9-15.4)	30.5 (23.9-36.5)	50.6 (36.0-62.0)	718
Males (2015 - 2016)	7.25 (6.53-8.05)	6.52 (5.52-7.54)	12.9 (10.8-15.0)	33.2 (24.7-42.4)	67.2 (35.7-165)	663
Females (2011 - 2012)	6.75 (5.79-7.87)	5.98 (5.05-7.49)	13.0 (10.3-17.5)	31.9 (23.9-45.6)	55.2 (41.4-83.2)	708
Females (2013 - 2014)	6.06 (5.07-7.24)	5.44 (4.53-6.68)	12.1 (9.75-14.6)	28.3 (22.3-36.0)	45.1 (36.0-63.1)	831
Females (2015 - 2016)	5.85 (5.19-6.59)	5.56 (4.89-6.50)	11.7 (10.0-13.9)	26.4 (17.8-32.6)	46.3 (32.1-53.9)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.25, 0.26, and 0.26, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Total Arsenic (creatinine corrected) (2011 – 2016)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	6.69 (5.68-7.87)	5.42 (4.46-6.87)	10.9 (8.91-14.7)	24.5 (19.6-29.7)	43.6 (24.8-91.3)	876
Total population (2013 - 2014)	6.28 (5.49-7.18)	5.31 (4.79-6.04)	9.35 (7.78-11.4)	24.5 (15.0-34.7)	41.5 (28.4-54.0)	975
Total population (2015 - 2016)	5.98 (5.57-6.42)	4.85 (4.36-5.68)	9.26 (8.00-11.0)	23.2 (16.4-28.1)	34.2 (28.1-49.4)	834
Age 20-49 years (2011 - 2012)	6.38 (5.43-7.49)	5.27 (4.21-6.76)	10.3 (8.80-13.3)	22.8 (16.1-28.8)	38.6 (22.1-103)	522
Age 18-49 years (2013 - 2014)	6.02 (5.07-7.14)	5.22 (4.45-5.91)	8.55 (7.34-11.4)	24.4 (13.4-35.3)	35.8 (21.5-52.1)	590
Age 18-49 years (2015 - 2016)	5.76 (5.21-6.36)	4.76 (4.31-5.41)	9.32 (7.32-13.6)	20.7 (15.3-28.1)	30.5 (20.7-62.5)	457
Age 50+ years (2011 - 2012)	7.20 (5.62-9.22)	5.85 (4.77-7.46)	12.4 (8.32-19.6)	26.1 (19.6-50.6)	70.5 (20.4-108)	354
Age 50+ years (2013 - 2014)	6.87 (6.21-7.61)	5.72 (5.00-6.88)	10.3 (8.69-12.5)	24.6 (14.7-52.6)	53.8 (25.6-91.3)	385
Age 50+ years (2015 - 2016)	6.34 (5.48-7.32)	5.01 (4.11-7.00)	8.99 (7.36-11.1)	25.8 (18.7-29.1)	38.9 (27.7-52.3)	377
Males (2011 - 2012)	6.27 (5.17-7.61)	5.18 (4.43-6.80)	10.6 (8.79-14.7)	21.7 (16.1-24.8)	30.6 (22.6-70.5)	527
Males (2013 - 2014)	6.33 (5.36-7.48)	5.61 (4.81-6.59)	8.74 (7.58-11.8)	24.6 (13.0-35.8)	35.8 (19.7-64.6)	523
Males (2015 - 2016)	5.83 (5.02-6.77)	4.56 (4.01-5.61)	8.35 (7.36-10.7)	24.4 (13.6-32.5)	32.8 (28.1-46.3)	487
Females (2011 - 2012)	7.25 (5.95-8.82)	5.52 (4.38-6.93)	11.1 (8.31-15.3)	30.8 (16.7-65.0)	72.1 (24.5-179)	349
Females (2013 - 2014)	6.23 (5.40-7.19)	5.22 (4.45-5.78)	9.75 (7.25-11.9)	24.5 (17.0-33.9)	49.5 (24.9-62.0)	452
Females (2015 - 2016)	6.16 (5.76-6.59)	5.19 (4.46-6.21)	10.8 (7.32-14.1)	22.8 (16.4-28.1)	34.3 (22.8-62.5)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	8.57 (7.44-9.86)	7.18 (6.16-8.60)	16.2 (12.9-20.3)	33.7 (28.3-44.3)	52.8 (39.9-71.8)	1342
Total population (2013 - 2014)	7.74 (6.93-8.65)	6.56 (5.69-7.64)	13.0 (11.1-15.1)	31.8 (24.5-40.8)	57.2 (47.9-74.7)	1548
Total population (2015 - 2016)	7.25 (6.78-7.74)	5.83 (5.49-6.33)	11.4 (10.4-14.6)	29.2 (22.3-37.6)	58.2 (42.4-83.3)	1468
Age 20-49 years (2011 - 2012)	8.06 (7.00-9.28)	6.88 (5.54-8.60)	15.0 (11.5-20.1)	31.7 (26.2-39.4)	47.5 (36.6-70.1)	670
Age 18-49 years (2013 - 2014)	6.81 (6.12-7.58)	5.94 (5.15-6.67)	11.1 (9.35-12.4)	23.7 (18.7-29.9)	48.7 (29.9-68.2)	821
Age 18-49 years (2015 - 2016)	6.36 (5.76-7.03)	5.19 (4.65-5.79)	10.1 (8.64-12.3)	24.8 (18.3-31.5)	45.2 (31.1-83.4)	748
Age 50+ years (2011 - 2012)	9.14 (7.40-11.3)	7.57 (6.16-9.71)	18.3 (12.8-24.6)	37.5 (27.9-52.8)	53.5 (37.5-94.6)	672
Age 50+ years (2013 - 2014)	8.99 (7.50-10.8)	7.67 (5.83-9.93)	16.0 (11.6-23.8)	40.8 (27.1-61.4)	69.6 (49.8-83.6)	727
Age 50+ years (2015 - 2016)	8.37 (7.39-9.47)	6.99 (6.03-7.97)	14.1 (10.7-17.6)	33.5 (20.4-57.2)	66.2 (40.9-113)	720
Males (2011 - 2012)	7.31 (5.97-8.94)	6.29 (5.05-8.02)	14.3 (10.6-18.1)	32.2 (20.2-44.3)	48.7 (32.8-69.6)	634
Males (2013 - 2014)	6.93 (6.17-7.78)	5.82 (4.87-6.89)	12.0 (10.0-13.7)	27.6 (20.8-40.8)	49.3 (37.9-67.9)	717
Males (2015 - 2016)	6.66 (6.09-7.28)	5.50 (4.91-5.99)	10.7 (9.30-13.8)	27.9 (19.7-38.7)	65.3 (31.2-98.0)	663
Females (2011 - 2012)	9.70 (8.62-10.9)	7.98 (6.87-9.34)	19.1 (13.7-24.4)	38.2 (28.7-48.6)	63.6 (45.9-86.7)	708
Females (2013 - 2014)	8.56 (7.48-9.80)	7.33 (6.39-8.36)	14.7 (11.7-17.0)	34.3 (24.5-43.2)	68.3 (41.8-98.1)	831
Females (2015 - 2016)	7.76 (6.96-8.66)	6.23 (5.47-7.40)	12.3 (10.5-16.5)	29.9 (22.7-42.1)	57.2 (34.4-91.7)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (2011 – 2016)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	1.10 (<LOD-3.06)	871
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	972
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	839
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	1.29 (<LOD-3.87)	521
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	588
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	380
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	1.37 (<LOD-6.54)	524
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	523
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	.800 (<LOD-1.15)	489
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	449
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.87, 0.79, and 0.79, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1343
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1549
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1479
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	671
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	824
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	754
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	725
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	725
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	635
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	715
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	665
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	834
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.87, 0.79, and 0.79, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (creatinine corrected) (2011 – 2016)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	3.65 (<LOD-5.17)	871
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	971
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	839
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	3.65 (<LOD-4.13)	521
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	587
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	380
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	3.44 (<LOD-3.76)	524
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	522
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	1.93 (<LOD-2.80)	489
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	449
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1342
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1548
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1477
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	670
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	824
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	752
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	724
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	725
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	634
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	714
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	665
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	834
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (2011 – 2016)

CAS Number 64436-13-1

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	3.00 (1.36-5.05)	13.1 (8.32-20.4)	25.7 (16.7-68.4)	871
Total population (2013 - 2014)	*	< LOD	3.36 (2.20-5.03)	13.1 (7.32-20.0)	25.1 (15.1-52.1)	972
Total population (2015 - 2016)	*	< LOD	3.01 (2.18-5.86)	15.5 (8.56-21.0)	25.3 (17.5-40.1)	839
Age 20-49 years (2011 - 2012)	*	< LOD	2.34 (1.32-4.47)	11.9 (6.90-20.1)	24.2 (11.9-42.8)	521
Age 18-49 years (2013 - 2014)	*	< LOD	3.78 (2.27-5.26)	14.7 (7.32-20.4)	24.6 (15.1-52.5)	588
Age 18-49 years (2015 - 2016)	*	< LOD	3.29 (1.42-8.81)	15.5 (7.02-20.5)	24.6 (16.0-36.7)	459
Age 50+ years (2011 - 2012)	*	< LOD	4.03 (1.27-7.44)	13.7 (6.54-46.5)	46.5 (8.47-114)	350
Age 50+ years (2013 - 2014)	*	< LOD	2.25 (1.60-3.93)	9.75 (5.60-18.5)	25.6 (11.9-48.4)	384
Age 50+ years (2015 - 2016)	*	< LOD	2.86 (2.18-4.11)	13.4 (7.83-21.9)	33.1 (16.8-61.5)	380
Males (2011 - 2012)	*	< LOD	3.26 (1.29-5.05)	11.0 (7.06-18.4)	25.1 (13.1-47.8)	524
Males (2013 - 2014)	*	< LOD	3.92 (2.41-6.44)	18.5 (6.38-35.2)	35.2 (15.5-61.6)	523
Males (2015 - 2016)	*	< LOD	3.64 (1.97-7.86)	16.0 (6.71-21.9)	24.6 (20.5-35.7)	489
Females (2011 - 2012)	*	< LOD	2.82 (1.32-6.35)	16.8 (7.50-24.2)	44.8 (13.3-141)	347
Females (2013 - 2014)	*	< LOD	2.83 (1.28-5.08)	12.1 (4.83-19.6)	19.6 (12.4-26.5)	449
Females (2015 - 2016)	*	< LOD	2.87 (1.89-3.92)	14.0 (5.73-24.3)	27.6 (14.0-49.9)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.19, 1.16, and 1.16, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	1.25 (<LOD-1.72)	5.83 (4.45-7.46)	18.7 (13.3-26.2)	37.4 (24.1-60.3)	1343
Total population (2013 - 2014)	*	< LOD	4.60 (3.24-6.31)	18.7 (14.1-22.0)	35.4 (26.1-44.6)	1549
Total population (2015 - 2016)	*	< LOD	4.46 (3.46-5.97)	17.5 (12.5-23.7)	35.2 (24.9-43.8)	1479
Age 20-49 years (2011 - 2012)	*	< LOD	4.95 (3.58-6.54)	19.3 (11.8-24.1)	37.4 (24.1-53.4)	671
Age 18-49 years (2013 - 2014)	*	< LOD	3.36 (2.72-4.61)	14.1 (9.20-21.3)	29.4 (19.2-41.8)	824
Age 18-49 years (2015 - 2016)	*	< LOD	3.46 (2.61-4.48)	17.4 (10.8-23.7)	34.0 (22.3-48.8)	754
Age 50+ years (2011 - 2012)	*	1.55 (<LOD-2.34)	7.21 (4.05-10.3)	18.6 (12.3-35.2)	38.8 (19.2-68.3)	672
Age 50+ years (2013 - 2014)	*	1.39 (<LOD-2.21)	6.11 (3.33-10.6)	22.0 (13.2-35.4)	39.7 (29.0-53.5)	725
Age 50+ years (2015 - 2016)	*	1.52 (<LOD-1.92)	5.89 (3.80-7.38)	19.5 (10.9-30.6)	39.7 (22.5-65.5)	725
Males (2011 - 2012)	*	1.30 (<LOD-2.09)	6.27 (4.10-9.30)	23.3 (12.8-33.9)	37.4 (25.5-63.9)	635
Males (2013 - 2014)	*	1.27 (<LOD-1.84)	4.95 (3.33-6.95)	18.7 (11.7-23.7)	36.6 (21.9-46.0)	715
Males (2015 - 2016)	*	1.21 (<LOD-1.85)	4.72 (3.53-7.09)	20.0 (12.5-29.0)	45.4 (23.7-111)	665
Females (2011 - 2012)	*	< LOD	5.65 (4.03-7.21)	18.2 (12.2-23.6)	36.9 (21.4-59.6)	708
Females (2013 - 2014)	*	< LOD	4.16 (2.76-6.13)	18.4 (12.5-24.3)	34.1 (23.9-50.7)	834
Females (2015 - 2016)	*	< LOD	4.32 (2.61-6.40)	14.4 (10.7-23.8)	31.1 (22.9-41.9)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.19, 1.16, and 1.16, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (creatinine corrected) (2011 – 2016)

CAS Number 64436-13-1

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	4.00 (2.90-5.25)	12.5 (8.40-20.6)	29.1 (16.4-67.2)	871
Total population (2013 - 2014)	*	< LOD	3.89 (3.04-4.82)	12.2 (6.89-21.2)	34.0 (14.6-51.6)	971
Total population (2015 - 2016)	*	< LOD	3.90 (2.93-5.00)	12.7 (8.22-21.6)	25.6 (21.6-30.7)	839
Age 20-49 years (2011 - 2012)	*	< LOD	4.00 (2.74-4.94)	10.3 (6.67-21.0)	26.8 (10.2-55.5)	521
Age 18-49 years (2013 - 2014)	*	< LOD	3.83 (2.83-5.16)	12.9 (6.31-31.5)	34.0 (12.2-51.6)	587
Age 18-49 years (2015 - 2016)	*	< LOD	3.57 (2.56-4.89)	12.7 (6.57-21.6)	21.6 (10.3-37.5)	459
Age 50+ years (2011 - 2012)	*	< LOD	4.29 (2.83-9.20)	15.4 (11.9-39.6)	56.0 (12.3-82.7)	350
Age 50+ years (2013 - 2014)	*	< LOD	4.18 (2.81-5.71)	11.4 (7.32-21.2)	36.1 (14.2-53.2)	384
Age 50+ years (2015 - 2016)	*	< LOD	4.24 (3.08-5.86)	15.3 (7.88-27.0)	29.1 (17.5-50.1)	380
Males (2011 - 2012)	*	< LOD	3.50 (2.47-4.94)	9.92 (5.99-13.8)	16.5 (12.0-39.7)	524
Males (2013 - 2014)	*	< LOD	3.73 (2.71-4.97)	11.5 (5.01-34.0)	34.0 (9.62-51.2)	522
Males (2015 - 2016)	*	< LOD	3.57 (2.34-5.46)	14.0 (5.86-22.8)	22.8 (20.1-30.7)	489
Females (2011 - 2012)	*	< LOD	4.88 (2.90-10.2)	18.8 (10.6-30.3)	39.6 (16.5-100)	347
Females (2013 - 2014)	*	< LOD	4.48 (3.31-5.38)	12.9 (7.45-19.0)	31.5 (12.2-51.8)	449
Females (2015 - 2016)	*	< LOD	4.24 (3.03-6.26)	11.8 (8.22-20.9)	28.3 (16.0-57.3)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	2.10 (<LOD-2.48)	7.55 (5.25-10.2)	21.8 (14.4-35.7)	39.6 (27.5-46.8)	1342
Total population (2013 - 2014)	*	< LOD	5.98 (4.61-7.62)	19.2 (14.5-26.3)	44.3 (34.4-59.4)	1548
Total population (2015 - 2016)	*	< LOD	5.33 (4.20-6.81)	16.7 (12.5-24.6)	42.3 (26.7-68.0)	1477
Age 20-49 years (2011 - 2012)	*	< LOD	6.21 (4.34-10.2)	17.2 (15.3-24.0)	35.1 (22.6-42.6)	670
Age 18-49 years (2013 - 2014)	*	< LOD	4.21 (3.44-5.48)	13.8 (8.90-19.2)	35.5 (19.2-54.7)	824
Age 18-49 years (2015 - 2016)	*	< LOD	3.93 (3.20-5.75)	13.7 (10.2-19.0)	29.3 (19.0-64.1)	752
Age 50+ years (2011 - 2012)	*	2.43 (<LOD-3.37)	8.09 (4.78-14.3)	26.1 (14.0-42.6)	43.4 (26.1-76.9)	672
Age 50+ years (2013 - 2014)	*	2.48 (<LOD-3.34)	8.44 (5.08-14.5)	26.9 (14.9-46.0)	56.1 (37.7-71.5)	724
Age 50+ years (2015 - 2016)	*	2.65 (<LOD-3.15)	6.31 (4.75-10.0)	19.4 (11.9-40.1)	51.3 (21.3-119)	725
Males (2011 - 2012)	*	1.75 (<LOD-2.10)	5.71 (3.57-10.0)	20.3 (11.2-35.7)	35.7 (20.7-52.1)	634
Males (2013 - 2014)	*	1.67 (<LOD-2.00)	5.49 (3.80-7.92)	16.7 (12.7-24.4)	40.5 (24.1-59.4)	714
Males (2015 - 2016)	*	1.67 (<LOD-1.96)	5.23 (3.84-6.83)	15.6 (11.8-27.0)	42.4 (19.1-95.1)	665
Females (2011 - 2012)	*	< LOD	8.46 (6.46-11.3)	23.7 (16.6-36.9)	41.4 (29.2-66.4)	708
Females (2013 - 2014)	*	< LOD	6.45 (4.82-8.13)	19.9 (13.8-33.3)	46.0 (33.3-82.4)	834
Females (2015 - 2016)	*	< LOD	5.47 (4.13-7.41)	17.1 (11.9-26.7)	38.8 (19.8-71.1)	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (2011 – 2016)

CAS Number 96055-45-7

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	871
Total population (2013 - 2014)	*	< LOD	< LOD	.170 (<LOD-.250)	.280 (.190-.350)	972
Total population (2015 - 2016)	*	< LOD	< LOD	.270 (<LOD-.440)	.440 (.290-.650)	839
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	521
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.190 (.130-.240)	.280 (.190-.350)	588
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.190 (<LOD-.410)	.410 (.190-.680)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	.270 (<LOD-.410)	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.300 (<LOD-.530)	.450 (.250-.720)	380
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	.310 (<LOD-4.53)	524
Males (2013 - 2014)	*	< LOD	< LOD	.200 (<LOD-.280)	.280 (.170-.410)	523
Males (2015 - 2016)	*	< LOD	< LOD	.330 (.140-.530)	.530 (.350-.650)	489
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347
Females (2013 - 2014)	*	< LOD	< LOD	.150 (<LOD-.240)	.240 (.190-.300)	449
Females (2015 - 2016)	*	< LOD	< LOD	.190 (<LOD-.410)	.350 (<LOD-.540)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.28, 0.11, and 0.11, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1343
Total population (2013 - 2014)	*	< LOD	< LOD	.220 (.150-.280)	.350 (.290-.380)	1549
Total population (2015 - 2016)	*	< LOD	< LOD	.230 (<LOD-.370)	.430 (.300-.570)	1479
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	671
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.200 (<LOD-.280)	.320 (.260-.380)	824
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.200 (<LOD-.360)	.380 (.240-.490)	754
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.220 (.140-.330)	.380 (.300-.390)	725
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.270 (<LOD-.450)	.490 (.290-.820)	725
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	635
Males (2013 - 2014)	*	< LOD	< LOD	.250 (.130-.330)	.360 (.290-.430)	715
Males (2015 - 2016)	*	< LOD	< LOD	.240 (.110-.450)	.470 (.280-.980)	665
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708
Females (2013 - 2014)	*	< LOD	< LOD	.200 (.110-.260)	.320 (.220-.380)	834
Females (2015 - 2016)	*	< LOD	< LOD	.220 (<LOD-.370)	.390 (.280-.540)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.28, 0.11, and 0.11, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (creatinine corrected) (2011 – 2016)

CAS Number 96055-45-7

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	871
Total population (2013 - 2014)	*	< LOD	< LOD	.286 (<LOD-.333)	.381 (.348-.444)	971
Total population (2015 - 2016)	*	< LOD	< LOD	.320 (<LOD-.400)	.554 (.348-.855)	839
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	521
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.250 (.190-.333)	.364 (.286-.485)	587
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.307 (<LOD-.348)	.400 (.297-.855)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	.444 (<LOD-.615)	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.400 (<LOD-.579)	.628 (.364-1.25)	380
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	1.18 (<LOD-1.34)	524
Males (2013 - 2014)	*	< LOD	< LOD	.229 (<LOD-.296)	.333 (.229-.444)	522
Males (2015 - 2016)	*	< LOD	< LOD	.276 (.194-.379)	.379 (.313-.574)	489
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347
Females (2013 - 2014)	*	< LOD	< LOD	.320 (<LOD-.442)	.471 (.364-.727)	449
Females (2015 - 2016)	*	< LOD	< LOD	.400 (<LOD-.615)	.650 (<LOD-1.62)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1342
Total population (2013 - 2014)	*	< LOD	< LOD	.364 (.320-.421)	.578 (.471-.667)	1548
Total population (2015 - 2016)	*	< LOD	< LOD	.364 (<LOD-.435)	.533 (.430-.638)	1477
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	670
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.296 (<LOD-.364)	.444 (.364-.523)	824
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.333 (<LOD-.413)	.467 (.400-.624)	752
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.471 (.333-.571)	.658 (.506-.800)	724
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.381 (<LOD-.500)	.571 (.421-.672)	725
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	634
Males (2013 - 2014)	*	< LOD	< LOD	.258 (.235-.333)	.571 (.333-.660)	714
Males (2015 - 2016)	*	< LOD	< LOD	.302 (.254-.400)	.444 (.302-.638)	665
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708
Females (2013 - 2014)	*	< LOD	< LOD	.421 (.364-.444)	.622 (.471-.727)	834
Females (2015 - 2016)	*	< LOD	< LOD	.400 (<LOD-.447)	.571 (.444-.667)	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (2011 – 2016)

CAS Number 13464-58-9

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	.750 (.580-.980)	1.01 (.740-1.75)	871
Total population (2013 - 2014)	.338 (.291-.393)	.500 (.400-.590)	.740 (.660-.840)	1.05 (.900-1.21)	1.30 (1.14-1.43)	972
Total population (2015 - 2016)	*	.190 (<LOD-.400)	.560 (.430-.730)	.890 (.750-1.09)	1.15 (.980-1.36)	839
Age 20-49 years (2011 - 2012)	*	< LOD	.510 (<LOD-.680)	.890 (.640-1.31)	1.31 (.890-2.22)	521
Age 18-49 years (2013 - 2014)	.394 (.332-.467)	.560 (.460-.640)	.780 (.680-.870)	1.10 (.920-1.27)	1.32 (1.14-1.46)	588
Age 18-49 years (2015 - 2016)	*	.260 (<LOD-.450)	.580 (.450-.740)	.900 (.700-1.24)	1.28 (.910-1.66)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	.500 (<LOD-.740)	.640 (.490-.920)	350
Age 50+ years (2013 - 2014)	*	.280 (<LOD-.460)	.660 (.540-.820)	.970 (.830-1.17)	1.24 (.970-1.48)	384
Age 50+ years (2015 - 2016)	*	< LOD	.520 (.260-.770)	.870 (.730-1.04)	1.11 (.870-1.27)	380
Males (2011 - 2012)	*	< LOD	.520 (<LOD-.720)	.900 (.680-1.31)	1.40 (.920-2.22)	524
Males (2013 - 2014)	.401 (.327-.491)	.580 (.440-.660)	.800 (.680-.920)	1.14 (.940-1.33)	1.35 (1.15-1.52)	523
Males (2015 - 2016)	.276 (.210-.362)	.370 (<LOD-.520)	.650 (.510-.900)	1.08 (.830-1.29)	1.30 (1.11-1.63)	489
Females (2011 - 2012)	*	< LOD	< LOD	.520 (<LOD-.640)	.640 (.520-.830)	347
Females (2013 - 2014)	.283 (.245-.327)	.430 (.280-.500)	.680 (.590-.780)	.940 (.800-1.20)	1.23 (.930-1.48)	449
Females (2015 - 2016)	*	< LOD	.450 (.170-.640)	.720 (.530-.860)	.860 (.720-1.06)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.48, 0.12, and 0.12, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	.490 (<LOD-.580)	.810 (.720-.930)	1.07 (.940-1.18)	1343
Total population (2013 - 2014)	.298 (.260-.341)	.430 (.320-.530)	.720 (.640-.790)	.960 (.870-1.05)	1.12 (1.05-1.22)	1549
Total population (2015 - 2016)	*	< LOD	.490 (.340-.640)	.870 (.650-1.10)	1.12 (.930-1.35)	1479
Age 20-49 years (2011 - 2012)	*	< LOD	.580 (.480-.710)	.870 (.800-1.08)	1.25 (1.05-1.48)	671
Age 18-49 years (2013 - 2014)	.364 (.316-.420)	.520 (.410-.590)	.770 (.690-.860)	1.04 (.960-1.11)	1.19 (1.12-1.35)	824
Age 18-49 years (2015 - 2016)	*	.230 (<LOD-.360)	.540 (.430-.750)	.990 (.750-1.26)	1.26 (1.07-1.57)	754
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	.700 (.550-.830)	.920 (.700-1.15)	672
Age 50+ years (2013 - 2014)	*	.240 (<LOD-.410)	.640 (.580-.690)	.870 (.790-.940)	1.03 (.940-1.11)	725
Age 50+ years (2015 - 2016)	*	< LOD	.380 (.130-.590)	.770 (.530-.950)	.970 (.730-1.17)	725
Males (2011 - 2012)	*	< LOD	.580 (.490-.690)	.940 (.820-1.12)	1.18 (1.05-1.47)	635
Males (2013 - 2014)	.358 (.304-.421)	.540 (.410-.630)	.800 (.710-.870)	.990 (.940-1.08)	1.17 (1.06-1.35)	715
Males (2015 - 2016)	*	.220 (<LOD-.380)	.560 (.410-.810)	1.00 (.720-1.34)	1.27 (1.00-1.66)	665
Females (2011 - 2012)	*	< LOD	< LOD	.740 (.570-.820)	.880 (.800-1.07)	708
Females (2013 - 2014)	*	.340 (.150-.440)	.630 (.580-.700)	.870 (.790-1.00)	1.10 (.950-1.20)	834
Females (2015 - 2016)	*	< LOD	.420 (.260-.540)	.750 (.600-.940)	1.01 (.840-1.12)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.48, 0.12, and 0.12, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (creatinine corrected) (2011 – 2016)

CAS Number 13464-58-9

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	1.37 (1.06-1.70)	1.89 (1.42-2.13)	871
Total population (2013 - 2014)	.348 (.298-.405)	.374 (.320-.444)	.641 (.552-.776)	1.01 (.900-1.17)	1.37 (1.10-1.63)	971
Total population (2015 - 2016)	*	.223 (<LOD-.333)	.457 (.305-.650)	.788 (.579-1.08)	1.08 (.750-1.44)	839
Age 20-49 years (2011 - 2012)	*	< LOD	.773 (<LOD-.944)	1.42 (1.06-2.00)	2.00 (1.35-2.91)	521
Age 18-49 years (2013 - 2014)	.372 (.314-.440)	.398 (.331-.473)	.641 (.561-.777)	1.07 (.900-1.21)	1.38 (1.10-1.63)	587
Age 18-49 years (2015 - 2016)	*	.241 (<LOD-.342)	.457 (.308-.648)	.764 (.546-1.04)	1.04 (.758-1.31)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.31 (<LOD-1.55)	1.50 (1.26-2.13)	350
Age 50+ years (2013 - 2014)	*	.348 (<LOD-.459)	.641 (.459-.838)	.944 (.816-1.13)	1.16 (1.00-1.80)	384
Age 50+ years (2015 - 2016)	*	< LOD	.503 (.269-.706)	.811 (.579-1.18)	1.15 (.750-1.60)	380
Males (2011 - 2012)	*	< LOD	.694 (<LOD-.850)	1.35 (.971-1.89)	2.00 (1.26-2.83)	524
Males (2013 - 2014)	.362 (.302-.433)	.381 (.320-.459)	.620 (.505-.730)	1.00 (.776-1.25)	1.27 (.985-1.65)	522
Males (2015 - 2016)	.237 (.177-.317)	.258 (<LOD-.356)	.536 (.344-.693)	.793 (.643-1.16)	1.15 (.725-1.93)	489
Females (2011 - 2012)	*	< LOD	< LOD	1.37 (<LOD-1.70)	1.70 (1.37-2.13)	347
Females (2013 - 2014)	.333 (.279-.398)	.361 (.276-.443)	.675 (.559-.847)	1.01 (.900-1.21)	1.42 (1.10-1.81)	449
Females (2015 - 2016)	*	< LOD	.421 (.250-.615)	.788 (.487-1.08)	1.08 (.758-1.44)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	.791 (<LOD-.855)	1.36 (1.21-1.55)	1.81 (1.54-2.00)	1342
Total population (2013 - 2014)	.351 (.304-.406)	.373 (.308-.444)	.701 (.597-.827)	1.21 (.989-1.35)	1.55 (1.31-1.85)	1548
Total population (2015 - 2016)	*	< LOD	.440 (.326-.586)	.776 (.644-.985)	1.08 (.861-1.25)	1477
Age 20-49 years (2011 - 2012)	*	< LOD	.815 (.723-.919)	1.48 (1.17-1.82)	1.96 (1.64-2.43)	670
Age 18-49 years (2013 - 2014)	.389 (.326-.464)	.401 (.329-.482)	.784 (.604-.943)	1.24 (1.02-1.57)	1.67 (1.26-2.06)	824
Age 18-49 years (2015 - 2016)	*	.250 (<LOD-.314)	.473 (.348-.615)	.750 (.667-.953)	1.01 (.833-1.21)	752
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.26 (1.13-1.42)	1.67 (1.36-1.93)	672
Age 50+ years (2013 - 2014)	*	.320 (<LOD-.406)	.620 (.560-.732)	1.04 (.861-1.30)	1.43 (1.30-1.59)	724
Age 50+ years (2015 - 2016)	*	< LOD	.400 (.281-.566)	.791 (.525-1.17)	1.17 (.790-1.52)	725
Males (2011 - 2012)	*	< LOD	.659 (.574-.708)	1.03 (.850-1.19)	1.48 (1.17-1.79)	634
Males (2013 - 2014)	.350 (.301-.406)	.371 (.301-.445)	.681 (.571-.806)	1.21 (.919-1.41)	1.51 (1.30-1.85)	714
Males (2015 - 2016)	*	.235 (<LOD-.313)	.441 (.314-.645)	.744 (.614-1.00)	1.08 (.741-1.27)	665
Females (2011 - 2012)	*	< LOD	< LOD	1.54 (1.36-1.81)	2.10 (1.69-2.62)	708
Females (2013 - 2014)	*	.375 (.299-.445)	.711 (.612-.864)	1.17 (.982-1.35)	1.55 (1.30-1.85)	834
Females (2015 - 2016)	*	< LOD	.434 (.320-.564)	.791 (.615-.985)	1.09 (.875-1.44)	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (2011 – 2016)

CAS Number 917-76-0

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.22 (2.83-3.66)	2.80 (2.45-3.29)	5.72 (4.29-7.10)	10.8 (7.78-16.1)	16.3 (10.9-24.3)	871
Total population (2013 - 2014)	3.15 (2.83-3.51)	3.10 (2.69-3.48)	5.15 (4.51-5.95)	7.76 (6.76-9.70)	11.4 (8.76-14.1)	972
Total population (2015 - 2016)	3.02 (2.80-3.25)	2.90 (2.48-3.27)	4.81 (4.39-5.17)	7.53 (6.43-8.92)	12.1 (8.43-18.7)	839
Age 20-49 years (2011 - 2012)	3.17 (2.71-3.70)	2.95 (2.34-3.79)	5.48 (4.08-6.76)	8.92 (7.34-12.5)	14.6 (10.0-19.4)	521
Age 18-49 years (2013 - 2014)	3.22 (2.84-3.66)	3.17 (2.69-3.76)	5.26 (4.66-5.96)	7.33 (6.81-9.19)	10.5 (7.77-12.8)	588
Age 18-49 years (2015 - 2016)	3.08 (2.77-3.43)	3.02 (2.46-3.50)	4.85 (4.30-5.57)	7.89 (6.52-9.53)	12.1 (7.98-16.0)	459
Age 50+ years (2011 - 2012)	3.31 (2.77-3.95)	2.58 (2.40-3.05)	5.92 (3.65-9.94)	13.3 (7.98-28.8)	20.2 (10.4-30.1)	350
Age 50+ years (2013 - 2014)	3.01 (2.64-3.43)	2.93 (2.37-3.34)	4.97 (4.12-6.30)	8.58 (6.09-12.3)	12.3 (8.64-16.8)	384
Age 50+ years (2015 - 2016)	2.92 (2.54-3.36)	2.69 (2.11-3.45)	4.61 (4.06-5.11)	6.81 (6.10-8.28)	12.4 (8.25-20.4)	380
Males (2011 - 2012)	3.55 (3.14-4.01)	3.05 (2.57-3.91)	6.45 (4.96-8.96)	13.3 (9.85-16.8)	17.6 (13.3-30.1)	524
Males (2013 - 2014)	3.34 (3.00-3.72)	3.34 (2.86-3.94)	5.75 (4.85-6.34)	8.19 (7.25-9.80)	11.1 (8.76-12.8)	523
Males (2015 - 2016)	3.31 (2.96-3.71)	3.13 (2.67-3.64)	5.23 (4.53-6.10)	8.25 (6.55-11.3)	13.0 (8.75-20.9)	489
Females (2011 - 2012)	2.84 (2.48-3.27)	2.57 (2.32-3.03)	4.41 (3.62-5.22)	7.95 (6.02-10.5)	11.8 (7.92-20.2)	347
Females (2013 - 2014)	2.97 (2.58-3.41)	2.78 (2.24-3.34)	4.74 (4.07-5.95)	7.33 (6.02-10.2)	11.4 (7.77-15.1)	449
Females (2015 - 2016)	2.70 (2.54-2.88)	2.38 (2.16-2.80)	4.43 (4.01-4.69)	6.54 (5.60-8.31)	9.94 (6.35-20.4)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.8, 1.91, and 1.91, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.56 (3.26-3.89)	3.44 (3.00-3.87)	5.93 (5.26-6.85)	9.87 (8.57-11.7)	14.2 (12.1-16.8)	1343
Total population (2013 - 2014)	3.18 (2.91-3.49)	3.02 (2.63-3.49)	5.26 (4.67-5.89)	8.78 (7.86-9.62)	11.8 (10.2-15.0)	1549
Total population (2015 - 2016)	3.09 (2.92-3.28)	2.95 (2.67-3.17)	5.05 (4.69-5.38)	8.76 (7.65-9.97)	12.0 (10.1-15.0)	1479
Age 20-49 years (2011 - 2012)	3.71 (3.31-4.17)	3.56 (3.10-4.14)	6.74 (5.61-7.65)	10.6 (8.92-12.3)	15.9 (12.2-18.1)	671
Age 18-49 years (2013 - 2014)	3.26 (2.98-3.57)	3.10 (2.69-3.57)	5.31 (4.68-5.87)	9.03 (7.62-10.7)	11.8 (10.5-16.4)	824
Age 18-49 years (2015 - 2016)	3.12 (2.86-3.41)	2.83 (2.42-3.21)	5.20 (4.59-5.95)	9.30 (7.52-11.5)	14.1 (10.0-19.5)	754
Age 50+ years (2011 - 2012)	3.40 (3.09-3.74)	3.21 (2.91-3.72)	5.44 (4.52-6.61)	9.02 (7.71-11.1)	13.6 (9.70-17.8)	672
Age 50+ years (2013 - 2014)	3.09 (2.77-3.45)	2.87 (2.36-3.53)	5.21 (4.31-6.31)	8.52 (7.69-9.21)	11.9 (9.62-15.0)	725
Age 50+ years (2015 - 2016)	3.06 (2.90-3.23)	3.09 (2.70-3.30)	4.81 (4.49-5.16)	7.96 (6.77-10.1)	10.5 (9.66-12.7)	725
Males (2011 - 2012)	3.95 (3.53-4.42)	3.89 (3.33-4.52)	6.30 (5.30-7.68)	10.5 (8.45-13.7)	15.9 (12.1-17.8)	635
Males (2013 - 2014)	3.32 (3.07-3.60)	3.27 (2.87-3.76)	5.45 (4.98-6.03)	8.56 (7.84-9.85)	11.6 (9.85-15.6)	715
Males (2015 - 2016)	3.31 (3.08-3.55)	3.17 (2.73-3.66)	5.26 (4.74-6.04)	9.12 (7.80-10.5)	11.9 (10.0-16.8)	665
Females (2011 - 2012)	3.28 (2.97-3.62)	3.01 (2.65-3.55)	5.53 (4.65-6.29)	9.52 (8.28-11.1)	13.8 (10.7-17.5)	708
Females (2013 - 2014)	3.06 (2.73-3.44)	2.77 (2.37-3.26)	4.95 (3.98-6.01)	8.82 (7.58-10.0)	11.9 (9.79-15.7)	834
Females (2015 - 2016)	2.93 (2.73-3.15)	2.76 (2.42-3.11)	4.80 (4.43-5.13)	8.18 (6.84-10.1)	12.1 (10.1-14.5)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.8, 1.91, and 1.91, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (creatinine corrected) (2011 – 2016)

CAS Number 917-76-0

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.53 (3.28-3.79)	3.27 (3.08-3.54)	5.56 (5.14-6.05)	8.95 (7.47-10.1)	10.9 (9.74-13.8)	871
Total population (2013 - 2014)	3.24 (2.98-3.52)	3.03 (2.81-3.36)	4.82 (4.32-5.19)	7.46 (6.14-8.94)	10.4 (7.94-12.3)	971
Total population (2015 - 2016)	2.99 (2.76-3.24)	2.86 (2.54-3.29)	4.28 (4.09-4.69)	7.10 (5.86-9.64)	10.5 (8.17-14.3)	839
Age 20-49 years (2011 - 2012)	3.28 (2.99-3.61)	3.10 (2.65-3.56)	5.20 (4.45-6.04)	8.47 (6.48-9.46)	10.6 (8.12-12.7)	521
Age 18-49 years (2013 - 2014)	3.04 (2.73-3.38)	2.83 (2.55-3.22)	4.50 (3.74-5.08)	6.19 (5.76-7.69)	9.51 (7.09-11.4)	587
Age 18-49 years (2015 - 2016)	2.85 (2.64-3.07)	2.93 (2.50-3.21)	4.23 (4.09-4.55)	6.13 (5.38-7.94)	9.42 (6.67-11.1)	459
Age 50+ years (2011 - 2012)	3.94 (3.48-4.46)	3.49 (3.20-4.06)	6.83 (4.77-7.95)	10.1 (7.00-20.2)	13.4 (10.1-25.1)	350
Age 50+ years (2013 - 2014)	3.69 (3.19-4.26)	3.57 (2.87-4.38)	5.40 (4.57-6.84)	8.94 (6.69-12.3)	12.3 (8.88-25.4)	384
Age 50+ years (2015 - 2016)	3.22 (2.84-3.64)	2.76 (2.34-3.31)	4.64 (3.73-5.71)	9.64 (7.10-10.7)	14.3 (10.3-15.3)	380
Males (2011 - 2012)	3.35 (3.13-3.59)	3.13 (2.82-3.29)	5.30 (4.95-6.33)	9.37 (7.30-10.1)	10.6 (9.37-13.0)	524
Males (2013 - 2014)	3.01 (2.75-3.31)	2.81 (2.65-3.27)	4.38 (3.94-4.82)	6.14 (5.16-7.74)	8.94 (6.14-11.4)	522
Males (2015 - 2016)	2.84 (2.57-3.14)	2.70 (2.22-3.16)	4.23 (3.65-4.66)	7.04 (5.48-9.46)	9.82 (7.50-14.6)	489
Females (2011 - 2012)	3.76 (3.30-4.28)	3.70 (3.10-4.23)	5.87 (4.64-7.00)	8.15 (7.00-11.5)	12.2 (8.10-21.4)	347
Females (2013 - 2014)	3.49 (3.09-3.95)	3.24 (2.85-3.85)	5.19 (4.47-6.08)	8.41 (6.28-10.5)	12.3 (8.31-14.9)	449
Females (2015 - 2016)	3.17 (2.89-3.47)	3.14 (2.70-3.31)	4.66 (4.09-5.19)	7.12 (5.63-10.7)	11.1 (6.75-14.5)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.15 (3.90-4.41)	3.92 (3.62-4.23)	6.43 (5.76-7.25)	10.8 (9.66-12.2)	14.8 (12.8-16.3)	1342
Total population (2013 - 2014)	3.75 (3.49-4.03)	3.55 (3.22-3.91)	5.70 (5.14-6.21)	9.54 (8.26-10.6)	13.1 (11.6-15.0)	1548
Total population (2015 - 2016)	3.47 (3.33-3.62)	3.38 (3.21-3.54)	5.40 (5.06-5.53)	8.51 (7.78-9.74)	13.0 (10.6-15.0)	1477
Age 20-49 years (2011 - 2012)	4.06 (3.74-4.40)	3.95 (3.50-4.42)	6.61 (5.92-7.38)	10.6 (9.38-12.4)	14.1 (11.9-15.9)	670
Age 18-49 years (2013 - 2014)	3.48 (3.25-3.73)	3.31 (2.96-3.63)	5.13 (4.78-5.70)	8.44 (7.34-9.33)	12.3 (9.71-13.5)	824
Age 18-49 years (2015 - 2016)	3.24 (3.03-3.47)	3.19 (2.87-3.46)	5.02 (4.67-5.40)	8.00 (7.11-9.56)	11.6 (9.74-15.2)	752
Age 50+ years (2011 - 2012)	4.25 (3.86-4.68)	3.88 (3.46-4.43)	6.14 (5.29-7.47)	11.3 (9.37-12.8)	15.4 (11.9-19.7)	672
Age 50+ years (2013 - 2014)	4.10 (3.71-4.52)	3.86 (3.40-4.38)	6.43 (5.53-7.33)	10.6 (8.67-12.8)	14.6 (12.4-16.9)	724
Age 50+ years (2015 - 2016)	3.75 (3.47-4.05)	3.55 (3.29-3.99)	5.49 (5.20-5.87)	9.29 (7.90-10.6)	13.7 (10.6-17.7)	725
Males (2011 - 2012)	3.53 (3.18-3.91)	3.31 (3.03-3.78)	5.32 (4.56-6.22)	8.34 (7.04-10.1)	12.8 (9.07-15.8)	634
Males (2013 - 2014)	3.24 (2.98-3.52)	3.00 (2.77-3.33)	4.72 (4.31-5.11)	7.99 (7.29-9.33)	11.0 (10.0-13.5)	714
Males (2015 - 2016)	3.02 (2.83-3.23)	2.93 (2.64-3.19)	4.63 (4.37-4.87)	7.35 (6.41-8.28)	10.6 (8.12-14.3)	665
Females (2011 - 2012)	4.71 (4.44-5.00)	4.54 (4.23-4.70)	7.49 (6.97-8.60)	11.9 (10.3-14.0)	15.9 (14.0-17.2)	708
Females (2013 - 2014)	4.29 (3.92-4.68)	4.03 (3.66-4.56)	6.43 (5.81-7.13)	10.7 (8.72-12.8)	13.9 (12.4-16.9)	834
Females (2015 - 2016)	3.89 (3.68-4.12)	3.75 (3.50-3.99)	5.69 (5.49-6.04)	10.0 (8.44-11.1)	13.5 (11.3-18.6)	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (2011 – 2016)

CAS Number 65513-69-1

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	1.38 (1.09-1.79)	1.93 (1.52-2.18)	871
Total population (2013 - 2014)	.446 (.401-.496)	.510 (.430-.590)	.890 (.820-.990)	1.36 (1.18-1.53)	1.72 (1.42-2.04)	972
Total population (2015 - 2016)	*	.350 (.230-.490)	.750 (.610-.920)	1.18 (1.05-1.35)	1.69 (1.40-2.00)	839
Age 20-49 years (2011 - 2012)	*	< LOD	.920 (<LOD-1.07)	1.50 (1.23-1.93)	2.11 (1.52-3.33)	521
Age 18-49 years (2013 - 2014)	.484 (.423-.553)	.560 (.470-.680)	.920 (.830-1.03)	1.36 (1.18-1.55)	1.70 (1.39-1.97)	588
Age 18-49 years (2015 - 2016)	.364 (.311-.425)	.360 (.230-.530)	.740 (.610-.920)	1.20 (1.03-1.51)	1.69 (1.33-2.09)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.12 (.960-1.44)	1.61 (1.12-2.04)	350
Age 50+ years (2013 - 2014)	.378 (.318-.448)	.370 (.250-.460)	.830 (.600-1.01)	1.32 (1.01-1.91)	1.81 (1.15-3.22)	384
Age 50+ years (2015 - 2016)	*	.340 (<LOD-.500)	.760 (.540-.920)	1.12 (.970-1.29)	1.63 (1.26-1.99)	380
Males (2011 - 2012)	*	< LOD	.990 (<LOD-1.18)	1.71 (1.38-2.10)	2.18 (1.73-3.39)	524
Males (2013 - 2014)	.490 (.421-.571)	.520 (.450-.720)	.990 (.840-1.10)	1.44 (1.12-1.72)	1.74 (1.44-2.00)	523
Males (2015 - 2016)	.398 (.333-.477)	.440 (.250-.580)	.860 (.690-1.04)	1.33 (1.17-1.60)	1.89 (1.55-2.22)	489
Females (2011 - 2012)	*	< LOD	< LOD	1.07 (.920-1.23)	1.31 (1.10-1.55)	347
Females (2013 - 2014)	.404 (.361-.452)	.470 (.340-.550)	.810 (.680-.900)	1.27 (.960-1.52)	1.55 (1.27-2.56)	449
Females (2015 - 2016)	*	.290 (<LOD-.470)	.640 (.490-.850)	1.02 (.870-1.26)	1.34 (1.03-2.00)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.89, 0.2, and 0.2, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	*	< LOD	< LOD	1.32 (1.17-1.54)	1.85 (1.57-2.07)	1343
Total population (2013 - 2014)	.402 (.357-.452)	.440 (.360-.530)	.770 (.720-.850)	1.19 (1.07-1.33)	1.54 (1.27-1.88)	1549
Total population (2015 - 2016)	*	.280 (<LOD-.440)	.680 (.590-.800)	1.12 (.970-1.34)	1.46 (1.29-1.70)	1479
Age 20-49 years (2011 - 2012)	*	< LOD	.940 (<LOD-1.06)	1.57 (1.26-1.88)	2.04 (1.76-2.39)	671
Age 18-49 years (2013 - 2014)	.429 (.388-.475)	.480 (.400-.540)	.810 (.740-.870)	1.24 (1.08-1.38)	1.60 (1.31-1.95)	824
Age 18-49 years (2015 - 2016)	*	.320 (<LOD-.500)	.770 (.660-.930)	1.26 (1.06-1.44)	1.56 (1.42-1.72)	754
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.13 (.970-1.41)	1.53 (1.28-1.75)	672
Age 50+ years (2013 - 2014)	.371 (.322-.429)	.390 (.290-.490)	.740 (.650-.830)	1.14 (1.04-1.32)	1.44 (1.22-1.80)	725
Age 50+ years (2015 - 2016)	*	.240 (<LOD-.340)	.590 (.540-.670)	.980 (.820-1.15)	1.22 (1.01-1.67)	725
Males (2011 - 2012)	*	< LOD	.960 (<LOD-1.18)	1.52 (1.23-1.85)	2.05 (1.76-2.40)	635
Males (2013 - 2014)	.461 (.407-.522)	.520 (.440-.630)	.900 (.830-.980)	1.28 (1.13-1.41)	1.64 (1.31-1.88)	715
Males (2015 - 2016)	*	.450 (.220-.550)	.780 (.650-.930)	1.25 (.990-1.56)	1.63 (1.42-1.83)	665
Females (2011 - 2012)	*	< LOD	< LOD	1.17 (1.00-1.44)	1.58 (1.42-1.88)	708
Females (2013 - 2014)	.354 (.312-.402)	.380 (.250-.480)	.710 (.610-.750)	1.10 (.890-1.27)	1.39 (1.13-1.89)	834
Females (2015 - 2016)	*	.200 (<LOD-.300)	.590 (.500-.690)	1.02 (.890-1.17)	1.29 (1.15-1.46)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.89, 0.2, and 0.2, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (creatinine corrected) (2011 – 2016)

CAS Number 65513-69-1

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	2.33 (2.03-2.63)	3.32 (2.63-3.72)	871
Total population (2013 - 2014)	.458 (.415-.506)	.471 (.424-.519)	.761 (.671-.867)	1.16 (1.00-1.30)	1.42 (1.27-1.69)	971
Total population (2015 - 2016)	*	.365 (.306-.441)	.609 (.493-.733)	1.00 (.839-1.20)	1.42 (1.14-1.68)	839
Age 20-49 years (2011 - 2012)	*	< LOD	1.29 (<LOD-1.54)	2.52 (1.85-3.32)	3.71 (2.10-4.20)	521
Age 18-49 years (2013 - 2014)	.456 (.409-.510)	.484 (.434-.520)	.728 (.681-.824)	1.08 (.975-1.15)	1.27 (1.11-1.41)	587
Age 18-49 years (2015 - 2016)	.336 (.278-.406)	.345 (.275-.438)	.558 (.483-.733)	.962 (.721-1.31)	1.31 (.928-1.64)	459
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	2.17 (1.91-2.63)	2.86 (2.33-3.50)	350
Age 50+ years (2013 - 2014)	.463 (.373-.574)	.445 (.350-.579)	.800 (.609-1.13)	1.33 (.978-1.84)	1.73 (1.22-3.07)	384
Age 50+ years (2015 - 2016)	*	.389 (<LOD-.492)	.679 (.510-.750)	1.07 (.886-1.35)	1.61 (1.07-2.08)	380
Males (2011 - 2012)	*	< LOD	1.24 (<LOD-1.40)	2.09 (1.58-2.86)	3.50 (2.03-3.72)	524
Males (2013 - 2014)	.443 (.397-.493)	.455 (.408-.513)	.746 (.636-.866)	1.07 (.930-1.20)	1.33 (1.13-1.60)	522
Males (2015 - 2016)	.342 (.283-.413)	.341 (.275-.434)	.607 (.483-.703)	1.01 (.737-1.37)	1.42 (1.14-1.93)	489
Females (2011 - 2012)	*	< LOD	< LOD	2.42 (2.10-2.92)	3.15 (2.42-3.94)	347
Females (2013 - 2014)	.476 (.422-.536)	.491 (.400-.579)	.778 (.654-.967)	1.27 (.978-1.45)	1.48 (1.27-2.13)	449
Females (2015 - 2016)	*	.392 (<LOD-.483)	.633 (.491-.786)	.967 (.789-1.19)	1.40 (1.05-1.64)	350

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	2.31 (1.92-2.52)	2.74 (2.42-3.53)	1342
Total population (2013 - 2014)	.474 (.424-.529)	.491 (.424-.556)	.820 (.737-.911)	1.27 (1.16-1.43)	1.62 (1.39-1.91)	1548
Total population (2015 - 2016)	*	.388 (<LOD-.425)	.662 (.560-.747)	1.01 (.908-1.17)	1.24 (1.17-1.36)	1477
Age 20-49 years (2011 - 2012)	*	< LOD	1.43 (<LOD-1.66)	2.33 (1.80-2.86)	3.32 (2.52-3.94)	670
Age 18-49 years (2013 - 2014)	.458 (.402-.522)	.478 (.415-.540)	.785 (.696-.875)	1.24 (1.06-1.43)	1.55 (1.29-1.94)	824
Age 18-49 years (2015 - 2016)	*	.392 (<LOD-.452)	.687 (.560-.778)	1.01 (.883-1.17)	1.23 (1.15-1.45)	752
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	2.25 (1.85-2.52)	2.63 (2.33-3.50)	672
Age 50+ years (2013 - 2014)	.492 (.439-.552)	.500 (.424-.582)	.862 (.754-.991)	1.35 (1.18-1.53)	1.69 (1.44-2.04)	724
Age 50+ years (2015 - 2016)	*	.378 (<LOD-.412)	.633 (.538-.727)	.989 (.846-1.18)	1.29 (1.08-1.49)	725
Males (2011 - 2012)	*	< LOD	1.07 (<LOD-1.17)	1.70 (1.43-1.91)	2.17 (1.76-2.67)	634
Males (2013 - 2014)	.450 (.406-.499)	.473 (.402-.541)	.762 (.683-.857)	1.20 (1.04-1.32)	1.53 (1.30-1.73)	714
Males (2015 - 2016)	*	.365 (.304-.427)	.642 (.511-.731)	.927 (.792-1.05)	1.17 (.982-1.30)	665
Females (2011 - 2012)	*	< LOD	< LOD	2.63 (2.33-2.86)	3.50 (2.69-4.85)	708
Females (2013 - 2014)	.496 (.437-.563)	.508 (.429-.583)	.874 (.761-1.02)	1.36 (1.18-1.55)	1.77 (1.39-2.13)	834
Females (2015 - 2016)	*	.398 (<LOD-.444)	.682 (.560-.785)	1.08 (.875-1.29)	1.31 (1.17-1.58)	812

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (2011 – 2012)‡

CAS Number 4964-14-1

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	871
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	521
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	524
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.25.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1343
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	671
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	635
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.25.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (creatinine corrected) (2011 – 2012)‡

CAS Number 4964-14-1

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	871
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	521
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	350
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	524
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1342
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	670
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	672
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	634
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	708

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Barium (2011 – 2016)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	1.16 (1.06-1.28)	1.24 (1.04-1.37)	2.37 (1.98-2.77)	3.79 (3.25-4.31)	5.43 (4.02-6.73)	876
Total population (2013 - 2014)	1.14 (1.03-1.26)	1.12 (1.01-1.31)	2.21 (1.97-2.38)	4.06 (3.37-4.86)	5.98 (4.86-7.55)	957
Total population (2015 - 2016)	1.26 (1.16-1.38)	1.26 (1.18-1.40)	2.31 (2.11-2.67)	4.89 (4.03-5.59)	7.19 (5.55-8.81)	834
Age 20-49 years (2011 - 2012)	1.25 (1.13-1.38)	1.25 (1.01-1.47)	2.55 (1.98-3.20)	3.90 (3.35-4.45)	5.43 (4.25-6.52)	522
Age 18-49 years (2013 - 2014)	1.20 (1.04-1.37)	1.26 (.980-1.52)	2.31 (1.94-2.86)	4.09 (3.58-4.47)	6.25 (4.78-7.67)	583
Age 18-49 years (2015 - 2016)	1.32 (1.17-1.49)	1.35 (1.18-1.59)	2.53 (2.11-2.96)	5.02 (3.68-5.60)	7.19 (5.19-9.45)	457
Age 50+ years (2011 - 2012)	1.04 (.875-1.24)	1.20 (.910-1.43)	2.19 (1.77-2.52)	3.43 (2.43-5.19)	5.34 (3.79-10.5)	354
Age 50+ years (2013 - 2014)	1.02 (.875-1.18)	1.03 (.890-1.15)	1.86 (1.37-2.70)	3.59 (2.68-5.47)	5.62 (3.47-12.5)	374
Age 50+ years (2015 - 2016)	1.18 (.984-1.42)	1.20 (.980-1.33)	2.13 (1.60-2.78)	4.45 (2.72-6.32)	7.02 (4.15-9.11)	377
Males (2011 - 2012)	1.30 (1.10-1.54)	1.34 (1.00-1.81)	2.73 (1.94-3.27)	3.98 (3.27-5.49)	5.80 (3.99-8.89)	527
Males (2013 - 2014)	1.19 (1.10-1.28)	1.24 (1.06-1.46)	2.16 (1.94-2.53)	3.88 (3.19-4.91)	5.96 (4.38-8.84)	512
Males (2015 - 2016)	1.35 (1.18-1.54)	1.33 (1.20-1.61)	2.42 (2.11-2.98)	4.82 (4.00-5.60)	6.59 (5.19-8.67)	487
Females (2011 - 2012)	1.01 (.892-1.14)	1.01 (.870-1.18)	2.20 (1.64-2.55)	3.14 (2.55-3.91)	4.80 (3.78-5.52)	349
Females (2013 - 2014)	1.08 (.934-1.26)	1.04 (.900-1.25)	2.31 (1.78-2.78)	4.09 (3.44-5.47)	6.31 (4.42-7.75)	445
Females (2015 - 2016)	1.17 (1.08-1.27)	1.18 (.940-1.32)	2.15 (1.64-2.76)	4.93 (3.41-5.83)	7.58 (4.44-13.9)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.1, 0.06, and 0.06, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	1.11 (1.02-1.20)	1.17 (1.03-1.28)	2.18 (1.98-2.45)	3.74 (3.39-4.02)	5.12 (4.61-5.57)	1343
Total population (2013 - 2014)	.998 (.925-1.08)	.980 (.880-1.12)	2.00 (1.79-2.20)	3.62 (3.15-4.19)	5.19 (4.38-5.61)	1487
Total population (2015 - 2016)	1.08 (1.00-1.17)	1.10 (1.01-1.24)	2.19 (2.02-2.33)	3.72 (3.25-4.15)	4.99 (4.06-6.13)	1470
Age 20-49 years (2011 - 2012)	1.13 (1.03-1.25)	1.21 (1.08-1.38)	2.19 (1.94-2.58)	3.63 (3.20-4.15)	4.46 (4.21-5.52)	671
Age 18-49 years (2013 - 2014)	1.05 (.947-1.17)	1.03 (.870-1.22)	2.07 (1.80-2.56)	3.96 (3.19-4.78)	5.60 (4.45-6.26)	778
Age 18-49 years (2015 - 2016)	1.16 (1.04-1.29)	1.24 (1.04-1.37)	2.37 (2.08-2.63)	3.89 (3.36-4.47)	5.46 (4.19-7.50)	750
Age 50+ years (2011 - 2012)	1.08 (.970-1.21)	1.09 (.890-1.29)	2.17 (1.79-2.53)	3.91 (3.01-5.13)	5.46 (4.62-7.13)	672
Age 50+ years (2013 - 2014)	.940 (.833-1.06)	.950 (.810-1.14)	1.83 (1.53-2.17)	3.19 (2.62-4.10)	4.94 (3.66-5.61)	709
Age 50+ years (2015 - 2016)	.998 (.903-1.10)	1.02 (.800-1.17)	1.98 (1.81-2.19)	3.51 (3.00-3.99)	4.93 (3.90-5.60)	720
Males (2011 - 2012)	1.20 (1.05-1.37)	1.25 (1.12-1.38)	2.18 (1.91-2.61)	3.85 (3.37-4.40)	5.78 (4.46-7.13)	635
Males (2013 - 2014)	1.10 (.973-1.25)	1.09 (.920-1.30)	2.09 (1.73-2.65)	4.18 (3.15-5.05)	5.61 (5.05-6.04)	663
Males (2015 - 2016)	1.25 (1.10-1.41)	1.34 (1.10-1.54)	2.55 (2.03-2.95)	4.16 (3.32-5.39)	5.73 (4.44-8.40)	663
Females (2011 - 2012)	1.04 (.928-1.17)	1.07 (.910-1.21)	2.16 (1.70-2.57)	3.63 (3.26-4.05)	5.05 (3.97-5.52)	708
Females (2013 - 2014)	.921 (.838-1.01)	.870 (.790-1.03)	1.85 (1.64-2.16)	3.30 (3.04-3.74)	4.48 (4.02-5.19)	824
Females (2015 - 2016)	.963 (.887-1.05)	.960 (.850-1.04)	2.00 (1.81-2.19)	3.36 (3.00-3.71)	4.45 (3.96-4.96)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.1, 0.06, and 0.06, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Barium (creatinine corrected) (2011 – 2016)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.28 (1.14-1.44)	1.31 (1.15-1.46)	2.14 (1.89-2.79)	4.22 (3.30-5.68)	6.17 (4.65-7.09)	876
Total population (2013 - 2014)	1.16 (1.05-1.28)	1.19 (.990-1.35)	2.21 (1.86-2.51)	3.39 (3.08-3.86)	4.51 (3.76-6.80)	956
Total population (2015 - 2016)	1.26 (1.13-1.40)	1.28 (1.12-1.47)	2.19 (1.97-2.52)	4.43 (3.19-5.11)	6.28 (4.92-7.78)	834
Age 20-49 years (2011 - 2012)	1.30 (1.12-1.50)	1.28 (1.07-1.38)	2.26 (1.84-3.00)	4.65 (3.30-5.76)	5.76 (4.13-7.22)	522
Age 18-49 years (2013 - 2014)	1.12 (.987-1.28)	1.13 (.956-1.35)	2.14 (1.82-2.48)	3.36 (3.08-3.70)	4.32 (3.53-6.68)	582
Age 18-49 years (2015 - 2016)	1.23 (1.06-1.41)	1.26 (1.08-1.53)	2.34 (1.97-2.78)	3.83 (3.00-4.92)	6.17 (4.85-7.98)	457
Age 50+ years (2011 - 2012)	1.26 (1.12-1.40)	1.41 (1.24-1.54)	1.95 (1.76-2.74)	3.76 (3.00-5.68)	6.66 (3.43-7.36)	354
Age 50+ years (2013 - 2014)	1.25 (1.00-1.55)	1.23 (.932-1.52)	2.46 (1.74-2.99)	3.39 (2.74-5.68)	5.68 (3.36-14.4)	374
Age 50+ years (2015 - 2016)	1.31 (1.15-1.50)	1.28 (1.10-1.48)	2.10 (1.81-2.41)	4.67 (3.19-5.71)	6.28 (4.70-7.78)	377
Males (2011 - 2012)	1.23 (1.07-1.42)	1.25 (1.04-1.48)	1.95 (1.78-2.68)	3.75 (2.81-5.76)	5.76 (3.49-7.75)	527
Males (2013 - 2014)	1.05 (.957-1.16)	1.08 (.974-1.14)	1.89 (1.81-2.19)	3.26 (3.06-3.55)	4.24 (3.55-5.95)	511
Males (2015 - 2016)	1.16 (.999-1.36)	1.21 (.943-1.58)	2.09 (1.66-2.47)	3.19 (2.79-4.85)	5.22 (3.93-6.44)	487
Females (2011 - 2012)	1.35 (1.10-1.65)	1.38 (1.15-1.70)	2.38 (1.79-3.67)	4.69 (3.04-6.46)	6.39 (3.94-10.4)	349
Females (2013 - 2014)	1.28 (1.11-1.48)	1.33 (.990-1.61)	2.45 (1.83-3.05)	3.54 (3.11-4.12)	5.42 (3.76-9.44)	445
Females (2015 - 2016)	1.38 (1.23-1.54)	1.30 (1.21-1.38)	2.52 (2.09-2.97)	4.92 (3.83-6.02)	7.26 (5.19-8.67)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.29 (1.18-1.41)	1.31 (1.21-1.40)	2.29 (1.98-2.70)	3.85 (3.46-4.37)	6.04 (4.37-8.33)	1342
Total population (2013 - 2014)	1.19 (1.12-1.27)	1.14 (1.07-1.24)	2.07 (1.93-2.34)	3.97 (3.65-4.28)	5.19 (4.58-5.89)	1486
Total population (2015 - 2016)	1.22 (1.11-1.34)	1.24 (1.09-1.38)	2.14 (1.91-2.43)	3.68 (3.00-4.35)	4.81 (4.15-5.50)	1468
Age 20-49 years (2011 - 2012)	1.24 (1.09-1.41)	1.28 (1.11-1.42)	2.04 (1.74-2.40)	3.49 (3.09-4.10)	5.17 (3.72-6.84)	670
Age 18-49 years (2013 - 2014)	1.15 (1.07-1.25)	1.10 (.994-1.21)	1.97 (1.79-2.26)	3.70 (2.93-4.32)	4.60 (4.20-5.89)	778
Age 18-49 years (2015 - 2016)	1.22 (1.07-1.38)	1.24 (1.05-1.38)	2.06 (1.78-2.34)	3.62 (2.79-4.59)	4.82 (4.15-6.35)	748
Age 50+ years (2011 - 2012)	1.36 (1.22-1.50)	1.36 (1.21-1.52)	2.64 (2.15-2.99)	4.31 (3.50-5.54)	6.83 (4.71-9.68)	672
Age 50+ years (2013 - 2014)	1.24 (1.09-1.40)	1.19 (1.06-1.46)	2.24 (1.94-2.56)	4.25 (3.79-4.50)	5.70 (4.50-7.19)	708
Age 50+ years (2015 - 2016)	1.22 (1.11-1.35)	1.25 (1.08-1.46)	2.26 (1.94-2.68)	3.69 (3.00-4.33)	4.53 (4.11-4.95)	720
Males (2011 - 2012)	1.07 (.954-1.20)	1.05 (.938-1.21)	1.87 (1.64-2.11)	3.20 (2.71-3.83)	4.26 (3.43-5.89)	634
Males (2013 - 2014)	1.06 (.963-1.18)	1.04 (.926-1.13)	1.89 (1.63-2.17)	3.29 (2.69-4.17)	4.38 (3.53-4.78)	662
Males (2015 - 2016)	1.14 (1.01-1.29)	1.17 (1.03-1.35)	2.08 (1.65-2.48)	3.48 (2.97-4.15)	4.81 (3.69-6.15)	663
Females (2011 - 2012)	1.50 (1.35-1.66)	1.45 (1.36-1.55)	2.67 (2.22-3.09)	4.71 (3.51-5.96)	7.71 (5.11-9.68)	708
Females (2013 - 2014)	1.31 (1.21-1.41)	1.26 (1.14-1.45)	2.34 (2.02-2.69)	4.25 (3.76-4.94)	6.23 (5.45-7.86)	824
Females (2015 - 2016)	1.28 (1.17-1.41)	1.28 (1.14-1.49)	2.25 (1.98-2.51)	3.78 (2.87-4.53)	4.82 (4.30-5.16)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Cadmium (2011 – 2016)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.308 (.264-.359)	.321 (.271-.411)	.683 (.552-.790)	1.29 (1.02-1.63)	1.85 (1.56-2.33)	876
Total population (2013 - 2014)	.239 (.221-.257)	.258 (.232-.284)	.547 (.485-.639)	.927 (.831-.995)	1.22 (1.05-1.38)	957
Total population (2015 - 2016)	.275 (.242-.314)	.282 (.241-.377)	.628 (.567-.708)	1.07 (.977-1.21)	1.48 (1.28-1.70)	834
Age 20-49 years (2011 - 2012)	.220 (.182-.265)	.229 (.164-.298)	.508 (.371-.622)	.873 (.684-1.14)	1.27 (1.01-1.49)	522
Age 18-49 years (2013 - 2014)	.171 (.158-.185)	.168 (.154-.189)	.372 (.316-.426)	.699 (.559-.770)	.821 (.754-.933)	583
Age 18-49 years (2015 - 2016)	.181 (.157-.208)	.191 (.168-.209)	.408 (.323-.477)	.706 (.582-.822)	.976 (.762-1.19)	457
Age 50+ years (2011 - 2012)	.522 (.447-.609)	.479 (.423-.608)	1.03 (.741-1.51)	1.82 (1.52-2.89)	3.45 (2.10-3.89)	354
Age 50+ years (2013 - 2014)	.484 (.433-.540)	.497 (.413-.584)	.856 (.751-1.03)	1.32 (1.12-1.62)	1.75 (1.43-2.12)	374
Age 50+ years (2015 - 2016)	.527 (.454-.612)	.586 (.464-.677)	.982 (.811-1.07)	1.53 (1.25-1.85)	2.10 (1.80-2.48)	377
Males (2011 - 2012)	.324 (.272-.385)	.368 (.292-.429)	.714 (.552-.844)	1.31 (.988-1.69)	1.69 (1.29-2.09)	527
Males (2013 - 2014)	.214 (.191-.240)	.238 (.180-.282)	.507 (.436-.593)	.856 (.792-.982)	1.12 (.977-1.39)	512
Males (2015 - 2016)	.269 (.220-.329)	.292 (.231-.420)	.611 (.501-.713)	1.05 (.765-1.19)	1.42 (1.10-1.85)	487
Females (2011 - 2012)	.289 (.229-.364)	.303 (.222-.416)	.629 (.455-.741)	1.25 (.783-2.05)	2.05 (1.16-2.53)	349
Females (2013 - 2014)	.266 (.242-.293)	.277 (.246-.313)	.582 (.485-.721)	.950 (.804-1.12)	1.26 (1.12-1.55)	445
Females (2015 - 2016)	.283 (.252-.318)	.281 (.220-.359)	.669 (.552-.781)	1.18 (.976-1.34)	1.62 (1.28-1.80)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.056, 0.036, and 0.036, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.174 (.158-.192)	.176 (.161-.192)	.314 (.279-.366)	.615 (.525-.705)	.842 (.738-1.04)	1343
Total population (2013 - 2014)	.139 (.131-.148)	.147 (.135-.154)	.290 (.264-.313)	.570 (.515-.615)	.788 (.692-.907)	1487
Total population (2015 - 2016)	.155 (.139-.173)	.159 (.144-.178)	.319 (.277-.370)	.630 (.492-.731)	.874 (.696-1.10)	1470
Age 20-49 years (2011 - 2012)	.130 (.113-.151)	.134 (.113-.155)	.233 (.185-.281)	.486 (.338-.610)	.642 (.578-.827)	671
Age 18-49 years (2013 - 2014)	.101 (.093-.110)	.094 (.087-.108)	.200 (.179-.229)	.358 (.312-.441)	.606 (.496-.654)	778
Age 18-49 years (2015 - 2016)	.112 (.097-.129)	.112 (.094-.135)	.232 (.199-.268)	.392 (.325-.518)	.571 (.450-.683)	750
Age 50+ years (2011 - 2012)	.236 (.212-.264)	.228 (.217-.259)	.395 (.336-.474)	.762 (.621-.873)	1.05 (.842-1.52)	672
Age 50+ years (2013 - 2014)	.200 (.184-.217)	.213 (.186-.232)	.391 (.335-.446)	.702 (.606-.803)	1.01 (.820-1.30)	709
Age 50+ years (2015 - 2016)	.222 (.197-.249)	.241 (.196-.267)	.446 (.364-.548)	.824 (.665-1.06)	1.14 (.909-1.44)	720
Males (2011 - 2012)	.165 (.149-.184)	.169 (.154-.185)	.280 (.238-.338)	.546 (.412-.664)	.826 (.595-.939)	635
Males (2013 - 2014)	.139 (.130-.149)	.148 (.131-.158)	.272 (.229-.314)	.516 (.435-.614)	.726 (.592-1.07)	663
Males (2015 - 2016)	.147 (.134-.162)	.149 (.133-.165)	.287 (.250-.340)	.521 (.389-.683)	.823 (.598-1.09)	663
Females (2011 - 2012)	.181 (.160-.205)	.184 (.152-.217)	.347 (.300-.405)	.643 (.583-.782)	.923 (.780-1.35)	708
Females (2013 - 2014)	.139 (.126-.155)	.146 (.126-.166)	.302 (.267-.340)	.603 (.526-.692)	.820 (.705-.965)	824
Females (2015 - 2016)	.161 (.138-.189)	.174 (.145-.213)	.350 (.284-.429)	.680 (.554-.798)	.947 (.713-1.22)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.056, 0.036, and 0.036, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (creatinine corrected) (2011 – 2016)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.339 (.307-.374)	.372 (.333-.421)	.631 (.559-.734)	1.09 (.990-1.23)	1.48 (1.27-1.71)	876
Total population (2013 - 2014)	.244 (.219-.272)	.260 (.219-.311)	.525 (.436-.650)	.907 (.727-1.05)	1.15 (1.00-1.36)	956
Total population (2015 - 2016)	.274 (.247-.305)	.302 (.259-.345)	.523 (.462-.633)	.950 (.760-1.14)	1.29 (1.11-1.57)	834
Age 20-49 years (2011 - 2012)	.228 (.201-.259)	.235 (.204-.267)	.424 (.363-.471)	.643 (.595-.735)	.935 (.725-1.19)	522
Age 18-49 years (2013 - 2014)	.160 (.149-.172)	.161 (.146-.175)	.295 (.270-.334)	.498 (.416-.650)	.727 (.584-.949)	582
Age 18-49 years (2015 - 2016)	.168 (.147-.191)	.172 (.139-.190)	.305 (.254-.372)	.492 (.390-.576)	.667 (.555-.745)	457
Age 50+ years (2011 - 2012)	.629 (.569-.696)	.594 (.507-.734)	.977 (.791-1.13)	1.48 (1.27-1.71)	1.97 (1.48-2.24)	354
Age 50+ years (2013 - 2014)	.594 (.540-.653)	.604 (.513-.675)	.899 (.722-1.05)	1.27 (1.09-1.49)	1.53 (1.25-1.79)	374
Age 50+ years (2015 - 2016)	.585 (.525-.653)	.524 (.475-.638)	.911 (.718-1.14)	1.32 (1.18-1.73)	1.80 (1.46-2.20)	377
Males (2011 - 2012)	.305 (.260-.358)	.372 (.281-.434)	.565 (.470-.667)	.932 (.745-1.13)	1.25 (.907-1.72)	527
Males (2013 - 2014)	.190 (.175-.206)	.192 (.173-.219)	.436 (.394-.466)	.697 (.602-.786)	.888 (.730-1.10)	511
Males (2015 - 2016)	.232 (.203-.265)	.254 (.197-.298)	.443 (.372-.506)	.738 (.544-.867)	.937 (.745-1.34)	487
Females (2011 - 2012)	.386 (.332-.448)	.373 (.331-.458)	.735 (.595-.873)	1.28 (.975-1.51)	1.68 (1.19-2.28)	349
Females (2013 - 2014)	.314 (.271-.364)	.334 (.270-.402)	.650 (.523-.767)	1.05 (.949-1.13)	1.27 (1.11-1.65)	445
Females (2015 - 2016)	.334 (.296-.377)	.385 (.310-.420)	.694 (.555-.911)	1.14 (.996-1.30)	1.53 (1.18-1.73)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.203 (.185-.222)	.194 (.181-.218)	.353 (.317-.399)	.568 (.503-.660)	.870 (.638-1.03)	1342
Total population (2013 - 2014)	.166 (.158-.174)	.166 (.151-.184)	.301 (.272-.317)	.549 (.489-.608)	.771 (.675-.846)	1486
Total population (2015 - 2016)	.174 (.159-.191)	.175 (.156-.195)	.311 (.285-.340)	.541 (.459-.608)	.775 (.608-.924)	1468
Age 20-49 years (2011 - 2012)	.142 (.128-.158)	.138 (.122-.152)	.230 (.198-.275)	.398 (.310-.470)	.538 (.421-.741)	670
Age 18-49 years (2013 - 2014)	.111 (.101-.121)	.113 (.102-.121)	.186 (.161-.209)	.298 (.265-.328)	.421 (.364-.543)	778
Age 18-49 years (2015 - 2016)	.117 (.105-.129)	.117 (.098-.133)	.200 (.167-.231)	.311 (.284-.358)	.405 (.358-.521)	748
Age 50+ years (2011 - 2012)	.296 (.271-.322)	.296 (.257-.331)	.458 (.416-.526)	.759 (.613-.942)	1.09 (.892-1.22)	672
Age 50+ years (2013 - 2014)	.263 (.248-.278)	.260 (.235-.285)	.421 (.382-.455)	.726 (.622-.826)	.977 (.826-1.20)	708
Age 50+ years (2015 - 2016)	.271 (.247-.298)	.264 (.234-.301)	.434 (.403-.491)	.758 (.580-.916)	.961 (.753-1.20)	720
Males (2011 - 2012)	.148 (.131-.166)	.143 (.132-.157)	.230 (.193-.280)	.405 (.324-.524)	.549 (.463-.713)	634
Males (2013 - 2014)	.134 (.125-.144)	.132 (.114-.151)	.227 (.205-.261)	.369 (.334-.436)	.581 (.430-.669)	662
Males (2015 - 2016)	.135 (.127-.144)	.127 (.120-.137)	.225 (.202-.265)	.387 (.333-.459)	.587 (.459-.737)	663
Females (2011 - 2012)	.260 (.233-.289)	.271 (.241-.290)	.443 (.385-.477)	.671 (.568-.892)	1.03 (.823-1.22)	708
Females (2013 - 2014)	.198 (.184-.213)	.203 (.180-.219)	.356 (.317-.395)	.627 (.581-.726)	.928 (.713-1.03)	824
Females (2015 - 2016)	.214 (.188-.245)	.224 (.195-.254)	.389 (.327-.427)	.623 (.494-.833)	.906 (.639-1.25)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cesium (2011 – 2016)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	3.73 (3.50-3.99)	4.03 (3.60-4.42)	6.34 (5.94-6.68)	8.73 (7.76-10.5)	11.1 (8.82-11.9)	876
Total population (2013 - 2014)	3.97 (3.68-4.29)	4.14 (3.82-4.55)	6.95 (6.39-7.56)	9.72 (9.01-10.4)	11.6 (9.88-14.1)	957
Total population (2015 - 2016)	3.90 (3.58-4.25)	3.96 (3.57-4.40)	6.44 (5.80-7.39)	8.93 (8.36-10.4)	11.7 (10.3-13.1)	834
Age 20-49 years (2011 - 2012)	3.66 (3.40-3.93)	3.99 (3.54-4.52)	6.50 (5.79-7.08)	8.61 (7.54-10.8)	11.1 (7.76-11.9)	522
Age 18-49 years (2013 - 2014)	4.02 (3.61-4.48)	4.19 (3.72-4.92)	7.05 (6.23-8.15)	9.54 (9.00-10.6)	11.7 (9.72-14.8)	583
Age 18-49 years (2015 - 2016)	3.75 (3.32-4.24)	3.83 (3.37-4.35)	6.09 (5.51-7.29)	8.90 (8.03-10.3)	10.9 (9.32-13.1)	457
Age 50+ years (2011 - 2012)	3.86 (3.44-4.33)	4.03 (3.27-4.61)	6.28 (5.53-6.63)	8.86 (7.52-10.8)	11.2 (8.86-11.5)	354
Age 50+ years (2013 - 2014)	3.87 (3.55-4.22)	3.99 (3.42-4.54)	6.71 (5.72-7.60)	10.2 (8.36-11.4)	11.6 (9.88-14.0)	374
Age 50+ years (2015 - 2016)	4.15 (3.78-4.55)	4.24 (3.64-5.23)	6.78 (5.80-8.03)	9.44 (8.57-10.9)	12.0 (9.93-13.7)	377
Males (2011 - 2012)	3.94 (3.61-4.30)	4.53 (3.58-5.11)	6.93 (6.34-7.18)	8.51 (7.71-10.6)	11.2 (8.21-11.9)	527
Males (2013 - 2014)	4.01 (3.64-4.42)	4.18 (3.97-4.79)	6.71 (6.17-7.34)	9.10 (8.48-9.89)	10.6 (9.54-11.6)	512
Males (2015 - 2016)	4.08 (3.65-4.57)	4.55 (3.87-5.37)	6.78 (5.84-7.81)	8.75 (8.03-10.3)	11.4 (9.04-12.2)	487
Females (2011 - 2012)	3.49 (3.03-4.02)	3.79 (3.20-4.03)	5.77 (4.62-6.64)	9.20 (6.63-11.1)	11.1 (7.19-16.0)	349
Females (2013 - 2014)	3.93 (3.46-4.46)	4.04 (3.34-4.78)	7.19 (6.33-8.58)	10.6 (9.25-11.9)	12.8 (9.88-14.9)	445
Females (2015 - 2016)	3.70 (3.43-4.00)	3.64 (3.14-4.01)	5.96 (5.19-7.15)	9.77 (8.61-10.8)	13.1 (10.7-14.0)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.12, 0.086, and 0.086, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	3.85 (3.63-4.09)	4.11 (3.89-4.42)	6.26 (5.86-6.84)	9.08 (8.48-9.44)	10.5 (9.58-11.6)	1342
Total population (2013 - 2014)	3.86 (3.66-4.07)	4.09 (3.85-4.36)	6.39 (6.11-6.76)	8.96 (8.23-9.70)	10.9 (10.0-11.7)	1487
Total population (2015 - 2016)	3.90 (3.61-4.21)	4.19 (3.77-4.59)	6.20 (5.76-6.62)	8.95 (8.31-9.59)	11.6 (9.76-13.1)	1470
Age 20-49 years (2011 - 2012)	3.65 (3.34-4.00)	3.97 (3.68-4.34)	6.24 (5.58-6.95)	9.08 (7.97-9.27)	9.94 (9.48-11.2)	671
Age 18-49 years (2013 - 2014)	3.85 (3.69-4.02)	4.13 (3.77-4.47)	6.41 (6.11-6.81)	8.74 (8.06-9.64)	10.2 (9.64-11.6)	778
Age 18-49 years (2015 - 2016)	3.78 (3.36-4.25)	4.31 (3.66-4.86)	6.30 (5.71-6.87)	8.63 (7.57-9.76)	11.0 (8.95-13.6)	750
Age 50+ years (2011 - 2012)	4.08 (3.80-4.38)	4.28 (3.91-4.59)	6.29 (5.76-7.08)	9.10 (8.06-10.2)	10.6 (9.44-13.8)	671
Age 50+ years (2013 - 2014)	3.86 (3.50-4.26)	3.99 (3.54-4.47)	6.38 (5.80-7.08)	9.14 (7.67-10.4)	11.3 (9.22-13.5)	709
Age 50+ years (2015 - 2016)	4.03 (3.72-4.36)	4.07 (3.66-4.49)	5.97 (5.74-6.40)	9.34 (8.75-9.96)	12.1 (9.96-13.6)	720
Males (2011 - 2012)	4.40 (4.14-4.67)	4.71 (4.28-5.17)	6.63 (6.13-7.15)	9.18 (8.15-9.88)	10.7 (9.74-12.8)	634
Males (2013 - 2014)	4.20 (3.88-4.55)	4.53 (4.10-4.97)	6.83 (6.39-7.39)	9.36 (8.42-10.2)	11.1 (9.36-13.5)	663
Males (2015 - 2016)	4.24 (3.97-4.54)	4.77 (4.45-5.08)	6.46 (5.95-7.04)	8.96 (8.28-9.76)	11.1 (9.58-13.6)	663
Females (2011 - 2012)	3.48 (3.22-3.75)	3.69 (3.46-3.90)	5.91 (5.33-6.62)	8.62 (7.79-9.48)	10.2 (9.48-11.5)	708
Females (2013 - 2014)	3.60 (3.37-3.84)	3.67 (3.39-4.12)	6.09 (5.61-6.49)	8.33 (7.78-9.27)	10.7 (9.81-11.5)	824
Females (2015 - 2016)	3.63 (3.27-4.03)	3.68 (3.26-4.30)	5.78 (5.09-6.54)	8.95 (7.82-10.3)	11.6 (9.37-13.2)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.12, 0.086, and 0.086, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cesium (creatinine corrected) (2011 – 2016)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.11 (3.77-4.47)	4.00 (3.69-4.36)	5.55 (5.22-5.70)	8.18 (6.39-10.7)	10.9 (7.48-14.4)	876
Total population (2013 - 2014)	4.06 (3.81-4.33)	3.88 (3.60-4.31)	5.61 (5.17-6.03)	8.01 (7.13-8.59)	9.03 (8.57-10.3)	956
Total population (2015 - 2016)	3.89 (3.67-4.12)	3.67 (3.48-3.98)	5.17 (4.71-5.90)	7.73 (7.11-8.62)	9.48 (8.47-11.0)	834
Age 20-49 years (2011 - 2012)	3.79 (3.44-4.18)	3.69 (3.20-4.15)	5.29 (4.57-5.70)	7.76 (5.72-10.2)	9.27 (7.48-14.4)	522
Age 18-49 years (2013 - 2014)	3.77 (3.50-4.06)	3.62 (3.26-4.04)	4.97 (4.66-5.37)	6.98 (6.17-8.01)	8.37 (7.13-10.1)	582
Age 18-49 years (2015 - 2016)	3.49 (3.25-3.74)	3.30 (3.09-3.58)	4.35 (4.00-5.03)	6.89 (5.48-8.44)	9.16 (7.11-11.1)	457
Age 50+ years (2011 - 2012)	4.65 (4.31-5.03)	4.51 (4.10-4.91)	6.10 (5.47-6.96)	9.36 (7.01-11.5)	11.5 (7.41-32.4)	354
Age 50+ years (2013 - 2014)	4.75 (4.33-5.21)	4.64 (4.12-5.44)	7.00 (5.85-7.99)	8.67 (8.38-9.11)	9.95 (8.89-11.8)	374
Age 50+ years (2015 - 2016)	4.61 (4.22-5.03)	4.58 (4.02-5.00)	6.18 (5.11-7.59)	8.58 (7.59-9.72)	10.4 (8.58-15.4)	377
Males (2011 - 2012)	3.72 (3.37-4.10)	3.68 (3.20-4.15)	4.88 (4.43-5.41)	6.27 (5.59-7.91)	8.00 (6.10-14.4)	527
Males (2013 - 2014)	3.56 (3.29-3.85)	3.52 (3.18-3.82)	4.67 (4.36-4.92)	6.24 (5.56-7.07)	7.99 (6.64-8.91)	511
Males (2015 - 2016)	3.52 (3.27-3.78)	3.42 (3.10-3.62)	4.52 (4.13-5.02)	7.02 (5.19-7.77)	8.11 (7.11-9.42)	487
Females (2011 - 2012)	4.66 (4.22-5.14)	4.53 (4.13-5.10)	6.95 (5.65-7.89)	9.27 (7.77-11.5)	11.5 (8.29-14.6)	349
Females (2013 - 2014)	4.64 (4.33-4.97)	4.58 (3.99-5.07)	6.65 (5.66-7.75)	8.67 (8.00-9.89)	10.3 (8.71-12.5)	445
Females (2015 - 2016)	4.38 (4.13-4.63)	4.16 (3.80-4.59)	5.93 (5.32-6.89)	9.01 (7.83-10.1)	12.4 (9.01-14.2)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.49 (4.24-4.76)	4.44 (4.20-4.75)	6.25 (5.71-6.77)	8.25 (7.65-8.86)	10.2 (8.73-11.9)	1341
Total population (2013 - 2014)	4.61 (4.43-4.79)	4.49 (4.29-4.78)	6.30 (6.13-6.58)	8.48 (8.18-8.96)	10.4 (9.66-10.8)	1486
Total population (2015 - 2016)	4.39 (4.16-4.63)	4.37 (4.05-4.68)	6.09 (5.56-6.58)	8.51 (7.55-9.44)	10.5 (9.33-11.1)	1468
Age 20-49 years (2011 - 2012)	3.99 (3.80-4.18)	4.00 (3.70-4.27)	5.59 (5.05-5.91)	7.01 (6.45-7.54)	8.19 (7.65-8.75)	670
Age 18-49 years (2013 - 2014)	4.22 (4.00-4.45)	4.12 (3.79-4.37)	5.73 (5.34-6.14)	7.84 (6.89-8.34)	9.47 (8.26-11.0)	778
Age 18-49 years (2015 - 2016)	3.95 (3.76-4.15)	3.95 (3.61-4.16)	5.45 (4.99-5.98)	7.45 (6.73-8.76)	9.50 (8.24-10.7)	748
Age 50+ years (2011 - 2012)	5.10 (4.62-5.63)	4.88 (4.35-5.61)	7.19 (5.91-8.22)	9.48 (8.25-10.7)	12.1 (10.2-13.5)	671
Age 50+ years (2013 - 2014)	5.09 (4.79-5.40)	5.01 (4.78-5.49)	6.93 (6.46-7.55)	9.39 (8.38-10.2)	10.7 (9.98-12.0)	708
Age 50+ years (2015 - 2016)	4.93 (4.61-5.26)	4.77 (4.53-5.26)	6.81 (6.05-7.48)	9.32 (8.16-10.0)	10.6 (9.86-11.7)	720
Males (2011 - 2012)	3.92 (3.61-4.26)	3.78 (3.54-4.27)	5.36 (4.79-6.24)	7.86 (6.47-8.52)	8.65 (8.01-10.3)	633
Males (2013 - 2014)	4.06 (3.87-4.27)	4.02 (3.78-4.29)	5.28 (5.00-5.71)	6.98 (6.42-8.00)	8.50 (7.85-9.06)	662
Males (2015 - 2016)	3.90 (3.67-4.14)	3.91 (3.53-4.21)	5.39 (4.86-5.79)	7.18 (6.45-8.22)	9.71 (8.22-11.3)	663
Females (2011 - 2012)	4.99 (4.75-5.25)	4.96 (4.72-5.20)	6.62 (6.25-7.17)	8.70 (8.10-9.98)	11.9 (9.48-13.5)	708
Females (2013 - 2014)	5.11 (4.91-5.31)	5.15 (4.87-5.38)	7.05 (6.64-7.56)	9.51 (8.66-10.5)	11.3 (10.5-12.5)	824
Females (2015 - 2016)	4.83 (4.52-5.17)	4.79 (4.32-5.17)	6.71 (6.02-7.43)	9.22 (7.95-9.86)	10.5 (9.33-12.1)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cobalt (2011 – 2016)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.309 (.282-.339)	.309 (.281-.338)	.518 (.457-.573)	.880 (.735-.966)	1.19 (.942-1.50)	875
Total population (2013 - 2014)	.409 (.365-.460)	.435 (.373-.500)	.710 (.667-.764)	1.07 (.970-1.19)	1.43 (1.30-1.70)	957
Total population (2015 - 2016)	.417 (.382-.456)	.428 (.391-.483)	.682 (.615-.760)	1.02 (.938-1.16)	1.38 (1.20-1.88)	834
Age 20-49 years (2011 - 2012)	.313 (.283-.347)	.315 (.281-.344)	.520 (.433-.619)	.904 (.690-1.05)	1.29 (.912-1.81)	521
Age 18-49 years (2013 - 2014)	.427 (.380-.481)	.463 (.422-.534)	.726 (.670-.800)	1.13 (.970-1.25)	1.48 (1.25-1.78)	583
Age 18-49 years (2015 - 2016)	.422 (.371-.480)	.436 (.379-.502)	.725 (.604-.818)	1.05 (.963-1.25)	1.63 (1.25-1.93)	457
Age 50+ years (2011 - 2012)	.302 (.268-.341)	.296 (.251-.374)	.518 (.448-.603)	.840 (.661-1.00)	1.03 (.857-1.36)	354
Age 50+ years (2013 - 2014)	.375 (.318-.441)	.364 (.281-.462)	.652 (.488-.779)	1.02 (.779-1.28)	1.38 (1.06-2.39)	374
Age 50+ years (2015 - 2016)	.410 (.351-.479)	.419 (.339-.501)	.641 (.560-.747)	.998 (.812-1.15)	1.31 (1.01-2.01)	377
Males (2011 - 2012)	.293 (.262-.329)	.300 (.263-.338)	.516 (.425-.566)	.688 (.603-.885)	.904 (.744-.966)	526
Males (2013 - 2014)	.386 (.362-.411)	.442 (.391-.472)	.663 (.594-.700)	.827 (.798-.904)	1.03 (.922-1.31)	512
Males (2015 - 2016)	.387 (.344-.435)	.428 (.359-.497)	.630 (.574-.678)	.838 (.799-.938)	1.05 (.887-1.20)	487
Females (2011 - 2012)	.330 (.300-.362)	.321 (.258-.351)	.556 (.456-.681)	1.14 (.822-1.40)	1.50 (1.17-2.02)	349
Females (2013 - 2014)	.435 (.360-.526)	.431 (.331-.554)	.811 (.665-1.00)	1.29 (1.13-1.50)	1.78 (1.39-2.28)	445
Females (2015 - 2016)	.456 (.412-.506)	.428 (.408-.500)	.784 (.747-.905)	1.31 (1.07-1.59)	2.01 (1.38-2.33)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.048, 0.023, and 0.023, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.305 (.284-.328)	.300 (.284-.323)	.482 (.456-.515)	.815 (.702-.998)	1.23 (1.03-1.56)	1343
Total population (2013 - 2014)	.368 (.349-.387)	.375 (.355-.404)	.640 (.604-.667)	.925 (.868-1.05)	1.24 (1.17-1.39)	1487
Total population (2015 - 2016)	.382 (.360-.406)	.394 (.374-.429)	.633 (.590-.664)	.949 (.856-1.08)	1.45 (1.24-1.67)	1470
Age 20-49 years (2011 - 2012)	.316 (.293-.341)	.328 (.295-.360)	.535 (.476-.596)	.883 (.736-1.06)	1.35 (1.00-1.61)	671
Age 18-49 years (2013 - 2014)	.379 (.343-.418)	.406 (.357-.460)	.673 (.637-.747)	1.03 (.901-1.11)	1.32 (1.17-1.44)	778
Age 18-49 years (2015 - 2016)	.408 (.381-.437)	.444 (.405-.489)	.664 (.632-.708)	1.01 (.890-1.22)	1.54 (1.28-1.66)	750
Age 50+ years (2011 - 2012)	.294 (.269-.322)	.284 (.265-.306)	.447 (.401-.482)	.729 (.588-.986)	1.16 (.810-1.62)	672
Age 50+ years (2013 - 2014)	.356 (.337-.376)	.353 (.329-.373)	.584 (.517-.647)	.873 (.741-.977)	1.23 (.900-2.13)	709
Age 50+ years (2015 - 2016)	.356 (.321-.394)	.358 (.326-.405)	.555 (.512-.639)	.934 (.753-1.08)	1.33 (.969-1.77)	720
Males (2011 - 2012)	.295 (.274-.318)	.292 (.277-.320)	.420 (.372-.475)	.656 (.541-.729)	.813 (.721-.982)	635
Males (2013 - 2014)	.360 (.335-.387)	.376 (.340-.421)	.604 (.549-.645)	.820 (.765-.891)	1.06 (.873-1.24)	663
Males (2015 - 2016)	.361 (.335-.388)	.403 (.378-.434)	.584 (.546-.629)	.814 (.666-.909)	.923 (.757-1.08)	663
Females (2011 - 2012)	.313 (.282-.348)	.311 (.279-.360)	.542 (.482-.600)	1.06 (.754-1.32)	1.53 (1.16-1.82)	708
Females (2013 - 2014)	.374 (.342-.410)	.374 (.340-.414)	.671 (.637-.717)	1.10 (.926-1.21)	1.40 (1.23-1.63)	824
Females (2015 - 2016)	.401 (.370-.435)	.388 (.352-.442)	.679 (.632-.741)	1.31 (1.06-1.52)	1.77 (1.38-2.13)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.048, 0.023, and 0.023, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Cobalt (creatinine corrected) (2011 – 2016)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.338 (.309-.370)	.327 (.289-.345)	.498 (.470-.514)	.756 (.688-.823)	1.16 (.875-1.50)	875
Total population (2013 - 2014)	.419 (.385-.456)	.408 (.372-.441)	.605 (.548-.661)	.932 (.845-1.00)	1.23 (1.06-1.48)	956
Total population (2015 - 2016)	.416 (.387-.447)	.394 (.365-.442)	.575 (.530-.633)	.896 (.788-1.05)	1.25 (1.08-1.53)	834
Age 20-49 years (2011 - 2012)	.322 (.285-.365)	.295 (.259-.339)	.474 (.442-.513)	.767 (.694-.919)	1.28 (.782-1.96)	521
Age 18-49 years (2013 - 2014)	.401 (.369-.435)	.403 (.355-.427)	.560 (.516-.636)	.880 (.749-1.00)	1.16 (.948-1.32)	582
Age 18-49 years (2015 - 2016)	.392 (.357-.431)	.368 (.333-.402)	.552 (.469-.612)	.914 (.675-1.10)	1.24 (1.04-1.41)	457
Age 50+ years (2011 - 2012)	.365 (.338-.394)	.336 (.329-.378)	.508 (.481-.573)	.688 (.622-.880)	1.04 (.800-1.50)	354
Age 50+ years (2013 - 2014)	.460 (.402-.527)	.436 (.367-.516)	.677 (.611-.759)	1.03 (.856-1.29)	1.53 (1.12-1.98)	374
Age 50+ years (2015 - 2016)	.455 (.416-.498)	.424 (.393-.480)	.589 (.531-.664)	.871 (.755-1.05)	1.63 (.977-1.85)	377
Males (2011 - 2012)	.274 (.253-.297)	.265 (.235-.300)	.400 (.336-.465)	.546 (.493-.622)	.622 (.513-.751)	526
Males (2013 - 2014)	.342 (.309-.379)	.347 (.321-.382)	.448 (.414-.513)	.630 (.559-.677)	.739 (.643-.986)	511
Males (2015 - 2016)	.333 (.303-.366)	.331 (.294-.362)	.455 (.387-.491)	.614 (.481-.719)	.795 (.649-.914)	487
Females (2011 - 2012)	.440 (.375-.516)	.417 (.337-.490)	.648 (.572-.729)	1.13 (.799-1.56)	1.88 (1.03-2.51)	349
Females (2013 - 2014)	.513 (.457-.576)	.509 (.433-.589)	.755 (.695-.855)	1.19 (1.00-1.24)	1.53 (1.23-1.73)	445
Females (2015 - 2016)	.539 (.498-.584)	.530 (.486-.551)	.755 (.648-.828)	1.14 (1.05-1.41)	1.67 (1.27-1.85)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.356 (.338-.375)	.333 (.304-.350)	.517 (.469-.569)	.865 (.713-1.10)	1.30 (1.10-1.58)	1342
Total population (2013 - 2014)	.439 (.420-.458)	.425 (.392-.446)	.623 (.580-.683)	.961 (.885-1.06)	1.32 (1.19-1.60)	1486
Total population (2015 - 2016)	.430 (.412-.450)	.411 (.391-.438)	.603 (.563-.649)	.957 (.823-1.11)	1.22 (1.11-1.51)	1468
Age 20-49 years (2011 - 2012)	.345 (.322-.370)	.317 (.282-.349)	.520 (.463-.569)	.962 (.750-1.12)	1.27 (1.10-1.58)	670
Age 18-49 years (2013 - 2014)	.415 (.394-.436)	.397 (.377-.431)	.590 (.561-.638)	.904 (.827-.965)	1.10 (.971-1.29)	778
Age 18-49 years (2015 - 2016)	.426 (.411-.442)	.404 (.379-.421)	.592 (.551-.634)	.939 (.840-1.05)	1.25 (1.05-1.51)	748
Age 50+ years (2011 - 2012)	.368 (.338-.401)	.345 (.304-.390)	.514 (.451-.593)	.786 (.604-1.17)	1.41 (.871-2.13)	672
Age 50+ years (2013 - 2014)	.468 (.437-.500)	.443 (.405-.480)	.683 (.588-.743)	1.17 (.864-1.41)	1.50 (1.25-2.09)	708
Age 50+ years (2015 - 2016)	.435 (.402-.471)	.428 (.390-.464)	.608 (.531-.686)	.964 (.725-1.20)	1.21 (.972-1.61)	720
Males (2011 - 2012)	.263 (.246-.282)	.242 (.228-.260)	.353 (.320-.391)	.511 (.432-.625)	.665 (.514-1.03)	634
Males (2013 - 2014)	.348 (.326-.371)	.333 (.314-.351)	.471 (.431-.508)	.678 (.593-.739)	.884 (.683-1.41)	662
Males (2015 - 2016)	.331 (.310-.354)	.315 (.298-.338)	.442 (.408-.469)	.588 (.511-.732)	.746 (.583-1.11)	663
Females (2011 - 2012)	.450 (.419-.485)	.423 (.400-.457)	.638 (.594-.710)	1.10 (.957-1.30)	1.58 (1.18-2.24)	708
Females (2013 - 2014)	.531 (.497-.568)	.519 (.476-.554)	.767 (.698-.829)	1.17 (.980-1.31)	1.50 (1.25-2.00)	824
Females (2015 - 2016)	.533 (.502-.565)	.500 (.479-.530)	.754 (.689-.823)	1.18 (.979-1.25)	1.44 (1.22-1.98)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Lead (2011 – 2016)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.475 (.398-.565)	.440 (.390-.560)	.870 (.740-1.02)	1.54 (1.15-2.01)	2.36 (1.71-4.62)	876
Total population (2013 - 2014)	.382 (.344-.425)	.390 (.340-.460)	.690 (.610-.820)	1.17 (1.02-1.30)	1.51 (1.30-1.91)	957
Total population (2015 - 2016)	.389 (.346-.438)	.390 (.360-.450)	.700 (.570-.850)	1.16 (1.03-1.36)	1.61 (1.39-2.01)	834
Age 20-49 years (2011 - 2012)	.422 (.350-.509)	.400 (.330-.550)	.790 (.660-.990)	1.20 (1.05-1.66)	1.78 (1.41-3.07)	522
Age 18-49 years (2013 - 2014)	.348 (.303-.400)	.360 (.300-.440)	.610 (.520-.690)	1.02 (.890-1.16)	1.34 (1.13-1.92)	583
Age 18-49 years (2015 - 2016)	.339 (.295-.389)	.360 (.290-.410)	.620 (.510-.720)	1.08 (.900-1.29)	1.55 (1.18-2.21)	457
Age 50+ years (2011 - 2012)	.570 (.452-.718)	.500 (.430-.700)	1.01 (.740-1.36)	1.92 (1.36-2.97)	3.35 (1.62-6.83)	354
Age 50+ years (2013 - 2014)	.466 (.401-.542)	.470 (.390-.570)	.920 (.710-1.13)	1.36 (1.25-1.43)	1.72 (1.40-2.03)	374
Age 50+ years (2015 - 2016)	.482 (.413-.563)	.510 (.400-.580)	.790 (.650-1.00)	1.25 (.990-1.92)	1.89 (1.32-2.60)	377
Males (2011 - 2012)	.583 (.476-.714)	.630 (.450-.750)	1.01 (.850-1.20)	1.80 (1.46-2.60)	3.07 (1.73-5.03)	527
Males (2013 - 2014)	.442 (.390-.500)	.460 (.390-.550)	.820 (.680-.990)	1.23 (1.17-1.52)	1.91 (1.48-2.14)	512
Males (2015 - 2016)	.450 (.377-.536)	.470 (.380-.570)	.800 (.650-1.01)	1.42 (1.17-1.61)	2.35 (1.52-2.60)	487
Females (2011 - 2012)	.366 (.309-.434)	.350 (.280-.410)	.640 (.500-.750)	1.15 (.750-1.47)	1.58 (1.14-3.45)	349
Females (2013 - 2014)	.331 (.291-.376)	.340 (.310-.370)	.570 (.460-.690)	1.01 (.830-1.24)	1.30 (1.12-1.41)	445
Females (2015 - 2016)	.329 (.293-.369)	.340 (.290-.390)	.560 (.460-.690)	.960 (.750-1.02)	1.20 (.990-1.36)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.08, 0.03, and 0.03, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.360 (.331-.392)	.380 (.340-.400)	.650 (.580-.710)	1.02 (.890-1.21)	1.38 (1.25-1.58)	1343
Total population (2013 - 2014)	.272 (.257-.288)	.280 (.270-.290)	.500 (.470-.530)	.790 (.720-.900)	1.16 (.950-1.51)	1487
Total population (2015 - 2016)	.282 (.257-.309)	.290 (.250-.330)	.530 (.470-.580)	.970 (.870-1.03)	1.30 (1.10-1.45)	1470
Age 20-49 years (2011 - 2012)	.300 (.265-.339)	.300 (.260-.360)	.560 (.490-.650)	.950 (.770-1.15)	1.26 (1.02-1.38)	671
Age 18-49 years (2013 - 2014)	.222 (.202-.244)	.230 (.210-.260)	.410 (.360-.480)	.650 (.600-.730)	.880 (.720-1.04)	778
Age 18-49 years (2015 - 2016)	.230 (.206-.257)	.230 (.210-.260)	.420 (.360-.470)	.710 (.570-.900)	1.11 (.730-1.66)	750
Age 50+ years (2011 - 2012)	.439 (.394-.489)	.440 (.390-.480)	.720 (.600-.820)	1.11 (.920-1.38)	1.63 (1.29-2.16)	672
Age 50+ years (2013 - 2014)	.340 (.315-.366)	.340 (.320-.370)	.590 (.520-.670)	1.00 (.790-1.25)	1.48 (1.12-2.52)	709
Age 50+ years (2015 - 2016)	.353 (.320-.389)	.380 (.340-.420)	.660 (.590-.720)	1.06 (.990-1.14)	1.45 (1.14-1.71)	720
Males (2011 - 2012)	.417 (.374-.465)	.420 (.380-.450)	.700 (.600-.790)	1.11 (.900-1.38)	1.61 (1.18-2.13)	635
Males (2013 - 2014)	.320 (.296-.345)	.320 (.290-.350)	.580 (.520-.630)	.960 (.740-1.25)	1.51 (1.04-2.68)	663
Males (2015 - 2016)	.311 (.283-.342)	.340 (.290-.390)	.600 (.520-.670)	1.00 (.810-1.10)	1.23 (1.10-1.54)	663
Females (2011 - 2012)	.321 (.288-.359)	.320 (.300-.380)	.590 (.500-.680)	.960 (.820-1.15)	1.32 (1.06-1.38)	708
Females (2013 - 2014)	.237 (.219-.257)	.240 (.220-.270)	.450 (.410-.480)	.700 (.630-.770)	.950 (.790-1.15)	824
Females (2015 - 2016)	.260 (.229-.296)	.260 (.220-.310)	.470 (.400-.540)	.900 (.700-1.08)	1.40 (.990-1.63)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.08, 0.03, and 0.03, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (creatinine corrected) (2011 – 2016)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.522 (.463-.588)	.495 (.438-.542)	.800 (.684-.935)	1.23 (1.08-1.51)	1.93 (1.25-3.70)	876
Total population (2013 - 2014)	.391 (.358-.428)	.375 (.334-.419)	.631 (.563-.704)	.955 (.837-1.06)	1.26 (1.08-1.50)	956
Total population (2015 - 2016)	.388 (.346-.435)	.373 (.333-.435)	.602 (.517-.714)	.939 (.788-1.07)	1.17 (1.07-1.41)	834
Age 20-49 years (2011 - 2012)	.438 (.385-.498)	.400 (.373-.436)	.640 (.538-.789)	1.10 (.833-1.31)	1.72 (1.12-3.50)	522
Age 18-49 years (2013 - 2014)	.327 (.298-.359)	.317 (.284-.340)	.468 (.426-.563)	.775 (.667-.862)	1.04 (.837-1.26)	582
Age 18-49 years (2015 - 2016)	.315 (.272-.365)	.300 (.263-.353)	.463 (.387-.560)	.743 (.632-.846)	.990 (.750-1.18)	457
Age 50+ years (2011 - 2012)	.687 (.586-.805)	.664 (.559-.750)	.956 (.808-1.21)	1.51 (1.14-2.19)	2.15 (1.23-4.53)	354
Age 50+ years (2013 - 2014)	.572 (.508-.644)	.575 (.500-.647)	.833 (.742-.977)	1.15 (1.04-1.62)	1.85 (1.33-2.20)	374
Age 50+ years (2015 - 2016)	.536 (.477-.601)	.538 (.474-.588)	.747 (.619-.837)	1.09 (1.00-1.20)	1.41 (1.09-1.61)	377
Males (2011 - 2012)	.550 (.491-.616)	.496 (.430-.602)	.833 (.717-1.03)	1.47 (1.12-1.93)	2.19 (1.72-3.70)	527
Males (2013 - 2014)	.392 (.358-.430)	.373 (.330-.409)	.623 (.527-.697)	.983 (.821-1.05)	1.33 (1.06-1.66)	511
Males (2015 - 2016)	.387 (.332-.452)	.374 (.312-.461)	.619 (.515-.743)	.939 (.825-1.06)	1.25 (1.04-1.48)	487
Females (2011 - 2012)	.488 (.413-.578)	.493 (.410-.542)	.714 (.590-.864)	1.14 (.867-1.34)	1.34 (1.10-4.00)	349
Females (2013 - 2014)	.391 (.341-.447)	.376 (.333-.448)	.634 (.562-.756)	.955 (.775-1.25)	1.22 (1.01-1.54)	445
Females (2015 - 2016)	.389 (.351-.431)	.373 (.342-.409)	.600 (.511-.676)	.941 (.679-1.14)	1.12 (.958-1.41)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.421 (.391-.453)	.408 (.388-.431)	.653 (.589-.706)	.944 (.848-1.14)	1.46 (1.22-1.64)	1342
Total population (2013 - 2014)	.324 (.311-.339)	.317 (.303-.330)	.529 (.500-.558)	.833 (.750-.917)	1.18 (1.00-1.35)	1486
Total population (2015 - 2016)	.317 (.288-.350)	.307 (.277-.341)	.531 (.472-.570)	.864 (.709-1.00)	1.13 (.966-1.28)	1468
Age 20-49 years (2011 - 2012)	.328 (.292-.369)	.316 (.273-.368)	.510 (.447-.575)	.750 (.654-.916)	.944 (.851-1.17)	670
Age 18-49 years (2013 - 2014)	.243 (.222-.267)	.229 (.202-.255)	.381 (.340-.417)	.609 (.486-.732)	.828 (.647-1.11)	778
Age 18-49 years (2015 - 2016)	.240 (.217-.266)	.228 (.198-.249)	.348 (.317-.393)	.593 (.500-.718)	.888 (.611-1.13)	748
Age 50+ years (2011 - 2012)	.548 (.494-.608)	.500 (.437-.583)	.760 (.701-.814)	1.29 (1.06-1.62)	1.77 (1.48-2.12)	672
Age 50+ years (2013 - 2014)	.448 (.424-.475)	.447 (.395-.477)	.650 (.578-.750)	1.00 (.906-1.23)	1.47 (1.20-1.82)	708
Age 50+ years (2015 - 2016)	.431 (.390-.478)	.428 (.377-.504)	.667 (.584-.763)	1.05 (.920-1.14)	1.27 (1.13-1.37)	720
Males (2011 - 2012)	.374 (.329-.425)	.364 (.319-.425)	.543 (.488-.622)	.835 (.704-1.13)	1.26 (.965-1.65)	634
Males (2013 - 2014)	.310 (.286-.336)	.302 (.269-.324)	.483 (.431-.529)	.741 (.612-1.00)	1.18 (.828-1.76)	662
Males (2015 - 2016)	.286 (.257-.317)	.278 (.248-.310)	.473 (.410-.539)	.750 (.609-.891)	1.00 (.779-1.13)	663
Females (2011 - 2012)	.462 (.421-.505)	.441 (.400-.510)	.716 (.645-.775)	1.05 (.909-1.29)	1.62 (1.22-1.83)	708
Females (2013 - 2014)	.337 (.318-.357)	.333 (.313-.353)	.560 (.519-.617)	.897 (.789-.947)	1.20 (1.00-1.32)	824
Females (2015 - 2016)	.346 (.306-.391)	.333 (.302-.380)	.545 (.484-.672)	.946 (.766-1.14)	1.28 (1.02-1.37)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Manganese (2011 – 2016)

CAS Number 8075-39-6

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.123 (.111-.137)	.120 (.100-.150)	.200 (.180-.220)	.300 (.260-.360)	.410 (.290-.630)	876
Total population (2013 - 2014)	*	< LOD	.130 (<LOD-.150)	.220 (.200-.250)	.300 (.260-.390)	957
Total population (2015 - 2016)	*	< LOD	.140 (.130-.150)	.210 (.190-.240)	.300 (.230-.480)	834
Age 20-49 years (2011 - 2012)	.135 (.117-.156)	.130 (.110-.160)	.230 (.190-.260)	.350 (.260-.590)	.570 (.290-.660)	522
Age 18-49 years (2013 - 2014)	*	< LOD	.130 (<LOD-.160)	.230 (.210-.280)	.310 (.260-.460)	583
Age 18-49 years (2015 - 2016)	*	< LOD	.140 (.130-.160)	.220 (.180-.270)	.350 (.200-.500)	457
Age 50+ years (2011 - 2012)	.106 (.090-.125)	.100 (.080-.130)	.160 (.120-.210)	.250 (.190-.300)	.300 (.250-.360)	354
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.200 (.150-.250)	.270 (.210-.310)	374
Age 50+ years (2015 - 2016)	*	< LOD	.130 (<LOD-.160)	.210 (.160-.250)	.250 (.210-.490)	377
Males (2011 - 2012)	.116 (.099-.134)	.110 (.080-.150)	.190 (.160-.220)	.290 (.230-.350)	.370 (.270-.570)	527
Males (2013 - 2014)	*	< LOD	< LOD	.210 (.140-.240)	.260 (.210-.310)	512
Males (2015 - 2016)	*	< LOD	.130 (<LOD-.150)	.190 (.170-.220)	.230 (.200-.330)	487
Females (2011 - 2012)	.133 (.117-.152)	.130 (.110-.150)	.220 (.170-.270)	.310 (.250-.630)	.600 (.270-.920)	349
Females (2013 - 2014)	*	< LOD	.140 (.130-.160)	.250 (.210-.290)	.350 (.280-.710)	445
Females (2015 - 2016)	*	< LOD	.150 (.130-.170)	.250 (.190-.400)	.400 (.220-.530)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.08, 0.13, and 0.13, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.122 (.110-.134)	.120 (.100-.140)	.190 (.170-.220)	.280 (.250-.300)	.350 (.300-.400)	1343
Total population (2013 - 2014)	*	< LOD	.130 (<LOD-.140)	.200 (.180-.230)	.280 (.240-.330)	1487
Total population (2015 - 2016)	*	< LOD	.130 (<LOD-.140)	.200 (.170-.220)	.280 (.230-.350)	1470
Age 20-49 years (2011 - 2012)	.120 (.106-.136)	.110 (.100-.140)	.190 (.170-.220)	.280 (.250-.300)	.360 (.300-.440)	671
Age 18-49 years (2013 - 2014)	*	< LOD	.130 (<LOD-.140)	.190 (.170-.220)	.250 (.210-.320)	778
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.200 (.190-.220)	.270 (.230-.310)	750
Age 50+ years (2011 - 2012)	.123 (.111-.136)	.130 (.100-.150)	.190 (.170-.220)	.270 (.240-.300)	.340 (.290-.400)	672
Age 50+ years (2013 - 2014)	*	< LOD	.130 (<LOD-.150)	.220 (.180-.260)	.310 (.240-.400)	709
Age 50+ years (2015 - 2016)	*	< LOD	.130 (<LOD-.140)	.200 (.160-.240)	.280 (.210-.500)	720
Males (2011 - 2012)	.121 (.109-.134)	.120 (.100-.140)	.190 (.170-.210)	.260 (.240-.290)	.330 (.290-.370)	635
Males (2013 - 2014)	*	< LOD	< LOD	.180 (.150-.210)	.230 (.200-.260)	663
Males (2015 - 2016)	*	< LOD	< LOD	.170 (.150-.200)	.240 (.190-.350)	663
Females (2011 - 2012)	.122 (.109-.137)	.120 (.100-.140)	.200 (.170-.230)	.280 (.250-.300)	.360 (.300-.470)	708
Females (2013 - 2014)	*	< LOD	.140 (<LOD-.160)	.230 (.190-.280)	.330 (.260-.450)	824
Females (2015 - 2016)	*	< LOD	.140 (.130-.160)	.220 (.180-.270)	.290 (.240-.420)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.08, 0.13, and 0.13, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary Manganese (creatinine corrected) (2011 – 2016)

CAS Number 8075-39-6

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.135 (.118-.155)	.127 (.114-.144)	.238 (.197-.286)	.380 (.333-.413)	.485 (.423-.587)	876
Total population (2013 - 2014)	*	< LOD	.192 (<LOD-.204)	.317 (.263-.400)	.483 (.329-.708)	956
Total population (2015 - 2016)	*	< LOD	.192 (.173-.221)	.326 (.279-.383)	.414 (.317-.511)	834
Age 20-49 years (2011 - 2012)	.140 (.116-.168)	.131 (.106-.158)	.267 (.211-.315)	.406 (.335-.473)	.556 (.419-1.00)	522
Age 18-49 years (2013 - 2014)	*	< LOD	.184 (<LOD-.196)	.288 (.244-.333)	.418 (.317-.657)	582
Age 18-49 years (2015 - 2016)	*	< LOD	.180 (.144-.236)	.354 (.264-.400)	.414 (.317-.657)	457
Age 50+ years (2011 - 2012)	.128 (.113-.146)	.127 (.106-.150)	.211 (.175-.286)	.317 (.271-.387)	.415 (.333-.583)	354
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.400 (.230-.816)	.541 (.387-.900)	374
Age 50+ years (2015 - 2016)	*	< LOD	.214 (<LOD-.242)	.307 (.266-.365)	.434 (.317-.657)	377
Males (2011 - 2012)	.109 (.093-.128)	.104 (.090-.123)	.188 (.150-.218)	.318 (.241-.335)	.385 (.335-.423)	527
Males (2013 - 2014)	*	< LOD	< LOD	.236 (.196-.297)	.326 (.279-.368)	511
Males (2015 - 2016)	*	< LOD	.142 (<LOD-.176)	.263 (.200-.317)	.329 (.263-.460)	487
Females (2011 - 2012)	.178 (.152-.208)	.180 (.136-.219)	.292 (.227-.380)	.469 (.388-.587)	.740 (.473-1.12)	349
Females (2013 - 2014)	*	< LOD	.230 (.196-.271)	.400 (.279-.708)	.642 (.400-.836)	445
Females (2015 - 2016)	*	< LOD	.242 (.205-.288)	.414 (.288-.484)	.460 (.414-.708)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.142 (.128-.157)	.138 (.119-.154)	.238 (.200-.283)	.426 (.374-.518)	.571 (.526-.625)	1342
Total population (2013 - 2014)	*	< LOD	.219 (<LOD-.244)	.368 (.329-.434)	.541 (.438-.657)	1486
Total population (2015 - 2016)	*	< LOD	.214 (<LOD-.242)	.368 (.307-.438)	.511 (.438-.571)	1468
Age 20-49 years (2011 - 2012)	.131 (.117-.147)	.130 (.110-.145)	.213 (.186-.254)	.407 (.345-.529)	.625 (.444-1.06)	670
Age 18-49 years (2013 - 2014)	*	< LOD	.196 (<LOD-.219)	.317 (.279-.393)	.434 (.358-.541)	778
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.350 (.297-.383)	.484 (.408-.511)	748
Age 50+ years (2011 - 2012)	.154 (.137-.173)	.144 (.127-.167)	.259 (.209-.318)	.441 (.374-.518)	.550 (.500-.605)	672
Age 50+ years (2013 - 2014)	*	< LOD	.256 (<LOD-.286)	.484 (.333-.564)	.657 (.507-.905)	708
Age 50+ years (2015 - 2016)	*	< LOD	.230 (<LOD-.271)	.397 (.307-.464)	.531 (.438-.630)	720
Males (2011 - 2012)	.108 (.095-.123)	.108 (.093-.119)	.172 (.157-.185)	.308 (.218-.379)	.385 (.341-.529)	634
Males (2013 - 2014)	*	< LOD	< LOD	.253 (.224-.271)	.317 (.279-.434)	662
Males (2015 - 2016)	*	< LOD	< LOD	.271 (.224-.307)	.438 (.307-.464)	663
Females (2011 - 2012)	.175 (.157-.196)	.160 (.143-.197)	.295 (.254-.342)	.519 (.426-.597)	.667 (.571-1.21)	708
Females (2013 - 2014)	*	< LOD	.279 (<LOD-.317)	.484 (.383-.541)	.640 (.511-.836)	824
Females (2015 - 2016)	*	< LOD	.263 (.242-.297)	.413 (.368-.487)	.571 (.487-.613)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary Molybdenum (2011 – 2016)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	32.6 (28.8-37.1)	36.0 (30.7-39.8)	67.2 (57.4-76.9)	105 (86.0-126)	140 (117-157)	876
Total population (2013 - 2014)	30.5 (27.3-34.1)	33.5 (26.7-39.5)	61.8 (54.8-70.6)	102 (86.2-113)	125 (107-145)	957
Total population (2015 - 2016)	31.0 (28.6-33.5)	35.5 (30.7-38.7)	60.2 (55.1-66.7)	102 (86.0-108)	126 (110-145)	834
Age 20-49 years (2011 - 2012)	35.5 (30.9-40.7)	37.9 (30.2-46.1)	71.0 (57.6-83.6)	108 (83.6-136)	134 (113-145)	522
Age 18-49 years (2013 - 2014)	33.0 (29.0-37.5)	36.7 (30.9-44.6)	65.7 (59.1-75.9)	108 (85.8-126)	127 (113-157)	583
Age 18-49 years (2015 - 2016)	32.0 (27.5-37.2)	37.3 (29.1-43.0)	66.7 (55.7-76.5)	105 (82.8-133)	139 (104-157)	457
Age 50+ years (2011 - 2012)	28.6 (24.2-33.9)	32.1 (23.0-39.7)	60.9 (52.2-72.6)	101 (78.8-137)	141 (95.2-184)	354
Age 50+ years (2013 - 2014)	25.9 (22.2-30.3)	26.2 (22.4-34.7)	50.1 (42.1-57.4)	80.8 (70.4-96.7)	107 (92.9-122)	374
Age 50+ years (2015 - 2016)	29.4 (25.6-33.8)	33.2 (27.5-37.4)	55.3 (45.5-62.7)	87.5 (66.0-110)	113 (87.3-124)	377
Males (2011 - 2012)	36.3 (30.9-42.6)	38.6 (29.6-46.1)	74.0 (59.7-88.1)	111 (85.2-141)	141 (120-160)	527
Males (2013 - 2014)	35.5 (32.8-38.3)	39.4 (34.8-44.0)	67.0 (58.2-75.4)	107 (86.5-116)	119 (111-144)	512
Males (2015 - 2016)	34.6 (31.0-38.5)	39.4 (32.7-48.3)	69.5 (62.2-75.9)	107 (98.5-120)	141 (114-150)	487
Females (2011 - 2012)	28.6 (24.0-34.0)	31.8 (26.8-37.9)	57.4 (46.2-70.2)	90.6 (76.8-112)	132 (96.5-175)	349
Females (2013 - 2014)	26.3 (21.7-31.9)	26.1 (20.7-36.6)	58.3 (46.1-69.1)	95.8 (73.9-121)	126 (80.7-173)	445
Females (2015 - 2016)	27.2 (24.6-30.1)	31.4 (25.8-35.5)	54.5 (43.3-60.1)	81.7 (61.9-107)	116 (79.7-154)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.99, 0.8, and 0.8, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	34.7 (32.4-37.2)	37.6 (34.3-40.5)	63.4 (59.6-68.5)	99.8 (93.1-108)	134 (115-144)	1343
Total population (2013 - 2014)	31.2 (28.4-34.2)	32.7 (28.4-36.2)	62.7 (55.4-68.5)	94.8 (88.1-101)	128 (113-131)	1487
Total population (2015 - 2016)	32.2 (29.7-34.8)	36.0 (32.2-39.2)	62.1 (57.0-67.5)	99.0 (93.2-105)	124 (112-137)	1469
Age 20-49 years (2011 - 2012)	35.4 (31.4-40.0)	40.8 (36.9-45.3)	66.5 (61.1-75.9)	103 (92.9-115)	134 (113-150)	671
Age 18-49 years (2013 - 2014)	32.0 (28.7-35.8)	33.9 (28.8-40.5)	65.2 (57.5-71.6)	94.2 (88.1-104)	125 (108-132)	778
Age 18-49 years (2015 - 2016)	32.9 (29.0-37.3)	39.5 (33.7-43.9)	70.4 (62.1-78.7)	105 (96.0-115)	125 (111-149)	749
Age 50+ years (2011 - 2012)	34.0 (31.7-36.4)	34.2 (31.7-38.8)	57.7 (54.0-64.5)	97.4 (81.6-108)	135 (109-144)	672
Age 50+ years (2013 - 2014)	30.3 (27.1-33.8)	29.8 (25.4-35.3)	57.1 (48.0-67.9)	95.2 (80.5-109)	129 (113-152)	709
Age 50+ years (2015 - 2016)	31.3 (28.3-34.7)	33.4 (28.3-38.3)	55.0 (50.6-60.2)	88.5 (76.8-95.7)	115 (93.2-137)	720
Males (2011 - 2012)	41.5 (38.2-44.9)	44.5 (40.0-51.0)	69.6 (63.7-75.2)	106 (97.4-124)	138 (108-150)	635
Males (2013 - 2014)	36.1 (32.6-40.0)	38.1 (33.9-43.7)	72.0 (61.8-79.2)	104 (95.2-116)	138 (114-181)	663
Males (2015 - 2016)	36.4 (33.1-40.0)	41.1 (35.3-45.0)	70.1 (62.1-79.1)	105 (94.8-112)	128 (112-144)	663
Females (2011 - 2012)	30.2 (27.1-33.6)	31.6 (28.1-35.3)	58.4 (50.0-64.9)	89.9 (80.6-103)	123 (107-156)	708
Females (2013 - 2014)	27.6 (25.1-30.4)	28.5 (24.6-32.9)	54.1 (47.0-62.6)	82.8 (77.1-88.8)	112 (96.3-129)	824
Females (2015 - 2016)	29.0 (25.5-33.1)	32.2 (26.6-37.8)	56.4 (50.6-62.2)	94.9 (78.4-105)	116 (103-149)	806

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.99, 0.8, and 0.8, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Molybdenum (creatinine corrected) (2011 – 2016)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	35.9 (34.0-37.9)	36.4 (33.4-38.8)	55.3 (52.6-57.9)	79.6 (73.4-89.5)	104 (91.2-110)	876
Total population (2013 - 2014)	31.2 (28.8-33.9)	32.2 (29.1-36.3)	49.1 (42.6-54.9)	66.4 (60.8-74.5)	82.3 (74.5-96.7)	956
Total population (2015 - 2016)	30.8 (28.9-32.9)	32.9 (31.0-34.8)	46.1 (41.7-49.4)	62.4 (57.0-70.5)	80.9 (67.5-98.3)	834
Age 20-49 years (2011 - 2012)	36.8 (33.8-40.0)	36.4 (32.8-40.5)	53.4 (49.3-57.9)	79.6 (69.2-91.5)	96.0 (89.5-108)	522
Age 18-49 years (2013 - 2014)	31.0 (27.9-34.3)	32.6 (28.3-38.0)	49.1 (42.6-54.9)	63.7 (58.2-75.4)	79.2 (66.5-94.7)	582
Age 18-49 years (2015 - 2016)	29.7 (27.2-32.4)	32.2 (29.0-33.8)	46.7 (40.7-50.0)	59.9 (56.5-65.3)	70.6 (62.4-85.3)	457
Age 50+ years (2011 - 2012)	34.5 (31.0-38.5)	35.3 (30.0-43.1)	57.0 (52.6-63.5)	80.7 (71.0-108)	108 (87.1-128)	354
Age 50+ years (2013 - 2014)	31.8 (29.1-34.9)	32.1 (28.8-34.5)	49.9 (41.3-58.2)	69.5 (61.5-80.2)	95.1 (69.1-123)	374
Age 50+ years (2015 - 2016)	32.7 (30.3-35.3)	34.6 (28.9-37.3)	44.5 (40.4-53.5)	71.7 (54.3-89.9)	93.3 (71.7-113)	377
Males (2011 - 2012)	34.2 (30.9-37.9)	35.6 (32.7-40.5)	55.5 (48.9-58.5)	73.4 (64.6-79.1)	83.1 (76.1-92.5)	527
Males (2013 - 2014)	31.5 (28.8-34.4)	32.2 (29.6-37.5)	46.4 (42.6-52.8)	63.6 (58.4-69.3)	75.4 (63.7-84.2)	511
Males (2015 - 2016)	29.8 (27.9-31.8)	32.9 (29.0-35.7)	46.0 (42.8-47.6)	58.8 (55.7-64.0)	74.3 (61.5-89.9)	487
Females (2011 - 2012)	38.1 (35.2-41.3)	36.4 (33.0-38.6)	53.5 (51.7-61.1)	96.0 (74.1-108)	119 (96.0-157)	349
Females (2013 - 2014)	31.0 (27.5-34.9)	32.5 (27.4-37.0)	50.0 (42.0-58.2)	74.2 (60.5-86.1)	94.7 (71.4-109)	445
Females (2015 - 2016)	32.1 (29.6-34.9)	32.5 (30.9-34.7)	46.1 (40.3-52.6)	67.7 (56.7-80.9)	93.3 (69.7-111)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	40.5 (38.8-42.2)	39.5 (37.3-43.4)	60.9 (57.2-63.6)	85.5 (79.9-91.6)	118 (99.1-142)	1342
Total population (2013 - 2014)	37.2 (34.8-39.8)	37.6 (36.0-39.4)	55.7 (51.1-59.4)	82.7 (74.7-86.6)	105 (93.6-116)	1486
Total population (2015 - 2016)	36.2 (34.2-38.2)	37.5 (35.0-40.2)	54.9 (51.0-58.4)	79.1 (71.0-85.5)	99.0 (90.7-104)	1467
Age 20-49 years (2011 - 2012)	38.7 (36.8-40.6)	37.7 (35.2-41.7)	57.9 (52.8-62.1)	77.5 (71.6-85.0)	111 (87.1-148)	670
Age 18-49 years (2013 - 2014)	35.1 (32.6-37.7)	36.4 (34.6-37.8)	51.3 (48.1-54.3)	71.6 (65.2-76.3)	83.8 (78.4-91.2)	778
Age 18-49 years (2015 - 2016)	34.3 (32.2-36.6)	35.4 (32.6-37.8)	52.5 (49.1-56.3)	74.8 (66.6-80.4)	93.3 (81.9-99.4)	747
Age 50+ years (2011 - 2012)	42.5 (39.5-45.7)	41.6 (37.3-46.3)	62.9 (56.2-71.6)	91.9 (85.5-104)	118 (103-148)	672
Age 50+ years (2013 - 2014)	39.7 (36.5-43.3)	40.1 (36.6-43.5)	59.0 (56.5-67.8)	91.0 (83.8-102)	122 (107-134)	708
Age 50+ years (2015 - 2016)	38.3 (35.6-41.2)	39.1 (36.3-42.6)	56.9 (51.6-63.2)	84.9 (75.3-91.4)	109 (91.4-123)	720
Males (2011 - 2012)	37.0 (33.9-40.4)	36.8 (33.3-42.8)	52.4 (48.8-59.5)	80.6 (69.6-86.7)	88.8 (84.9-114)	634
Males (2013 - 2014)	34.9 (31.7-38.3)	36.0 (31.2-39.3)	52.8 (48.1-57.8)	79.7 (68.6-88.2)	102 (86.9-122)	662
Males (2015 - 2016)	33.4 (31.1-36.0)	35.0 (32.4-36.4)	49.4 (43.9-56.9)	70.0 (64.3-77.0)	93.1 (77.6-99.4)	663
Females (2011 - 2012)	43.4 (40.5-46.6)	42.1 (38.5-45.4)	65.2 (61.2-69.6)	95.1 (84.4-105)	148 (104-167)	708
Females (2013 - 2014)	39.2 (37.0-41.7)	39.3 (37.5-40.7)	57.7 (52.7-62.0)	83.6 (75.0-88.4)	107 (93.6-123)	824
Females (2015 - 2016)	38.6 (35.2-42.3)	40.5 (36.1-45.5)	58.2 (52.9-65.1)	83.7 (78.0-89.6)	104 (91.4-126)	804

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Strontium (2011 – 2016)

CAS Number 7440-24-6

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	89.8 (77.9-103)	94.5 (77.7-114)	175 (142-209)	271 (250-309)	342 (315-377)	874
Total population (2013 - 2014)	89.4 (80.6-99.2)	99.9 (90.2-112)	166 (153-181)	264 (222-315)	343 (292-390)	957
Total population (2015 - 2016)	99.3 (89.8-110)	111 (100-118)	183 (160-206)	282 (246-311)	357 (313-420)	834
Age 20-49 years (2011 - 2012)	93.3 (82.0-106)	93.2 (80.9-104)	191 (150-220)	277 (245-320)	355 (288-396)	522
Age 18-49 years (2013 - 2014)	95.8 (84.8-108)	108 (94.3-126)	180 (157-202)	276 (222-327)	348 (294-395)	583
Age 18-49 years (2015 - 2016)	98.2 (82.4-117)	111 (94.5-125)	189 (153-227)	287 (238-325)	357 (311-454)	457
Age 50+ years (2011 - 2012)	84.5 (69.1-103)	96.6 (67.0-123)	159 (129-184)	255 (200-309)	338 (307-401)	352
Age 50+ years (2013 - 2014)	77.3 (65.6-91.0)	80.3 (63.4-101)	143 (125-149)	229 (168-289)	315 (252-479)	374
Age 50+ years (2015 - 2016)	101 (91.1-112)	110 (96.7-126)	171 (152-199)	268 (215-339)	367 (282-420)	377
Males (2011 - 2012)	100 (85.1-118)	110 (91.4-125)	185 (155-227)	306 (267-329)	365 (312-396)	526
Males (2013 - 2014)	96.7 (87.0-107)	107 (94.3-124)	184 (156-209)	271 (222-323)	324 (271-395)	512
Males (2015 - 2016)	107 (93.9-123)	120 (107-133)	185 (164-214)	311 (250-327)	379 (312-454)	487
Females (2011 - 2012)	78.3 (65.4-93.8)	77.7 (65.3-101)	150 (110-203)	249 (184-318)	318 (231-525)	348
Females (2013 - 2014)	82.6 (72.5-94.2)	90.7 (76.8-106)	151 (139-163)	246 (201-348)	360 (267-479)	445
Females (2015 - 2016)	90.5 (79.7-103)	96.7 (87.3-109)	176 (149-199)	256 (231-292)	339 (282-420)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 2.5, 2.34, and 2.34, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	82.2 (76.2-88.6)	83.3 (77.0-92.0)	156 (151-166)	234 (211-252)	302 (265-353)	1342
Total population (2013 - 2014)	78.7 (75.1-82.4)	83.0 (78.7-88.3)	138 (129-149)	219 (198-237)	282 (256-315)	1487
Total population (2015 - 2016)	86.1 (79.7-92.9)	95.9 (87.9-106)	159 (148-172)	230 (219-245)	290 (275-321)	1470
Age 20-49 years (2011 - 2012)	85.0 (78.0-92.6)	90.4 (79.9-106)	172 (155-190)	246 (219-265)	293 (265-327)	671
Age 18-49 years (2013 - 2014)	83.4 (75.9-91.7)	91.0 (82.1-96.5)	151 (131-176)	231 (216-254)	297 (253-363)	778
Age 18-49 years (2015 - 2016)	89.0 (81.5-97.2)	101 (92.1-113)	171 (150-185)	241 (226-274)	304 (276-363)	750
Age 50+ years (2011 - 2012)	79.3 (72.2-87.1)	77.8 (66.7-89.0)	146 (130-156)	217 (179-276)	325 (234-379)	671
Age 50+ years (2013 - 2014)	73.7 (67.7-80.2)	77.1 (69.4-83.4)	124 (118-131)	195 (180-216)	269 (234-303)	709
Age 50+ years (2015 - 2016)	82.9 (72.3-95.0)	92.8 (75.7-105)	152 (137-164)	215 (187-235)	278 (224-321)	720
Males (2011 - 2012)	92.5 (81.8-105)	97.6 (85.4-108)	160 (141-184)	247 (194-292)	302 (252-379)	634
Males (2013 - 2014)	86.5 (79.9-93.6)	92.4 (84.2-97.8)	144 (129-176)	220 (193-254)	298 (244-341)	663
Males (2015 - 2016)	97.8 (90.0-106)	107 (94.4-130)	174 (162-183)	260 (219-282)	299 (278-321)	663
Females (2011 - 2012)	74.9 (69.1-81.3)	77.0 (66.1-82.2)	153 (139-167)	230 (204-265)	294 (264-346)	708
Females (2013 - 2014)	72.7 (67.9-77.9)	75.9 (69.3-81.1)	131 (120-143)	216 (186-239)	269 (235-321)	824
Females (2015 - 2016)	77.5 (70.3-85.5)	86.5 (75.4-97.4)	148 (141-155)	224 (195-234)	268 (240-341)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 2.5, 2.34, and 2.34, respectively.

Urinary Strontium (creatinine corrected) (2011 – 2016)

CAS Number 7440-24-6

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	98.7 (86.5-112)	97.8 (82.5-117)	168 (140-192)	250 (207-314)	356 (258-481)	874
Total population (2013 - 2014)	91.5 (82.1-102)	99.1 (89.3-107)	150 (136-170)	213 (189-235)	266 (217-365)	956
Total population (2015 - 2016)	98.9 (91.1-107)	106 (100-112)	163 (148-176)	243 (195-277)	318 (262-349)	834
Age 20-49 years (2011 - 2012)	96.7 (85.4-109)	95.3 (82.1-115)	162 (136-187)	236 (204-275)	305 (241-427)	522
Age 18-49 years (2013 - 2014)	89.8 (79.7-101)	96.8 (85.2-106)	145 (132-162)	208 (183-225)	255 (200-393)	582
Age 18-49 years (2015 - 2016)	91.2 (80.4-104)	102 (87.7-108)	146 (126-165)	214 (176-282)	282 (212-336)	457
Age 50+ years (2011 - 2012)	102 (86.3-120)	107 (78.1-117)	175 (140-197)	279 (197-398)	398 (190-811)	352
Age 50+ years (2013 - 2014)	95.0 (77.4-117)	105 (87.4-126)	161 (138-179)	232 (192-287)	297 (235-365)	374
Age 50+ years (2015 - 2016)	112 (102-123)	120 (103-142)	176 (150-195)	259 (198-343)	349 (274-394)	377
Males (2011 - 2012)	94.4 (83.9-106)	95.4 (79.0-113)	146 (131-171)	222 (185-260)	314 (226-375)	526
Males (2013 - 2014)	85.8 (75.1-98.0)	94.2 (83.6-105)	144 (128-161)	195 (174-222)	253 (193-365)	511
Males (2015 - 2016)	92.6 (84.3-102)	102 (84.9-109)	152 (134-167)	214 (176-259)	285 (230-325)	487
Females (2011 - 2012)	104 (79.2-137)	101 (78.1-143)	187 (123-246)	275 (180-706)	434 (211-939)	348
Females (2013 - 2014)	97.5 (86.0-111)	105 (92.3-112)	156 (136-180)	226 (193-266)	297 (233-375)	445
Females (2015 - 2016)	107 (93.8-122)	117 (103-126)	178 (157-191)	261 (210-321)	336 (261-382)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	95.7 (89.6-102)	99.7 (92.5-109)	150 (140-164)	235 (214-255)	318 (277-346)	1341
Total population (2013 - 2014)	94.0 (89.2-99.0)	100 (92.7-105)	146 (139-154)	218 (191-243)	288 (255-324)	1486
Total population (2015 - 2016)	96.9 (91.2-103)	101 (95.3-107)	152 (145-162)	207 (195-219)	260 (239-286)	1468
Age 20-49 years (2011 - 2012)	92.6 (83.7-102)	101 (85.7-115)	139 (128-154)	219 (183-254)	261 (241-311)	670
Age 18-49 years (2013 - 2014)	91.3 (84.9-98.2)	94.9 (88.9-103)	138 (131-151)	205 (177-235)	268 (238-297)	778
Age 18-49 years (2015 - 2016)	93.0 (86.8-99.6)	94.4 (88.1-103)	146 (133-154)	198 (183-226)	266 (214-303)	748
Age 50+ years (2011 - 2012)	99.2 (89.8-110)	98.3 (92.4-113)	164 (145-200)	258 (220-322)	350 (313-372)	671
Age 50+ years (2013 - 2014)	97.1 (88.9-106)	104 (93.9-110)	150 (143-161)	235 (193-286)	302 (253-390)	708
Age 50+ years (2015 - 2016)	101 (91.5-112)	108 (98.7-119)	162 (146-181)	210 (189-234)	259 (215-331)	720
Males (2011 - 2012)	82.3 (74.1-91.4)	88.9 (80.1-92.5)	130 (119-142)	185 (152-227)	233 (195-311)	633
Males (2013 - 2014)	83.9 (79.5-88.5)	89.3 (84.7-98.2)	129 (120-140)	176 (162-191)	229 (184-256)	662
Males (2015 - 2016)	89.8 (83.1-97.1)	92.7 (84.5-98.7)	146 (130-155)	200 (186-207)	243 (210-256)	663
Females (2011 - 2012)	108 (101-115)	113 (100-126)	179 (156-204)	272 (239-315)	346 (305-372)	708
Females (2013 - 2014)	103 (95.5-112)	108 (97.5-115)	159 (151-171)	260 (218-298)	336 (294-390)	824
Females (2015 - 2016)	103 (95.9-111)	109 (102-118)	158 (148-168)	214 (198-249)	280 (238-338)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Thallium (2011 – 2016)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.137 (.126-.149)	.147 (.128-.162)	.230 (.210-.257)	.358 (.282-.419)	.419 (.356-.524)	876
Total population (2013 - 2014)	.138 (.121-.158)	.150 (.126-.178)	.246 (.220-.273)	.364 (.302-.410)	.435 (.410-.459)	957
Total population (2015 - 2016)	.146 (.135-.159)	.155 (.135-.175)	.250 (.227-.276)	.360 (.322-.380)	.426 (.389-.463)	834
Age 20-49 years (2011 - 2012)	.145 (.130-.160)	.160 (.136-.176)	.250 (.213-.308)	.375 (.294-.446)	.440 (.356-.524)	522
Age 18-49 years (2013 - 2014)	.151 (.132-.173)	.171 (.139-.200)	.267 (.234-.292)	.373 (.316-.429)	.435 (.397-.480)	583
Age 18-49 years (2015 - 2016)	.160 (.143-.178)	.164 (.144-.194)	.279 (.237-.311)	.380 (.349-.406)	.445 (.392-.521)	457
Age 50+ years (2011 - 2012)	.126 (.112-.143)	.130 (.112-.157)	.208 (.173-.230)	.303 (.229-.395)	.395 (.256-.535)	354
Age 50+ years (2013 - 2014)	.115 (.100-.133)	.123 (.101-.136)	.196 (.173-.220)	.302 (.258-.408)	.431 (.362-.477)	374
Age 50+ years (2015 - 2016)	.128 (.114-.145)	.135 (.120-.167)	.219 (.189-.250)	.289 (.268-.324)	.366 (.315-.426)	377
Males (2011 - 2012)	.143 (.128-.161)	.150 (.128-.176)	.230 (.216-.265)	.358 (.266-.473)	.465 (.332-.535)	527
Males (2013 - 2014)	.144 (.125-.165)	.160 (.125-.198)	.253 (.226-.274)	.336 (.299-.405)	.424 (.402-.451)	512
Males (2015 - 2016)	.152 (.137-.169)	.167 (.136-.186)	.250 (.216-.286)	.341 (.314-.368)	.396 (.363-.440)	487
Females (2011 - 2012)	.130 (.111-.152)	.136 (.109-.160)	.231 (.172-.286)	.358 (.236-.440)	.389 (.337-.511)	349
Females (2013 - 2014)	.133 (.109-.164)	.139 (.114-.171)	.243 (.192-.301)	.385 (.288-.459)	.459 (.385-.602)	445
Females (2015 - 2016)	.140 (.126-.155)	.145 (.119-.175)	.249 (.219-.276)	.375 (.311-.424)	.492 (.397-.554)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.02, 0.018, and 0.018, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.147 (.137-.157)	.156 (.142-.168)	.247 (.221-.274)	.346 (.316-.377)	.417 (.372-.521)	1343
Total population (2013 - 2014)	.138 (.131-.146)	.151 (.138-.161)	.239 (.218-.260)	.338 (.318-.356)	.417 (.389-.438)	1487
Total population (2015 - 2016)	.148 (.136-.162)	.157 (.143-.176)	.254 (.227-.275)	.366 (.319-.394)	.435 (.402-.470)	1470
Age 20-49 years (2011 - 2012)	.158 (.143-.175)	.173 (.158-.196)	.276 (.247-.318)	.376 (.345-.407)	.438 (.385-.522)	671
Age 18-49 years (2013 - 2014)	.148 (.138-.159)	.161 (.143-.174)	.254 (.239-.265)	.371 (.340-.395)	.440 (.412-.470)	778
Age 18-49 years (2015 - 2016)	.163 (.146-.183)	.176 (.158-.197)	.285 (.257-.303)	.388 (.366-.419)	.467 (.426-.538)	750
Age 50+ years (2011 - 2012)	.135 (.123-.148)	.140 (.125-.153)	.204 (.181-.245)	.292 (.258-.352)	.361 (.298-.545)	672
Age 50+ years (2013 - 2014)	.128 (.120-.137)	.139 (.131-.150)	.213 (.189-.248)	.312 (.270-.340)	.375 (.326-.419)	709
Age 50+ years (2015 - 2016)	.133 (.120-.148)	.143 (.121-.155)	.216 (.192-.240)	.311 (.262-.374)	.406 (.356-.435)	720
Males (2011 - 2012)	.168 (.153-.185)	.173 (.152-.202)	.269 (.235-.304)	.361 (.324-.385)	.412 (.372-.509)	635
Males (2013 - 2014)	.150 (.138-.162)	.162 (.150-.171)	.242 (.222-.269)	.347 (.310-.386)	.438 (.386-.476)	663
Males (2015 - 2016)	.161 (.146-.178)	.181 (.160-.207)	.271 (.237-.300)	.369 (.315-.419)	.452 (.394-.521)	663
Females (2011 - 2012)	.132 (.121-.143)	.140 (.130-.149)	.230 (.198-.258)	.322 (.290-.376)	.431 (.341-.522)	708
Females (2013 - 2014)	.130 (.121-.139)	.138 (.120-.153)	.235 (.204-.254)	.327 (.304-.348)	.398 (.375-.421)	824
Females (2015 - 2016)	.139 (.126-.153)	.143 (.125-.156)	.224 (.203-.257)	.356 (.300-.388)	.432 (.382-.488)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.02, 0.018, and 0.018, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Thallium (creatinine corrected) (2011 – 2016)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.151 (.138-.164)	.153 (.142-.161)	.207 (.184-.227)	.292 (.237-.364)	.365 (.278-.544)	876
Total population (2013 - 2014)	.142 (.129-.156)	.142 (.133-.152)	.199 (.177-.222)	.280 (.248-.322)	.388 (.297-.410)	956
Total population (2015 - 2016)	.146 (.136-.156)	.145 (.134-.153)	.210 (.193-.226)	.284 (.250-.318)	.350 (.298-.408)	834
Age 20-49 years (2011 - 2012)	.150 (.135-.166)	.151 (.140-.166)	.200 (.178-.241)	.286 (.235-.333)	.347 (.286-.587)	522
Age 18-49 years (2013 - 2014)	.142 (.126-.160)	.140 (.130-.152)	.194 (.174-.219)	.285 (.231-.329)	.392 (.291-.463)	582
Age 18-49 years (2015 - 2016)	.148 (.139-.158)	.144 (.136-.153)	.209 (.193-.231)	.277 (.236-.318)	.358 (.284-.408)	457
Age 50+ years (2011 - 2012)	.152 (.138-.168)	.153 (.127-.171)	.222 (.186-.243)	.305 (.228-.416)	.382 (.243-.544)	354
Age 50+ years (2013 - 2014)	.141 (.129-.155)	.142 (.127-.160)	.201 (.181-.236)	.278 (.260-.313)	.373 (.287-.410)	374
Age 50+ years (2015 - 2016)	.142 (.126-.161)	.145 (.124-.170)	.211 (.180-.231)	.284 (.242-.345)	.345 (.284-.421)	377
Males (2011 - 2012)	.135 (.124-.148)	.134 (.121-.146)	.180 (.159-.207)	.241 (.198-.278)	.278 (.237-.375)	527
Males (2013 - 2014)	.127 (.113-.144)	.133 (.121-.142)	.175 (.155-.190)	.248 (.222-.260)	.283 (.260-.394)	511
Males (2015 - 2016)	.131 (.119-.145)	.129 (.112-.148)	.183 (.157-.208)	.240 (.204-.277)	.277 (.220-.328)	487
Females (2011 - 2012)	.173 (.155-.193)	.171 (.162-.188)	.235 (.201-.294)	.336 (.284-.457)	.457 (.294-.593)	349
Females (2013 - 2014)	.157 (.141-.176)	.156 (.140-.174)	.223 (.191-.260)	.313 (.246-.400)	.392 (.296-.482)	445
Females (2015 - 2016)	.165 (.152-.179)	.169 (.152-.180)	.242 (.216-.255)	.318 (.276-.402)	.406 (.318-.504)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.171 (.159-.184)	.167 (.156-.181)	.237 (.219-.258)	.342 (.312-.376)	.449 (.373-.510)	1342
Total population (2013 - 2014)	.165 (.158-.173)	.163 (.153-.171)	.241 (.227-.251)	.344 (.327-.359)	.433 (.405-.457)	1486
Total population (2015 - 2016)	.167 (.157-.178)	.166 (.152-.176)	.234 (.210-.271)	.336 (.300-.371)	.408 (.362-.481)	1468
Age 20-49 years (2011 - 2012)	.172 (.157-.189)	.171 (.156-.189)	.235 (.211-.257)	.333 (.289-.388)	.431 (.333-.665)	670
Age 18-49 years (2013 - 2014)	.162 (.151-.174)	.159 (.143-.176)	.236 (.220-.253)	.333 (.301-.361)	.418 (.361-.467)	778
Age 18-49 years (2015 - 2016)	.171 (.161-.181)	.170 (.154-.178)	.239 (.213-.267)	.347 (.303-.392)	.435 (.392-.494)	748
Age 50+ years (2011 - 2012)	.169 (.153-.187)	.165 (.152-.179)	.238 (.209-.282)	.348 (.300-.425)	.476 (.351-.532)	672
Age 50+ years (2013 - 2014)	.169 (.159-.179)	.165 (.153-.176)	.246 (.224-.264)	.353 (.329-.389)	.436 (.405-.507)	708
Age 50+ years (2015 - 2016)	.163 (.150-.178)	.160 (.145-.186)	.231 (.204-.280)	.331 (.292-.362)	.391 (.331-.523)	720
Males (2011 - 2012)	.150 (.137-.164)	.151 (.134-.159)	.209 (.180-.233)	.296 (.235-.333)	.333 (.283-.460)	634
Males (2013 - 2014)	.145 (.136-.154)	.138 (.130-.145)	.195 (.181-.207)	.291 (.258-.303)	.352 (.307-.404)	662
Males (2015 - 2016)	.148 (.136-.161)	.145 (.133-.164)	.199 (.178-.232)	.299 (.266-.332)	.348 (.298-.494)	663
Females (2011 - 2012)	.189 (.177-.202)	.186 (.172-.200)	.266 (.240-.289)	.403 (.345-.436)	.482 (.411-.557)	708
Females (2013 - 2014)	.184 (.175-.193)	.188 (.174-.198)	.270 (.252-.281)	.389 (.353-.416)	.444 (.430-.482)	824
Females (2015 - 2016)	.185 (.172-.198)	.183 (.167-.203)	.256 (.237-.283)	.369 (.326-.407)	.444 (.399-.535)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Tin (2011 – 2016)

CAS Number 7440-31-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.580 (.485-.694)	.490 (.400-.600)	1.00 (.800-1.27)	2.50 (1.57-4.09)	4.22 (2.95-6.85)	876
Total population (2013 - 2014)	.451 (.385-.528)	.410 (.360-.490)	.990 (.770-1.21)	2.20 (1.81-2.65)	4.26 (2.70-5.46)	957
Total population (2015 - 2016)	.477 (.417-.544)	.450 (.380-.520)	.990 (.830-1.16)	2.19 (1.80-2.44)	3.99 (2.86-5.04)	834
Age 20-49 years (2011 - 2012)	.573 (.466-.705)	.440 (.360-.610)	.980 (.730-1.52)	2.72 (1.62-4.22)	4.53 (2.95-9.52)	522
Age 18-49 years (2013 - 2014)	.396 (.331-.473)	.360 (.320-.430)	.780 (.690-1.12)	1.75 (1.35-2.38)	3.02 (1.84-5.46)	583
Age 18-49 years (2015 - 2016)	.455 (.383-.541)	.420 (.340-.510)	.940 (.730-1.18)	2.29 (1.75-2.93)	4.59 (2.55-12.4)	457
Age 50+ years (2011 - 2012)	.592 (.499-.702)	.570 (.450-.690)	1.01 (.880-1.23)	2.10 (1.47-3.34)	3.59 (2.24-5.88)	354
Age 50+ years (2013 - 2014)	.594 (.488-.723)	.560 (.480-.650)	1.30 (.990-1.55)	3.32 (2.32-4.48)	5.50 (2.84-25.6)	374
Age 50+ years (2015 - 2016)	.512 (.416-.630)	.480 (.390-.590)	1.10 (.690-1.43)	2.15 (1.64-2.29)	3.17 (2.29-4.64)	377
Males (2011 - 2012)	.546 (.448-.667)	.480 (.390-.580)	.880 (.730-1.12)	2.09 (1.27-3.04)	3.59 (2.24-5.74)	527
Males (2013 - 2014)	.427 (.334-.544)	.370 (.320-.490)	.790 (.690-1.11)	2.36 (1.34-4.83)	5.46 (2.18-19.6)	512
Males (2015 - 2016)	.438 (.356-.539)	.420 (.310-.560)	.970 (.640-1.25)	1.84 (1.50-2.29)	3.64 (2.29-4.61)	487
Females (2011 - 2012)	.626 (.506-.774)	.520 (.400-.660)	1.22 (.850-1.55)	2.94 (1.55-6.85)	6.85 (2.94-12.3)	349
Females (2013 - 2014)	.477 (.416-.547)	.450 (.380-.550)	1.16 (.840-1.34)	2.12 (1.75-2.60)	3.32 (2.49-4.43)	445
Females (2015 - 2016)	.526 (.442-.627)	.470 (.410-.550)	.990 (.870-1.19)	2.44 (1.80-3.43)	4.64 (2.30-11.5)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.22, 0.09, and 0.09, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.591 (.529-.660)	.510 (.450-.580)	1.03 (.880-1.23)	2.65 (2.13-3.44)	4.74 (3.44-6.50)	1343
Total population (2013 - 2014)	.397 (.344-.459)	.360 (.320-.400)	.860 (.730-1.00)	2.12 (1.61-2.36)	3.20 (2.57-4.15)	1487
Total population (2015 - 2016)	.454 (.402-.514)	.430 (.360-.520)	.950 (.840-1.08)	2.09 (1.76-2.54)	3.62 (2.67-5.02)	1469
Age 20-49 years (2011 - 2012)	.492 (.441-.549)	.410 (.370-.490)	.880 (.780-.990)	1.94 (1.41-2.48)	3.28 (2.23-5.54)	671
Age 18-49 years (2013 - 2014)	.327 (.276-.388)	.300 (.250-.360)	.730 (.540-.890)	1.57 (1.14-1.99)	2.29 (1.83-3.01)	778
Age 18-49 years (2015 - 2016)	.372 (.336-.411)	.330 (.280-.400)	.780 (.650-.900)	1.78 (1.47-2.42)	3.01 (2.42-4.72)	749
Age 50+ years (2011 - 2012)	.718 (.608-.849)	.580 (.470-.720)	1.24 (.990-1.67)	3.62 (2.39-4.74)	6.06 (3.62-9.43)	672
Age 50+ years (2013 - 2014)	.494 (.416-.587)	.400 (.340-.530)	1.06 (.810-1.36)	2.57 (2.22-3.09)	4.46 (3.21-6.37)	709
Age 50+ years (2015 - 2016)	.567 (.483-.665)	.560 (.450-.670)	1.14 (.970-1.40)	2.44 (1.91-3.17)	3.95 (2.82-6.28)	720
Males (2011 - 2012)	.613 (.521-.721)	.510 (.470-.580)	.990 (.790-1.26)	3.20 (1.85-4.81)	6.21 (3.20-9.46)	635
Males (2013 - 2014)	.388 (.336-.448)	.340 (.280-.390)	.800 (.650-.990)	1.83 (1.45-2.31)	3.03 (2.26-4.70)	663
Males (2015 - 2016)	.439 (.369-.521)	.420 (.320-.540)	.840 (.680-1.11)	1.76 (1.40-2.30)	2.98 (2.00-4.54)	663
Females (2011 - 2012)	.574 (.506-.651)	.490 (.420-.590)	1.03 (.870-1.28)	2.25 (2.07-3.08)	4.08 (3.10-5.40)	708
Females (2013 - 2014)	.405 (.342-.481)	.370 (.310-.430)	.900 (.750-1.16)	2.22 (1.67-2.61)	3.30 (2.67-4.15)	824
Females (2015 - 2016)	.467 (.405-.539)	.440 (.370-.530)	1.03 (.910-1.26)	2.44 (1.88-2.95)	4.19 (2.70-5.39)	806

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.22, 0.09, and 0.09, respectively.

Urinary Tin (creatinine corrected) (2011 – 2016)

CAS Number 7440-31-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.638 (.559-.729)	.557 (.484-.634)	1.04 (.815-1.32)	2.20 (1.86-2.81)	4.15 (2.81-5.52)	876
Total population (2013 - 2014)	.462 (.400-.533)	.419 (.333-.526)	.823 (.735-.986)	1.73 (1.46-2.41)	3.20 (2.49-4.92)	956
Total population (2015 - 2016)	.475 (.430-.525)	.391 (.343-.443)	.828 (.735-1.02)	1.68 (1.47-2.19)	3.28 (2.38-4.75)	834
Age 20-49 years (2011 - 2012)	.594 (.506-.697)	.519 (.433-.650)	.918 (.764-1.30)	2.00 (1.63-2.74)	4.15 (2.38-7.90)	522
Age 18-49 years (2013 - 2014)	.371 (.318-.433)	.333 (.274-.434)	.670 (.582-.796)	1.27 (.896-1.73)	2.21 (1.33-3.07)	582
Age 18-49 years (2015 - 2016)	.423 (.381-.469)	.350 (.302-.391)	.741 (.558-.913)	1.50 (1.30-2.27)	3.64 (1.65-5.96)	457
Age 50+ years (2011 - 2012)	.714 (.605-.842)	.576 (.459-.691)	1.24 (.772-1.52)	2.67 (1.49-3.82)	4.09 (2.74-5.86)	354
Age 50+ years (2013 - 2014)	.730 (.625-.853)	.646 (.532-.783)	1.35 (1.10-1.59)	3.36 (2.37-5.24)	5.69 (3.20-17.1)	374
Age 50+ years (2015 - 2016)	.569 (.484-.668)	.514 (.336-.745)	.959 (.828-1.24)	1.89 (1.50-2.50)	3.03 (2.33-3.58)	377
Males (2011 - 2012)	.516 (.459-.579)	.482 (.403-.576)	.780 (.671-.918)	1.53 (1.18-2.05)	2.20 (1.88-3.11)	527
Males (2013 - 2014)	.379 (.303-.473)	.319 (.250-.409)	.708 (.546-.818)	1.48 (1.01-2.69)	2.69 (1.60-6.49)	511
Males (2015 - 2016)	.378 (.320-.446)	.309 (.264-.391)	.639 (.457-.814)	1.47 (1.09-1.79)	1.99 (1.49-2.80)	487
Females (2011 - 2012)	.835 (.653-1.07)	.673 (.538-.818)	1.40 (.973-2.38)	3.30 (2.20-5.10)	5.14 (3.48-12.3)	349
Females (2013 - 2014)	.563 (.490-.647)	.550 (.437-.656)	1.00 (.823-1.27)	1.89 (1.59-2.49)	3.39 (2.49-5.50)	445
Females (2015 - 2016)	.621 (.538-.718)	.506 (.398-.680)	1.08 (.853-1.29)	2.50 (1.42-3.77)	4.24 (2.42-6.07)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.691 (.620-.769)	.610 (.552-.678)	1.11 (.975-1.34)	2.50 (1.98-2.99)	4.50 (3.10-5.55)	1342
Total population (2013 - 2014)	.473 (.417-.537)	.417 (.378-.472)	.889 (.735-1.06)	1.92 (1.78-2.21)	3.19 (2.72-3.65)	1486
Total population (2015 - 2016)	.511 (.450-.580)	.455 (.408-.507)	.901 (.783-1.05)	1.77 (1.48-2.23)	3.18 (2.46-4.18)	1467
Age 20-49 years (2011 - 2012)	.539 (.484-.601)	.500 (.442-.550)	.872 (.766-.975)	1.72 (1.20-2.39)	3.04 (1.95-4.43)	670
Age 18-49 years (2013 - 2014)	.358 (.320-.401)	.333 (.286-.372)	.614 (.567-.697)	1.28 (1.13-1.65)	2.07 (1.78-2.64)	778
Age 18-49 years (2015 - 2016)	.388 (.352-.427)	.341 (.307-.364)	.649 (.578-.723)	1.28 (1.07-1.53)	2.12 (1.49-3.33)	747
Age 50+ years (2011 - 2012)	.898 (.782-1.03)	.778 (.653-.895)	1.67 (1.22-1.98)	2.91 (2.52-5.06)	5.58 (4.22-7.26)	672
Age 50+ years (2013 - 2014)	.647 (.552-.758)	.549 (.482-.643)	1.33 (1.03-1.55)	2.71 (2.02-3.26)	4.00 (2.99-5.70)	708
Age 50+ years (2015 - 2016)	.693 (.590-.813)	.622 (.493-.770)	1.12 (.919-1.44)	2.46 (1.80-2.94)	4.37 (2.94-7.31)	720
Males (2011 - 2012)	.550 (.454-.665)	.466 (.403-.565)	.829 (.653-1.32)	2.28 (1.37-4.04)	4.17 (2.29-6.27)	634
Males (2013 - 2014)	.373 (.324-.429)	.332 (.288-.375)	.640 (.504-.787)	1.54 (1.26-1.84)	2.55 (1.96-3.25)	662
Males (2015 - 2016)	.403 (.340-.477)	.356 (.303-.429)	.725 (.537-.901)	1.38 (.991-2.23)	2.86 (1.49-3.82)	663
Females (2011 - 2012)	.825 (.726-.937)	.753 (.625-.867)	1.28 (1.09-1.60)	2.56 (2.23-3.22)	4.50 (3.10-6.07)	708
Females (2013 - 2014)	.575 (.494-.670)	.529 (.459-.579)	1.13 (.880-1.36)	2.27 (1.83-2.76)	3.63 (2.95-4.16)	824
Females (2015 - 2016)	.621 (.551-.699)	.520 (.486-.605)	1.03 (.904-1.21)	2.10 (1.65-2.59)	4.37 (2.59-7.31)	804

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Tungsten (2011 – 2016)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.074 (.063-.089)	.070 (.060-.083)	.142 (.113-.184)	.285 (.197-.467)	.496 (.258-.838)	866
Total population (2013 - 2014)	.059 (.052-.066)	.062 (.050-.072)	.128 (.114-.143)	.221 (.197-.247)	.291 (.250-.398)	957
Total population (2015 - 2016)	.068 (.061-.076)	.069 (.061-.082)	.131 (.118-.153)	.252 (.202-.312)	.397 (.297-.493)	834
Age 20-49 years (2011 - 2012)	.081 (.064-.103)	.077 (.065-.094)	.154 (.116-.227)	.361 (.182-.611)	.527 (.265-.838)	513
Age 18-49 years (2013 - 2014)	.065 (.057-.074)	.068 (.057-.083)	.137 (.121-.161)	.230 (.196-.269)	.375 (.260-.465)	583
Age 18-49 years (2015 - 2016)	.076 (.065-.089)	.081 (.065-.090)	.147 (.118-.199)	.278 (.209-.390)	.470 (.302-.594)	457
Age 50+ years (2011 - 2012)	.065 (.056-.076)	.063 (.048-.075)	.120 (.088-.165)	.235 (.162-.286)	.298 (.227-.512)	353
Age 50+ years (2013 - 2014)	.047 (.039-.058)	.049 (.035-.065)	.104 (.083-.126)	.207 (.147-.254)	.256 (.211-.292)	374
Age 50+ years (2015 - 2016)	.058 (.049-.067)	.061 (.050-.080)	.118 (.095-.131)	.202 (.146-.272)	.297 (.238-.397)	377
Males (2011 - 2012)	.083 (.065-.106)	.075 (.060-.099)	.164 (.116-.218)	.351 (.183-.703)	.611 (.265-.838)	522
Males (2013 - 2014)	.064 (.057-.072)	.068 (.057-.082)	.132 (.117-.145)	.214 (.196-.230)	.272 (.230-.380)	512
Males (2015 - 2016)	.074 (.064-.085)	.083 (.067-.092)	.136 (.115-.170)	.252 (.178-.390)	.390 (.253-.474)	487
Females (2011 - 2012)	.065 (.054-.078)	.064 (.049-.079)	.131 (.090-.180)	.228 (.175-.312)	.366 (.234-.479)	344
Females (2013 - 2014)	.054 (.045-.064)	.055 (.039-.069)	.124 (.097-.153)	.236 (.186-.276)	.311 (.256-.483)	445
Females (2015 - 2016)	.062 (.055-.070)	.061 (.053-.068)	.128 (.104-.154)	.245 (.172-.319)	.397 (.292-.557)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.026, 0.018, and 0.018, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.064 (.058-.072)	.058 (.053-.064)	.117 (.099-.140)	.234 (.183-.319)	.364 (.274-.474)	1337
Total population (2013 - 2014)	.050 (.044-.057)	.048 (.039-.057)	.106 (.087-.123)	.213 (.175-.245)	.343 (.264-.419)	1487
Total population (2015 - 2016)	.057 (.050-.065)	.057 (.050-.067)	.110 (.098-.128)	.214 (.167-.264)	.320 (.254-.406)	1469
Age 20-49 years (2011 - 2012)	.072 (.061-.086)	.067 (.055-.082)	.132 (.106-.178)	.283 (.184-.405)	.405 (.277-.743)	668
Age 18-49 years (2013 - 2014)	.052 (.043-.062)	.050 (.037-.068)	.119 (.098-.142)	.221 (.188-.264)	.350 (.264-.468)	778
Age 18-49 years (2015 - 2016)	.064 (.054-.075)	.066 (.054-.078)	.135 (.108-.162)	.241 (.188-.297)	.361 (.297-.476)	749
Age 50+ years (2011 - 2012)	.057 (.052-.063)	.053 (.047-.058)	.098 (.085-.122)	.200 (.167-.225)	.307 (.216-.426)	669
Age 50+ years (2013 - 2014)	.048 (.041-.056)	.046 (.038-.054)	.095 (.076-.119)	.190 (.138-.259)	.280 (.227-.507)	709
Age 50+ years (2015 - 2016)	.051 (.044-.059)	.052 (.041-.062)	.090 (.077-.106)	.164 (.124-.268)	.294 (.164-.365)	720
Males (2011 - 2012)	.073 (.064-.083)	.068 (.057-.080)	.138 (.116-.166)	.271 (.190-.384)	.405 (.246-.628)	632
Males (2013 - 2014)	.056 (.049-.065)	.053 (.044-.065)	.120 (.097-.157)	.243 (.203-.310)	.379 (.298-.468)	663
Males (2015 - 2016)	.066 (.056-.077)	.066 (.054-.080)	.125 (.100-.153)	.241 (.167-.302)	.337 (.244-.476)	663
Females (2011 - 2012)	.058 (.053-.065)	.053 (.047-.059)	.103 (.086-.124)	.220 (.170-.277)	.322 (.237-.472)	705
Females (2013 - 2014)	.045 (.040-.051)	.045 (.034-.054)	.097 (.080-.109)	.176 (.148-.216)	.280 (.226-.393)	824
Females (2015 - 2016)	.051 (.044-.059)	.050 (.040-.059)	.101 (.086-.118)	.202 (.154-.268)	.301 (.225-.438)	806

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.026, 0.018, and 0.018, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Tungsten (creatinine corrected) (2011 – 2016)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.082 (.072-.093)	.076 (.069-.088)	.129 (.115-.143)	.238 (.162-.365)	.365 (.247-.633)	866
Total population (2013 - 2014)	.060 (.054-.067)	.059 (.052-.069)	.107 (.097-.118)	.170 (.149-.191)	.241 (.192-.319)	956
Total population (2015 - 2016)	.068 (.061-.075)	.063 (.056-.072)	.109 (.095-.124)	.185 (.160-.234)	.267 (.206-.482)	834
Age 20-49 years (2011 - 2012)	.084 (.070-.101)	.083 (.068-.096)	.136 (.113-.171)	.247 (.140-.391)	.374 (.247-.658)	513
Age 18-49 years (2013 - 2014)	.061 (.055-.067)	.059 (.051-.069)	.108 (.099-.120)	.162 (.142-.186)	.214 (.186-.277)	582
Age 18-49 years (2015 - 2016)	.070 (.062-.081)	.063 (.057-.075)	.112 (.093-.129)	.200 (.153-.240)	.279 (.178-.681)	457
Age 50+ years (2011 - 2012)	.078 (.070-.088)	.074 (.064-.082)	.123 (.106-.138)	.208 (.163-.233)	.262 (.226-.288)	353
Age 50+ years (2013 - 2014)	.058 (.048-.071)	.057 (.049-.072)	.100 (.084-.123)	.179 (.142-.225)	.281 (.175-.480)	374
Age 50+ years (2015 - 2016)	.064 (.057-.071)	.062 (.049-.073)	.100 (.084-.121)	.179 (.138-.234)	.267 (.191-.491)	377
Males (2011 - 2012)	.078 (.064-.095)	.075 (.062-.091)	.123 (.098-.150)	.247 (.129-.391)	.370 (.229-.571)	522
Males (2013 - 2014)	.057 (.051-.064)	.058 (.048-.071)	.099 (.087-.117)	.162 (.142-.186)	.198 (.186-.254)	511
Males (2015 - 2016)	.064 (.056-.072)	.062 (.054-.072)	.097 (.083-.115)	.161 (.122-.225)	.234 (.149-.482)	487
Females (2011 - 2012)	.087 (.072-.103)	.082 (.069-.098)	.139 (.118-.163)	.230 (.193-.313)	.343 (.229-.733)	344
Females (2013 - 2014)	.063 (.055-.073)	.059 (.050-.076)	.118 (.101-.125)	.175 (.154-.215)	.281 (.198-.364)	445
Females (2015 - 2016)	.073 (.065-.082)	.065 (.056-.078)	.125 (.107-.148)	.218 (.172-.267)	.289 (.218-.640)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.075 (.068-.084)	.069 (.064-.075)	.126 (.105-.146)	.223 (.174-.275)	.345 (.233-.492)	1336
Total population (2013 - 2014)	.060 (.053-.067)	.057 (.048-.065)	.105 (.091-.119)	.190 (.162-.227)	.310 (.246-.371)	1486
Total population (2015 - 2016)	.065 (.057-.073)	.061 (.053-.069)	.103 (.091-.123)	.181 (.150-.221)	.289 (.208-.384)	1467
Age 20-49 years (2011 - 2012)	.079 (.068-.092)	.074 (.064-.083)	.128 (.106-.168)	.246 (.183-.374)	.391 (.233-.659)	667
Age 18-49 years (2013 - 2014)	.057 (.050-.065)	.054 (.046-.066)	.100 (.084-.116)	.172 (.155-.204)	.270 (.226-.324)	778
Age 18-49 years (2015 - 2016)	.067 (.058-.076)	.062 (.053-.072)	.103 (.091-.123)	.201 (.146-.244)	.291 (.221-.401)	747
Age 50+ years (2011 - 2012)	.072 (.065-.079)	.065 (.062-.074)	.122 (.099-.135)	.192 (.157-.238)	.261 (.206-.366)	669
Age 50+ years (2013 - 2014)	.063 (.054-.073)	.059 (.049-.070)	.110 (.090-.130)	.224 (.155-.287)	.334 (.251-.701)	708
Age 50+ years (2015 - 2016)	.062 (.054-.072)	.059 (.051-.070)	.104 (.080-.126)	.170 (.130-.206)	.289 (.172-.425)	720
Males (2011 - 2012)	.065 (.057-.075)	.062 (.055-.068)	.107 (.088-.130)	.180 (.133-.261)	.261 (.172-.458)	631
Males (2013 - 2014)	.055 (.047-.063)	.053 (.042-.065)	.099 (.081-.119)	.162 (.133-.223)	.300 (.194-.377)	662
Males (2015 - 2016)	.060 (.052-.071)	.055 (.047-.065)	.099 (.082-.122)	.177 (.127-.230)	.288 (.177-.497)	663
Females (2011 - 2012)	.084 (.077-.092)	.076 (.069-.082)	.142 (.120-.164)	.244 (.200-.334)	.391 (.268-.544)	705
Females (2013 - 2014)	.064 (.058-.071)	.059 (.052-.067)	.112 (.102-.122)	.220 (.172-.251)	.310 (.261-.367)	824
Females (2015 - 2016)	.068 (.061-.076)	.065 (.056-.074)	.112 (.092-.126)	.184 (.142-.242)	.289 (.195-.331)	804

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Uranium (2011 – 2016)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.007 (.006-.009)	.007 (.006-.008)	.013 (.010-.017)	.024 (.019-.034)	.035 (.026-.057)	876
Total population (2013 - 2014)	.006 (.005-.007)	.006 (.005-.007)	.012 (.009-.015)	.025 (.017-.039)	.039 (.027-.062)	957
Total population (2015 - 2016)	.007 (.006-.008)	.007 (.006-.008)	.014 (.010-.019)	.025 (.018-.039)	.041 (.024-.096)	834
Age 20-49 years (2011 - 2012)	.008 (.006-.009)	.007 (.006-.009)	.013 (.010-.018)	.023 (.018-.034)	.036 (.023-.069)	522
Age 18-49 years (2013 - 2014)	.006 (.005-.007)	.006 (.005-.007)	.011 (.009-.013)	.024 (.016-.033)	.033 (.026-.054)	583
Age 18-49 years (2015 - 2016)	.007 (.005-.009)	.007 (.006-.008)	.014 (.009-.021)	.029 (.017-.061)	.048 (.022-.130)	457
Age 50+ years (2011 - 2012)	.007 (.006-.009)	.007 (.005-.007)	.013 (.008-.017)	.025 (.017-.033)	.034 (.026-.039)	354
Age 50+ years (2013 - 2014)	.006 (.005-.007)	.005 (.004-.007)	.012 (.008-.017)	.030 (.016-.058)	.048 (.035-.076)	374
Age 50+ years (2015 - 2016)	.006 (.005-.008)	.007 (.005-.009)	.013 (.011-.019)	.024 (.018-.027)	.027 (.024-.043)	377
Males (2011 - 2012)	.008 (.006-.009)	.007 (.006-.008)	.013 (.010-.016)	.026 (.017-.040)	.040 (.022-.069)	527
Males (2013 - 2014)	.006 (.005-.007)	.006 (.005-.008)	.012 (.010-.014)	.023 (.016-.033)	.034 (.024-.054)	512
Males (2015 - 2016)	.007 (.006-.009)	.007 (.006-.008)	.014 (.010-.019)	.024 (.018-.033)	.036 (.024-.057)	487
Females (2011 - 2012)	.007 (.006-.009)	.007 (.005-.009)	.013 (.008-.019)	.023 (.018-.027)	.029 (.023-.060)	349
Females (2013 - 2014)	.006 (.005-.007)	.006 (.005-.007)	.012 (.008-.017)	.027 (.016-.042)	.042 (.030-.076)	445
Females (2015 - 2016)	.007 (.005-.008)	.006 (.005-.008)	.013 (.010-.021)	.028 (.017-.065)	.047 (.022-.096)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.003, 0.002, and 0.002, respectively.

Nonsmokers† (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2011 - 2012)	.005 (.005-.006)	.005 (.004-.006)	.009 (.007-.012)	.016 (.013-.022)	.025 (.020-.032)	1343
Total population (2013 - 2014)	.005 (.004-.006)	.004 (.004-.005)	.009 (.007-.011)	.023 (.014-.030)	.035 (.024-.056)	1487
Total population (2015 - 2016)	.005 (.004-.006)	.005 (.004-.005)	.009 (.007-.012)	.018 (.014-.026)	.031 (.020-.036)	1470
Age 20-49 years (2011 - 2012)	.005 (.004-.006)	.005 (.004-.006)	.008 (.007-.010)	.015 (.011-.021)	.023 (.016-.031)	671
Age 18-49 years (2013 - 2014)	.005 (.004-.006)	.004 (.004-.005)	.010 (.008-.012)	.023 (.014-.031)	.034 (.023-.053)	778
Age 18-49 years (2015 - 2016)	.005 (.004-.006)	.004 (.004-.005)	.009 (.007-.013)	.019 (.013-.031)	.032 (.019-.049)	750
Age 50+ years (2011 - 2012)	.006 (.005-.007)	.005 (.004-.006)	.011 (.007-.014)	.017 (.014-.025)	.028 (.019-.043)	672
Age 50+ years (2013 - 2014)	.005 (.004-.006)	.004 (.003-.005)	.009 (.007-.011)	.023 (.013-.034)	.035 (.024-.061)	709
Age 50+ years (2015 - 2016)	.005 (.004-.006)	.005 (.004-.005)	.009 (.007-.012)	.017 (.014-.025)	.030 (.020-.035)	720
Males (2011 - 2012)	.006 (.005-.007)	.005 (.004-.007)	.010 (.007-.013)	.016 (.013-.022)	.023 (.016-.040)	635
Males (2013 - 2014)	.005 (.004-.006)	.004 (.003-.005)	.009 (.007-.013)	.024 (.014-.038)	.038 (.026-.056)	663
Males (2015 - 2016)	.005 (.005-.006)	.005 (.004-.006)	.010 (.007-.013)	.017 (.014-.026)	.031 (.018-.041)	663
Females (2011 - 2012)	.005 (.005-.006)	.005 (.004-.006)	.009 (.007-.011)	.017 (.013-.025)	.028 (.020-.038)	708
Females (2013 - 2014)	.005 (.004-.006)	.004 (.004-.005)	.009 (.007-.011)	.021 (.013-.030)	.033 (.023-.053)	824
Females (2015 - 2016)	.005 (.004-.006)	.004 (.003-.005)	.008 (.006-.012)	.019 (.014-.026)	.031 (.022-.036)	807

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.003, 0.002, and 0.002, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Uranium (creatinine corrected) (2011 – 2016)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.008 (.007-.010)	.007 (.007-.009)	.013 (.011-.016)	.022 (.019-.026)	.031 (.022-.073)	876
Total population (2013 - 2014)	.006 (.005-.007)	.005 (.004-.007)	.011 (.008-.013)	.020 (.014-.030)	.031 (.021-.052)	956
Total population (2015 - 2016)	.007 (.005-.009)	.006 (.005-.008)	.011 (.008-.017)	.023 (.014-.042)	.039 (.021-.083)	834
Age 20-49 years (2011 - 2012)	.008 (.006-.010)	.007 (.006-.009)	.013 (.010-.015)	.022 (.019-.027)	.030 (.021-.083)	522
Age 18-49 years (2013 - 2014)	.006 (.005-.007)	.005 (.004-.006)	.010 (.007-.011)	.017 (.013-.023)	.026 (.020-.036)	582
Age 18-49 years (2015 - 2016)	.006 (.005-.009)	.006 (.004-.008)	.010 (.007-.019)	.022 (.012-.047)	.036 (.016-.121)	457
Age 50+ years (2011 - 2012)	.008 (.007-.010)	.008 (.006-.011)	.014 (.012-.017)	.021 (.019-.027)	.034 (.022-.058)	354
Age 50+ years (2013 - 2014)	.007 (.005-.009)	.006 (.004-.009)	.013 (.009-.016)	.025 (.015-.052)	.051 (.022-.101)	374
Age 50+ years (2015 - 2016)	.007 (.006-.009)	.007 (.005-.008)	.012 (.009-.017)	.026 (.016-.039)	.039 (.021-.066)	377
Males (2011 - 2012)	.007 (.006-.009)	.007 (.005-.009)	.012 (.008-.016)	.020 (.014-.030)	.027 (.019-.083)	527
Males (2013 - 2014)	.005 (.005-.006)	.005 (.004-.005)	.008 (.006-.011)	.018 (.013-.022)	.025 (.021-.035)	511
Males (2015 - 2016)	.006 (.005-.008)	.006 (.004-.007)	.010 (.007-.014)	.017 (.010-.028)	.029 (.017-.074)	487
Females (2011 - 2012)	.009 (.008-.010)	.009 (.007-.010)	.014 (.012-.017)	.025 (.021-.030)	.037 (.024-.058)	349
Females (2013 - 2014)	.007 (.006-.009)	.006 (.005-.009)	.012 (.009-.015)	.022 (.014-.046)	.043 (.022-.085)	445
Females (2015 - 2016)	.008 (.006-.010)	.007 (.005-.009)	.013 (.009-.024)	.028 (.015-.054)	.045 (.021-.151)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.006 (.005-.007)	.006 (.005-.007)	.010 (.008-.013)	.020 (.014-.027)	.028 (.021-.035)	1342
Total population (2013 - 2014)	.006 (.005-.007)	.005 (.004-.006)	.010 (.008-.012)	.020 (.014-.033)	.037 (.020-.058)	1486
Total population (2015 - 2016)	.005 (.005-.007)	.005 (.004-.006)	.009 (.007-.012)	.016 (.012-.024)	.027 (.018-.037)	1468
Age 20-49 years (2011 - 2012)	.006 (.005-.006)	.005 (.005-.006)	.009 (.007-.012)	.019 (.013-.024)	.027 (.020-.029)	670
Age 18-49 years (2013 - 2014)	.005 (.005-.006)	.005 (.004-.006)	.009 (.007-.011)	.018 (.012-.025)	.028 (.019-.060)	778
Age 18-49 years (2015 - 2016)	.005 (.004-.006)	.005 (.004-.006)	.008 (.006-.011)	.015 (.010-.026)	.026 (.014-.040)	748
Age 50+ years (2011 - 2012)	.007 (.006-.008)	.007 (.006-.008)	.012 (.009-.014)	.020 (.015-.032)	.034 (.023-.051)	672
Age 50+ years (2013 - 2014)	.006 (.005-.008)	.005 (.005-.006)	.011 (.008-.015)	.023 (.014-.042)	.043 (.027-.058)	708
Age 50+ years (2015 - 2016)	.006 (.005-.007)	.006 (.005-.006)	.009 (.008-.012)	.018 (.013-.025)	.028 (.021-.037)	720
Males (2011 - 2012)	.005 (.004-.006)	.005 (.004-.006)	.008 (.007-.009)	.013 (.010-.020)	.020 (.013-.029)	634
Males (2013 - 2014)	.005 (.004-.006)	.004 (.004-.005)	.008 (.006-.010)	.016 (.010-.027)	.027 (.014-.074)	662
Males (2015 - 2016)	.005 (.004-.006)	.005 (.004-.005)	.008 (.006-.009)	.015 (.010-.019)	.028 (.016-.042)	663
Females (2011 - 2012)	.008 (.006-.009)	.007 (.006-.008)	.013 (.010-.016)	.022 (.018-.028)	.033 (.027-.040)	708
Females (2013 - 2014)	.007 (.006-.008)	.006 (.005-.007)	.011 (.009-.014)	.023 (.016-.038)	.042 (.024-.067)	824
Females (2015 - 2016)	.006 (.005-.007)	.006 (.005-.007)	.010 (.008-.013)	.018 (.013-.025)	.027 (.021-.037)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Nitrate (2011 – 2014)

CAS Number 84145-82-4

Geometric mean and selected percentiles of urine concentrations (in mg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	47.1 (43.6-50.8)	49.3 (45.4-52.3)	82.8 (70.0-90.9)	121 (107-133)	149 (127-173)	869
Total population (2013 - 2014)	47.7 (43.8-51.9)	51.1 (45.2-58.0)	82.8 (76.7-90.2)	117 (107-134)	142 (135-155)	947
Age 20-49 years (2011 - 2012)	48.4 (44.2-52.9)	52.2 (46.7-57.4)	82.6 (69.3-94.4)	120 (98.8-145)	150 (123-224)	518
Age 18-49 years (2013 - 2014)	51.0 (46.1-56.3)	54.9 (49.5-62.4)	89.1 (78.4-99.8)	122 (111-139)	146 (135-183)	577
Age 50+ years (2011 - 2012)	45.0 (40.2-50.5)	46.1 (39.4-54.4)	82.8 (64.5-91.7)	121 (102-140)	145 (107-173)	351
Age 50+ years (2013 - 2014)	41.4 (36.8-46.6)	41.0 (35.4-45.4)	71.4 (63.5-83.5)	106 (87.1-126)	129 (101-248)	370
Males (2011 - 2012)	50.5 (45.7-55.8)	52.2 (46.5-60.2)	88.1 (79.0-98.6)	124 (105-152)	166 (123-192)	525
Males (2013 - 2014)	49.9 (44.7-55.8)	54.8 (48.3-60.0)	82.4 (74.3-94.8)	118 (106-135)	141 (118-189)	511
Females (2011 - 2012)	43.0 (38.3-48.3)	44.2 (38.8-52.2)	69.8 (63.9-81.5)	110 (89.3-145)	145 (107-241)	344
Females (2013 - 2014)	45.4 (41.1-50.2)	47.0 (40.4-54.5)	82.8 (70.4-93.8)	114 (101-135)	145 (129-179)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	39.2 (36.5-42.0)	41.5 (38.6-44.8)	67.9 (62.8-73.5)	102 (93.7-113)	132 (114-150)	1319
Total population (2013 - 2014)	38.0 (36.1-40.1)	38.9 (37.3-41.2)	66.9 (61.7-71.9)	99.8 (92.3-107)	128 (116-151)	1477
Age 20-49 years (2011 - 2012)	42.3 (38.2-46.9)	44.5 (41.0-48.0)	71.9 (64.5-80.6)	113 (94.5-120)	138 (114-180)	659
Age 18-49 years (2013 - 2014)	40.1 (37.3-43.0)	40.8 (37.3-45.3)	69.2 (62.3-77.4)	102 (95.9-108)	132 (111-153)	774
Age 50+ years (2011 - 2012)	36.0 (32.5-40.0)	38.7 (33.1-44.2)	60.8 (54.0-70.9)	93.7 (83.0-108)	120 (102-148)	660
Age 50+ years (2013 - 2014)	35.9 (32.6-39.4)	37.6 (32.6-41.5)	65.0 (55.5-71.2)	92.3 (85.6-109)	128 (109-157)	703
Males (2011 - 2012)	45.4 (41.3-49.9)	45.2 (42.1-49.8)	73.3 (65.4-77.5)	108 (89.0-132)	150 (103-178)	628
Males (2013 - 2014)	41.7 (38.1-45.8)	42.3 (38.2-48.9)	69.6 (60.2-81.6)	101 (88.3-116)	134 (109-156)	661
Females (2011 - 2012)	34.9 (31.8-38.2)	37.5 (32.2-43.0)	60.8 (55.8-68.9)	99.3 (89.1-113)	119 (112-139)	691
Females (2013 - 2014)	35.2 (32.8-37.8)	36.9 (31.9-38.9)	65.4 (59.0-68.9)	98.7 (90.1-108)	124 (109-157)	816

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

Urinary Nitrate (creatinine corrected) (2011 – 2014)

CAS Number 84145-82-4

Geometric mean and selected percentiles of urine concentrations (in mg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	52.0 (48.0-56.3)	51.7 (44.4-58.6)	71.7 (64.7-78.8)	91.9 (86.1-108)	133 (95.0-165)	869
Total population (2013 - 2014)	48.4 (46.1-50.8)	47.5 (45.0-50.1)	65.4 (60.3-70.1)	89.4 (80.6-104)	113 (105-128)	947
Age 20-49 years (2011 - 2012)	50.4 (46.0-55.2)	47.7 (42.0-54.5)	65.9 (60.0-73.2)	88.9 (79.2-112)	136 (88.9-187)	518
Age 18-49 years (2013 - 2014)	47.1 (44.3-50.0)	46.4 (43.0-49.7)	60.3 (55.4-67.3)	83.2 (71.3-107)	107 (86.7-130)	577
Age 50+ years (2011 - 2012)	54.4 (49.6-59.7)	57.2 (49.4-60.9)	80.9 (66.1-86.3)	99.3 (87.2-107)	109 (98.8-144)	351
Age 50+ years (2013 - 2014)	51.4 (45.9-57.5)	49.4 (45.0-57.0)	72.5 (64.9-76.4)	104 (80.6-118)	119 (101-168)	370
Males (2011 - 2012)	47.8 (43.9-52.1)	47.7 (42.1-53.0)	61.8 (58.6-68.8)	87.1 (73.9-95.0)	102 (87.2-133)	525
Males (2013 - 2014)	44.3 (40.0-48.9)	42.8 (38.9-48.8)	55.9 (51.8-67.1)	83.2 (64.1-106)	108 (89.4-133)	511
Females (2011 - 2012)	57.7 (52.3-63.7)	58.8 (51.1-65.3)	80.9 (71.8-84.8)	104 (88.1-142)	144 (102-241)	344
Females (2013 - 2014)	53.1 (49.3-57.1)	51.6 (46.5-57.0)	72.2 (66.4-76.2)	99.6 (78.8-113)	116 (106-149)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	46.0 (42.9-49.2)	43.8 (40.9-46.4)	67.4 (59.5-73.6)	106 (90.2-121)	145 (119-166)	1318
Total population (2013 - 2014)	45.6 (43.3-48.0)	44.5 (41.9-47.5)	65.4 (61.8-70.4)	97.4 (90.5-105)	123 (115-136)	1476
Age 20-49 years (2011 - 2012)	46.6 (42.4-51.1)	42.7 (38.7-47.0)	63.8 (54.7-72.5)	107 (84.9-137)	150 (107-173)	658
Age 18-49 years (2013 - 2014)	44.1 (42.1-46.2)	42.5 (40.0-44.3)	61.1 (56.8-65.0)	93.5 (83.9-102)	120 (105-130)	774
Age 50+ years (2011 - 2012)	45.4 (41.2-49.9)	45.0 (41.1-50.0)	68.5 (56.6-84.9)	99.4 (85.2-120)	140 (112-151)	660
Age 50+ years (2013 - 2014)	47.3 (43.3-51.6)	48.4 (42.2-53.1)	71.3 (64.7-79.2)	105 (90.0-117)	135 (112-162)	702
Males (2011 - 2012)	40.6 (37.9-43.4)	39.1 (36.4-41.7)	54.6 (51.0-60.9)	84.9 (69.3-98.4)	106 (87.2-120)	627
Males (2013 - 2014)	40.6 (37.8-43.5)	38.2 (35.3-42.1)	55.7 (50.6-62.8)	79.7 (76.0-86.7)	104 (86.7-123)	660
Females (2011 - 2012)	50.7 (45.8-56.1)	47.8 (43.6-53.6)	76.5 (67.7-86.6)	124 (101-151)	154 (137-186)	691
Females (2013 - 2014)	50.2 (47.3-53.3)	50.3 (46.2-54.1)	72.4 (67.0-77.1)	108 (98.7-120)	139 (120-167)	816

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Perchlorate (2011 – 2014)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	2.53 (2.29-2.81)	2.73 (2.34-3.07)	4.72 (3.91-5.50)	7.64 (7.18-9.44)	10.3 (7.98-15.4)	869
Total population (2013 - 2014)	2.41 (2.17-2.67)	2.41 (2.03-3.03)	4.53 (4.24-4.79)	7.09 (6.18-8.29)	9.54 (7.92-13.2)	947
Age 20-49 years (2011 - 2012)	2.59 (2.27-2.96)	2.75 (2.34-3.24)	4.72 (3.82-5.77)	8.92 (6.00-10.7)	11.7 (8.84-23.5)	518
Age 18-49 years (2013 - 2014)	2.52 (2.30-2.75)	2.86 (2.21-3.28)	4.72 (4.48-5.20)	7.28 (6.19-8.29)	9.34 (7.62-12.3)	577
Age 50+ years (2011 - 2012)	2.44 (2.05-2.91)	2.59 (1.95-3.39)	4.68 (3.39-6.26)	7.41 (5.64-8.40)	8.60 (7.49-10.7)	351
Age 50+ years (2013 - 2014)	2.19 (1.82-2.64)	2.13 (1.80-2.42)	3.78 (3.20-4.10)	6.44 (5.02-10.4)	12.5 (9.05-21.9)	370
Males (2011 - 2012)	2.76 (2.42-3.13)	2.98 (2.51-3.36)	5.45 (4.26-6.32)	8.26 (7.23-10.3)	10.6 (8.26-26.6)	525
Males (2013 - 2014)	2.45 (2.22-2.69)	2.39 (1.98-3.17)	4.53 (4.24-4.72)	6.63 (5.90-7.20)	9.34 (6.63-12.5)	511
Females (2011 - 2012)	2.28 (2.02-2.58)	2.49 (1.99-2.90)	4.08 (3.63-4.63)	7.18 (5.01-9.20)	9.45 (7.60-11.5)	344
Females (2013 - 2014)	2.37 (2.03-2.76)	2.41 (1.94-2.96)	4.47 (3.78-5.00)	7.72 (6.34-8.66)	11.4 (7.82-17.5)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.05 and 0.05, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	2.95 (2.75-3.15)	2.96 (2.71-3.22)	5.40 (5.01-5.74)	9.11 (8.34-10.4)	12.8 (11.1-14.8)	1319
Total population (2013 - 2014)	2.51 (2.34-2.70)	2.44 (2.26-2.69)	4.54 (4.17-4.97)	7.60 (6.91-8.24)	9.90 (8.57-11.5)	1477
Age 20-49 years (2011 - 2012)	2.87 (2.59-3.18)	2.88 (2.36-3.38)	5.47 (4.83-6.58)	9.11 (7.99-10.9)	12.1 (9.70-16.8)	659
Age 18-49 years (2013 - 2014)	2.51 (2.32-2.71)	2.42 (2.22-2.76)	4.76 (4.22-5.54)	7.92 (7.06-8.48)	9.90 (8.57-11.8)	774
Age 50+ years (2011 - 2012)	3.03 (2.68-3.43)	3.00 (2.54-3.47)	5.21 (4.25-6.12)	9.02 (7.50-11.2)	14.4 (10.3-18.4)	660
Age 50+ years (2013 - 2014)	2.52 (2.30-2.76)	2.47 (2.25-2.71)	4.25 (3.80-4.66)	7.07 (6.17-8.02)	10.3 (8.21-12.0)	703
Males (2011 - 2012)	3.32 (3.01-3.66)	3.30 (2.97-3.67)	5.70 (5.04-7.10)	10.4 (8.34-11.1)	13.8 (11.1-18.1)	628
Males (2013 - 2014)	2.64 (2.37-2.94)	2.79 (2.46-3.08)	4.65 (4.09-5.44)	7.73 (6.46-9.10)	10.2 (8.35-13.4)	661
Females (2011 - 2012)	2.68 (2.45-2.94)	2.63 (2.39-2.95)	5.04 (4.02-5.97)	8.46 (7.95-9.48)	12.6 (10.6-15.2)	691
Females (2013 - 2014)	2.41 (2.22-2.62)	2.25 (2.11-2.44)	4.37 (3.81-5.16)	7.52 (6.76-8.06)	9.19 (8.06-11.4)	816

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.05 and 0.05, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Perchlorate (creatinine corrected) (2011 – 2014)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	2.80 (2.57-3.05)	2.68 (2.35-2.96)	4.50 (4.08-4.88)	7.32 (6.20-7.61)	9.53 (7.50-13.8)	869
Total population (2013 - 2014)	2.44 (2.26-2.64)	2.34 (2.16-2.62)	3.65 (3.35-4.11)	5.90 (5.16-7.86)	9.73 (7.86-11.1)	947
Age 20-49 years (2011 - 2012)	2.70 (2.37-3.09)	2.53 (2.18-3.07)	4.45 (3.86-5.14)	7.08 (5.38-9.16)	9.66 (7.08-23.5)	518
Age 18-49 years (2013 - 2014)	2.32 (2.12-2.54)	2.24 (2.07-2.54)	3.52 (3.24-3.75)	5.60 (4.57-6.00)	7.86 (5.60-10.1)	577
Age 50+ years (2011 - 2012)	2.95 (2.65-3.30)	2.73 (2.21-3.16)	4.63 (3.77-5.24)	7.45 (5.11-9.62)	9.03 (7.50-11.6)	351
Age 50+ years (2013 - 2014)	2.71 (2.37-3.10)	2.62 (2.19-3.07)	4.25 (3.52-4.94)	8.06 (5.62-10.5)	11.6 (8.35-17.1)	370
Males (2011 - 2012)	2.61 (2.36-2.89)	2.33 (2.11-2.70)	4.27 (3.90-4.72)	7.13 (5.56-7.53)	9.66 (7.13-23.5)	525
Males (2013 - 2014)	2.17 (1.98-2.38)	2.21 (1.92-2.54)	3.30 (3.04-3.57)	5.16 (4.35-5.77)	7.90 (5.77-10.5)	511
Females (2011 - 2012)	3.06 (2.71-3.45)	3.02 (2.73-3.41)	4.73 (4.45-5.18)	7.50 (6.21-8.87)	9.16 (7.50-11.7)	344
Females (2013 - 2014)	2.76 (2.53-3.01)	2.62 (2.34-2.96)	4.12 (3.61-4.57)	7.57 (5.03-10.1)	10.1 (7.86-12.3)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.45 (3.19-3.74)	3.36 (3.02-3.68)	5.83 (5.49-6.10)	9.81 (8.13-11.8)	15.0 (11.0-18.5)	1318
Total population (2013 - 2014)	3.01 (2.80-3.24)	2.97 (2.76-3.24)	4.82 (4.52-5.41)	7.55 (6.70-8.35)	10.3 (8.80-11.7)	1476
Age 20-49 years (2011 - 2012)	3.15 (2.80-3.54)	2.95 (2.53-3.44)	5.60 (4.53-6.36)	9.20 (7.21-11.1)	12.8 (9.81-17.4)	658
Age 18-49 years (2013 - 2014)	2.76 (2.52-3.01)	2.71 (2.53-2.88)	4.60 (4.02-5.10)	7.33 (6.21-8.44)	9.68 (8.10-11.7)	774
Age 50+ years (2011 - 2012)	3.82 (3.37-4.32)	3.66 (3.33-4.06)	6.09 (5.28-6.80)	10.0 (7.86-14.9)	16.9 (11.0-23.6)	660
Age 50+ years (2013 - 2014)	3.32 (3.08-3.59)	3.36 (2.97-3.73)	5.21 (4.67-5.69)	8.03 (6.81-8.71)	10.6 (9.16-12.7)	702
Males (2011 - 2012)	2.96 (2.68-3.28)	2.92 (2.55-3.22)	4.65 (4.07-5.35)	7.04 (6.09-9.31)	13.4 (7.21-20.0)	627
Males (2013 - 2014)	2.56 (2.33-2.83)	2.44 (2.20-2.75)	4.18 (3.66-4.64)	6.50 (5.66-7.48)	8.35 (7.03-11.0)	660
Females (2011 - 2012)	3.90 (3.51-4.33)	3.82 (3.17-4.58)	6.48 (6.02-7.49)	10.2 (9.22-12.7)	16.2 (11.8-19.2)	691
Females (2013 - 2014)	3.44 (3.18-3.71)	3.49 (3.14-3.76)	5.62 (4.77-6.04)	8.16 (7.33-9.35)	11.4 (9.45-13.8)	816

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Thiocyanate (2011 – 2014)

CAS Number 302-04-5

Geometric mean and selected percentiles of urine concentrations (in mg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.10 (3.58-4.69)	4.60 (3.98-5.37)	7.16 (6.43-8.09)	11.2 (9.43-12.7)	14.6 (12.7-16.2)	869
Total population (2013 - 2014)	3.93 (3.56-4.33)	4.48 (3.93-4.78)	7.45 (6.70-8.23)	12.5 (10.2-14.0)	15.2 (13.9-17.7)	944
Age 20-49 years (2011 - 2012)	4.18 (3.72-4.69)	4.67 (4.15-5.05)	7.38 (6.43-8.20)	11.7 (10.2-13.3)	15.9 (12.7-17.8)	518
Age 18-49 years (2013 - 2014)	3.99 (3.46-4.61)	4.72 (3.90-5.32)	7.90 (6.96-8.89)	13.5 (10.8-14.5)	16.0 (14.1-18.0)	575
Age 50+ years (2011 - 2012)	3.98 (3.24-4.90)	4.38 (3.37-5.94)	6.90 (5.48-8.14)	9.94 (7.67-13.5)	12.8 (9.50-15.3)	351
Age 50+ years (2013 - 2014)	3.79 (3.40-4.23)	3.87 (3.41-4.63)	6.53 (5.45-7.58)	9.98 (9.02-12.6)	14.4 (11.5-18.3)	369
Males (2011 - 2012)	4.03 (3.26-4.98)	4.51 (3.30-6.14)	7.23 (6.43-8.59)	11.1 (8.99-13.4)	14.5 (11.8-17.8)	525
Males (2013 - 2014)	3.81 (3.31-4.39)	4.63 (3.73-5.19)	7.59 (6.60-8.92)	13.5 (10.7-14.5)	15.6 (14.1-18.5)	508
Females (2011 - 2012)	4.19 (3.81-4.61)	4.71 (4.31-5.37)	6.83 (6.12-7.95)	11.3 (8.53-13.1)	15.3 (11.9-18.2)	344
Females (2013 - 2014)	4.05 (3.61-4.54)	4.30 (3.88-4.78)	7.15 (6.16-8.24)	11.3 (9.40-14.1)	14.5 (11.3-17.7)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.02 and 0.02, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.795 (.737-.858)	.875 (.819-.929)	1.56 (1.41-1.74)	2.54 (2.23-2.92)	3.23 (2.97-3.57)	1319
Total population (2013 - 2014)	.791 (.745-.841)	.799 (.737-.861)	1.48 (1.37-1.55)	2.55 (2.31-2.89)	3.67 (2.96-4.47)	1476
Age 20-49 years (2011 - 2012)	.855 (.777-.940)	.927 (.854-1.00)	1.71 (1.50-1.92)	2.67 (2.29-3.17)	3.43 (3.01-4.36)	659
Age 18-49 years (2013 - 2014)	.838 (.774-.907)	.862 (.766-.988)	1.54 (1.43-1.73)	2.54 (2.31-2.96)	3.75 (2.96-5.03)	774
Age 50+ years (2011 - 2012)	.736 (.666-.814)	.833 (.726-.897)	1.44 (1.21-1.68)	2.39 (1.94-2.90)	2.92 (2.39-3.86)	660
Age 50+ years (2013 - 2014)	.742 (.668-.824)	.751 (.668-.843)	1.36 (1.19-1.57)	2.66 (1.96-3.26)	3.67 (2.70-4.81)	702
Males (2011 - 2012)	.968 (.865-1.08)	1.01 (.913-1.20)	1.90 (1.57-2.20)	2.79 (2.31-3.25)	3.43 (2.94-4.10)	628
Males (2013 - 2014)	.938 (.853-1.03)	.911 (.830-1.05)	1.79 (1.55-2.07)	2.96 (2.44-3.81)	4.33 (3.10-5.93)	661
Females (2011 - 2012)	.681 (.600-.773)	.727 (.603-.843)	1.36 (1.21-1.50)	2.27 (1.97-2.54)	3.17 (2.52-3.32)	691
Females (2013 - 2014)	.687 (.634-.744)	.694 (.621-.779)	1.29 (1.14-1.39)	2.20 (1.91-2.36)	3.10 (2.67-3.75)	815

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.02 and 0.02, respectively.

Urinary Thiocyanate (creatinine corrected) (2011 – 2014)

CAS Number 302-04-5

Geometric mean and selected percentiles of urine concentrations (in mg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.53 (4.02-5.10)	5.04 (4.38-5.47)	8.28 (7.42-10.0)	14.4 (11.6-15.7)	16.7 (15.3-18.9)	869
Total population (2013 - 2014)	3.99 (3.57-4.47)	4.37 (3.99-5.00)	7.81 (7.12-8.51)	11.9 (10.4-14.3)	15.6 (13.5-18.6)	944
Age 20-49 years (2011 - 2012)	4.35 (3.87-4.89)	4.84 (3.82-5.47)	7.98 (7.54-8.91)	14.0 (11.1-16.1)	16.7 (14.2-19.9)	518
Age 18-49 years (2013 - 2014)	3.69 (3.25-4.19)	4.17 (3.75-4.68)	7.40 (6.33-8.43)	11.7 (10.4-13.8)	14.4 (12.9-15.9)	575
Age 50+ years (2011 - 2012)	4.81 (4.06-5.71)	5.28 (4.43-6.84)	8.84 (7.11-12.1)	15.3 (10.5-17.2)	16.6 (15.3-18.3)	351
Age 50+ years (2013 - 2014)	4.71 (4.16-5.34)	4.68 (4.42-5.62)	8.12 (7.37-9.45)	12.9 (10.3-18.4)	18.6 (11.0-22.8)	369
Males (2011 - 2012)	3.81 (3.28-4.43)	4.20 (3.64-5.06)	7.30 (6.54-7.77)	11.1 (9.41-12.5)	14.3 (12.3-15.6)	525
Males (2013 - 2014)	3.38 (2.96-3.86)	4.14 (3.13-4.49)	7.12 (6.14-7.87)	11.0 (9.50-11.7)	13.2 (11.7-14.9)	508
Females (2011 - 2012)	5.62 (4.64-6.81)	5.82 (4.69-8.05)	11.1 (8.53-14.6)	16.7 (14.0-18.9)	19.2 (16.7-24.0)	344
Females (2013 - 2014)	4.73 (4.12-5.42)	4.87 (4.08-5.92)	8.19 (7.52-9.75)	13.8 (10.7-17.1)	17.9 (14.2-21.2)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	.933 (.881-.988)	.976 (.905-1.10)	1.69 (1.54-1.84)	2.70 (2.34-2.99)	3.29 (3.02-3.89)	1318
Total population (2013 - 2014)	.948 (.882-1.02)	.994 (.908-1.06)	1.68 (1.54-1.80)	2.71 (2.28-3.00)	3.74 (3.13-4.47)	1475
Age 20-49 years (2011 - 2012)	.938 (.864-1.02)	1.01 (.902-1.10)	1.67 (1.46-1.84)	2.51 (2.18-2.91)	3.02 (2.91-3.18)	658
Age 18-49 years (2013 - 2014)	.922 (.843-1.01)	.950 (.860-1.04)	1.52 (1.37-1.66)	2.33 (2.09-2.57)	3.37 (2.60-4.40)	774
Age 50+ years (2011 - 2012)	.927 (.852-1.01)	.965 (.830-1.18)	1.72 (1.46-1.99)	2.91 (2.16-3.37)	3.76 (3.16-4.33)	660
Age 50+ years (2013 - 2014)	.979 (.880-1.09)	1.05 (.890-1.24)	1.85 (1.55-2.08)	2.92 (2.41-3.56)	4.13 (3.14-5.08)	701
Males (2011 - 2012)	.865 (.782-.956)	.941 (.743-1.09)	1.56 (1.28-1.87)	2.66 (2.09-2.96)	3.37 (2.67-4.05)	627
Males (2013 - 2014)	.912 (.832-.999)	.983 (.854-1.12)	1.62 (1.47-1.82)	2.75 (2.17-3.19)	4.13 (2.88-5.08)	660
Females (2011 - 2012)	.990 (.910-1.08)	1.05 (.936-1.17)	1.75 (1.59-1.91)	2.86 (2.41-3.03)	3.29 (2.97-3.96)	691
Females (2013 - 2014)	.980 (.910-1.05)	1.01 (.923-1.06)	1.71 (1.55-1.81)	2.69 (2.26-3.13)	3.53 (2.94-4.15)	815

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Hydroxyfluorene (2011 – 2012)‡

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1120 (983-1290)	1290 (1060-1430)	2340 (2100-2620)	3960 (3380-4570)	5600 (4730-6100)	885
Age 20-49 years (2011 - 2012)	1050 (862-1280)	1220 (990-1410)	2260 (1870-2520)	3430 (2740-4260)	4760 (3840-5330)	530
Age 50+ years (2011 - 2012)	1250 (1080-1440)	1380 (1030-1840)	2520 (2140-3380)	4900 (3800-5910)	6100 (4900-6960)	355
Males (2011 - 2012)	1130 (925-1380)	1330 (976-1540)	2480 (2090-3020)	4260 (3550-5600)	5960 (4140-7490)	537
Females (2011 - 2012)	1120 (993-1260)	1230 (1100-1360)	2260 (2070-2410)	3380 (2680-4210)	4480 (3760-5650)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	161 (149-175)	153 (144-169)	296 (262-327)	563 (459-622)	715 (621-980)	1300
Age 20-49 years (2011 - 2012)	175 (157-194)	169 (148-202)	345 (306-384)	622 (524-683)	826 (670-1100)	640
Age 50+ years (2011 - 2012)	148 (131-168)	143 (125-161)	254 (214-298)	448 (345-599)	622 (481-966)	660
Males (2011 - 2012)	194 (169-223)	194 (161-217)	337 (285-399)	622 (493-735)	916 (623-1460)	612
Females (2011 - 2012)	140 (129-151)	138 (124-147)	260 (225-290)	487 (396-580)	644 (580-766)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyfluorene (creatinine corrected) (2011 – 2012)‡

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1240 (1160-1330)	1370 (1320-1460)	2230 (2040-2460)	3200 (2950-3490)	3940 (3540-4670)	885
Age 20-49 years (2011 - 2012)	1100 (993-1220)	1240 (1050-1350)	1950 (1750-2150)	3080 (2540-3440)	3850 (3210-4390)	530
Age 50+ years (2011 - 2012)	1510 (1360-1670)	1750 (1450-1950)	2630 (2300-2930)	3540 (2950-3920)	4120 (3480-5090)	355
Males (2011 - 2012)	1080 (974-1200)	1250 (1030-1370)	1920 (1710-2170)	2860 (2400-3390)	3550 (2950-4020)	537
Females (2011 - 2012)	1490 (1280-1740)	1750 (1470-1970)	2740 (2110-3080)	3630 (3080-4120)	4390 (3630-4840)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	190 (177-204)	173 (163-184)	265 (248-291)	435 (366-472)	629 (472-890)	1299
Age 20-49 years (2011 - 2012)	193 (178-209)	175 (166-186)	271 (239-303)	443 (349-511)	637 (472-920)	639
Age 50+ years (2011 - 2012)	186 (167-207)	168 (145-195)	260 (223-301)	426 (348-484)	624 (450-941)	660
Males (2011 - 2012)	173 (152-197)	147 (132-177)	248 (205-281)	423 (314-511)	542 (424-1320)	611
Females (2011 - 2012)	204 (192-216)	185 (171-200)	282 (250-312)	446 (374-509)	702 (476-816)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (2011 – 2012)‡

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	574 (486-677)	670 (525-801)	1270 (1080-1590)	2130 (1900-2530)	2900 (2370-3330)	885
Age 20-49 years (2011 - 2012)	539 (432-674)	638 (496-800)	1210 (1030-1430)	2010 (1730-2440)	2750 (2120-3340)	530
Age 50+ years (2011 - 2012)	632 (510-783)	693 (496-945)	1460 (1100-1750)	2400 (1750-2990)	3040 (2440-3970)	355
Males (2011 - 2012)	583 (452-752)	684 (493-951)	1550 (1140-1830)	2440 (1930-2990)	2990 (2390-4560)	537
Females (2011 - 2012)	561 (499-632)	637 (515-759)	1130 (960-1240)	1810 (1510-2050)	2400 (1930-2830)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	56.9 (51.9-62.5)	56.0 (50.0-60.0)	104 (92.0-117)	195 (169-221)	281 (229-373)	1296
Age 20-49 years (2011 - 2012)	62.1 (55.5-69.5)	59.0 (54.0-70.0)	124 (113-143)	227 (199-267)	347 (267-439)	639
Age 50+ years (2011 - 2012)	52.0 (45.4-59.5)	53.0 (45.0-59.0)	83.0 (68.0-102)	153 (116-192)	222 (162-355)	657
Males (2011 - 2012)	68.6 (58.5-80.5)	62.0 (57.0-70.0)	118 (104-148)	223 (164-311)	332 (222-818)	611
Females (2011 - 2012)	49.1 (44.6-54.2)	50.0 (47.0-56.0)	88.0 (79.0-99.0)	166 (151-183)	260 (195-320)	685

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (creatinine corrected) (2011 – 2012)‡

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	634 (575-700)	765 (694-825)	1210 (1110-1330)	1830 (1480-2050)	2060 (1980-2280)	885
Age 20-49 years (2011 - 2012)	565 (500-638)	631 (568-736)	1170 (1020-1240)	1780 (1360-2050)	2050 (1730-2320)	530
Age 50+ years (2011 - 2012)	763 (639-911)	964 (844-1030)	1310 (1100-1640)	1840 (1560-2060)	2060 (1690-2420)	355
Males (2011 - 2012)	558 (479-651)	637 (568-754)	1100 (971-1200)	1640 (1290-2050)	2050 (1560-2140)	537
Females (2011 - 2012)	750 (624-902)	936 (796-1080)	1350 (1130-1680)	1980 (1420-2420)	2330 (2030-2450)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	66.8 (61.6-72.6)	59.3 (54.5-65.4)	98.3 (88.9-107)	174 (149-200)	251 (200-338)	1295
Age 20-49 years (2011 - 2012)	68.5 (62.3-75.3)	58.9 (53.6-67.3)	103 (83.2-117)	182 (148-223)	251 (203-345)	638
Age 50+ years (2011 - 2012)	65.2 (57.1-74.4)	60.5 (50.0-70.7)	94.4 (87.5-107)	168 (137-200)	249 (171-372)	657
Males (2011 - 2012)	61.2 (52.3-71.5)	51.9 (48.0-59.7)	86.0 (76.4-103)	149 (113-195)	226 (149-765)	610
Females (2011 - 2012)	71.7 (65.5-78.5)	65.6 (57.6-75.8)	106 (92.9-127)	193 (163-239)	254 (235-311)	685

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (2011 – 2012)‡

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	605 (557-657)	658 (553-724)	1190 (1040-1300)	1980 (1700-2470)	3100 (2470-3730)	885
Age 20-49 years (2011 - 2012)	571 (507-643)	621 (504-669)	1110 (915-1220)	1760 (1470-2400)	2590 (2090-3680)	530
Age 50+ years (2011 - 2012)	662 (572-766)	742 (553-900)	1350 (1150-1480)	2470 (1780-2840)	3460 (2470-4020)	355
Males (2011 - 2012)	612 (536-698)	658 (453-809)	1190 (999-1400)	2340 (1590-3400)	3460 (2370-4020)	537
Females (2011 - 2012)	595 (512-692)	642 (529-736)	1190 (903-1440)	1880 (1470-2560)	2590 (1790-3730)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	204 (189-220)	199 (181-222)	381 (341-406)	752 (650-872)	1230 (915-1350)	1300
Age 20-49 years (2011 - 2012)	210 (188-234)	210 (188-248)	402 (350-437)	807 (678-945)	1310 (1010-1340)	640
Age 50+ years (2011 - 2012)	198 (169-232)	183 (141-240)	343 (308-388)	714 (524-909)	1010 (720-1780)	660
Males (2011 - 2012)	241 (212-274)	244 (196-285)	433 (387-492)	796 (664-951)	1280 (951-1490)	612
Females (2011 - 2012)	179 (162-198)	181 (157-198)	322 (290-375)	683 (495-864)	1230 (794-1580)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (creatinine corrected) (2011 – 2012)‡

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	669 (609-734)	667 (618-741)	1170 (1100-1280)	1860 (1610-2110)	2630 (2000-3640)	885
Age 20-49 years (2011 - 2012)	598 (513-696)	586 (520-659)	1020 (851-1170)	1730 (1320-2370)	2630 (1650-4950)	530
Age 50+ years (2011 - 2012)	799 (720-887)	877 (794-949)	1350 (1160-1610)	2010 (1610-2300)	2570 (2080-2940)	355
Males (2011 - 2012)	586 (518-662)	605 (531-683)	1070 (878-1150)	1610 (1360-1930)	2490 (1820-2910)	537
Females (2011 - 2012)	795 (707-895)	797 (665-936)	1390 (1190-1600)	2010 (1660-2630)	2700 (2010-3890)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	240 (219-262)	218 (195-244)	359 (326-419)	704 (575-848)	959 (834-1140)	1299
Age 20-49 years (2011 - 2012)	232 (212-253)	208 (187-229)	349 (324-386)	663 (537-908)	1080 (804-1170)	639
Age 50+ years (2011 - 2012)	248 (217-284)	230 (193-275)	367 (324-489)	704 (543-917)	921 (783-1080)	660
Males (2011 - 2012)	215 (193-240)	192 (179-212)	315 (280-362)	676 (411-921)	921 (621-1630)	611
Females (2011 - 2012)	261 (233-292)	243 (208-277)	397 (342-492)	750 (583-914)	984 (901-1140)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (2011 – 2012)‡

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	197 (178-218)	207 (178-236)	378 (315-434)	577 (526-665)	758 (607-864)	885
Age 20-49 years (2011 - 2012)	198 (173-228)	210 (172-256)	378 (311-427)	569 (511-643)	716 (580-864)	530
Age 50+ years (2011 - 2012)	195 (172-220)	200 (157-249)	407 (298-459)	607 (459-809)	772 (543-1170)	355
Males (2011 - 2012)	195 (170-224)	207 (172-236)	398 (313-453)	589 (532-687)	758 (619-820)	537
Females (2011 - 2012)	199 (173-230)	208 (175-247)	365 (276-453)	526 (387-790)	750 (526-1170)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	114 (106-123)	112 (102-125)	209 (193-230)	356 (307-432)	535 (400-639)	1300
Age 20-49 years (2011 - 2012)	117 (105-131)	123 (103-138)	230 (201-249)	389 (315-466)	541 (443-590)	640
Age 50+ years (2011 - 2012)	111 (96.5-127)	105 (93.0-122)	193 (173-221)	322 (271-400)	498 (340-874)	660
Males (2011 - 2012)	126 (113-140)	127 (106-141)	221 (198-253)	356 (302-437)	498 (375-781)	612
Females (2011 - 2012)	106 (95.1-117)	104 (94.0-110)	197 (174-232)	356 (290-446)	540 (375-639)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (creatinine corrected) (2011 – 2012)‡

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	218 (204-233)	213 (197-244)	328 (303-360)	492 (426-543)	583 (543-609)	885
Age 20-49 years (2011 - 2012)	208 (193-223)	204 (178-234)	313 (292-340)	455 (394-492)	531 (474-658)	530
Age 50+ years (2011 - 2012)	235 (212-260)	238 (211-270)	357 (289-481)	543 (426-583)	583 (543-691)	355
Males (2011 - 2012)	187 (171-204)	181 (159-210)	283 (234-322)	383 (360-455)	492 (409-583)	537
Females (2011 - 2012)	266 (243-291)	267 (239-300)	416 (326-500)	543 (500-594)	658 (562-795)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	134 (123-146)	126 (113-134)	200 (178-218)	335 (269-413)	498 (384-655)	1299
Age 20-49 years (2011 - 2012)	130 (118-142)	122 (108-133)	195 (167-218)	303 (244-384)	473 (332-598)	639
Age 50+ years (2011 - 2012)	139 (123-157)	129 (112-145)	206 (175-236)	340 (272-460)	508 (413-683)	660
Males (2011 - 2012)	112 (102-122)	100 (91.0-112)	157 (137-175)	247 (192-367)	413 (247-598)	611
Females (2011 - 2012)	154 (136-175)	143 (126-162)	221 (200-254)	352 (288-495)	549 (432-831)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (2011 – 2012)‡

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	112 (102-122)	109 (102-130)	205 (184-228)	334 (297-360)	389 (371-466)	884
Age 20-49 years (2011 - 2012)	109 (95.7-124)	108 (96.0-130)	202 (164-228)	304 (258-349)	385 (353-489)	530
Age 50+ years (2011 - 2012)	117 (105-129)	119 (94.0-149)	219 (199-247)	360 (287-374)	398 (366-498)	354
Males (2011 - 2012)	120 (105-136)	130 (105-151)	224 (197-260)	360 (292-377)	417 (374-489)	537
Females (2011 - 2012)	102 (90.4-116)	106 (88.0-119)	185 (151-213)	263 (235-310)	357 (301-478)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	53.2 (49.5-57.2)	52.0 (48.0-57.0)	93.0 (83.0-103)	170 (147-195)	264 (198-306)	1297
Age 20-49 years (2011 - 2012)	57.1 (52.1-62.5)	58.0 (52.0-66.0)	103 (93.0-114)	179 (164-202)	265 (209-331)	640
Age 50+ years (2011 - 2012)	49.4 (42.9-57.0)	48.0 (41.0-56.0)	82.0 (68.0-95.0)	141 (114-235)	262 (141-349)	657
Males (2011 - 2012)	65.3 (57.6-74.0)	65.0 (53.0-76.0)	112 (96.0-126)	206 (168-247)	275 (209-384)	611
Females (2011 - 2012)	45.3 (41.9-49.1)	46.0 (42.0-49.0)	75.0 (67.0-89.0)	137 (112-175)	226 (158-303)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (creatinine corrected) (2011 – 2012)‡

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	124 (117-131)	127 (117-132)	193 (175-207)	285 (247-318)	365 (307-425)	884
Age 20-49 years (2011 - 2012)	114 (105-124)	112 (104-120)	178 (162-198)	261 (234-295)	365 (261-538)	530
Age 50+ years (2011 - 2012)	140 (129-153)	144 (132-158)	207 (188-243)	318 (243-356)	356 (293-432)	354
Males (2011 - 2012)	115 (106-124)	116 (101-129)	173 (159-180)	264 (206-321)	385 (249-432)	537
Females (2011 - 2012)	137 (121-155)	142 (126-159)	220 (191-245)	303 (253-334)	356 (307-503)	347

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	62.4 (57.7-67.6)	57.1 (53.3-60.5)	92.3 (78.9-101)	154 (120-182)	213 (163-282)	1296
Age 20-49 years (2011 - 2012)	62.9 (58.6-67.5)	59.3 (53.7-62.9)	91.7 (80.0-101)	145 (113-173)	188 (152-284)	639
Age 50+ years (2011 - 2012)	62.0 (54.4-70.6)	56.7 (48.7-64.8)	92.3 (73.9-110)	156 (121-203)	218 (156-303)	657
Males (2011 - 2012)	58.1 (52.1-64.8)	52.6 (47.9-56.3)	85.5 (70.1-103)	146 (110-200)	200 (145-281)	610
Females (2011 - 2012)	66.0 (59.8-72.9)	61.5 (57.1-68.2)	93.1 (84.1-105)	156 (114-188)	226 (163-292)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (2011 – 2012)‡

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	138 (120-158)	143 (123-162)	265 (220-340)	517 (444-549)	633 (552-678)	885
Age 20-49 years (2011 - 2012)	136 (114-164)	143 (115-168)	264 (207-325)	519 (382-593)	651 (563-724)	530
Age 50+ years (2011 - 2012)	140 (122-160)	151 (120-184)	269 (223-369)	497 (398-550)	622 (495-784)	355
Males (2011 - 2012)	147 (123-176)	161 (123-201)	313 (253-382)	549 (458-622)	673 (622-784)	537
Females (2011 - 2012)	126 (109-145)	128 (109-150)	242 (183-269)	385 (297-483)	519 (401-687)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	48.0 (44.2-52.2)	47.0 (42.0-54.0)	88.0 (79.0-100)	165 (135-193)	229 (190-284)	1299
Age 20-49 years (2011 - 2012)	51.8 (46.7-57.4)	54.0 (47.0-61.0)	103 (90.0-118)	182 (165-202)	231 (202-325)	640
Age 50+ years (2011 - 2012)	44.4 (38.1-51.8)	44.0 (35.0-54.0)	78.0 (63.0-91.0)	135 (100-186)	221 (146-282)	659
Males (2011 - 2012)	57.9 (49.8-67.4)	56.0 (47.0-67.0)	106 (82.0-132)	189 (149-251)	261 (195-475)	612
Females (2011 - 2012)	41.5 (38.0-45.2)	40.0 (37.0-45.0)	80.0 (67.0-87.0)	135 (109-173)	206 (173-217)	687

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (creatinine corrected) (2011 – 2012)‡

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	152 (143-162)	162 (150-173)	255 (239-277)	370 (350-410)	467 (416-503)	885
Age 20-49 years (2011 - 2012)	143 (129-158)	147 (129-167)	244 (214-258)	359 (304-410)	422 (375-525)	530
Age 50+ years (2011 - 2012)	169 (155-183)	189 (161-214)	289 (259-313)	427 (348-460)	474 (407-560)	355
Males (2011 - 2012)	141 (130-153)	150 (129-166)	231 (217-253)	354 (324-406)	467 (409-474)	537
Females (2011 - 2012)	168 (145-194)	181 (151-210)	278 (246-329)	407 (361-427)	471 (410-667)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	56.4 (52.0-61.3)	52.1 (48.2-56.1)	82.1 (73.8-95.2)	148 (121-168)	206 (159-300)	1298
Age 20-49 years (2011 - 2012)	57.1 (52.7-61.8)	51.9 (47.2-56.8)	81.8 (70.3-94.6)	150 (118-173)	203 (163-250)	639
Age 50+ years (2011 - 2012)	55.8 (48.7-63.8)	52.2 (44.5-60.3)	82.8 (69.8-103)	147 (114-177)	222 (148-338)	659
Males (2011 - 2012)	51.6 (45.5-58.6)	46.3 (41.4-52.9)	76.4 (61.6-93.6)	140 (102-163)	188 (139-338)	611
Females (2011 - 2012)	60.5 (54.5-67.2)	55.8 (50.9-61.6)	87.0 (75.8-105)	149 (122-178)	231 (151-334)	687

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (2011 – 2012)‡

CAS Number 7657-86-7

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	38.2 (35.3-41.3)	42.0 (35.0-46.0)	74.0 (66.0-79.0)	116 (102-136)	156 (144-178)	874
Age 20-49 years (2011 - 2012)	36.9 (32.9-41.3)	38.0 (31.0-46.0)	73.0 (61.0-79.0)	109 (99.0-126)	155 (126-179)	525
Age 50+ years (2011 - 2012)	40.3 (36.1-45.1)	45.0 (38.0-50.0)	77.0 (66.0-95.0)	126 (106-148)	156 (124-201)	349
Males (2011 - 2012)	36.3 (31.6-41.8)	36.0 (31.0-45.0)	74.0 (64.0-82.0)	119 (102-148)	169 (126-189)	531
Females (2011 - 2012)	40.7 (34.7-47.8)	47.0 (38.0-52.0)	74.0 (63.0-84.0)	113 (90.0-146)	151 (117-182)	343

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	17.4 (16.3-18.7)	16.0 (14.0-17.0)	30.0 (27.0-33.0)	53.0 (44.0-67.0)	84.0 (72.0-96.0)	1296
Age 20-49 years (2011 - 2012)	19.1 (17.3-21.1)	18.0 (15.0-22.0)	34.0 (30.0-39.0)	63.0 (51.0-72.0)	84.0 (67.0-116)	639
Age 50+ years (2011 - 2012)	15.8 (14.0-17.9)	14.0 (12.0-17.0)	26.0 (23.0-29.0)	40.0 (34.0-65.0)	81.0 (44.0-134)	657
Males (2011 - 2012)	19.4 (17.0-22.0)	19.0 (16.0-23.0)	33.0 (29.0-35.0)	60.0 (44.0-79.0)	84.0 (67.0-108)	610
Females (2011 - 2012)	16.0 (14.7-17.5)	14.0 (12.0-16.0)	26.0 (22.0-31.0)	47.0 (40.0-65.0)	82.0 (52.0-134)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (creatinine corrected) (2011 – 2012)‡

CAS Number 7657-86-7

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	42.0 (38.8-45.5)	44.4 (40.7-46.8)	76.5 (63.2-88.9)	124 (105-143)	153 (142-172)	874
Age 20-49 years (2011 - 2012)	38.6 (34.7-42.9)	40.4 (36.8-44.6)	64.5 (59.3-80.0)	118 (95.5-133)	143 (123-198)	525
Age 50+ years (2011 - 2012)	48.2 (43.4-53.6)	53.3 (45.7-59.7)	90.1 (77.4-103)	143 (103-158)	154 (124-175)	349
Males (2011 - 2012)	34.8 (30.4-39.8)	37.8 (35.3-40.9)	60.8 (49.5-72.2)	100 (82.3-112)	127 (100-172)	531
Females (2011 - 2012)	53.9 (45.3-64.2)	59.0 (47.2-63.4)	103 (75.8-124)	143 (121-159)	159 (143-228)	343

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	20.4 (19.0-22.0)	19.7 (18.4-21.1)	30.2 (26.4-33.8)	50.7 (41.8-65.0)	79.6 (51.9-117)	1295
Age 20-49 years (2011 - 2012)	20.9 (19.2-22.8)	20.3 (19.2-22.1)	30.9 (26.3-34.7)	51.5 (42.7-66.7)	80.5 (54.6-117)	638
Age 50+ years (2011 - 2012)	19.9 (17.8-22.2)	18.5 (17.6-20.9)	29.6 (26.1-32.7)	48.8 (37.5-65.0)	79.6 (47.5-111)	657
Males (2011 - 2012)	17.3 (15.8-18.9)	17.1 (15.1-18.3)	25.1 (23.0-27.3)	41.2 (31.9-54.7)	59.7 (39.7-111)	609
Females (2011 - 2012)	23.3 (21.2-25.6)	22.2 (20.3-24.4)	34.5 (29.6-38.6)	54.9 (47.1-79.6)	88.8 (55.3-135)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (2011 – 2012)‡

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	234 (202-273)	239 (198-295)	483 (387-555)	773 (693-888)	1160 (922-1240)	885
Age 20-49 years (2011 - 2012)	237 (196-286)	243 (198-303)	460 (364-604)	773 (652-1010)	1180 (832-1440)	530
Age 50+ years (2011 - 2012)	231 (196-271)	232 (162-295)	497 (358-582)	775 (603-1100)	1120 (756-1400)	355
Males (2011 - 2012)	238 (193-293)	238 (193-321)	522 (415-636)	835 (756-1080)	1230 (1020-1380)	537
Females (2011 - 2012)	230 (200-264)	243 (194-278)	423 (342-513)	664 (543-828)	882 (685-1180)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	81.5 (75.1-88.5)	83.0 (75.0-92.0)	147 (135-168)	262 (227-306)	395 (311-450)	1297
Age 20-49 years (2011 - 2012)	96.1 (84.9-109)	99.0 (83.0-113)	183 (160-217)	304 (262-365)	436 (349-482)	639
Age 50+ years (2011 - 2012)	68.5 (61.1-76.8)	71.0 (59.0-86.0)	121 (101-135)	196 (167-222)	307 (206-424)	658
Males (2011 - 2012)	92.1 (82.5-103)	93.0 (83.0-100)	169 (143-183)	299 (227-424)	450 (316-599)	611
Females (2011 - 2012)	74.1 (67.5-81.3)	75.0 (64.0-85.0)	136 (120-154)	238 (196-293)	330 (285-381)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (creatinine corrected) (2011 – 2012)‡

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	259 (240-280)	264 (253-281)	429 (387-458)	661 (547-763)	887 (714-996)	885
Age 20-49 years (2011 - 2012)	248 (224-274)	251 (218-277)	395 (360-453)	653 (525-769)	838 (700-996)	530
Age 50+ years (2011 - 2012)	278 (248-312)	296 (264-334)	448 (386-518)	694 (556-887)	899 (748-1070)	355
Males (2011 - 2012)	228 (204-255)	226 (206-261)	378 (330-418)	546 (458-703)	804 (580-993)	537
Females (2011 - 2012)	307 (266-354)	323 (288-376)	466 (413-572)	743 (589-887)	888 (700-1040)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	96.7 (90.8-103)	92.4 (87.3-100)	149 (141-160)	248 (214-280)	341 (280-460)	1296
Age 20-49 years (2011 - 2012)	106 (100-113)	104 (94.2-113)	163 (147-184)	256 (225-289)	329 (295-385)	638
Age 50+ years (2011 - 2012)	87.6 (78.0-98.4)	85.5 (75.0-91.6)	127 (116-146)	220 (183-307)	401 (249-855)	658
Males (2011 - 2012)	82.3 (74.0-91.7)	80.7 (72.3-85.7)	122 (109-136)	208 (162-298)	323 (243-482)	610
Females (2011 - 2012)	110 (101-119)	104 (93.2-118)	167 (153-182)	258 (224-289)	362 (307-438)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (2011 – 2012)‡

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	9.00 (7.76-10.4)	10.6 (8.57-11.9)	19.8 (17.0-22.1)	34.6 (27.9-36.5)	42.6 (35.7-49.0)	885
Age 20-49 years (2011 - 2012)	8.18 (6.53-10.3)	9.97 (7.63-11.5)	18.3 (14.8-21.7)	27.6 (24.2-35.2)	37.2 (32.3-48.5)	530
Age 50+ years (2011 - 2012)	10.5 (8.84-12.4)	11.8 (8.52-14.1)	22.7 (18.5-26.0)	38.8 (27.2-43.7)	44.5 (38.8-128)	355
Males (2011 - 2012)	8.79 (6.99-11.0)	10.9 (8.54-12.4)	21.3 (17.2-24.2)	35.7 (27.4-38.8)	42.6 (33.2-49.0)	537
Females (2011 - 2012)	9.28 (8.16-10.6)	9.97 (8.08-12.1)	18.5 (16.1-21.1)	30.7 (24.7-35.2)	42.2 (35.1-58.5)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.044.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.17 (1.08-1.27)	1.09 (.954-1.20)	2.31 (2.11-2.48)	5.40 (4.36-6.12)	9.40 (7.26-11.6)	1300
Age 20-49 years (2011 - 2012)	1.00 (.931-1.08)	.931 (.805-1.09)	1.92 (1.77-2.29)	4.44 (3.30-5.79)	7.21 (5.79-9.93)	640
Age 50+ years (2011 - 2012)	1.39 (1.20-1.61)	1.25 (.954-1.59)	2.64 (2.29-3.05)	5.83 (4.58-8.21)	11.6 (8.84-16.0)	660
Males (2011 - 2012)	1.31 (1.14-1.52)	1.20 (.950-1.52)	2.42 (2.11-2.89)	5.73 (4.12-6.91)	8.21 (6.63-16.0)	612
Females (2011 - 2012)	1.07 (.920-1.25)	.976 (.831-1.15)	2.16 (1.85-2.50)	4.97 (3.51-6.72)	11.0 (6.34-12.9)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.044.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (creatinine corrected) (2011 – 2012)‡

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	9.95 (8.94-11.1)	12.0 (10.3-13.1)	18.4 (16.4-19.8)	29.4 (24.2-36.4)	38.8 (33.0-46.1)	885
Age 20-49 years (2011 - 2012)	8.56 (7.40-9.91)	9.49 (8.34-11.3)	15.8 (14.0-18.4)	26.4 (20.7-35.2)	37.2 (30.0-42.0)	530
Age 50+ years (2011 - 2012)	12.6 (10.6-15.1)	13.5 (13.2-15.5)	20.2 (18.1-24.2)	33.7 (24.2-40.5)	42.2 (32.3-124)	355
Males (2011 - 2012)	8.41 (7.34-9.63)	9.46 (8.12-11.9)	14.3 (13.4-16.7)	22.5 (19.9-26.1)	32.8 (26.1-38.0)	537
Females (2011 - 2012)	12.4 (10.2-15.0)	14.7 (13.1-15.9)	21.4 (18.6-28.7)	36.6 (29.3-44.0)	44.0 (36.6-50.3)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.38 (1.25-1.52)	1.18 (1.05-1.35)	2.44 (2.05-2.88)	5.46 (4.61-6.86)	9.35 (7.80-12.4)	1299
Age 20-49 years (2011 - 2012)	1.10 (.993-1.22)	.998 (.849-1.16)	1.92 (1.75-2.21)	3.67 (3.17-4.67)	6.19 (4.97-7.70)	639
Age 50+ years (2011 - 2012)	1.74 (1.52-1.99)	1.49 (1.17-1.83)	3.15 (2.50-4.16)	7.55 (5.54-11.4)	15.8 (10.6-19.4)	660
Males (2011 - 2012)	1.17 (1.02-1.34)	.963 (.790-1.20)	1.98 (1.70-2.45)	4.07 (3.26-6.19)	8.48 (6.25-11.8)	611
Females (2011 - 2012)	1.57 (1.35-1.82)	1.41 (1.17-1.66)	2.91 (2.28-3.42)	5.95 (5.23-7.65)	10.6 (7.80-12.9)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (2011 – 2012)‡

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	11.9 (10.6-13.4)	13.0 (11.2-14.5)	24.0 (20.5-27.7)	36.1 (31.2-43.7)	49.4 (43.5-52.5)	885
Age 20-49 years (2011 - 2012)	11.6 (9.84-13.6)	13.3 (10.6-15.2)	23.4 (19.1-27.7)	32.8 (29.8-38.5)	45.3 (35.5-51.6)	530
Age 50+ years (2011 - 2012)	12.4 (10.5-14.8)	12.7 (10.3-16.8)	26.0 (19.8-29.7)	43.6 (35.9-51.1)	52.8 (36.1-71.2)	355
Males (2011 - 2012)	11.8 (9.86-14.1)	13.0 (10.7-16.0)	26.0 (21.4-29.2)	38.5 (31.2-50.4)	51.6 (36.6-67.3)	537
Females (2011 - 2012)	12.0 (10.8-13.4)	12.9 (10.7-14.5)	21.2 (17.9-26.0)	35.9 (29.1-38.4)	41.1 (36.1-49.6)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.042.

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.12 (2.81-3.46)	3.17 (2.76-3.67)	6.35 (5.52-7.54)	13.1 (11.1-15.2)	18.3 (15.5-20.5)	1300
Age 20-49 years (2011 - 2012)	3.62 (3.11-4.22)	3.75 (3.08-4.44)	8.57 (6.20-10.7)	15.2 (12.0-17.9)	20.5 (16.3-23.0)	640
Age 50+ years (2011 - 2012)	2.67 (2.35-3.05)	2.57 (2.31-3.25)	5.27 (4.41-6.05)	10.6 (8.51-11.5)	14.8 (11.5-20.0)	660
Males (2011 - 2012)	3.30 (2.95-3.69)	3.41 (2.78-4.06)	6.10 (5.35-7.54)	11.5 (10.7-14.3)	15.8 (11.9-20.0)	612
Females (2011 - 2012)	2.99 (2.57-3.49)	2.89 (2.46-3.74)	6.74 (5.29-8.62)	13.9 (11.7-16.2)	19.5 (15.6-21.8)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.042.

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (creatinine corrected) (2011 – 2012)‡

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	13.2 (12.4-14.0)	14.2 (13.4-14.9)	21.2 (19.6-22.1)	28.7 (25.8-32.0)	34.7 (30.8-39.4)	885
Age 20-49 years (2011 - 2012)	12.1 (11.0-13.3)	13.1 (11.8-14.2)	19.2 (18.1-20.7)	28.0 (23.6-31.2)	33.9 (28.6-41.9)	530
Age 50+ years (2011 - 2012)	15.0 (13.4-16.8)	17.4 (15.1-18.4)	23.5 (21.8-24.5)	31.3 (25.8-34.3)	35.7 (28.8-39.8)	355
Males (2011 - 2012)	11.3 (10.4-12.3)	12.9 (11.3-13.7)	18.3 (15.5-19.6)	23.7 (21.4-28.0)	29.0 (24.3-34.6)	537
Females (2011 - 2012)	16.1 (14.1-18.4)	17.7 (14.7-20.8)	24.3 (21.4-28.4)	33.2 (26.9-39.4)	39.4 (34.3-43.8)	348

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.67 (3.44-3.92)	3.40 (3.04-3.84)	6.56 (5.94-7.27)	11.9 (10.0-12.6)	15.5 (13.4-17.9)	1299
Age 20-49 years (2011 - 2012)	4.01 (3.57-4.50)	3.74 (3.20-4.32)	7.48 (6.56-8.70)	12.6 (11.1-13.6)	16.4 (13.9-18.9)	639
Age 50+ years (2011 - 2012)	3.35 (3.00-3.75)	3.18 (2.57-3.57)	5.73 (4.66-6.86)	9.63 (8.57-11.4)	13.0 (10.5-17.4)	660
Males (2011 - 2012)	2.95 (2.67-3.25)	2.77 (2.46-2.99)	4.86 (4.17-5.76)	8.72 (7.23-9.39)	11.4 (9.19-14.6)	611
Females (2011 - 2012)	4.37 (3.94-4.84)	4.18 (3.40-5.01)	7.64 (7.04-8.64)	13.0 (11.9-14.9)	17.7 (15.5-20.3)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole (Trp-P-1) (2013 – 2014)

CAS Number 62450-06-0

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	919
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	558
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	420

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.79.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1446
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	759
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	687
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	655
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.79.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole (Trp-P-1) (creatinine corrected) (2013 – 2014)

CAS Number 62450-06-0

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	918
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	557
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	498
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	420

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1445
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	759
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	686
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-3-methyl-9H-pyriodo[2,3-b]indole (MeA-α-C) (2013 – 2014)

CAS Number 68006-83-7

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	1.07 (.910-1.25)	1.19 (.900-1.47)	3.20 (2.70-3.90)	5.72 (4.95-7.28)	8.88 (7.28-11.3)	920
Age 18-49 years (2013 - 2014)	1.03 (.808-1.32)	1.14 (.610-1.53)	3.19 (2.33-4.02)	5.80 (4.62-8.44)	10.6 (6.25-16.9)	561
Age 50+ years (2013 - 2014)	1.15 (.951-1.39)	1.43 (.890-1.94)	3.29 (2.73-3.98)	5.41 (4.70-6.64)	7.52 (5.49-9.62)	359
Males (2013 - 2014)	1.10 (.906-1.35)	1.29 (.800-1.58)	3.34 (2.82-3.98)	6.23 (4.68-9.45)	10.4 (6.64-15.3)	498
Females (2013 - 2014)	1.03 (.853-1.25)	1.16 (.770-1.57)	3.08 (2.34-3.86)	5.48 (4.87-7.26)	8.26 (6.82-9.62)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.33.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	.430 (<LOD-.580)	1444
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	.540 (<LOD-.880)	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	684
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	.520 (<LOD-.880)	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	790

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.33.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-3-methyl-9H-pyriodo[2,3-b]indole (MeA-α-C) (creatinine corrected) (2013 – 2014)

CAS Number 68006-83-7

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	1.13 (.951-1.35)	1.27 (.972-1.58)	3.95 (2.97-4.86)	7.89 (6.16-9.56)	10.0 (8.75-12.5)	919
Age 18-49 years (2013 - 2014)	.995 (.774-1.28)	1.10 (.662-1.52)	3.19 (2.33-4.89)	7.52 (5.76-9.53)	10.0 (8.59-11.9)	560
Age 50+ years (2013 - 2014)	1.49 (1.25-1.79)	1.85 (1.38-2.49)	4.75 (3.93-5.88)	8.07 (6.16-10.0)	10.0 (7.94-16.6)	359
Males (2013 - 2014)	.998 (.823-1.21)	1.13 (.807-1.46)	3.18 (2.56-4.10)	7.11 (5.27-9.29)	9.67 (7.67-15.4)	497
Females (2013 - 2014)	1.29 (1.04-1.59)	1.39 (1.05-2.04)	4.69 (3.72-5.70)	8.11 (6.80-10.0)	10.8 (8.63-16.6)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	1.28 (<LOD-1.64)	1443
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	1.21 (<LOD-1.29)	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	683
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	1.00 (<LOD-1.29)	653
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	790

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP) (2013 – 2014)

CAS Number 105650-23-5

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	1.44 (1.01-1.98)	6.38 (5.21-7.94)	15.3 (9.07-26.2)	921
Age 18-49 years (2013 - 2014)	*	.360 (<LOD-.480)	1.49 (.990-2.52)	6.93 (4.59-11.9)	17.7 (8.70-36.7)	561
Age 50+ years (2013 - 2014)	*	< LOD	1.22 (.670-2.30)	6.15 (2.77-7.94)	9.10 (6.15-34.2)	360
Males (2013 - 2014)	*	< LOD	1.44 (1.00-1.88)	6.06 (3.83-7.94)	13.2 (7.68-23.9)	499
Females (2013 - 2014)	*	< LOD	1.45 (.850-2.77)	6.93 (3.99-14.8)	20.1 (7.10-42.6)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.34.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	.530 (.450-.590)	2.30 (1.83-2.92)	8.27 (6.70-10.6)	17.0 (14.2-21.1)	1446
Age 18-49 years (2013 - 2014)	.949 (.844-1.07)	.600 (.510-.730)	2.35 (1.95-3.04)	9.67 (7.10-13.2)	18.6 (13.8-33.1)	759
Age 50+ years (2013 - 2014)	*	.430 (<LOD-.560)	2.04 (1.26-3.32)	7.39 (4.94-11.3)	14.9 (11.3-21.1)	687
Males (2013 - 2014)	1.06 (.915-1.24)	.720 (.590-.880)	3.22 (2.19-4.53)	10.4 (6.77-15.9)	20.0 (13.9-37.7)	654
Females (2013 - 2014)	*	.390 (<LOD-.510)	1.73 (1.29-2.12)	6.97 (4.82-9.20)	14.2 (8.62-26.6)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.34.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP) (creatinine corrected) (2013 – 2014)

CAS Number 105650-23-5

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	1.51 (1.26-1.84)	5.39 (3.49-7.64)	12.2 (7.66-15.4)	920
Age 18-49 years (2013 - 2014)	*	.534 (<LOD-.649)	1.58 (1.20-1.84)	5.65 (2.99-9.05)	12.2 (6.77-15.6)	560
Age 50+ years (2013 - 2014)	*	< LOD	1.50 (1.06-2.74)	5.39 (3.57-10.2)	12.3 (6.26-18.5)	360
Males (2013 - 2014)	*	< LOD	1.44 (1.04-1.80)	4.84 (2.99-7.07)	11.3 (5.65-15.4)	498
Females (2013 - 2014)	*	< LOD	1.71 (1.09-2.51)	6.79 (3.32-10.6)	12.3 (7.59-15.3)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	.754 (.702-.802)	2.49 (1.98-3.08)	9.66 (7.78-11.9)	18.5 (13.9-27.6)	1445
Age 18-49 years (2013 - 2014)	1.05 (.935-1.19)	.770 (.669-.889)	2.38 (1.96-3.13)	10.2 (6.69-12.9)	19.5 (13.5-30.3)	759
Age 50+ years (2013 - 2014)	*	.749 (<LOD-.857)	2.52 (1.71-3.86)	9.66 (7.27-12.2)	18.3 (12.2-27.1)	686
Males (2013 - 2014)	1.04 (.908-1.20)	.749 (.663-.881)	2.91 (1.77-4.62)	10.1 (6.56-13.5)	18.3 (11.9-32.1)	653
Females (2013 - 2014)	*	.774 (<LOD-.857)	2.18 (1.85-2.73)	9.49 (6.88-13.7)	19.1 (12.2-31.7)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-9H-pyrido[2,3-b]indole (A-α-C) (2013 – 2014)

CAS Number 26148-68-5

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	19.7 (15.7-24.7)	27.3 (22.6-32.1)	60.9 (53.0-68.8)	97.7 (88.1-128)	149 (107-206)	918
Age 18-49 years (2013 - 2014)	18.3 (13.2-25.5)	26.1 (17.4-35.0)	63.5 (51.0-74.6)	107 (83.4-155)	159 (128-226)	558
Age 50+ years (2013 - 2014)	23.0 (19.1-27.6)	30.9 (21.9-42.2)	57.4 (47.6-70.2)	91.4 (78.1-104)	120 (94.8-139)	360
Males (2013 - 2014)	18.0 (13.2-24.6)	25.6 (17.0-35.4)	56.3 (47.5-66.2)	104 (82.0-132)	157 (107-227)	499
Females (2013 - 2014)	21.6 (16.7-28.0)	28.0 (20.3-40.4)	62.7 (55.5-74.6)	96.0 (83.2-128)	139 (97.7-205)	419

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.62.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	1.13 (.960-1.34)	3.38 (2.63-4.59)	8.39 (5.40-10.8)	1444
Age 18-49 years (2013 - 2014)	*	< LOD	1.41 (1.11-1.63)	4.71 (3.32-5.75)	10.7 (6.54-15.7)	759
Age 50+ years (2013 - 2014)	*	< LOD	.950 (.700-1.27)	2.30 (1.56-3.76)	5.20 (3.72-8.39)	685
Males (2013 - 2014)	*	< LOD	1.43 (1.13-1.68)	4.44 (2.71-6.29)	10.2 (5.75-15.3)	653
Females (2013 - 2014)	*	< LOD	.920 (.800-1.15)	2.64 (1.87-3.91)	5.77 (4.05-9.50)	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.62.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-9H-pyrido[2,3-b]indole (A-α-C) (creatinine corrected) (2013 – 2014)

CAS Number 26148-68-5

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	20.9 (16.3-26.8)	29.9 (23.3-34.7)	69.3 (59.7-80.4)	122 (96.3-161)	175 (125-253)	917
Age 18-49 years (2013 - 2014)	17.7 (12.9-24.3)	23.6 (17.0-32.6)	66.2 (49.5-75.4)	122 (88.2-167)	175 (127-255)	557
Age 50+ years (2013 - 2014)	29.6 (23.5-37.2)	39.6 (34.2-50.3)	80.0 (65.0-91.4)	131 (98.3-163)	181 (109-259)	360
Males (2013 - 2014)	16.3 (12.0-22.2)	22.7 (16.7-32.2)	56.4 (41.5-69.9)	99.4 (82.2-127)	152 (102-267)	498
Females (2013 - 2014)	27.1 (20.4-36.0)	37.5 (29.8-47.5)	84.6 (68.1-102)	146 (91.0-186)	182 (146-259)	419

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	1.63 (1.45-1.88)	4.17 (3.14-5.21)	8.65 (5.82-11.6)	1443
Age 18-49 years (2013 - 2014)	*	< LOD	1.78 (1.52-2.00)	4.39 (3.08-5.75)	11.0 (5.82-13.1)	759
Age 50+ years (2013 - 2014)	*	< LOD	1.53 (1.26-1.91)	3.78 (2.58-5.94)	7.77 (4.89-10.7)	684
Males (2013 - 2014)	*	< LOD	1.42 (1.26-1.65)	4.40 (3.03-5.57)	9.03 (5.50-14.9)	652
Females (2013 - 2014)	*	< LOD	1.84 (1.53-2.15)	4.00 (2.96-4.89)	7.85 (4.89-11.6)	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-3-methyl-3H-imidazo[4,5-f]quinolone (IQ) (2013 – 2014)

CAS Number 76180-96-6

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	921
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	561
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	360
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.37.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1447
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	687
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	655
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.37.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-3-methyl-3H-imidazo[4,5-f]quinolone (IQ) (creatinine corrected) (2013 – 2014)

CAS Number 76180-96-6

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	920
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	560
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	360
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	498
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1446
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	686
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole (Glu-P-1) (2013 – 2014)

CAS Number 67730-11-4

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	922
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	561
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	500
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.31.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1447
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	687
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	655
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.31.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole (Glu-P-1) (creatinine corrected) (2013 – 2014)

CAS Number 67730-11-4

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	921
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	560
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1446
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	686
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Aminodipyrido[1,2-a:3',2'-d] imidazole (Glu-P-2) (2013 – 2014)

CAS Number 67730-10-3

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	920
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	560
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	360
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	498
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.83.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1447
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	687
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	655
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.83.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Aminodipyrido[1,2-a:3',2'-d] imidazole (Glu-P-2) (creatinine corrected) (2013 – 2014)

CAS Number 67730-10-3

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	919
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	559
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	360
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	497
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1446
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	686
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 1-Methyl-9H-pyrido[3,4-b]indole (Harman) (2013 – 2014)

CAS Number 486-84-0

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	203 (181-228)	198 (172-229)	351 (301-425)	714 (563-886)	1010 (876-1380)	921
Age 18-49 years (2013 - 2014)	204 (171-242)	201 (168-238)	340 (290-376)	714 (502-921)	1020 (757-1860)	560
Age 50+ years (2013 - 2014)	202 (178-229)	193 (162-229)	433 (295-519)	713 (553-937)	959 (759-1190)	361
Males (2013 - 2014)	200 (172-233)	178 (152-212)	350 (276-452)	756 (520-996)	1190 (821-1800)	500
Females (2013 - 2014)	206 (178-239)	223 (184-254)	351 (295-439)	714 (554-893)	931 (821-1080)	421

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 4.59.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	129 (120-139)	115 (107-124)	233 (211-260)	541 (449-607)	811 (748-1060)	1447
Age 18-49 years (2013 - 2014)	115 (107-124)	104 (94.8-110)	203 (178-227)	404 (355-470)	751 (538-913)	760
Age 50+ years (2013 - 2014)	147 (133-162)	135 (118-148)	286 (237-342)	628 (541-760)	914 (683-1380)	687
Males (2013 - 2014)	137 (121-155)	120 (108-144)	243 (202-310)	539 (386-642)	782 (608-1230)	655
Females (2013 - 2014)	123 (111-136)	108 (95.4-119)	224 (190-268)	546 (412-734)	853 (683-1280)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 4.59.

Urinary 1-Methyl-9H-pyrido[3,4-b]indole (Harman) (creatinine corrected) (2013 – 2014)

CAS Number 486-84-0

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	215 (200-230)	209 (186-230)	388 (347-412)	665 (578-718)	895 (713-1110)	920
Age 18-49 years (2013 - 2014)	197 (175-221)	185 (160-224)	345 (311-389)	595 (468-713)	829 (608-1100)	559
Age 50+ years (2013 - 2014)	260 (226-299)	245 (206-287)	440 (357-568)	695 (589-1040)	1050 (718-1310)	361
Males (2013 - 2014)	181 (160-203)	166 (145-195)	328 (276-389)	589 (451-836)	870 (589-1200)	499
Females (2013 - 2014)	257 (243-272)	244 (225-273)	418 (382-457)	713 (640-785)	895 (756-1100)	421

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	156 (146-167)	136 (124-153)	283 (257-306)	605 (514-714)	1100 (958-1220)	1446
Age 18-49 years (2013 - 2014)	128 (117-140)	116 (100-129)	225 (182-253)	449 (389-495)	780 (524-1030)	760
Age 50+ years (2013 - 2014)	196 (178-216)	181 (152-213)	356 (294-400)	835 (652-1050)	1250 (1020-1720)	686
Males (2013 - 2014)	135 (122-149)	120 (103-138)	238 (202-285)	481 (375-652)	850 (648-1030)	654
Females (2013 - 2014)	178 (158-199)	153 (131-191)	319 (282-378)	742 (580-958)	1270 (836-1720)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

Urinary 1-Methyl-3-amino-5H-pyrido[4,3-b]indole (Trp-P-2) (2013 – 2014)

CAS Number 62450-07-1

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	1.11 (.780-1.37)	922
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	1.09 (.820-1.37)	561
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	1.17 (<LOD-1.79)	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	1.17 (<LOD-1.79)	500
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	1.09 (.640-1.47)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.63.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1446
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	686
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	655
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.63.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 1-Methyl-3-amino-5H-pyrido[4,3-b]indole (Trp-P-2) (creatinine corrected) (2013 – 2014)

CAS Number 62450-07-1

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	1.96 (1.62-2.54)	921
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	1.67 (1.41-2.37)	560
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	2.50 (<LOD-3.55)	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	1.61 (<LOD-2.05)	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	2.37 (1.80-3.64)	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1445
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	685
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 9H-Pyrido[3,4-b]indole (Norharman) (2013 – 2014)

CAS Number 244-63-3

Geometric mean and selected percentiles of concentrations (in ng/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	468 (417-525)	475 (403-524)	846 (738-969)	1430 (1210-1740)	1920 (1420-2350)	905
Age 18-49 years (2013 - 2014)	458 (389-538)	464 (374-540)	838 (664-1000)	1400 (1020-1840)	1980 (1400-2350)	551
Age 50+ years (2013 - 2014)	490 (444-542)	482 (401-550)	961 (732-1090)	1520 (1250-1870)	1870 (1420-2470)	354
Males (2013 - 2014)	476 (404-559)	475 (384-528)	838 (617-1080)	1530 (1020-2040)	2000 (1480-2770)	498
Females (2013 - 2014)	460 (405-521)	464 (382-559)	887 (771-1020)	1400 (1140-1660)	1870 (1400-2280)	407

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 12.6.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	309 (293-326)	304 (283-330)	586 (528-621)	1030 (931-1090)	1460 (1230-1700)	1436
Age 18-49 years (2013 - 2014)	284 (265-303)	288 (258-310)	528 (467-581)	901 (758-1030)	1240 (1040-1420)	755
Age 50+ years (2013 - 2014)	341 (311-374)	330 (303-369)	673 (561-784)	1120 (966-1490)	1720 (1230-2150)	681
Males (2013 - 2014)	357 (326-389)	356 (319-401)	654 (580-777)	1150 (962-1350)	1610 (1230-2090)	648
Females (2013 - 2014)	274 (256-294)	275 (250-295)	533 (455-592)	901 (777-1040)	1330 (1050-1530)	788

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 12.6.

Urinary 9H-Pyrido[3,4-b]indole (Norharman) (creatinine corrected) (2013 – 2014)

CAS Number 244-63-3

Geometric mean and selected percentiles of concentrations (in ng/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	498 (454-546)	505 (448-547)	829 (714-965)	1350 (1150-1590)	1810 (1580-2270)	904
Age 18-49 years (2013 - 2014)	444 (390-505)	455 (376-519)	736 (602-859)	1150 (905-1490)	1550 (1230-1810)	550
Age 50+ years (2013 - 2014)	634 (564-714)	603 (515-732)	1100 (867-1330)	1780 (1440-2120)	2570 (2010-3080)	354
Males (2013 - 2014)	429 (371-498)	429 (388-484)	672 (536-950)	1130 (827-1630)	1550 (1150-2150)	497
Females (2013 - 2014)	583 (541-629)	597 (535-637)	931 (809-1160)	1590 (1330-1780)	2200 (1700-2590)	407

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	375 (353-398)	359 (338-388)	675 (604-733)	1070 (944-1220)	1420 (1230-1700)	1435
Age 18-49 years (2013 - 2014)	317 (295-342)	315 (276-347)	526 (462-585)	876 (790-944)	1140 (970-1300)	755
Age 50+ years (2013 - 2014)	454 (411-501)	446 (400-522)	836 (724-899)	1250 (1080-1490)	1750 (1370-2280)	680
Males (2013 - 2014)	348 (325-373)	343 (305-375)	606 (529-685)	970 (856-1230)	1330 (996-1740)	647
Females (2013 - 2014)	399 (368-433)	381 (347-415)	724 (620-803)	1120 (1000-1250)	1580 (1280-1890)	788

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

Blood 1,1,1-Trichloroethane (Methyl chloroform) (2013 – 2016)

CAS Number 71-55-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	829
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	458
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	371
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	496
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	333

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.010 and 0.010 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2123
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2080
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1044
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1036
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	935
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1145

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.010 and 0.010 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,1,1,2-Tetrachloroethane (2013 – 2016)

CAS Number 79-34-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	925
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	832
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	555
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	461
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	370
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	371
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	494
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	498
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	431
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	334

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2095
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2079
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1098
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1044
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	997
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1035
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	923
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	935
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1172
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1144

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,2,3-Trichloropropane (2013 – 2016)

CAS Number 96-18-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	944
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	820
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	560
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	455
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	365
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	505
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	489
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	439
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	331

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2106
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2046
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1101
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1032
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1005
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1014
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	933
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	918
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1173
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1128

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,2-Dibromoethane (2013 – 2016)

CAS Number 106-93-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	790
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	442
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	348
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	477
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	313

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.015 and 0.015 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2122
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2021
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1109
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1015
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1006
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	908
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1181
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1113

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.015 and 0.015 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,2-Dichlorobenzene (o-Dichlorobenzene) (2013 – 2016)

CAS Number 95-50-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	938
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	812
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	555
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	448
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	383
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	364
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	503
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	487
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	435
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	325

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2084
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2028
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1089
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1017
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	995
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1011
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	923
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	910
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1161
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1118

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,2-Dichloroethane (Ethylene dichloride) (2013 – 2016)

CAS Number 107-06-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	951
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	817
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	456
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	508
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	493
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	324

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.010 and 0.010 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2122
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2059
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1034
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1012
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1025
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	923
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1181
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1136

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.010 and 0.010 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,3-Dichlorobenzene (m-Dichlorobenzene) (2013 – 2016)

CAS Number 95-50-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	942
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	821
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	560
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	454
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	382
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	367
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	504
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	496
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	438
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	325

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2108
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2052
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1101
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1031
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1007
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1021
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	932
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	922
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1176
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1130

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,4-Dichlorobenzene (Paradichlorobenzene) (2013 – 2016)

CAS Number 106-46-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	.079 (.055-.117)	.321 (.200-.566)	1.33 (.491-3.80)	939
Total population (2015 - 2016)	*	< LOD	.105 (.066-.183)	.438 (.257-.880)	1.79 (.609-4.33)	826
Age 18-49 years (2013 - 2014)	*	< LOD	.069 (.050-.099)	.241 (.149-.378)	.954 (.345-2.12)	557
Age 18-49 years (2015 - 2016)	*	< LOD	.098 (.053-.194)	.390 (.179-1.30)	1.87 (.817-5.03)	459
Age 50+ years (2013 - 2014)	*	< LOD	.114 (.047-.235)	.541 (.248-1.59)	2.11 (.541-4.10)	382
Age 50+ years (2015 - 2016)	*	< LOD	.106 (.069-.224)	.438 (.265-.609)	1.30 (.574-2.58)	367
Males (2013 - 2014)	*	< LOD	.096 (.066-.122)	.402 (.190-.640)	1.64 (.583-4.08)	503
Males (2015 - 2016)	*	< LOD	.107 (.068-.201)	.438 (.214-1.12)	1.60 (.574-4.11)	494
Females (2013 - 2014)	*	< LOD	.067 (.043-.129)	.297 (.187-.498)	.949 (.378-2.77)	436
Females (2015 - 2016)	*	< LOD	.097 (.055-.194)	.460 (.265-.960)	1.79 (.488-6.69)	332

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	.073 (.052-.100)	.311 (.192-.479)	.963 (.512-2.08)	2106
Total population (2015 - 2016)	*	< LOD	.096 (.062-.165)	.384 (.240-.749)	1.18 (.589-2.60)	2072
Age 18-49 years (2013 - 2014)	*	< LOD	.084 (.054-.131)	.337 (.177-.594)	1.19 (.531-3.50)	1099
Age 18-49 years (2015 - 2016)	*	< LOD	.099 (.065-.186)	.524 (.257-1.31)	1.78 (.924-3.55)	1039
Age 50+ years (2013 - 2014)	*	< LOD	.062 (.046-.081)	.292 (.181-.400)	.761 (.428-1.94)	1007
Age 50+ years (2015 - 2016)	*	< LOD	.088 (.057-.157)	.316 (.191-.589)	.664 (.384-1.68)	1033
Males (2013 - 2014)	*	< LOD	.078 (.060-.093)	.331 (.181-.462)	.696 (.462-1.67)	931
Males (2015 - 2016)	*	< LOD	.093 (.064-.134)	.376 (.253-.861)	1.61 (.749-3.20)	932
Females (2013 - 2014)	*	< LOD	.070 (.043-.110)	.294 (.176-.591)	1.32 (.591-3.06)	1175
Females (2015 - 2016)	*	< LOD	.096 (.057-.181)	.384 (.206-.685)	.963 (.505-2.65)	1140

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,4-Dioxane (2013 – 2016)

CAS Number 123-91-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	922
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	796
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	553
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	440
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	369
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	356
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	493
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	475
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	429
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	321

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.500 and 0.500 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2069
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1994
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1084
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1006
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	985
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	988
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	914
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	903
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1155
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1091

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.500 and 0.500 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 2,5-Dimethylfuran (2013 – 2016)

CAS Number 625-86-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.073 (.063-.084)	.089 (.077-.103)	.157 (.142-.174)	.234 (.204-.261)	.294 (.248-.325)	951
Total population (2015 - 2016)	.078 (.067-.090)	.102 (.090-.115)	.177 (.162-.197)	.275 (.258-.291)	.343 (.310-.374)	831
Age 18-49 years (2013 - 2014)	.065 (.054-.078)	.083 (.067-.098)	.154 (.130-.176)	.241 (.207-.262)	.295 (.248-.325)	567
Age 18-49 years (2015 - 2016)	.058 (.044-.076)	.075 (.053-.104)	.153 (.125-.182)	.248 (.203-.289)	.316 (.251-.412)	460
Age 50+ years (2013 - 2014)	.091 (.077-.106)	.105 (.088-.116)	.161 (.150-.178)	.222 (.192-.277)	.279 (.222-.338)	384
Age 50+ years (2015 - 2016)	.125 (.112-.141)	.140 (.122-.154)	.231 (.176-.257)	.314 (.275-.343)	.361 (.314-.581)	371
Males (2013 - 2014)	.067 (.057-.078)	.082 (.070-.098)	.161 (.132-.180)	.257 (.206-.295)	.310 (.272-.346)	509
Males (2015 - 2016)	.070 (.059-.083)	.096 (.077-.111)	.165 (.147-.189)	.264 (.236-.316)	.347 (.300-.410)	499
Females (2013 - 2014)	.080 (.066-.097)	.095 (.079-.111)	.155 (.134-.178)	.215 (.195-.244)	.253 (.225-.295)	442
Females (2015 - 2016)	.088 (.075-.104)	.110 (.089-.133)	.191 (.163-.226)	.284 (.242-.315)	.321 (.285-.354)	332

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.011 and 0.011 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2122
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2081
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1044
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1012
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1037
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	940
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	937
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1144

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.011 and 0.011 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/2,5-Dimethylfuran_BiomonitoringSummary.html

Blood Benzene (2013 – 2016)

CAS Number 71-43-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.139 (.121-.159)	.167 (.145-.188)	.279 (.243-.311)	.413 (.371-.436)	.500 (.439-.558)	915
Total population (2015 - 2016)	.153 (.135-.174)	.178 (.163-.198)	.308 (.280-.338)	.455 (.395-.535)	.642 (.510-.826)	824
Age 18-49 years (2013 - 2014)	.125 (.105-.149)	.155 (.121-.176)	.263 (.229-.311)	.414 (.367-.439)	.498 (.427-.558)	542
Age 18-49 years (2015 - 2016)	.121 (.096-.153)	.144 (.111-.178)	.261 (.213-.336)	.407 (.347-.503)	.602 (.425-.826)	456
Age 50+ years (2013 - 2014)	.168 (.144-.196)	.195 (.167-.219)	.304 (.249-.327)	.388 (.362-.443)	.525 (.427-.633)	373
Age 50+ years (2015 - 2016)	.224 (.196-.256)	.224 (.198-.261)	.372 (.303-.395)	.541 (.395-.796)	.796 (.503-1.37)	368
Males (2013 - 2014)	.132 (.113-.153)	.158 (.127-.182)	.281 (.233-.339)	.436 (.403-.498)	.549 (.458-.650)	493
Males (2015 - 2016)	.142 (.123-.164)	.169 (.145-.185)	.287 (.243-.346)	.477 (.395-.625)	.741 (.602-1.01)	494
Females (2013 - 2014)	.146 (.122-.174)	.170 (.149-.208)	.275 (.234-.315)	.368 (.327-.430)	.444 (.388-.498)	422
Females (2015 - 2016)	.168 (.145-.194)	.188 (.169-.213)	.330 (.280-.354)	.453 (.379-.523)	.541 (.415-.796)	330

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	.029 (<LOD-.051)	.081 (.036-.144)	2049
Total population (2015 - 2016)	*	< LOD	.028 (<LOD-.036)	.050 (.042-.058)	.067 (.058-.080)	2045
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.033 (<LOD-.061)	.090 (.037-.148)	1077
Age 18-49 years (2015 - 2016)	*	< LOD	.029 (<LOD-.039)	.053 (.043-.067)	.078 (.057-.130)	1031
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.027 (<LOD-.050)	.075 (.029-.125)	972
Age 50+ years (2015 - 2016)	*	< LOD	.027 (<LOD-.036)	.047 (.039-.054)	.062 (.051-.071)	1014
Males (2013 - 2014)	*	< LOD	< LOD	.032 (<LOD-.073)	.108 (.036-.148)	910
Males (2015 - 2016)	*	< LOD	.029 (<LOD-.038)	.051 (.041-.057)	.070 (.057-.086)	924
Females (2013 - 2014)	*	< LOD	< LOD	.027 (<LOD-.052)	.060 (.036-.107)	1139
Females (2015 - 2016)	*	< LOD	.026 (<LOD-.035)	.050 (.039-.062)	.065 (.054-.089)	1121

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Blood Benzonitrile (2015 – 2016)

CAS Number 100-47-0

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2015 - 2016)	*	< LOD	< LOD	.221 (.177-.281)	.320 (.228-.494)	823
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.231 (.177-.292)	.367 (.242-.516)	456
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.198 (.156-.290)	.282 (.198-.658)	367
Males (2015 - 2016)	*	< LOD	.150 (<LOD-.169)	.255 (.195-.381)	.438 (.281-.658)	494
Females (2015 - 2016)	*	< LOD	< LOD	.188 (.163-.218)	.248 (.198-.327)	329

Limit of detection (LOD, see Data Analysis section) for Survey year 15-16 is 0.150.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2039
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1027
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1012
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	918
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1121

Limit of detection (LOD, see Data Analysis section) for Survey year 15-16 is 0.150.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Bromodichloromethane (2013 – 2016)

CAS Number 75-27-4

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	8.00 (<LOD-10.0)	11.0 (8.00-15.0)	932
Total population (2015 - 2016)	*	< LOD	< LOD	11.0 (<LOD-18.0)	15.0 (10.0-21.0)	827
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	8.00 (<LOD-10.0)	11.0 (8.00-13.0)	554
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	11.0 (<LOD-18.0)	17.0 (11.0-21.0)	459
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	7.00 (<LOD-10.0)	12.0 (7.00-18.0)	378
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	10.0 (<LOD-15.0)	14.0 (8.00-34.0)	368
Males (2013 - 2014)	*	< LOD	< LOD	8.00 (<LOD-11.0)	11.0 (7.00-18.0)	497
Males (2015 - 2016)	*	< LOD	< LOD	11.0 (<LOD-21.0)	15.0 (9.00-29.0)	494
Females (2013 - 2014)	*	< LOD	< LOD	7.00 (<LOD-9.00)	10.0 (8.00-12.0)	435
Females (2015 - 2016)	*	< LOD	< LOD	9.00 (<LOD-16.0)	15.0 (9.00-21.0)	333

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 6.00 and 6.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	7.00 (<LOD-8.00)	9.00 (7.00-12.0)	2093
Total population (2015 - 2016)	*	< LOD	< LOD	9.00 (6.00-13.0)	13.0 (9.00-21.0)	2079
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	7.00 (<LOD-8.00)	10.0 (8.00-12.0)	1095
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	10.0 (6.00-15.0)	16.0 (11.0-20.0)	1041
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	6.00 (<LOD-8.00)	9.00 (7.00-12.0)	998
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	7.00 (<LOD-11.0)	11.0 (6.00-25.0)	1038
Males (2013 - 2014)	*	< LOD	< LOD	7.00 (<LOD-9.00)	10.0 (9.00-12.0)	927
Males (2015 - 2016)	*	< LOD	< LOD	9.00 (6.00-14.0)	16.0 (10.0-21.0)	936
Females (2013 - 2014)	*	< LOD	< LOD	6.00 (<LOD-8.00)	9.00 (7.00-11.0)	1166
Females (2015 - 2016)	*	< LOD	< LOD	9.00 (<LOD-12.0)	12.0 (8.00-21.0)	1143

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 6.00 and 6.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Chlorobenzene (Monochlorobenzene) (2013 – 2016)

CAS Number 108-90-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	821
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	458
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	363
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	494
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	327

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.011 and 0.011 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2122
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2079
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1109
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1044
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1035
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	940
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	935
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1144

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.011 and 0.011 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood Chloroethane (2013 – 2016)

CAS Number 75-00-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	949
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	823
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	565
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	455
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	384
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	368
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	508
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	492
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	441
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	331

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.045 and 0.045 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2119
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2057
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1028
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1009
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1029
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	937
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	928
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1129

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.045 and 0.045 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Cyclohexane (2013 – 2016)

CAS Number 110-82-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	899
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	814
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	533
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	452
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	366
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	362
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	475
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	488
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	424
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	326

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.020 and 0.020 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1991
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1989
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1036
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	998
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	955
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	991
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	891
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	898
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1100
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1091

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.020 and 0.020 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Dibromochloromethane (Chlorodibromomethane) (2013 – 2016)

CAS Number 124-48-1

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (<LOD-11.0)	948
Total population (2015 - 2016)	*	< LOD	< LOD	9.00 (<LOD-16.0)	15.0 (<LOD-27.0)	831
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (<LOD-10.0)	565
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	9.00 (<LOD-19.0)	15.0 (<LOD-27.0)	459
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	5.00 (<LOD-9.00)	10.0 (5.00-13.0)	383
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	7.00 (<LOD-16.0)	12.0 (<LOD-23.0)	372
Males (2013 - 2014)	*	< LOD	< LOD	5.00 (<LOD-7.00)	8.00 (6.00-13.0)	505
Males (2015 - 2016)	*	< LOD	< LOD	9.00 (<LOD-21.0)	16.0 (5.00-23.0)	498
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (<LOD-10.0)	443
Females (2015 - 2016)	*	< LOD	< LOD	7.00 (<LOD-12.0)	11.0 (<LOD-20.0)	333

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 5.00 and 5.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (6.00-8.00)	2118
Total population (2015 - 2016)	*	< LOD	< LOD	6.00 (<LOD-12.0)	10.0 (5.00-22.0)	2085
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	5.00 (<LOD-7.00)	8.00 (6.00-12.0)	1109
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	7.00 (<LOD-17.0)	13.0 (5.00-27.0)	1046
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	6.00 (<LOD-7.00)	1009
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	5.00 (<LOD-9.00)	9.00 (5.00-18.0)	1039
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (6.00-9.00)	941
Males (2015 - 2016)	*	< LOD	< LOD	6.00 (<LOD-11.0)	11.0 (6.00-20.0)	938
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	7.00 (5.00-9.00)	1177
Females (2015 - 2016)	*	< LOD	< LOD	6.00 (<LOD-13.0)	10.0 (5.00-25.0)	1147

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 5.00 and 5.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Dichloromethane (Methylene chloride) (2013 – 2016)

CAS Number 75-09-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	928
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	820
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	555
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	451
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	373
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	369
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	498
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	492
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	430
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	328

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.250 and 0.250 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2085
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2037
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1088
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1023
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	997
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1014
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	924
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	914
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1161
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1123

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.250 and 0.250 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Diethyl Ether (2013 – 2016)

CAS Number 60-29-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	901
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	812
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	535
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	449
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	366
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	363
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	481
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	485
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	420
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	327

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2017
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2053
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1060
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1027
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	957
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1026
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	897
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	926
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1120
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1127

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Ethyl Acetate (2013 – 2016)

CAS Number 141-78-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	939
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	.316 (<LOD-4.64)	802
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	559
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	.316 (<LOD-4.64)	441
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	.541 (<LOD-4.08)	380
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	1.02 (<LOD-12.4)	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	503
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	.694 (<LOD-5.76)	479
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	.224 (<LOD-6.39)	436
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	323

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.158 and 0.158 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2080
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1996
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1088
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1008
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	992
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	988
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	919
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	902
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1161
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1094

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.158 and 0.158 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Ethylbenzene (2013 – 2016)

CAS Number 100-41-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.062 (.056-.068)	.063 (.059-.070)	.104 (.094-.115)	.150 (.137-.165)	.189 (.165-.199)	921
Total population (2015 - 2016)	.068 (.060-.076)	.075 (.068-.084)	.117 (.105-.132)	.167 (.148-.194)	.202 (.174-.251)	830
Age 18-49 years (2013 - 2014)	.059 (.052-.066)	.060 (.055-.068)	.104 (.092-.119)	.151 (.136-.173)	.189 (.164-.209)	546
Age 18-49 years (2015 - 2016)	.056 (.046-.068)	.062 (.048-.077)	.105 (.088-.128)	.160 (.122-.196)	.196 (.162-.233)	459
Age 50+ years (2013 - 2014)	.067 (.060-.075)	.070 (.062-.080)	.103 (.090-.115)	.147 (.132-.152)	.192 (.151-.197)	375
Age 50+ years (2015 - 2016)	.091 (.079-.106)	.095 (.085-.101)	.135 (.121-.152)	.183 (.154-.202)	.222 (.179-.375)	371
Males (2013 - 2014)	.062 (.055-.069)	.062 (.055-.072)	.113 (.097-.132)	.170 (.146-.194)	.199 (.189-.217)	490
Males (2015 - 2016)	.065 (.057-.075)	.073 (.064-.080)	.122 (.101-.135)	.172 (.146-.207)	.220 (.167-.332)	498
Females (2013 - 2014)	.061 (.054-.069)	.064 (.060-.073)	.094 (.084-.108)	.136 (.124-.149)	.156 (.147-.169)	431
Females (2015 - 2016)	.071 (.061-.082)	.079 (.068-.091)	.114 (.104-.133)	.164 (.146-.185)	.198 (.155-.269)	332

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	.035 (.025-.047)	.054 (.043-.075)	2031
Total population (2015 - 2016)	*	< LOD	< LOD	.034 (.029-.041)	.056 (.045-.073)	2062
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.031 (<LOD-.040)	.050 (.037-.079)	1058
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.038 (.029-.050)	.060 (.043-.087)	1036
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.040 (<LOD-.059)	.059 (.045-.082)	973
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.031 (.026-.042)	.052 (.034-.075)	1026
Males (2013 - 2014)	*	< LOD	< LOD	.039 (.031-.048)	.057 (.048-.076)	901
Males (2015 - 2016)	*	< LOD	< LOD	.039 (.031-.052)	.061 (.045-.089)	927
Females (2013 - 2014)	*	< LOD	< LOD	.031 (<LOD-.047)	.052 (.035-.077)	1130
Females (2015 - 2016)	*	< LOD	< LOD	.030 (.025-.038)	.052 (.035-.069)	1135

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

Blood Furan (2013 – 2016)

CAS Number 110-00-9

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.051 (.046-.056)	.055 (.046-.063)	.092 (.082-.104)	.139 (.126-.152)	.172 (.146-.205)	951
Total population (2015 - 2016)	.054 (.048-.059)	.057 (.049-.066)	.106 (.092-.116)	.158 (.141-.171)	.190 (.164-.230)	833
Age 18-49 years (2013 - 2014)	.047 (.041-.054)	.048 (.037-.061)	.087 (.075-.103)	.142 (.133-.155)	.176 (.148-.202)	566
Age 18-49 years (2015 - 2016)	.045 (.038-.054)	.043 (.032-.058)	.090 (.072-.111)	.146 (.115-.164)	.172 (.158-.206)	461
Age 50+ years (2013 - 2014)	.058 (.051-.065)	.061 (.053-.072)	.103 (.089-.112)	.136 (.118-.165)	.170 (.131-.226)	385
Age 50+ years (2015 - 2016)	.071 (.065-.079)	.075 (.067-.090)	.124 (.110-.130)	.171 (.155-.201)	.211 (.163-.251)	372
Males (2013 - 2014)	.048 (.043-.055)	.050 (.038-.061)	.090 (.077-.107)	.162 (.122-.182)	.194 (.162-.215)	508
Males (2015 - 2016)	.050 (.045-.056)	.052 (.044-.061)	.096 (.078-.116)	.143 (.121-.172)	.183 (.151-.244)	499
Females (2013 - 2014)	.053 (.046-.062)	.056 (.048-.066)	.094 (.075-.115)	.125 (.116-.141)	.148 (.138-.156)	443
Females (2015 - 2016)	.058 (.052-.066)	.062 (.053-.075)	.115 (.099-.127)	.164 (.149-.179)	.201 (.161-.235)	334

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2123
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2086
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1046
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1040
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	938
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1148

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Heptane (2013 – 2016)

CAS Number 142-82-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	923
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	804
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	549
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	443
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	374
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	492
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	480
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	431
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	324

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.100 and 0.100 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2053
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2015
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1071
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1017
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	982
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	998
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	911
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	902
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1142
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1113

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.100 and 0.100 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Hexane (2013 – 2016)

CAS Number 110-54-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	881
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	782
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	520
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	434
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	361
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	348
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	470
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	468
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	411
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	314

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.122 and 0.122 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1939
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1901
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1003
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	946
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	936
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	955
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	866
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	857
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1073
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1044

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.122 and 0.122 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Isobutyronitrile (2015 – 2016)

CAS Number 78-82-0

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2015 - 2016)	*	< LOD	.059 (.055-.066)	.094 (.083-.114)	.143 (.114-.242)	814
Age 18-49 years (2015 - 2016)	*	< LOD	.052 (.040-.064)	.084 (.065-.123)	.133 (.087-.242)	453
Age 50+ years (2015 - 2016)	*	.046 (<LOD-.054)	.071 (.063-.075)	.114 (.083-.128)	.173 (.111-.357)	361
Males (2015 - 2016)	*	< LOD	.059 (.052-.072)	.098 (.078-.148)	.203 (.121-.291)	486
Females (2015 - 2016)	*	< LOD	.060 (.053-.071)	.094 (.074-.114)	.123 (.093-.252)	328

Limit of detection (LOD, see Data Analysis section) for Survey year 15-16 is 0.040.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2027
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1023
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1004
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	918
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1109

Limit of detection (LOD, see Data Analysis section) for Survey year 15-16 is 0.040.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Isopropylbenzene (2013 – 2016)

CAS Number 98-82-8

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	817
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	457
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	360
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	491
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	326

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2123
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2070
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1038
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1032
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	933
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1137

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Methyl-tert-Butyl Ether (MTBE) (2013 – 2016)

CAS Number 1634-04-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	900
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-17.0)	745
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	538
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-15.0)	418
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	362
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-24.0)	327
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	490
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	14.0 (<LOD-20.0)	444
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	410
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	301

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 10.0 and 10.0 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2020
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1954
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1050
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	987
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	970
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	967
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	892
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	877
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1128
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-13.0)	1077

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 10.0 and 10.0 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/MTBE_BiomonitoringSummary.html

Blood Methylcyclopentane (2013 – 2016)

CAS Number 96-37-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	935
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	793
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	557
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	440
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	378
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	353
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	497
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	474
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	438
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	319

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.020 and 0.020 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2087
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1949
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1089
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	981
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	998
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	968
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	932
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	880
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1155
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1069

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.020 and 0.020 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Nitrobenzene (2013 – 2016)

CAS Number 98-95-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	939
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	821
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	563
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	454
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	376
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	367
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	503
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	492
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	436
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	329

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.320 and 0.320 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2113
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2051
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1108
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1035
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1005
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1016
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	934
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	924
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1179
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1127

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.320 and 0.320 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Nitrobenzene_BiomonitoringSummary.html

Blood Octane (2013 – 2016)

CAS Number 111-65-9

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	938
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	809
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	556
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	448
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	382
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	361
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	500
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	487
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	438
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	322

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.100 and 0.100 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2059
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2027
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1081
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1024
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	978
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1003
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	914
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	905
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1145
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1122

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.100 and 0.100 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Tetrachloroethene (Perchloroethylene) (2013 – 2016)

CAS Number 127-18-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	.070 (<LOD-.943)	884
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	.056 (<LOD-.087)	833
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	.048 (<LOD-.096)	525
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	.080 (<LOD-.135)	461
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.061 (<LOD-1.56)	1.20 (<LOD-5.11)	359
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	372
Males (2013 - 2014)	*	< LOD	< LOD	.049 (<LOD-.070)	.102 (.049-.979)	472
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	.080 (<LOD-.135)	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	.049 (<LOD-1.56)	412
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	334

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.048 and 0.048 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	.083 (.067-.104)	1972
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	.084 (<LOD-.123)	2086
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	.074 (.050-.111)	1023
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	.071 (<LOD-.109)	1046
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.051 (<LOD-.078)	.086 (.066-.146)	949
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	.102 (<LOD-.195)	1040
Males (2013 - 2014)	*	< LOD	< LOD	.050 (<LOD-.063)	.099 (.066-.162)	877
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	.085 (<LOD-.120)	938
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	.078 (.051-.103)	1095
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	.084 (<LOD-.155)	1148

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.048 and 0.048 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Tetrachloromethane (Carbon tetrachloride) (2013 – 2016)

CAS Number 56-23-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	824
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	456
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	368
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	494
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	330

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 5.00E-03 and 5.00E-03 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2119
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2074
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1108
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1039
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1011
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1035
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	939
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	931
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1180
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1143

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 5.00E-03 and 5.00E-03 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood Tetrahydrofuran (2013 – 2016)

CAS Number 109-99-9

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	912
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	808
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	543
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	445
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	369
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	363
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	486
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	481
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	426
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	327

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.125 and 0.125 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2033
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2016
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1060
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	973
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1003
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	902
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	901
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1131
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1115

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.125 and 0.125 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Toluene (2013 – 2016)

CAS Number 108-88-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.383 (.343-.428)	.422 (.363-.498)	.685 (.619-.734)	1.01 (.913-1.09)	1.19 (1.10-1.31)	913
Total population (2015 - 2016)	.405 (.354-.464)	.456 (.412-.513)	.763 (.696-.847)	1.17 (.990-1.35)	1.50 (1.24-2.04)	822
Age 18-49 years (2013 - 2014)	.355 (.310-.405)	.388 (.322-.471)	.670 (.567-.797)	1.01 (.875-1.09)	1.19 (1.09-1.31)	543
Age 18-49 years (2015 - 2016)	.318 (.253-.398)	.366 (.266-.475)	.669 (.540-.772)	.974 (.836-1.24)	1.32 (1.06-1.71)	455
Age 50+ years (2013 - 2014)	.442 (.389-.501)	.499 (.408-.542)	.701 (.631-.743)	1.02 (.913-1.12)	1.17 (1.08-1.31)	370
Age 50+ years (2015 - 2016)	.601 (.520-.695)	.609 (.517-.668)	.898 (.756-1.04)	1.39 (1.03-3.08)	2.20 (1.17-7.61)	367
Males (2013 - 2014)	.376 (.337-.418)	.400 (.364-.460)	.729 (.650-.826)	1.10 (1.01-1.20)	1.31 (1.19-1.60)	494
Males (2015 - 2016)	.389 (.331-.458)	.430 (.375-.491)	.748 (.635-.897)	1.24 (.953-1.71)	1.72 (1.17-3.08)	495
Females (2013 - 2014)	.390 (.333-.457)	.446 (.340-.541)	.646 (.581-.718)	.902 (.807-.996)	1.05 (.953-1.14)	419
Females (2015 - 2016)	.427 (.361-.505)	.484 (.433-.569)	.772 (.709-.844)	1.12 (.932-1.24)	1.32 (1.06-1.66)	327

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.064 (.059-.070)	.058 (.055-.062)	.086 (.078-.095)	.147 (.127-.188)	.241 (.201-.338)	2058
Total population (2015 - 2016)	.070 (.061-.081)	.061 (.053-.074)	.101 (.085-.120)	.182 (.147-.234)	.312 (.235-.382)	2080
Age 18-49 years (2013 - 2014)	.064 (.059-.070)	.057 (.054-.061)	.085 (.079-.094)	.147 (.126-.197)	.243 (.207-.388)	1072
Age 18-49 years (2015 - 2016)	.071 (.062-.082)	.063 (.053-.075)	.101 (.085-.118)	.200 (.148-.262)	.343 (.239-.413)	1042
Age 50+ years (2013 - 2014)	.064 (.058-.072)	.059 (.054-.065)	.088 (.077-.100)	.147 (.123-.191)	.230 (.188-.307)	986
Age 50+ years (2015 - 2016)	.069 (.059-.082)	.060 (.051-.074)	.102 (.083-.122)	.164 (.140-.219)	.264 (.188-.361)	1038
Males (2013 - 2014)	.069 (.063-.074)	.061 (.057-.065)	.092 (.085-.100)	.173 (.139-.213)	.244 (.215-.346)	911
Males (2015 - 2016)	.076 (.065-.088)	.065 (.055-.081)	.108 (.088-.138)	.202 (.162-.278)	.323 (.253-.479)	937
Females (2013 - 2014)	.061 (.054-.068)	.056 (.051-.060)	.082 (.072-.094)	.135 (.109-.174)	.225 (.147-.395)	1147
Females (2015 - 2016)	.066 (.057-.076)	.059 (.052-.069)	.096 (.080-.112)	.158 (.127-.205)	.264 (.184-.374)	1143

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.025 and 0.025 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Blood Tribromomethane (Bromoform) (2013 – 2016)

CAS Number 75-25-2

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	939
Total population (2015 - 2016)	*	< LOD	< LOD	8.00 (<LOD-13.0)	13.0 (10.0-16.0)	813
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	9.00 (<LOD-11.0)	557
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	10.0 (<LOD-14.0)	13.0 (8.00-23.0)	449
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	382
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	8.00 (<LOD-11.0)	11.0 (<LOD-28.0)	364
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	9.00 (<LOD-11.0)	504
Males (2015 - 2016)	*	< LOD	< LOD	10.0 (<LOD-17.0)	13.0 (9.00-17.0)	486
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	435
Females (2015 - 2016)	*	< LOD	< LOD	8.00 (<LOD-13.0)	11.0 (<LOD-28.0)	327

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 8.00 and 8.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	8.00 (<LOD-10.0)	2094
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	9.00 (<LOD-16.0)	2061
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	9.00 (<LOD-12.0)	1093
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-16.0)	1033
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1001
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	8.00 (<LOD-18.0)	1028
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	927
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	8.00 (<LOD-16.0)	928
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	9.00 (<LOD-11.0)	1167
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	10.0 (<LOD-15.0)	1133

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 8.00 and 8.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Trichloroethene (Trichloroethylene) (2013 – 2016)

CAS Number 79-01-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	923
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	833
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	551
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	461
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	372
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	372
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	492
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	499
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	431
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	334

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.012 and 0.012 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2054
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2086
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1076
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1046
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	978
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1040
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	910
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	938
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1144
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1148

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.012 and 0.012 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Trichloromethane (Chloroform) (2013 – 2016)

CAS Number 67-66-3

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	9.00 (<LOD-12.0)	18.0 (15.0-24.0)	32.0 (27.0-39.0)	51.0 (38.0-62.0)	926
Total population (2015 - 2016)	11.8 (10.9-12.8)	9.00 (8.00-11.0)	19.0 (16.0-22.0)	35.0 (28.0-42.0)	53.0 (36.0-70.0)	803
Age 18-49 years (2013 - 2014)	*	9.00 (<LOD-12.0)	17.0 (14.0-22.0)	30.0 (25.0-36.0)	49.0 (33.0-62.0)	550
Age 18-49 years (2015 - 2016)	12.0 (10.9-13.1)	10.0 (8.00-12.0)	19.0 (16.0-22.0)	36.0 (29.0-40.0)	52.0 (31.0-77.0)	447
Age 50+ years (2013 - 2014)	*	9.00 (<LOD-15.0)	20.0 (15.0-27.0)	35.0 (25.0-51.0)	52.0 (37.0-77.0)	376
Age 50+ years (2015 - 2016)	*	9.00 (8.00-11.0)	19.0 (14.0-22.0)	35.0 (22.0-65.0)	65.0 (28.0-79.0)	356
Males (2013 - 2014)	*	< LOD	16.0 (13.0-22.0)	30.0 (24.0-38.0)	53.0 (36.0-62.0)	493
Males (2015 - 2016)	11.9 (10.5-13.4)	10.0 (8.00-13.0)	19.0 (16.0-23.0)	34.0 (23.0-52.0)	53.0 (34.0-70.0)	484
Females (2013 - 2014)	11.9 (9.58-14.8)	11.0 (<LOD-15.0)	21.0 (14.0-27.0)	34.0 (25.0-44.0)	45.0 (32.0-84.0)	433
Females (2015 - 2016)	11.7 (10.7-12.9)	9.00 (8.00-11.0)	18.0 (15.0-20.0)	37.0 (24.0-43.0)	62.0 (26.0-147)	319

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 8.00 and 8.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	8.00 (<LOD-10.0)	16.0 (14.0-19.0)	26.0 (23.0-34.0)	40.0 (32.0-48.0)	2080
Total population (2015 - 2016)	*	9.00 (8.00-11.0)	17.0 (15.0-20.0)	30.0 (27.0-34.0)	47.0 (41.0-55.0)	2007
Age 18-49 years (2013 - 2014)	*	< LOD	15.0 (13.0-17.0)	26.0 (22.0-32.0)	40.0 (30.0-51.0)	1087
Age 18-49 years (2015 - 2016)	*	9.00 (<LOD-11.0)	16.0 (14.0-20.0)	30.0 (27.0-35.0)	47.0 (39.0-52.0)	1020
Age 50+ years (2013 - 2014)	*	9.00 (<LOD-11.0)	17.0 (15.0-19.0)	27.0 (23.0-36.0)	40.0 (34.0-43.0)	993
Age 50+ years (2015 - 2016)	11.4 (10.2-12.8)	9.00 (8.00-11.0)	17.0 (13.0-22.0)	30.0 (24.0-40.0)	48.0 (36.0-65.0)	987
Males (2013 - 2014)	*	< LOD	16.0 (14.0-19.0)	26.0 (22.0-36.0)	38.0 (28.0-50.0)	924
Males (2015 - 2016)	*	9.00 (<LOD-11.0)	17.0 (15.0-19.0)	32.0 (27.0-41.0)	54.0 (42.0-63.0)	908
Females (2013 - 2014)	*	8.00 (<LOD-10.0)	16.0 (14.0-18.0)	27.0 (23.0-34.0)	41.0 (33.0-50.0)	1156
Females (2015 - 2016)	*	9.00 (8.00-10.0)	16.0 (14.0-21.0)	29.0 (27.0-32.0)	42.0 (34.0-55.0)	1099

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 8.00 and 8.00 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood aaa-Trifluorotoluene (2013 – 2016)

CAS Number 98-08-8

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	952
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	829
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	567
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	461
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	385
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	368
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	509
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	495
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	443
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	334

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2123
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2075
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1042
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1033
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	933
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1182
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1142

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.040 and 0.040 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Vinyl Bromide (2013 – 2016)

CAS Number 593-60-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	941
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	830
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	559
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	461
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	382
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	369
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	505
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	497
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	436
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	333

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.045 and 0.045 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	2088
Total population (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	2065
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1093
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1039
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	995
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1026
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	923
Males (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	928
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1165
Females (2015 - 2016)	*	< LOD	< LOD	< LOD	< LOD	1137

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.045 and 0.045 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood m-/p-Xylene (2013 – 2016)

CAS Number 108-38-3/106-42-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.157 (.142-.173)	.165 (.148-.181)	.258 (.239-.280)	.361 (.340-.386)	.460 (.410-.501)	946
Total population (2015 - 2016)	.174 (.151-.200)	.188 (.169-.211)	.289 (.264-.325)	.414 (.360-.479)	.582 (.425-.787)	830
Age 18-49 years (2013 - 2014)	.150 (.134-.169)	.158 (.138-.175)	.258 (.225-.288)	.368 (.332-.395)	.476 (.401-.516)	562
Age 18-49 years (2015 - 2016)	.146 (.118-.181)	.158 (.127-.193)	.267 (.223-.321)	.391 (.316-.561)	.544 (.391-.787)	461
Age 50+ years (2013 - 2014)	.169 (.150-.191)	.177 (.156-.199)	.257 (.235-.280)	.359 (.310-.410)	.447 (.385-.518)	384
Age 50+ years (2015 - 2016)	.231 (.198-.269)	.226 (.204-.258)	.318 (.282-.360)	.448 (.369-.602)	.619 (.423-1.86)	369
Males (2013 - 2014)	.163 (.146-.182)	.165 (.148-.186)	.288 (.255-.308)	.410 (.368-.472)	.516 (.443-.569)	506
Males (2015 - 2016)	.173 (.145-.208)	.184 (.166-.218)	.302 (.257-.347)	.423 (.347-.611)	.619 (.414-.895)	498
Females (2013 - 2014)	.151 (.134-.171)	.165 (.145-.182)	.239 (.208-.260)	.325 (.286-.340)	.382 (.340-.439)	440
Females (2015 - 2016)	.174 (.150-.202)	.193 (.167-.217)	.281 (.258-.308)	.400 (.327-.464)	.467 (.390-.741)	332

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.034 and 0.034 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	.041 (.035-.047)	.065 (.057-.077)	.124 (.089-.163)	.187 (.154-.248)	2098
Total population (2015 - 2016)	*	.038 (<LOD-.045)	.064 (.055-.081)	.124 (.101-.164)	.213 (.155-.278)	2086
Age 18-49 years (2013 - 2014)	*	.040 (<LOD-.045)	.063 (.055-.070)	.102 (.085-.147)	.166 (.136-.248)	1099
Age 18-49 years (2015 - 2016)	*	.039 (.034-.046)	.063 (.055-.079)	.143 (.101-.202)	.230 (.168-.293)	1046
Age 50+ years (2013 - 2014)	.050 (.043-.059)	.043 (.036-.051)	.070 (.057-.090)	.144 (.091-.187)	.198 (.158-.286)	999
Age 50+ years (2015 - 2016)	*	.038 (<LOD-.046)	.066 (.053-.084)	.113 (.099-.139)	.185 (.121-.305)	1040
Males (2013 - 2014)	.050 (.045-.056)	.045 (.039-.050)	.070 (.063-.084)	.149 (.101-.169)	.203 (.168-.250)	930
Males (2015 - 2016)	.049 (.042-.057)	.041 (.035-.051)	.072 (.058-.092)	.153 (.105-.208)	.237 (.156-.403)	938
Females (2013 - 2014)	*	.039 (<LOD-.046)	.062 (.051-.075)	.105 (.077-.160)	.164 (.111-.302)	1168
Females (2015 - 2016)	*	.037 (<LOD-.043)	.060 (.051-.071)	.114 (.091-.138)	.188 (.130-.272)	1148

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.034 and 0.034 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Blood o-Xylene (2013 – 2016)

CAS Number 95-47-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	.035 (.033-.038)	.036 (.032-.039)	.053 (.049-.058)	.075 (.067-.082)	.091 (.082-.107)	952
Total population (2015 - 2016)	.039 (.035-.044)	.039 (.034-.044)	.059 (.054-.065)	.080 (.069-.095)	.106 (.080-.171)	827
Age 18-49 years (2013 - 2014)	.034 (.032-.037)	.034 (.029-.039)	.053 (.047-.058)	.077 (.066-.084)	.091 (.082-.107)	567
Age 18-49 years (2015 - 2016)	.034 (.030-.040)	.032 (.027-.039)	.055 (.045-.067)	.075 (.065-.098)	.098 (.071-.171)	457
Age 50+ years (2013 - 2014)	.038 (.033-.042)	.037 (.032-.043)	.053 (.049-.058)	.071 (.066-.085)	.089 (.071-.114)	385
Age 50+ years (2015 - 2016)	.049 (.041-.057)	.046 (.042-.052)	.064 (.056-.072)	.086 (.075-.111)	.115 (.084-.635)	370
Males (2013 - 2014)	.037 (.034-.040)	.036 (.033-.041)	.058 (.053-.065)	.082 (.073-.094)	.102 (.083-.170)	509
Males (2015 - 2016)	.039 (.034-.045)	.038 (.034-.045)	.060 (.051-.067)	.082 (.067-.115)	.115 (.081-.230)	494
Females (2013 - 2014)	.034 (.030-.038)	.035 (.030-.039)	.049 (.043-.055)	.065 (.059-.070)	.078 (.068-.091)	443
Females (2015 - 2016)	.040 (.034-.046)	.040 (.032-.046)	.058 (.053-.064)	.079 (.071-.084)	.088 (.076-.137)	333

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2013 - 2014)	*	< LOD	< LOD	.034 (.027-.049)	.051 (.042-.073)	2123
Total population (2015 - 2016)	*	< LOD	< LOD	.035 (.028-.046)	.059 (.040-.081)	2071
Age 18-49 years (2013 - 2014)	*	< LOD	< LOD	.030 (.026-.039)	.048 (.035-.070)	1110
Age 18-49 years (2015 - 2016)	*	< LOD	< LOD	.037 (.026-.051)	.060 (.041-.082)	1041
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	.039 (.029-.051)	.057 (.046-.085)	1013
Age 50+ years (2015 - 2016)	*	< LOD	< LOD	.033 (.028-.044)	.058 (.034-.097)	1030
Males (2013 - 2014)	*	< LOD	< LOD	.038 (.030-.050)	.059 (.046-.075)	941
Males (2015 - 2016)	*	< LOD	< LOD	.040 (.028-.060)	.060 (.039-.131)	934
Females (2013 - 2014)	*	< LOD	< LOD	.032 (<LOD-.048)	.048 (.035-.075)	1182
Females (2015 - 2016)	*	< LOD	< LOD	.032 (.025-.040)	.051 (.037-.071)	1137

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.024 and 0.024 respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (2011 – 2014)

CAS Number 51868-61-2

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	206 (182-232)	224 (190-250)	398 (358-452)	722 (593-894)	1000 (821-1240)	869
Total population (2013 - 2014)	189 (169-212)	199 (178-221)	401 (352-438)	653 (573-716)	850 (731-992)	911
Age 20-49 years (2011 - 2012)	184 (158-214)	200 (171-235)	356 (304-406)	634 (563-697)	842 (692-1070)	518
Age 20-49 years (2013 - 2014)	181 (154-213)	190 (176-213)	379 (314-444)	605 (503-715)	774 (617-1060)	545
Age 50+ years (2011 - 2012)	245 (201-298)	251 (190-344)	501 (395-579)	911 (542-1240)	1230 (894-1710)	351
Age 50+ years (2013 - 2014)	214 (191-239)	217 (185-262)	441 (363-505)	731 (619-881)	925 (754-1190)	366
Males (2011 - 2012)	218 (182-261)	236 (191-267)	427 (372-507)	827 (589-1060)	1230 (894-1410)	525
Males (2013 - 2014)	185 (152-227)	188 (157-243)	401 (325-458)	653 (573-754)	878 (719-1060)	507
Females (2011 - 2012)	191 (166-220)	198 (162-260)	372 (307-453)	657 (514-818)	874 (692-1060)	344
Females (2013 - 2014)	193 (174-214)	202 (176-229)	401 (347-438)	653 (555-678)	774 (668-925)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 6.96 and 6.96, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	73.0 (67.3-79.3)	78.6 (72.5-86.4)	144 (133-157)	241 (216-279)	338 (291-414)	1318
Total population (2013 - 2014)	67.3 (61.4-73.9)	68.5 (59.7-77.9)	138 (130-150)	236 (217-256)	327 (276-373)	1358
Age 20-49 years (2011 - 2012)	66.5 (58.8-75.3)	74.2 (65.7-84.1)	135 (117-147)	235 (205-260)	305 (253-351)	659
Age 20-49 years (2013 - 2014)	66.3 (60.6-72.5)	64.6 (52.4-78.5)	136 (123-155)	239 (208-264)	328 (264-381)	662
Age 50+ years (2011 - 2012)	80.8 (73.1-89.3)	85.4 (73.9-97.7)	158 (135-175)	278 (216-333)	424 (292-489)	659
Age 50+ years (2013 - 2014)	68.2 (59.1-78.7)	70.7 (58.7-91.3)	138 (123-154)	226 (205-261)	318 (261-396)	696
Males (2011 - 2012)	98.1 (89.3-108)	98.6 (87.1-116)	174 (151-198)	298 (259-338)	414 (322-457)	628
Males (2013 - 2014)	79.9 (70.2-90.8)	83.9 (66.4-105)	153 (139-169)	244 (219-272)	340 (284-369)	654
Females (2011 - 2012)	57.9 (51.4-65.1)	60.5 (48.9-73.9)	122 (106-140)	203 (175-230)	267 (230-314)	690
Females (2013 - 2014)	58.3 (52.7-64.6)	58.6 (51.6-67.8)	125 (106-143)	223 (186-261)	297 (261-392)	801

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 6.96 and 6.96, respectively.

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 51868-61-2

Metabolite of Acrolein

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	227 (209-247)	236 (208-265)	381 (343-416)	575 (476-698)	785 (623-906)	869
Total population (2013 - 2014)	193 (170-219)	211 (179-252)	336 (309-380)	509 (443-611)	682 (613-739)	910
Age 20-49 years (2011 - 2012)	192 (175-211)	188 (169-206)	332 (297-367)	459 (412-527)	627 (488-845)	518
Age 20-49 years (2013 - 2014)	167 (144-195)	174 (147-200)	298 (258-334)	451 (370-495)	602 (471-682)	544
Age 50+ years (2011 - 2012)	296 (253-347)	305 (242-353)	475 (373-551)	698 (515-906)	906 (553-1380)	351
Age 50+ years (2013 - 2014)	265 (242-291)	293 (262-313)	406 (382-474)	653 (546-768)	795 (696-849)	366
Males (2011 - 2012)	207 (182-235)	207 (185-234)	341 (296-390)	488 (409-592)	614 (513-785)	525
Males (2013 - 2014)	165 (141-194)	165 (137-204)	311 (279-343)	459 (385-570)	639 (508-768)	506
Females (2011 - 2012)	257 (224-294)	270 (231-321)	429 (396-491)	695 (491-871)	871 (692-979)	344
Females (2013 - 2014)	225 (198-256)	252 (213-283)	370 (320-422)	578 (471-645)	712 (617-772)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	85.6 (79.9-91.8)	83.5 (77.6-92.1)	132 (122-142)	192 (174-227)	257 (232-285)	1317
Total population (2013 - 2014)	80.6 (73.7-88.1)	79.9 (72.2-89.6)	127 (114-144)	194 (178-213)	272 (237-367)	1357
Age 20-49 years (2011 - 2012)	73.0 (67.3-79.1)	71.6 (68.0-77.9)	111 (97.1-128)	165 (145-177)	188 (175-214)	658
Age 20-49 years (2013 - 2014)	74.1 (68.2-80.5)	75.0 (66.9-80.3)	114 (101-126)	173 (158-199)	241 (199-271)	662
Age 50+ years (2011 - 2012)	102 (92.8-111)	96.9 (92.2-104)	153 (137-172)	251 (205-284)	322 (277-373)	659
Age 50+ years (2013 - 2014)	89.3 (78.9-101)	87.5 (75.3-99.4)	141 (122-162)	229 (192-252)	372 (252-442)	695
Males (2011 - 2012)	87.5 (80.8-94.8)	82.4 (73.5-95.8)	128 (115-140)	201 (168-255)	277 (203-326)	627
Males (2013 - 2014)	77.6 (68.4-88.0)	77.8 (70.5-89.3)	117 (101-138)	178 (155-217)	241 (192-289)	653
Females (2011 - 2012)	84.2 (77.1-91.9)	87.3 (75.9-94.5)	133 (120-147)	190 (174-219)	248 (212-291)	690
Females (2013 - 2014)	83.2 (76.4-90.5)	80.2 (70.7-92.7)	133 (117-152)	213 (184-234)	330 (237-428)	801

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (2011 – 2014)

CAS Number 23127-40-4

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	821 (727-927)	831 (720-1030)	1760 (1520-2070)	2920 (2640-3180)	3760 (3370-4290)	869
Total population (2013 - 2014)	717 (613-838)	757 (647-912)	1470 (1260-1860)	2760 (2300-3110)	3480 (2810-4100)	908
Age 20-49 years (2011 - 2012)	764 (637-915)	809 (606-986)	1620 (1330-2070)	2710 (2350-3020)	3480 (3020-3750)	518
Age 20-49 years (2013 - 2014)	698 (567-858)	745 (591-957)	1430 (1210-1860)	2710 (2130-3280)	3480 (2720-4330)	544
Age 50+ years (2011 - 2012)	919 (776-1090)	1020 (771-1290)	2050 (1660-2400)	3560 (2840-4240)	4290 (3560-4600)	351
Age 50+ years (2013 - 2014)	776 (671-897)	805 (685-1000)	1560 (1230-2180)	2800 (2490-3030)	3460 (2810-3680)	364
Males (2011 - 2012)	866 (718-1040)	868 (708-1160)	1910 (1580-2350)	3020 (2670-3190)	4290 (3020-4600)	525
Males (2013 - 2014)	678 (545-842)	718 (577-891)	1470 (1320-1770)	2720 (2250-2990)	3270 (2840-3880)	504
Females (2011 - 2012)	767 (696-846)	801 (699-942)	1580 (1320-2010)	2710 (2180-3560)	3560 (2710-4240)	344
Females (2013 - 2014)	759 (652-883)	792 (677-956)	1470 (1140-1970)	2720 (2150-3460)	3490 (2610-4640)	433

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 13.0 and 13.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	171 (159-184)	174 (161-190)	313 (293-335)	534 (466-651)	779 (687-920)	1318
Total population (2013 - 2014)	172 (157-187)	165 (149-180)	322 (289-354)	587 (505-671)	846 (699-1080)	1356
Age 20-49 years (2011 - 2012)	183 (162-206)	190 (163-220)	328 (298-366)	558 (438-671)	771 (616-1050)	659
Age 20-49 years (2013 - 2014)	184 (165-206)	178 (158-199)	341 (297-382)	601 (501-681)	846 (678-1250)	662
Age 50+ years (2011 - 2012)	160 (142-180)	161 (140-175)	291 (238-355)	529 (395-702)	794 (640-971)	659
Age 50+ years (2013 - 2014)	159 (141-180)	154 (130-183)	301 (259-343)	580 (483-668)	857 (668-1040)	694
Males (2011 - 2012)	220 (203-238)	224 (210-238)	349 (301-375)	634 (528-682)	823 (671-949)	628
Males (2013 - 2014)	204 (181-231)	194 (166-235)	348 (312-386)	587 (512-700)	885 (633-1290)	656
Females (2011 - 2012)	141 (126-157)	140 (118-155)	283 (244-313)	495 (395-651)	771 (515-1120)	690
Females (2013 - 2014)	148 (132-166)	135 (112-160)	280 (239-340)	581 (465-668)	839 (706-1040)	798

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 13.0 and 13.0, respectively.

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 23127-40-4

Metabolite of Acrolein

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	907 (833-987)	930 (817-1090)	1780 (1590-1990)	2830 (2290-3290)	3690 (2940-4720)	869
Total population (2013 - 2014)	729 (611-871)	796 (645-945)	1490 (1130-1870)	2520 (1950-3010)	3070 (2620-3820)	907
Age 20-49 years (2011 - 2012)	796 (699-906)	815 (663-955)	1420 (1290-1710)	2440 (2100-3120)	3560 (2810-4280)	518
Age 20-49 years (2013 - 2014)	644 (530-782)	697 (543-854)	1140 (960-1640)	2200 (1870-2700)	2900 (2330-3670)	543
Age 50+ years (2011 - 2012)	1110 (987-1250)	1260 (1080-1460)	2210 (1920-2290)	3050 (2290-3900)	3900 (2830-5520)	351
Age 50+ years (2013 - 2014)	968 (826-1130)	1090 (945-1330)	1860 (1550-2120)	2810 (2240-3700)	3820 (2660-4580)	364
Males (2011 - 2012)	820 (736-914)	801 (707-952)	1420 (1260-1670)	2290 (1950-2870)	3370 (2310-4000)	525
Males (2013 - 2014)	601 (500-722)	651 (512-852)	1190 (1020-1490)	1960 (1720-2260)	2730 (2120-2900)	503
Females (2011 - 2012)	1030 (853-1240)	1170 (1020-1330)	2250 (1810-2500)	3110 (2500-4110)	4250 (2930-5740)	344
Females (2013 - 2014)	889 (722-1100)	917 (728-1140)	1780 (1310-2250)	2870 (2160-3720)	3710 (3010-4180)	433

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	201 (189-214)	184 (171-197)	298 (283-316)	510 (446-564)	692 (576-812)	1317
Total population (2013 - 2014)	202 (184-222)	183 (170-203)	303 (280-340)	551 (478-646)	905 (652-1220)	1355
Age 20-49 years (2011 - 2012)	201 (183-220)	180 (163-197)	298 (269-342)	519 (424-626)	678 (546-863)	658
Age 20-49 years (2013 - 2014)	202 (183-223)	181 (161-208)	299 (270-340)	538 (438-688)	876 (657-940)	662
Age 50+ years (2011 - 2012)	201 (179-226)	190 (171-211)	298 (246-350)	499 (399-606)	710 (550-902)	659
Age 50+ years (2013 - 2014)	206 (183-231)	184 (167-208)	310 (280-360)	578 (459-703)	1020 (602-1960)	693
Males (2011 - 2012)	197 (184-210)	186 (169-199)	287 (245-318)	451 (392-527)	606 (529-675)	627
Males (2013 - 2014)	197 (177-220)	184 (171-206)	289 (260-329)	462 (369-580)	688 (511-904)	655
Females (2011 - 2012)	205 (188-222)	183 (164-211)	315 (284-355)	544 (457-647)	778 (622-902)	690
Females (2013 - 2014)	206 (182-233)	178 (159-205)	323 (271-392)	602 (489-905)	1080 (678-1700)	798

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (2011 – 2014)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	110 (92.8-130)	113 (84.6-144)	219 (194-256)	384 (291-507)	507 (358-679)	869
Total population (2013 - 2014)	121 (103-143)	124 (107-148)	239 (208-271)	400 (320-564)	613 (405-1000)	853
Age 20-49 years (2011 - 2012)	118 (93.4-149)	129 (99.8-158)	254 (195-305)	420 (316-540)	540 (401-752)	518
Age 20-49 years (2013 - 2014)	134 (109-165)	138 (114-174)	255 (213-323)	491 (359-681)	727 (464-1000)	512
Age 50+ years (2011 - 2012)	97.9 (79.7-120)	84.7 (75.3-138)	201 (138-251)	292 (243-370)	407 (324-528)	351
Age 50+ years (2013 - 2014)	101 (86.6-117)	102 (79.1-114)	200 (157-226)	307 (253-354)	383 (318-451)	341
Males (2011 - 2012)	122 (96.1-154)	131 (99.7-164)	256 (212-292)	445 (333-540)	540 (422-752)	525
Males (2013 - 2014)	130 (101-166)	141 (104-180)	253 (210-309)	476 (329-607)	625 (529-878)	469
Females (2011 - 2012)	96.2 (84.8-109)	90.0 (79.5-122)	194 (153-226)	304 (254-378)	401 (313-445)	344
Females (2013 - 2014)	113 (97.1-132)	112 (104-127)	210 (179-255)	366 (282-461)	511 (346-1230)	410

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 2.2 and 2.2, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	36.5 (34.0-39.3)	37.3 (34.7-40.6)	64.8 (61.4-68.9)	112 (100-125)	162 (141-188)	1318
Total population (2013 - 2014)	37.3 (34.2-40.7)	37.1 (34.6-41.2)	75.8 (67.4-83.5)	127 (119-140)	181 (148-219)	1312
Age 20-49 years (2011 - 2012)	38.9 (34.1-44.4)	41.2 (34.7-47.0)	73.0 (63.8-78.5)	131 (106-163)	193 (152-285)	659
Age 20-49 years (2013 - 2014)	40.1 (36.2-44.5)	41.8 (36.9-45.6)	85.7 (76.7-93.1)	137 (119-162)	186 (161-231)	644
Age 50+ years (2011 - 2012)	34.1 (31.6-36.8)	35.3 (32.5-38.8)	59.7 (54.8-64.3)	94.0 (79.3-117)	129 (104-145)	659
Age 50+ years (2013 - 2014)	33.8 (29.8-38.2)	33.6 (30.3-39.7)	64.9 (55.4-77.0)	121 (102-144)	174 (120-227)	668
Males (2011 - 2012)	45.8 (42.8-49.0)	47.6 (40.4-53.0)	76.9 (72.3-82.2)	129 (112-142)	162 (142-189)	628
Males (2013 - 2014)	42.6 (37.7-48.1)	44.4 (37.1-49.5)	85.4 (73.4-94.8)	136 (117-152)	183 (152-227)	626
Females (2011 - 2012)	30.6 (27.2-34.3)	30.7 (29.2-33.4)	55.5 (49.1-59.9)	100 (84.0-117)	164 (108-285)	690
Females (2013 - 2014)	33.5 (30.3-37.1)	33.4 (30.2-37.7)	68.7 (60.0-80.5)	127 (103-144)	183 (137-227)	779

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 2.2 and 2.2, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	121 (107-137)	129 (115-142)	180 (161-199)	248 (214-325)	343 (248-432)	869
Total population (2013 - 2014)	125 (105-150)	127 (108-158)	209 (178-240)	304 (258-337)	355 (327-453)	853
Age 20-49 years (2011 - 2012)	123 (105-144)	131 (116-148)	186 (153-230)	280 (221-364)	367 (278-434)	518
Age 20-49 years (2013 - 2014)	126 (104-152)	125 (102-158)	220 (175-256)	319 (295-349)	419 (335-516)	512
Age 50+ years (2011 - 2012)	118 (102-137)	124 (98.6-149)	175 (146-200)	235 (176-282)	272 (235-353)	351
Age 50+ years (2013 - 2014)	126 (105-153)	131 (112-167)	195 (178-221)	269 (223-318)	318 (266-371)	341
Males (2011 - 2012)	115 (99.3-134)	121 (100-142)	176 (154-188)	233 (191-353)	353 (230-432)	525
Males (2013 - 2014)	117 (94.8-144)	124 (99.2-146)	196 (157-236)	297 (235-346)	355 (298-454)	469
Females (2011 - 2012)	129 (110-152)	135 (117-161)	188 (161-235)	270 (230-337)	340 (259-391)	344
Females (2013 - 2014)	135 (112-162)	142 (114-177)	217 (188-256)	319 (284-349)	371 (328-502)	410

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	42.8 (40.5-45.4)	42.1 (39.2-45.3)	61.6 (58.9-63.8)	90.0 (79.5-104)	118 (105-134)	1317
Total population (2013 - 2014)	44.7 (40.6-49.2)	43.1 (39.4-48.0)	69.3 (62.6-77.3)	106 (92.9-125)	153 (128-193)	1311
Age 20-49 years (2011 - 2012)	42.8 (39.1-46.8)	41.3 (36.9-44.8)	61.2 (56.7-64.7)	93.8 (76.8-113)	128 (103-159)	658
Age 20-49 years (2013 - 2014)	44.4 (40.4-48.8)	42.1 (38.5-46.4)	69.1 (62.6-77.4)	106 (92.9-124)	152 (119-193)	644
Age 50+ years (2011 - 2012)	42.9 (39.5-46.6)	43.5 (38.9-48.5)	62.3 (56.7-66.2)	88.1 (72.9-105)	113 (90.4-155)	659
Age 50+ years (2013 - 2014)	44.9 (39.7-50.8)	44.4 (38.1-50.3)	69.3 (60.5-79.6)	106 (89.7-138)	159 (120-229)	667
Males (2011 - 2012)	40.9 (38.5-43.5)	39.5 (35.7-43.4)	61.2 (55.3-66.0)	82.5 (76.7-90.9)	109 (100-122)	627
Males (2013 - 2014)	41.4 (37.3-46.1)	41.2 (36.1-46.9)	65.8 (59.7-71.9)	98.5 (87.5-106)	137 (104-178)	625
Females (2011 - 2012)	44.4 (41.0-48.2)	44.8 (40.0-47.7)	62.3 (57.7-65.4)	96.8 (79.2-117)	131 (98.1-175)	690
Females (2013 - 2014)	47.6 (42.8-53.0)	44.9 (40.6-50.3)	74.6 (61.8-84.0)	118 (96.7-152)	188 (134-236)	779

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (2011 – 2014)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	17.2 (15.2-19.4)	15.8 (13.6-19.7)	30.3 (26.2-35.3)	53.0 (39.0-69.3)	76.2 (53.3-82.0)	869
Total population (2013 - 2014)	17.3 (15.6-19.3)	17.5 (15.7-19.2)	30.2 (26.2-33.9)	51.2 (40.9-66.4)	78.0 (55.2-122)	915
Age 20-49 years (2011 - 2012)	18.1 (15.5-21.2)	18.0 (13.6-21.9)	31.4 (25.2-40.3)	57.1 (43.0-73.9)	77.4 (55.3-94.7)	518
Age 20-49 years (2013 - 2014)	18.7 (16.2-21.5)	19.1 (16.6-22.1)	31.4 (27.0-35.4)	56.5 (41.6-78.0)	88.4 (58.1-125)	547
Age 50+ years (2011 - 2012)	15.8 (13.0-19.2)	14.7 (10.6-18.9)	27.1 (19.9-37.1)	46.6 (34.7-68.7)	74.5 (40.0-88.9)	351
Age 50+ years (2013 - 2014)	14.9 (13.1-16.8)	13.3 (11.0-15.9)	27.4 (21.8-31.5)	42.4 (31.6-54.8)	58.9 (41.8-122)	368
Males (2011 - 2012)	18.0 (15.0-21.6)	17.1 (13.3-22.4)	33.0 (25.2-40.3)	53.0 (38.8-73.9)	77.4 (53.0-94.7)	525
Males (2013 - 2014)	17.9 (15.4-20.8)	18.4 (14.6-22.9)	31.4 (26.6-37.7)	55.0 (43.2-66.5)	82.1 (62.4-97.6)	510
Females (2011 - 2012)	16.2 (14.3-18.4)	14.1 (13.1-17.0)	28.3 (23.6-31.9)	51.7 (31.8-76.2)	74.5 (39.6-97.6)	344
Females (2013 - 2014)	16.8 (14.9-19.0)	16.9 (15.1-18.6)	29.0 (24.0-32.6)	44.6 (35.2-65.8)	75.1 (42.4-132)	435

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 9.4 and 9.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	11.6 (10.8-12.2)	17.9 (16.2-20.4)	25.0 (20.7-30.3)	1318
Total population (2013 - 2014)	*	< LOD	11.4 (10.3-12.1)	19.6 (17.0-23.0)	27.1 (23.8-32.0)	1373
Age 20-49 years (2011 - 2012)	*	< LOD	12.4 (11.1-14.4)	19.9 (16.2-26.9)	29.3 (20.8-42.0)	659
Age 20-49 years (2013 - 2014)	*	< LOD	11.9 (10.5-13.1)	20.8 (18.8-24.1)	27.8 (24.7-33.0)	674
Age 50+ years (2011 - 2012)	*	< LOD	10.8 (9.65-11.9)	16.8 (13.4-19.0)	20.7 (16.3-29.1)	659
Age 50+ years (2013 - 2014)	*	< LOD	10.7 (<LOD-12.1)	17.7 (13.9-24.3)	25.8 (18.3-33.9)	699
Males (2011 - 2012)	*	< LOD	12.5 (11.7-13.8)	18.4 (16.2-21.3)	22.9 (19.0-30.3)	628
Males (2013 - 2014)	*	< LOD	11.7 (10.7-12.9)	20.0 (16.0-25.6)	28.7 (25.0-32.3)	658
Females (2011 - 2012)	*	< LOD	10.6 (9.53-11.6)	16.7 (14.3-20.7)	26.9 (18.8-33.7)	690
Females (2013 - 2014)	*	< LOD	11.1 (9.88-11.9)	19.1 (16.0-23.0)	26.7 (21.0-35.2)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 9.4 and 9.4, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	19.0 (17.1-21.1)	19.1 (16.6-22.2)	28.0 (25.1-32.9)	39.1 (35.6-42.0)	45.2 (42.0-48.2)	869
Total population (2013 - 2014)	17.6 (15.5-20.1)	17.5 (15.0-20.9)	26.6 (22.9-30.2)	38.4 (34.0-45.1)	51.2 (44.4-58.3)	914
Age 20-49 years (2011 - 2012)	18.9 (17.0-21.0)	19.3 (17.1-21.0)	28.4 (24.8-33.3)	41.0 (35.8-44.3)	48.2 (41.0-55.4)	518
Age 20-49 years (2013 - 2014)	17.2 (14.9-19.9)	16.6 (14.1-20.8)	26.4 (22.3-31.4)	38.4 (33.4-47.5)	49.8 (45.0-55.4)	546
Age 50+ years (2011 - 2012)	19.1 (16.3-22.3)	18.5 (15.4-23.4)	27.7 (23.2-33.9)	38.1 (28.8-42.0)	42.0 (33.5-54.2)	351
Age 50+ years (2013 - 2014)	18.4 (16.1-21.0)	18.8 (16.7-21.2)	26.7 (22.9-30.8)	38.3 (32.6-46.0)	55.7 (38.3-69.4)	368
Males (2011 - 2012)	17.0 (15.0-19.4)	16.6 (15.2-18.9)	25.2 (21.0-28.4)	35.9 (30.5-39.1)	43.0 (39.1-47.1)	525
Males (2013 - 2014)	15.9 (14.1-17.8)	15.5 (13.6-17.9)	23.3 (21.0-26.7)	36.2 (30.1-42.4)	46.1 (40.4-52.0)	509
Females (2011 - 2012)	21.8 (19.2-24.8)	22.8 (19.8-25.7)	33.2 (26.6-38.7)	42.0 (35.0-49.4)	47.5 (42.0-56.4)	344
Females (2013 - 2014)	19.6 (16.9-22.8)	20.5 (16.6-23.6)	28.9 (23.0-36.9)	39.1 (35.1-51.2)	55.7 (44.0-67.7)	435

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	15.9 (14.5-16.6)	24.6 (22.2-26.6)	31.7 (26.6-41.6)	1317
Total population (2013 - 2014)	*	< LOD	16.2 (14.1-18.5)	26.1 (22.9-29.4)	35.0 (30.2-39.1)	1372
Age 20-49 years (2011 - 2012)	*	< LOD	16.1 (14.1-18.0)	26.6 (20.2-36.9)	39.1 (28.9-51.2)	658
Age 20-49 years (2013 - 2014)	*	< LOD	15.0 (13.6-17.1)	24.6 (20.8-27.2)	30.2 (26.6-35.0)	674
Age 50+ years (2011 - 2012)	*	< LOD	15.8 (13.7-17.1)	23.8 (20.2-24.6)	27.7 (24.6-30.2)	659
Age 50+ years (2013 - 2014)	*	< LOD	17.1 (<LOD-19.6)	27.7 (22.9-36.9)	47.5 (28.7-60.5)	698
Males (2011 - 2012)	*	< LOD	11.9 (10.9-12.8)	17.1 (15.1-19.8)	22.9 (19.0-26.6)	627
Males (2013 - 2014)	*	< LOD	13.3 (12.3-13.9)	19.4 (17.5-20.3)	23.1 (20.3-27.7)	657
Females (2011 - 2012)	*	< LOD	18.5 (16.9-20.2)	27.7 (24.6-36.9)	41.6 (28.9-51.2)	690
Females (2013 - 2014)	*	< LOD	19.4 (15.5-22.9)	30.2 (26.6-36.9)	39.1 (35.0-50.3)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (2011 – 2014)

CAS Number 74514-75-3

Metabolite of Acrylonitrile

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	115 (95.2-140)	141 (118-172)	274 (233-310)	480 (439-542)	705 (519-792)	869
Total population (2013 - 2014)	95.1 (74.5-122)	118 (97.7-147)	247 (198-303)	453 (391-520)	599 (523-737)	873
Age 20-49 years (2011 - 2012)	108 (81.9-143)	139 (105-190)	261 (220-290)	484 (371-590)	708 (505-888)	518
Age 20-49 years (2013 - 2014)	91.4 (66.6-125)	118 (89.9-153)	251 (193-317)	498 (412-533)	662 (520-991)	522
Age 50+ years (2011 - 2012)	127 (100-162)	146 (117-186)	305 (218-350)	468 (384-652)	705 (443-846)	351
Age 50+ years (2013 - 2014)	110 (89.1-135)	121 (101-148)	238 (190-301)	391 (310-498)	509 (417-565)	351
Males (2011 - 2012)	124 (93.8-165)	166 (131-192)	306 (250-376)	551 (467-646)	745 (542-846)	525
Males (2013 - 2014)	85.8 (60.0-123)	111 (79.7-149)	254 (201-310)	486 (397-550)	663 (507-874)	480
Females (2011 - 2012)	105 (87.2-126)	127 (114-144)	233 (197-277)	360 (290-471)	504 (402-699)	344
Females (2013 - 2014)	106 (85.3-131)	119 (101-147)	234 (188-299)	412 (327-520)	533 (469-620)	418

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.55 (1.40-1.71)	1.34 (1.22-1.47)	2.36 (2.20-2.51)	4.82 (3.70-6.84)	16.6 (8.95-23.7)	1318
Total population (2013 - 2014)	1.67 (1.48-1.88)	1.29 (1.17-1.42)	2.42 (2.11-2.68)	6.40 (4.63-10.6)	39.9 (14.9-64.9)	1351
Age 20-49 years (2011 - 2012)	1.74 (1.45-2.08)	1.46 (1.24-1.67)	2.52 (2.28-2.97)	7.59 (4.81-13.3)	20.3 (8.55-79.9)	659
Age 20-49 years (2013 - 2014)	1.85 (1.61-2.12)	1.39 (1.25-1.57)	2.68 (2.37-3.31)	9.88 (6.27-21.5)	47.8 (21.5-82.9)	661
Age 50+ years (2011 - 2012)	1.37 (1.21-1.54)	1.23 (1.07-1.36)	2.20 (1.88-2.44)	3.65 (3.08-4.36)	6.84 (3.80-19.9)	659
Age 50+ years (2013 - 2014)	1.44 (1.25-1.65)	1.20 (1.08-1.38)	2.01 (1.81-2.42)	4.64 (3.46-6.62)	12.2 (5.12-89.1)	690
Males (2011 - 2012)	1.90 (1.62-2.23)	1.62 (1.44-1.85)	2.96 (2.44-3.24)	5.97 (3.73-15.4)	19.9 (8.83-25.5)	628
Males (2013 - 2014)	1.89 (1.64-2.18)	1.44 (1.29-1.63)	2.83 (2.35-3.46)	8.87 (6.28-13.8)	40.2 (18.2-76.0)	651
Females (2011 - 2012)	1.31 (1.11-1.56)	1.20 (1.03-1.29)	1.94 (1.78-2.16)	3.85 (3.01-5.31)	10.8 (4.82-56.0)	690
Females (2013 - 2014)	1.50 (1.26-1.79)	1.16 (1.07-1.35)	2.15 (1.98-2.46)	5.75 (3.55-13.1)	42.2 (8.20-109)	797

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 74514-75-3

Metabolite of Acrylonitrile

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	127 (109-148)	166 (148-181)	261 (237-292)	409 (346-457)	537 (442-622)	869
Total population (2013 - 2014)	98.9 (75.7-129)	132 (104-168)	238 (194-291)	401 (343-466)	516 (446-609)	872
Age 20-49 years (2011 - 2012)	113 (91.4-139)	146 (127-163)	236 (220-274)	396 (309-442)	550 (408-657)	518
Age 20-49 years (2013 - 2014)	85.9 (63.0-117)	115 (87.1-141)	227 (170-291)	403 (339-465)	525 (426-640)	521
Age 50+ years (2011 - 2012)	154 (126-188)	195 (167-229)	300 (249-342)	442 (356-484)	537 (458-622)	351
Age 50+ years (2013 - 2014)	139 (110-175)	175 (144-186)	256 (222-303)	401 (332-485)	511 (381-719)	351
Males (2011 - 2012)	118 (97.2-143)	147 (125-167)	233 (215-261)	359 (323-435)	462 (408-622)	525
Males (2013 - 2014)	77.7 (55.9-108)	110 (78.3-140)	208 (168-269)	343 (272-426)	443 (343-474)	479
Females (2011 - 2012)	141 (109-182)	200 (162-229)	295 (255-342)	448 (330-565)	565 (442-657)	344
Females (2013 - 2014)	126 (98.7-162)	149 (115-185)	267 (215-335)	473 (371-525)	569 (481-681)	418

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.82 (1.65-1.99)	1.49 (1.36-1.62)	2.34 (2.04-2.64)	4.79 (3.89-6.06)	13.5 (8.27-20.6)	1317
Total population (2013 - 2014)	2.01 (1.77-2.28)	1.53 (1.42-1.68)	2.72 (2.39-3.08)	7.88 (5.03-10.3)	32.2 (13.0-68.5)	1350
Age 20-49 years (2011 - 2012)	1.91 (1.65-2.22)	1.53 (1.31-1.71)	2.51 (2.18-2.77)	6.53 (4.43-10.0)	23.6 (7.54-67.8)	658
Age 20-49 years (2013 - 2014)	2.07 (1.80-2.38)	1.51 (1.36-1.71)	2.85 (2.39-3.59)	9.05 (6.18-14.8)	36.3 (14.1-80.1)	661
Age 50+ years (2011 - 2012)	1.72 (1.55-1.91)	1.48 (1.32-1.62)	2.19 (1.88-2.64)	3.82 (2.95-5.46)	7.95 (4.24-22.4)	659
Age 50+ years (2013 - 2014)	1.90 (1.61-2.24)	1.53 (1.37-1.72)	2.59 (2.33-2.90)	5.46 (3.64-10.1)	14.7 (6.39-120)	689
Males (2011 - 2012)	1.70 (1.49-1.94)	1.36 (1.21-1.54)	2.03 (1.76-2.57)	5.46 (3.12-10.0)	13.7 (7.56-40.4)	627
Males (2013 - 2014)	1.86 (1.64-2.11)	1.39 (1.21-1.55)	2.53 (2.27-2.83)	7.74 (5.88-11.4)	36.3 (14.1-73.3)	650
Females (2011 - 2012)	1.91 (1.65-2.21)	1.57 (1.47-1.73)	2.57 (2.19-2.90)	4.60 (3.43-6.17)	11.8 (5.29-45.4)	690
Females (2013 - 2014)	2.15 (1.79-2.58)	1.65 (1.49-1.83)	2.92 (2.44-3.54)	8.24 (4.45-12.0)	32.2 (10.3-135)	797

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (2011 – 2014)

CAS Number 15060-26-1

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	2.51 (2.21-2.85)	2.50 (2.02-2.89)	5.28 (4.30-6.46)	10.5 (7.92-14.8)	16.9 (12.5-20.9)	869
Total population (2013 - 2014)	2.12 (1.88-2.40)	2.01 (1.66-2.24)	4.80 (3.92-5.42)	8.40 (7.34-9.33)	13.5 (9.81-15.6)	888
Age 20-49 years (2011 - 2012)	2.66 (2.31-3.06)	2.75 (2.30-3.10)	5.26 (4.28-6.54)	10.5 (7.63-15.8)	16.9 (12.5-18.9)	518
Age 20-49 years (2013 - 2014)	2.20 (1.88-2.57)	2.09 (1.73-2.44)	4.95 (3.66-6.07)	8.45 (7.03-10.2)	14.1 (9.49-17.4)	530
Age 50+ years (2011 - 2012)	2.30 (1.77-2.99)	2.02 (1.35-2.98)	5.28 (3.14-7.60)	11.2 (6.50-22.7)	18.2 (8.11-37.5)	351
Age 50+ years (2013 - 2014)	1.96 (1.71-2.25)	1.73 (1.47-2.10)	4.50 (3.59-4.92)	7.87 (5.72-11.2)	12.0 (9.37-14.3)	358
Males (2011 - 2012)	2.25 (1.84-2.74)	1.99 (1.53-2.61)	4.51 (3.22-6.15)	11.9 (6.92-16.9)	16.9 (10.6-23.1)	525
Males (2013 - 2014)	1.90 (1.64-2.19)	1.69 (1.51-2.09)	4.07 (3.47-4.88)	7.85 (6.56-9.49)	12.9 (8.87-14.5)	498
Females (2011 - 2012)	2.89 (2.53-3.30)	3.10 (2.65-3.64)	6.04 (4.76-6.83)	10.1 (7.93-13.3)	15.2 (10.5-20.5)	344
Females (2013 - 2014)	2.38 (2.09-2.71)	2.17 (1.93-2.68)	5.19 (4.37-5.95)	8.88 (7.62-11.1)	14.1 (9.81-16.8)	419

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.791 and 0.791, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	1.27 (1.14-1.43)	2.12 (1.85-2.44)	2.98 (2.57-3.70)	1318
Total population (2013 - 2014)	*	< LOD	1.02 (.927-1.15)	1.85 (1.65-2.10)	2.72 (2.38-3.06)	1355
Age 20-49 years (2011 - 2012)	*	< LOD	1.38 (1.18-1.58)	2.46 (1.99-2.83)	3.76 (2.69-5.01)	659
Age 20-49 years (2013 - 2014)	*	< LOD	1.32 (1.14-1.43)	2.17 (1.95-2.52)	3.06 (2.52-3.64)	664
Age 50+ years (2011 - 2012)	*	< LOD	1.17 (.904-1.45)	1.79 (1.53-2.26)	2.41 (2.09-3.34)	659
Age 50+ years (2013 - 2014)	*	< LOD	.810 (<LOD-.975)	1.41 (1.22-1.66)	2.10 (1.55-2.78)	691
Males (2011 - 2012)	*	< LOD	1.19 (.994-1.51)	2.02 (1.77-2.32)	2.50 (2.26-3.64)	628
Males (2013 - 2014)	*	< LOD	1.02 (.833-1.18)	1.75 (1.41-2.10)	2.30 (2.01-2.79)	652
Females (2011 - 2012)	*	< LOD	1.31 (1.15-1.43)	2.17 (1.63-2.88)	3.34 (2.53-4.80)	690
Females (2013 - 2014)	*	< LOD	1.08 (.951-1.25)	2.09 (1.81-2.44)	3.12 (2.54-3.85)	800

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.791 and 0.791, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 15060-26-1

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	2.77 (2.44-3.15)	2.88 (2.24-3.39)	5.57 (4.40-7.16)	10.5 (8.12-11.7)	15.5 (10.7-18.4)	869
Total population (2013 - 2014)	2.17 (1.85-2.53)	2.11 (1.67-2.54)	4.33 (3.63-5.25)	8.23 (6.79-10.0)	11.3 (10.0-13.3)	887
Age 20-49 years (2011 - 2012)	2.77 (2.53-3.03)	2.96 (2.12-3.73)	5.56 (4.99-6.25)	9.42 (8.12-10.8)	12.5 (10.5-20.9)	518
Age 20-49 years (2013 - 2014)	2.03 (1.72-2.39)	1.95 (1.59-2.31)	4.02 (3.05-4.97)	7.49 (5.96-10.0)	11.2 (8.88-12.5)	529
Age 50+ years (2011 - 2012)	2.78 (2.12-3.63)	2.72 (2.06-3.37)	5.80 (3.38-10.2)	11.0 (6.72-17.6)	15.9 (7.73-20.7)	351
Age 50+ years (2013 - 2014)	2.44 (2.00-2.97)	2.54 (1.68-3.67)	5.06 (4.21-6.19)	9.60 (7.35-11.2)	13.3 (10.0-17.0)	358
Males (2011 - 2012)	2.13 (1.84-2.46)	2.02 (1.75-2.59)	4.29 (3.72-5.03)	7.70 (5.83-9.06)	9.42 (7.73-11.5)	525
Males (2013 - 2014)	1.69 (1.48-1.91)	1.54 (1.36-1.74)	3.32 (2.75-4.00)	6.47 (4.96-9.60)	10.8 (7.69-12.5)	497
Females (2011 - 2012)	3.87 (3.13-4.78)	4.00 (3.05-4.78)	7.45 (5.71-10.3)	15.2 (10.2-17.6)	17.6 (10.8-25.6)	344
Females (2013 - 2014)	2.81 (2.26-3.49)	2.61 (1.94-4.10)	5.34 (4.10-7.06)	9.56 (7.87-11.0)	11.9 (10.0-16.3)	419

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	1.70 (1.54-1.95)	2.86 (2.43-3.15)	3.98 (3.25-4.30)	1317
Total population (2013 - 2014)	*	< LOD	1.55 (1.43-1.64)	2.63 (2.33-2.94)	3.48 (2.98-4.30)	1354
Age 20-49 years (2011 - 2012)	*	< LOD	1.81 (1.55-2.09)	3.02 (2.43-3.40)	4.03 (3.30-4.31)	658
Age 20-49 years (2013 - 2014)	*	< LOD	1.56 (1.40-1.78)	2.54 (2.21-2.81)	3.11 (2.66-4.13)	664
Age 50+ years (2011 - 2012)	*	< LOD	1.64 (1.43-1.92)	2.58 (2.15-3.11)	3.84 (2.95-5.08)	659
Age 50+ years (2013 - 2014)	*	< LOD	1.47 (<LOD-1.64)	2.78 (2.24-3.29)	3.73 (3.03-5.08)	690
Males (2011 - 2012)	*	< LOD	1.27 (1.13-1.43)	2.03 (1.64-2.36)	2.64 (2.15-3.34)	627
Males (2013 - 2014)	*	< LOD	1.22 (1.10-1.29)	1.83 (1.64-2.07)	2.65 (2.15-3.03)	651
Females (2011 - 2012)	*	< LOD	2.07 (1.86-2.41)	3.30 (2.86-3.99)	4.30 (3.49-5.19)	690
Females (2013 - 2014)	*	< LOD	1.91 (1.64-2.16)	3.06 (2.66-3.44)	4.30 (3.48-5.08)	800

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(phenyl)-L-cysteine (2011 – 2014)

CAS Number 4775-80-8

Metabolite of Benzene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	.631 (<LOD-.757)	1.23 (1.09-1.36)	2.07 (1.68-2.86)	3.11 (1.93-3.78)	869
Total population (2013 - 2014)	*	< LOD	.970 (.826-1.12)	1.91 (1.24-2.46)	2.99 (2.20-3.32)	892
Age 20-49 years (2011 - 2012)	*	.644 (<LOD-.710)	1.25 (1.06-1.43)	2.25 (1.69-3.05)	3.11 (1.84-3.93)	518
Age 20-49 years (2013 - 2014)	*	< LOD	1.03 (.884-1.20)	2.03 (1.47-2.68)	3.27 (2.03-4.82)	536
Age 50+ years (2011 - 2012)	*	.627 (<LOD-.908)	1.14 (.919-1.43)	1.78 (1.43-3.24)	3.32 (1.74-4.03)	351
Age 50+ years (2013 - 2014)	*	< LOD	.844 (.672-1.01)	1.34 (1.01-1.82)	2.21 (1.23-3.27)	356
Males (2011 - 2012)	*	.699 (<LOD-.908)	1.35 (1.13-1.53)	2.80 (1.55-3.58)	3.58 (2.25-4.03)	525
Males (2013 - 2014)	*	< LOD	1.00 (.766-1.20)	1.93 (1.24-3.27)	3.27 (1.73-3.94)	495
Females (2011 - 2012)	*	< LOD	1.05 (.926-1.25)	1.70 (1.42-2.07)	2.21 (1.78-2.67)	344
Females (2013 - 2014)	*	< LOD	.938 (.773-1.09)	1.68 (1.12-2.45)	2.45 (2.02-3.33)	426

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.6 and 0.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	.956 (.888-1.07)	1.82 (1.56-2.30)	3.04 (2.18-3.79)	1318
Total population (2013 - 2014)	*	< LOD	.798 (<LOD-.979)	1.42 (1.16-1.72)	1.94 (1.51-2.69)	1335
Age 20-49 years (2011 - 2012)	*	< LOD	1.00 (.929-1.26)	2.16 (1.75-2.75)	3.20 (2.41-3.76)	659
Age 20-49 years (2013 - 2014)	*	< LOD	.865 (.699-1.04)	1.51 (1.24-1.84)	2.20 (1.56-3.27)	650
Age 50+ years (2011 - 2012)	*	< LOD	.911 (.779-1.05)	1.51 (1.24-2.44)	2.84 (1.43-3.79)	659
Age 50+ years (2013 - 2014)	*	< LOD	.688 (<LOD-.910)	1.32 (1.03-1.68)	1.84 (1.42-2.39)	685
Males (2011 - 2012)	*	.628 (<LOD-.779)	1.12 (.949-1.28)	1.77 (1.46-2.75)	3.20 (1.73-5.62)	628
Males (2013 - 2014)	*	< LOD	.910 (.668-1.14)	1.51 (1.25-1.86)	2.19 (1.64-3.54)	643
Females (2011 - 2012)	*	< LOD	.844 (.666-.986)	1.85 (1.37-2.44)	2.84 (1.83-3.50)	690
Females (2013 - 2014)	*	< LOD	.715 (<LOD-.940)	1.29 (.997-1.70)	1.84 (1.36-2.45)	787

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.6 and 0.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(phenyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 4775-80-8

Metabolite of Benzene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	.827 (<LOD-.922)	1.33 (1.18-1.52)	2.11 (1.70-2.45)	2.53 (2.27-2.83)	869
Total population (2013 - 2014)	*	< LOD	1.11 (.949-1.34)	1.85 (1.55-2.23)	2.42 (2.07-3.14)	892
Age 20-49 years (2011 - 2012)	*	.771 (<LOD-.886)	1.26 (1.03-1.65)	2.11 (1.63-2.49)	2.63 (2.11-3.36)	518
Age 20-49 years (2013 - 2014)	*	< LOD	1.06 (.886-1.33)	1.77 (1.49-2.21)	2.29 (2.05-3.14)	536
Age 50+ years (2011 - 2012)	*	.942 (<LOD-1.06)	1.37 (1.21-1.54)	2.13 (1.63-2.36)	2.53 (2.23-2.82)	351
Age 50+ years (2013 - 2014)	*	< LOD	1.22 (.972-1.51)	1.93 (1.55-2.42)	2.42 (1.93-3.72)	356
Males (2011 - 2012)	*	.744 (<LOD-.865)	1.19 (.942-1.54)	2.03 (1.54-2.49)	2.53 (1.93-3.11)	525
Males (2013 - 2014)	*	< LOD	.922 (.757-1.29)	1.61 (1.12-2.06)	2.07 (1.61-3.04)	495
Females (2011 - 2012)	*	< LOD	1.41 (1.25-1.63)	2.12 (1.77-2.44)	2.64 (2.23-3.03)	344
Females (2013 - 2014)	*	< LOD	1.25 (1.03-1.51)	2.00 (1.70-2.42)	2.89 (2.21-3.88)	426

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	1.29 (1.15-1.41)	2.07 (1.82-2.55)	3.26 (2.55-4.15)	1317
Total population (2013 - 2014)	*	< LOD	1.17 (<LOD-1.34)	2.02 (1.77-2.31)	2.72 (2.36-3.60)	1334
Age 20-49 years (2011 - 2012)	*	< LOD	1.32 (1.15-1.57)	2.36 (1.86-2.91)	3.26 (2.65-4.90)	658
Age 20-49 years (2013 - 2014)	*	< LOD	1.18 (.922-1.41)	1.93 (1.70-2.23)	2.49 (2.10-3.09)	650
Age 50+ years (2011 - 2012)	*	< LOD	1.25 (1.06-1.46)	1.93 (1.67-2.36)	2.83 (1.98-4.81)	659
Age 50+ years (2013 - 2014)	*	< LOD	1.15 (<LOD-1.33)	2.23 (1.72-2.49)	3.44 (2.42-3.93)	684
Males (2011 - 2012)	*	.642 (<LOD-.740)	1.06 (.922-1.15)	1.79 (1.42-2.23)	2.53 (1.91-3.48)	627
Males (2013 - 2014)	*	< LOD	.942 (.861-1.03)	1.57 (1.34-1.85)	2.36 (1.85-3.03)	642
Females (2011 - 2012)	*	< LOD	1.51 (1.26-1.70)	2.36 (1.93-3.21)	3.86 (2.73-4.81)	690
Females (2013 - 2014)	*	< LOD	1.34 (<LOD-1.51)	2.27 (2.02-2.49)	3.25 (2.49-3.92)	787

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (2011 – 2014)

CAS Number 4775-80-8

Metabolite of 1-Bromopropane

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.88 (3.24-4.65)	3.05 (2.48-3.87)	9.15 (6.24-13.8)	25.4 (18.2-46.7)	64.2 (29.9-105)	862
Total population (2013 - 2014)	3.21 (2.80-3.67)	2.47 (2.08-3.08)	7.27 (6.15-9.20)	20.1 (14.2-27.7)	38.4 (25.2-47.1)	907
Age 20-49 years (2011 - 2012)	4.11 (3.31-5.10)	3.45 (2.73-4.44)	9.79 (6.13-16.4)	28.1 (16.1-64.2)	58.9 (28.1-105)	516
Age 20-49 years (2013 - 2014)	3.71 (3.04-4.53)	2.93 (2.05-4.40)	9.42 (7.23-12.4)	25.3 (15.2-40.3)	40.6 (28.7-66.2)	539
Age 50+ years (2011 - 2012)	3.54 (2.57-4.89)	2.68 (2.08-3.89)	7.66 (4.63-15.4)	25.1 (18.2-47.3)	68.7 (21.4-163)	346
Age 50+ years (2013 - 2014)	2.38 (2.12-2.68)	2.06 (1.40-2.54)	4.72 (3.68-6.44)	11.4 (7.28-15.9)	19.5 (13.7-24.5)	368
Males (2011 - 2012)	4.16 (3.15-5.51)	3.17 (2.24-5.01)	10.6 (5.72-18.6)	29.9 (18.2-51.5)	91.2 (29.9-163)	520
Males (2013 - 2014)	3.43 (2.97-3.97)	2.88 (2.16-3.59)	9.34 (6.45-12.7)	21.0 (13.7-28.1)	35.4 (21.1-45.3)	503
Females (2011 - 2012)	3.56 (3.14-4.03)	2.95 (2.25-3.87)	8.19 (5.94-10.3)	22.9 (14.6-28.4)	47.3 (25.1-68.7)	342
Females (2013 - 2014)	2.99 (2.41-3.71)	2.38 (1.66-3.46)	6.15 (5.10-6.75)	15.2 (10.4-20.3)	47.0 (15.8-106)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 1.2 and 1.2, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.78 (4.19-5.45)	4.38 (3.75-5.19)	12.5 (10.4-15.2)	30.0 (24.6-38.9)	56.1 (34.7-78.6)	1276
Total population (2013 - 2014)	3.52 (3.07-4.02)	2.99 (2.47-3.61)	8.32 (6.89-10.5)	23.5 (18.1-28.9)	41.0 (31.5-53.2)	1372
Age 20-49 years (2011 - 2012)	5.18 (4.41-6.08)	4.82 (3.68-6.06)	13.3 (10.2-17.6)	32.4 (23.9-44.4)	64.4 (33.4-96.3)	644
Age 20-49 years (2013 - 2014)	3.87 (3.20-4.68)	3.21 (2.53-4.20)	9.19 (6.58-14.2)	28.5 (19.5-40.1)	46.6 (37.2-59.6)	672
Age 50+ years (2011 - 2012)	4.38 (3.45-5.56)	4.17 (3.08-5.22)	10.5 (8.49-15.7)	27.4 (18.6-39.2)	43.7 (27.4-72.9)	632
Age 50+ years (2013 - 2014)	3.21 (2.81-3.68)	2.60 (2.11-3.24)	7.57 (6.56-9.13)	19.4 (14.8-25.6)	31.9 (22.9-51.2)	700
Males (2011 - 2012)	5.26 (4.47-6.20)	4.82 (3.99-5.98)	12.5 (10.2-15.2)	33.3 (24.4-45.7)	60.9 (29.8-96.3)	607
Males (2013 - 2014)	4.00 (3.22-4.96)	3.31 (2.61-4.49)	10.2 (7.60-13.8)	29.9 (19.1-40.1)	47.5 (32.3-61.2)	657
Females (2011 - 2012)	4.43 (3.79-5.16)	4.20 (3.26-5.31)	12.3 (9.84-16.6)	28.7 (20.8-39.3)	43.7 (33.1-69.4)	669
Females (2013 - 2014)	3.16 (2.70-3.70)	2.59 (1.99-3.40)	7.26 (5.83-8.35)	19.0 (14.8-23.5)	30.3 (23.5-41.6)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 1.2 and 1.2, respectively.

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 4775-80-8

Metabolite of 1-Bromopropane

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.29 (3.71-4.95)	4.16 (3.29-5.00)	8.54 (7.85-9.58)	27.2 (16.9-38.5)	61.7 (35.1-87.5)	862
Total population (2013 - 2014)	3.26 (2.97-3.59)	2.81 (2.58-3.17)	6.92 (5.65-8.77)	16.2 (11.5-23.1)	31.0 (22.5-40.3)	906
Age 20-49 years (2011 - 2012)	4.29 (3.66-5.02)	4.38 (3.33-5.00)	8.82 (7.75-11.6)	26.0 (16.3-38.2)	47.7 (27.2-87.5)	516
Age 20-49 years (2013 - 2014)	3.42 (2.87-4.08)	3.07 (2.40-4.05)	7.47 (5.66-9.51)	16.5 (11.0-28.6)	31.2 (21.0-40.3)	538
Age 50+ years (2011 - 2012)	4.29 (3.15-5.86)	3.86 (2.36-6.06)	7.85 (5.72-12.2)	36.1 (11.0-71.6)	71.6 (32.2-92.8)	346
Age 50+ years (2013 - 2014)	2.96 (2.45-3.56)	2.55 (1.82-3.74)	5.65 (4.70-6.44)	13.5 (9.58-21.6)	25.4 (17.0-51.8)	368
Males (2011 - 2012)	3.94 (3.15-4.91)	3.86 (2.58-5.31)	8.24 (6.22-11.0)	26.0 (13.5-43.0)	62.0 (22.3-87.5)	520
Males (2013 - 2014)	3.05 (2.60-3.58)	2.63 (2.16-3.40)	7.47 (5.51-9.65)	14.5 (11.3-21.6)	26.6 (15.3-36.0)	502
Females (2011 - 2012)	4.78 (3.89-5.86)	4.47 (2.95-6.06)	8.71 (7.55-11.6)	30.3 (12.0-61.7)	51.3 (37.2-92.8)	342
Females (2013 - 2014)	3.49 (2.99-4.08)	3.07 (2.57-3.70)	6.44 (5.47-7.83)	19.4 (10.6-36.2)	40.3 (22.1-64.6)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	5.59 (4.95-6.31)	5.31 (4.47-6.00)	14.0 (12.6-16.5)	36.0 (26.4-46.1)	51.8 (40.0-65.2)	1275
Total population (2013 - 2014)	4.22 (3.73-4.76)	4.10 (3.48-4.71)	9.76 (8.81-11.4)	24.6 (20.8-30.4)	40.0 (32.4-53.3)	1371
Age 20-49 years (2011 - 2012)	5.72 (5.05-6.48)	5.31 (4.32-6.54)	15.3 (12.8-21.1)	36.4 (29.2-48.8)	52.6 (41.6-67.1)	643
Age 20-49 years (2013 - 2014)	4.32 (3.63-5.13)	4.00 (3.27-4.92)	10.3 (8.45-13.4)	24.8 (20.8-30.9)	38.6 (30.8-53.3)	672
Age 50+ years (2011 - 2012)	5.45 (4.30-6.92)	5.14 (4.08-6.59)	12.6 (9.63-17.8)	32.7 (21.3-44.4)	49.9 (32.7-71.8)	632
Age 50+ years (2013 - 2014)	4.24 (3.72-4.84)	4.20 (3.44-4.71)	9.44 (7.65-12.0)	23.8 (19.0-31.8)	40.9 (30.5-58.4)	699
Males (2011 - 2012)	4.68 (4.04-5.42)	4.28 (3.53-5.47)	12.2 (9.32-13.8)	31.0 (19.7-36.7)	46.1 (32.7-61.5)	606
Males (2013 - 2014)	3.89 (3.21-4.71)	3.91 (2.76-4.92)	9.42 (7.78-11.7)	23.8 (17.2-30.1)	35.1 (26.0-53.3)	656
Females (2011 - 2012)	6.43 (5.32-7.78)	6.39 (4.70-8.20)	16.4 (12.7-24.7)	37.1 (29.3-50.3)	60.9 (43.8-80.0)	669
Females (2013 - 2014)	4.51 (3.89-5.23)	4.17 (3.50-4.75)	9.50 (7.61-13.3)	24.2 (19.8-33.0)	40.3 (31.6-58.4)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (2011 – 2014)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	350 (316-388)	370 (324-420)	618 (556-703)	981 (886-1100)	1260 (985-1600)	869
Total population (2013 - 2014)	360 (327-397)	418 (372-450)	636 (570-695)	902 (838-979)	1130 (957-1510)	914
Age 20-49 years (2011 - 2012)	357 (316-404)	392 (329-443)	614 (545-723)	979 (815-1100)	1260 (912-1600)	518
Age 20-49 years (2013 - 2014)	376 (333-423)	438 (383-472)	641 (559-707)	901 (829-998)	1170 (957-1510)	548
Age 50+ years (2011 - 2012)	340 (296-391)	354 (287-427)	629 (497-754)	981 (870-1220)	1280 (981-1510)	351
Age 50+ years (2013 - 2014)	340 (306-376)	357 (294-431)	612 (556-702)	931 (818-1000)	1130 (908-1600)	366
Males (2011 - 2012)	391 (342-447)	411 (373-463)	706 (575-815)	1220 (870-1510)	1510 (1100-1830)	525
Males (2013 - 2014)	375 (318-442)	449 (354-490)	655 (576-726)	886 (804-979)	1100 (949-1300)	508
Females (2011 - 2012)	305 (269-347)	281 (243-366)	568 (461-629)	834 (661-971)	976 (910-1010)	344
Females (2013 - 2014)	346 (320-373)	373 (318-422)	591 (527-655)	934 (832-1020)	1170 (961-1510)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.25 and 5.25, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	238 (221-257)	266 (238-283)	429 (409-451)	606 (573-640)	758 (689-812)	1318
Total population (2013 - 2014)	223 (206-240)	244 (221-262)	397 (375-424)	636 (564-679)	753 (707-813)	1375
Age 20-49 years (2011 - 2012)	233 (206-264)	258 (226-310)	437 (398-478)	620 (549-664)	746 (655-798)	659
Age 20-49 years (2013 - 2014)	219 (205-234)	240 (219-259)	390 (354-422)	582 (531-686)	750 (623-817)	674
Age 50+ years (2011 - 2012)	244 (226-263)	271 (237-282)	422 (369-455)	596 (531-670)	790 (620-849)	659
Age 50+ years (2013 - 2014)	223 (198-252)	250 (211-278)	407 (372-456)	651 (584-697)	779 (707-817)	701
Males (2011 - 2012)	296 (269-326)	331 (282-386)	478 (439-516)	639 (578-721)	790 (664-877)	628
Males (2013 - 2014)	257 (232-284)	277 (241-304)	439 (395-491)	658 (565-711)	766 (707-883)	660
Females (2011 - 2012)	200 (182-221)	219 (193-236)	354 (329-388)	562 (519-607)	738 (613-828)	690
Females (2013 - 2014)	198 (180-217)	210 (189-236)	368 (336-407)	618 (524-676)	733 (651-806)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.25 and 5.25, respectively.

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	387 (363-412)	381 (364-403)	496 (453-555)	679 (594-741)	786 (717-853)	869
Total population (2013 - 2014)	366 (332-403)	386 (363-402)	489 (448-535)	641 (595-696)	768 (713-889)	913
Age 20-49 years (2011 - 2012)	372 (347-399)	357 (339-382)	469 (439-519)	681 (584-743)	777 (700-850)	518
Age 20-49 years (2013 - 2014)	345 (311-383)	366 (330-387)	456 (423-502)	598 (557-663)	715 (634-774)	547
Age 50+ years (2011 - 2012)	411 (378-447)	408 (376-453)	521 (474-601)	668 (576-805)	833 (658-898)	351
Age 50+ years (2013 - 2014)	423 (384-466)	425 (410-451)	538 (495-578)	754 (600-889)	913 (768-1050)	366
Males (2011 - 2012)	370 (345-396)	369 (341-403)	470 (443-503)	610 (532-738)	777 (612-898)	525
Males (2013 - 2014)	333 (294-377)	345 (329-373)	456 (416-486)	567 (527-624)	737 (586-908)	507
Females (2011 - 2012)	409 (378-443)	388 (360-450)	540 (474-622)	685 (645-741)	806 (718-893)	344
Females (2013 - 2014)	404 (368-443)	406 (384-433)	512 (456-578)	696 (616-754)	822 (699-1020)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	279 (267-292)	276 (262-288)	357 (342-370)	461 (436-472)	534 (478-574)	1317
Total population (2013 - 2014)	267 (245-290)	273 (250-297)	359 (335-384)	478 (438-520)	565 (496-670)	1374
Age 20-49 years (2011 - 2012)	256 (240-272)	249 (234-268)	321 (298-340)	399 (361-447)	498 (431-549)	658
Age 20-49 years (2013 - 2014)	244 (222-267)	250 (231-272)	319 (298-338)	423 (364-475)	490 (417-567)	674
Age 50+ years (2011 - 2012)	307 (290-324)	301 (282-330)	394 (369-425)	491 (465-534)	566 (507-632)	659
Age 50+ years (2013 - 2014)	295 (263-330)	301 (268-341)	398 (363-449)	512 (469-615)	650 (537-879)	700
Males (2011 - 2012)	264 (251-278)	256 (243-272)	342 (321-365)	429 (404-446)	493 (429-633)	627
Males (2013 - 2014)	250 (228-274)	255 (229-280)	327 (305-366)	452 (391-488)	541 (468-624)	659
Females (2011 - 2012)	292 (276-308)	288 (274-308)	367 (348-388)	474 (450-524)	549 (498-578)	690
Females (2013 - 2014)	282 (258-308)	290 (264-315)	376 (353-406)	492 (449-532)	610 (507-786)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (2011 – 2014)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	885
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	528
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	357
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	493
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1353
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	664
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	689
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	651
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	799

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	884
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	527
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	357
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	492
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	422

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1352
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	664
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	688
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	650
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	799

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (2011 – 2014)

CAS Number 159092-64-5

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	1.03 (.868-1.19)	2.67 (2.20-3.61)	6.15 (5.12-7.79)	8.99 (7.71-10.0)	869
Total population (2013 - 2014)	*	.956 (.720-1.18)	2.58 (2.15-3.21)	5.22 (4.43-6.73)	8.16 (5.64-12.6)	905
Age 20-49 years (2011 - 2012)	*	.834 (<LOD-1.11)	2.61 (2.00-3.31)	6.01 (3.99-8.50)	8.95 (6.22-9.94)	518
Age 20-49 years (2013 - 2014)	*	.793 (<LOD-1.18)	2.49 (1.93-3.28)	5.12 (4.43-6.59)	7.85 (5.43-10.7)	540
Age 50+ years (2011 - 2012)	1.47 (1.24-1.73)	1.29 (1.07-1.55)	3.09 (2.21-4.92)	7.56 (5.22-8.91)	9.43 (7.79-12.4)	351
Age 50+ years (2013 - 2014)	1.35 (1.21-1.52)	1.15 (.956-1.37)	2.88 (2.42-3.32)	6.04 (4.16-7.90)	8.32 (5.53-17.3)	365
Males (2011 - 2012)	*	.966 (.754-1.21)	2.62 (1.82-4.86)	6.22 (4.87-8.91)	9.43 (7.67-10.1)	525
Males (2013 - 2014)	*	.771 (<LOD-1.40)	2.37 (1.88-3.19)	4.96 (3.62-7.05)	7.90 (5.02-12.6)	504
Females (2011 - 2012)	*	1.07 (.707-1.29)	2.74 (2.31-3.79)	6.07 (4.50-7.71)	8.14 (6.55-11.1)	344
Females (2013 - 2014)	1.31 (1.21-1.41)	1.13 (.907-1.24)	2.82 (2.15-3.82)	5.57 (4.43-6.97)	8.19 (5.14-12.9)	431

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1369
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	671
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	698
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	658
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	810

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 159092-64-5

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	1.46 (1.18-1.74)	3.07 (2.72-3.75)	5.76 (4.74-7.06)	7.84 (5.68-11.0)	869
Total population (2013 - 2014)	*	1.26 (1.08-1.50)	2.75 (2.25-3.24)	4.59 (3.71-5.78)	6.76 (5.33-8.01)	904
Age 20-49 years (2011 - 2012)	*	1.21 (<LOD-1.56)	2.86 (2.34-3.41)	5.33 (4.08-6.45)	7.06 (6.01-9.68)	518
Age 20-49 years (2013 - 2014)	*	1.10 (<LOD-1.24)	2.15 (1.75-2.81)	3.81 (3.08-5.31)	5.59 (4.04-7.96)	539
Age 50+ years (2011 - 2012)	1.77 (1.48-2.13)	1.63 (1.27-2.06)	3.75 (3.01-4.67)	6.67 (4.42-9.12)	7.87 (4.74-15.0)	351
Age 50+ years (2013 - 2014)	1.69 (1.44-1.98)	1.92 (1.57-2.25)	3.53 (3.25-3.72)	6.12 (4.36-7.30)	8.09 (6.12-9.97)	365
Males (2011 - 2012)	*	1.18 (.952-1.52)	2.68 (1.90-3.25)	4.83 (3.70-5.65)	6.32 (4.86-9.12)	525
Males (2013 - 2014)	*	1.01 (<LOD-1.23)	2.16 (1.68-2.81)	3.72 (3.11-4.83)	5.83 (3.72-8.39)	503
Females (2011 - 2012)	*	1.83 (1.22-2.81)	4.00 (3.06-5.52)	6.88 (5.30-8.60)	8.60 (6.73-13.9)	344
Females (2013 - 2014)	1.54 (1.31-1.80)	1.55 (1.24-1.93)	3.25 (2.63-3.57)	5.33 (4.46-6.12)	6.95 (5.59-7.96)	431

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1368
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	671
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	697
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	657
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	810

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (2011 – 2014)

CAS Number 159092-65-6

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	28.4 (25.3-31.9)	31.9 (27.4-38.6)	61.2 (52.5-70.4)	97.1 (87.6-107)	124 (109-133)	869
Total population (2013 - 2014)	25.6 (21.4-30.8)	28.3 (22.9-36.4)	56.3 (48.0-64.9)	90.8 (77.7-106)	119 (99.3-144)	890
Age 20-49 years (2011 - 2012)	25.9 (21.9-30.6)	28.2 (23.2-37.4)	54.8 (45.4-62.6)	86.3 (72.7-98.9)	109 (94.4-138)	518
Age 20-49 years (2013 - 2014)	25.0 (20.2-30.8)	27.4 (22.4-36.6)	55.2 (46.4-67.6)	91.7 (74.5-106)	112 (98.9-143)	532
Age 50+ years (2011 - 2012)	32.7 (26.7-40.2)	40.4 (31.4-46.3)	77.7 (55.7-92.1)	108 (87.2-130)	133 (99.8-193)	351
Age 50+ years (2013 - 2014)	27.9 (23.0-33.7)	29.1 (22.3-37.0)	60.3 (45.7-66.7)	88.1 (74.9-123)	127 (79.9-184)	358
Males (2011 - 2012)	28.4 (23.3-34.7)	31.4 (23.2-41.1)	68.1 (49.2-78.6)	106 (89.0-129)	133 (107-171)	525
Males (2013 - 2014)	24.5 (19.6-30.5)	26.5 (21.3-36.8)	56.6 (46.5-64.4)	91.7 (70.4-117)	127 (91.7-156)	492
Females (2011 - 2012)	28.3 (25.4-31.5)	34.1 (28.2-40.0)	57.6 (47.7-63.1)	87.2 (75.4-98.9)	108 (89.9-125)	344
Females (2013 - 2014)	26.9 (22.6-31.9)	29.2 (24.0-35.5)	55.2 (44.6-69.0)	87.6 (77.7-106)	115 (94.4-131)	427

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.6 and 0.6, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	3.93 (3.60-4.30)	4.03 (3.78-4.39)	7.23 (6.72-7.74)	11.6 (10.5-13.0)	14.9 (13.4-17.7)	1318
Total population (2013 - 2014)	4.30 (3.90-4.74)	4.20 (3.75-4.59)	7.37 (6.67-8.26)	12.5 (10.9-15.9)	20.9 (15.4-28.8)	1297
Age 20-49 years (2011 - 2012)	3.99 (3.45-4.63)	4.24 (3.59-4.92)	7.33 (6.57-8.66)	12.6 (10.5-14.7)	20.5 (13.5-25.8)	659
Age 20-49 years (2013 - 2014)	4.26 (3.83-4.75)	4.16 (3.47-4.68)	7.79 (6.62-8.92)	14.0 (11.5-18.1)	22.4 (15.6-31.5)	638
Age 50+ years (2011 - 2012)	3.87 (3.52-4.26)	3.96 (3.65-4.46)	7.23 (6.16-7.84)	10.7 (9.56-12.1)	13.6 (11.5-14.9)	659
Age 50+ years (2013 - 2014)	4.26 (3.75-4.83)	4.26 (3.70-4.71)	7.21 (6.21-8.35)	11.3 (9.60-15.9)	17.9 (12.0-28.8)	659
Males (2011 - 2012)	4.99 (4.58-5.43)	5.17 (4.59-5.80)	7.84 (7.23-8.66)	12.9 (10.7-14.6)	15.8 (14.3-20.7)	628
Males (2013 - 2014)	4.81 (4.26-5.44)	4.68 (4.26-5.39)	8.30 (7.33-9.37)	13.9 (11.4-16.5)	20.9 (16.5-30.1)	630
Females (2011 - 2012)	3.26 (2.83-3.77)	3.29 (2.85-3.77)	6.46 (5.74-7.28)	10.6 (9.11-12.4)	13.5 (11.7-19.9)	690
Females (2013 - 2014)	3.91 (3.45-4.43)	3.75 (3.20-4.23)	6.72 (5.84-7.87)	12.3 (10.3-17.3)	21.5 (13.1-33.3)	764

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.6 and 0.6, respectively.

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 159092-65-6

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	31.3 (28.1-34.9)	35.2 (29.7-40.0)	63.9 (53.2-70.3)	95.0 (81.1-114)	124 (102-150)	869
Total population (2013 - 2014)	26.2 (21.0-32.6)	30.3 (24.2-36.9)	53.7 (43.9-65.5)	87.0 (65.3-110)	110 (88.6-141)	889
Age 20-49 years (2011 - 2012)	27.0 (23.4-31.1)	29.9 (24.3-35.3)	51.4 (42.9-64.8)	84.1 (71.8-95.0)	106 (85.3-137)	518
Age 20-49 years (2013 - 2014)	23.0 (18.4-28.6)	25.5 (19.9-32.0)	45.4 (36.2-58.4)	77.5 (58.3-103)	105 (84.2-126)	531
Age 50+ years (2011 - 2012)	39.6 (33.1-47.3)	45.4 (35.4-57.4)	75.5 (67.7-86.7)	115 (83.5-153)	126 (86.7-180)	351
Age 50+ years (2013 - 2014)	35.0 (27.7-44.1)	43.0 (33.1-49.7)	64.7 (53.6-81.7)	101 (73.4-140)	128 (101-174)	358
Males (2011 - 2012)	26.9 (23.7-30.6)	29.6 (25.3-34.6)	50.0 (40.0-58.7)	76.7 (71.6-85.0)	99.0 (79.3-118)	525
Males (2013 - 2014)	21.7 (17.7-26.5)	24.9 (18.6-30.0)	45.4 (34.5-55.6)	76.9 (55.2-89.0)	91.4 (76.9-127)	491
Females (2011 - 2012)	38.0 (30.8-46.8)	45.2 (35.4-57.4)	74.7 (65.3-91.2)	118 (89.0-150)	150 (118-180)	344
Females (2013 - 2014)	31.7 (24.6-41.0)	36.1 (28.0-46.8)	59.2 (46.8-81.8)	97.4 (67.1-121)	114 (98.7-164)	427

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	4.62 (4.26-5.00)	4.43 (3.89-4.89)	7.04 (6.42-7.41)	10.4 (9.25-11.6)	13.5 (11.9-16.3)	1317
Total population (2013 - 2014)	4.96 (4.39-5.61)	4.67 (4.11-5.39)	7.55 (6.57-8.72)	11.9 (9.94-15.6)	16.5 (13.3-26.3)	1296
Age 20-49 years (2011 - 2012)	4.39 (3.90-4.94)	4.18 (3.42-4.99)	7.04 (5.83-7.64)	10.2 (8.70-12.8)	14.8 (10.8-22.4)	658
Age 20-49 years (2013 - 2014)	4.55 (4.04-5.13)	4.12 (3.65-4.78)	7.10 (6.17-8.29)	12.9 (9.99-15.1)	16.4 (14.5-18.7)	638
Age 50+ years (2011 - 2012)	4.87 (4.49-5.29)	4.50 (4.05-5.16)	7.04 (6.44-8.00)	10.8 (8.95-12.0)	12.5 (11.5-14.1)	659
Age 50+ years (2013 - 2014)	5.43 (4.67-6.32)	5.09 (4.29-6.00)	7.83 (6.54-9.13)	11.5 (9.77-16.0)	17.0 (11.5-51.8)	658
Males (2011 - 2012)	4.46 (4.16-4.77)	4.11 (3.81-4.57)	6.68 (6.11-7.36)	10.1 (8.69-11.6)	12.1 (11.0-14.0)	627
Males (2013 - 2014)	4.53 (3.94-5.20)	4.35 (3.71-5.22)	6.96 (5.95-7.85)	10.6 (9.57-13.4)	15.1 (12.2-17.4)	629
Females (2011 - 2012)	4.74 (4.22-5.34)	4.52 (3.89-5.33)	7.18 (6.24-7.96)	11.1 (9.04-13.5)	14.0 (11.8-21.5)	690
Females (2013 - 2014)	5.36 (4.65-6.18)	4.81 (4.29-5.52)	8.06 (6.63-9.43)	13.4 (10.2-16.7)	18.1 (13.4-49.6)	764

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Thioxothiazolidine-4-carboxylic acid (2011 – 2014)

CAS Number 20933-67-9

Metabolite of Carbon disulfide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	22.4 (17.2-25.1)	46.1 (37.0-62.7)	89.0 (60.1-161)	869
Total population (2013 - 2014)	*	< LOD	19.1 (15.0-25.3)	47.4 (32.8-70.8)	91.6 (55.4-128)	916
Age 20-49 years (2011 - 2012)	*	< LOD	20.7 (14.1-24.6)	41.6 (28.1-64.9)	83.8 (52.2-146)	518
Age 20-49 years (2013 - 2014)	*	< LOD	20.5 (15.0-27.3)	47.4 (29.2-86.9)	96.6 (48.8-129)	548
Age 50+ years (2011 - 2012)	*	< LOD	25.1 (16.4-32.7)	60.1 (34.1-89.0)	89.0 (58.2-415)	351
Age 50+ years (2013 - 2014)	*	< LOD	17.0 (13.5-21.3)	55.4 (34.8-70.3)	85.3 (49.1-125)	368
Males (2011 - 2012)	*	< LOD	22.3 (15.2-34.1)	46.0 (37.0-60.8)	83.2 (52.2-161)	525
Males (2013 - 2014)	*	< LOD	19.0 (15.1-25.6)	48.2 (30.7-89.4)	102 (48.8-209)	510
Females (2011 - 2012)	*	< LOD	22.7 (14.1-25.1)	46.2 (30.0-69.4)	89.0 (36.7-419)	344
Females (2013 - 2014)	*	< LOD	19.3 (14.5-24.3)	46.1 (28.0-83.4)	85.3 (44.0-126)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 11.2 and 11.2, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	18.0 (14.3-21.7)	53.5 (37.8-69.5)	114 (76.9-145)	1318
Total population (2013 - 2014)	*	< LOD	18.8 (17.3-20.7)	55.3 (41.7-70.9)	127 (93.1-155)	1375
Age 20-49 years (2011 - 2012)	*	< LOD	18.5 (12.4-26.1)	56.8 (36.8-91.6)	115 (70.0-159)	659
Age 20-49 years (2013 - 2014)	*	< LOD	18.4 (13.6-23.5)	46.2 (32.0-96.9)	127 (65.9-151)	674
Age 50+ years (2011 - 2012)	*	< LOD	17.5 (12.4-22.5)	47.6 (32.8-59.0)	114 (59.0-178)	659
Age 50+ years (2013 - 2014)	*	< LOD	19.3 (16.0-27.4)	57.9 (41.3-88.4)	126 (74.4-237)	701
Males (2011 - 2012)	*	< LOD	26.4 (19.5-30.5)	73.7 (51.9-121)	159 (96.4-198)	628
Males (2013 - 2014)	*	< LOD	22.3 (19.2-28.2)	59.8 (36.3-124)	130 (63.9-201)	660
Females (2011 - 2012)	*	< LOD	13.2 (<LOD-17.3)	35.7 (26.7-44.7)	73.1 (49.8-103)	690
Females (2013 - 2014)	*	< LOD	16.0 (13.6-18.2)	47.1 (34.4-76.5)	121 (79.5-153)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 11.2 and 11.2, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Thioxothiazolidine-4-carboxylic acid (creatinine corrected) (2011 – 2014)

CAS Number 20933-67-9

Metabolite of Carbon disulfide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	27.2 (23.2-32.9)	57.9 (46.5-71.7)	88.1 (71.7-141)	869
Total population (2013 - 2014)	*	< LOD	24.9 (20.8-28.8)	53.2 (39.9-65.6)	73.8 (65.0-107)	915
Age 20-49 years (2011 - 2012)	*	< LOD	25.2 (20.4-32.9)	51.3 (43.8-57.9)	91.3 (57.6-169)	518
Age 20-49 years (2013 - 2014)	*	< LOD	21.9 (18.8-28.1)	47.8 (35.9-65.6)	68.3 (58.0-107)	547
Age 50+ years (2011 - 2012)	*	< LOD	30.4 (23.2-49.8)	71.7 (35.9-87.8)	88.1 (71.7-220)	351
Age 50+ years (2013 - 2014)	*	< LOD	28.3 (23.2-33.2)	61.7 (39.5-82.2)	90.0 (61.7-187)	368
Males (2011 - 2012)	*	< LOD	24.7 (18.0-32.9)	49.8 (43.9-60.6)	78.7 (57.5-141)	525
Males (2013 - 2014)	*	< LOD	21.3 (16.1-28.1)	46.5 (30.4-68.2)	75.7 (52.6-139)	509
Females (2011 - 2012)	*	< LOD	31.6 (23.2-51.3)	71.7 (41.6-87.8)	88.1 (57.6-344)	344
Females (2013 - 2014)	*	< LOD	28.1 (21.9-34.3)	61.7 (39.9-71.8)	73.8 (64.6-126)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	27.5 (23.2-29.9)	60.8 (50.8-76.3)	110 (84.5-164)	1317
Total population (2013 - 2014)	*	< LOD	29.8 (27.2-32.9)	71.8 (60.9-78.3)	126 (89.4-179)	1374
Age 20-49 years (2011 - 2012)	*	< LOD	27.5 (21.0-35.4)	60.8 (44.9-94.8)	103 (66.0-154)	658
Age 20-49 years (2013 - 2014)	*	< LOD	25.5 (22.9-30.4)	52.4 (40.9-76.3)	100 (63.5-171)	674
Age 50+ years (2011 - 2012)	*	< LOD	27.2 (23.1-29.3)	56.7 (41.6-75.4)	144 (71.8-223)	659
Age 50+ years (2013 - 2014)	*	< LOD	34.9 (29.1-43.9)	79.0 (68.5-96.9)	156 (89.4-223)	700
Males (2011 - 2012)	*	< LOD	23.2 (20.3-29.9)	55.9 (44.3-79.1)	116 (58.4-230)	627
Males (2013 - 2014)	*	< LOD	23.5 (19.9-30.0)	64.4 (40.9-84.3)	93.8 (74.1-194)	659
Females (2011 - 2012)	*	< LOD	29.3 (<LOD-32.9)	61.7 (44.2-96.7)	104 (80.5-161)	690
Females (2013 - 2014)	*	< LOD	32.9 (29.6-37.6)	71.8 (60.8-83.6)	134 (100-187)	814

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (2011 – 2014)

CAS Number 33164-70-4

Metabolite of Crotonaldehyde

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1760 (1550-1990)	2000 (1600-2360)	3880 (3340-4370)	6980 (5940-7570)	7910 (7610-8720)	869
Total population (2013 - 2014)	1490 (1270-1750)	1600 (1290-1980)	3320 (2910-4030)	5510 (4940-6320)	7680 (6120-9100)	852
Age 20-49 years (2011 - 2012)	1590 (1330-1900)	1680 (1270-2250)	3570 (2730-4250)	6060 (4580-7110)	7790 (6310-8880)	518
Age 20-49 years (2013 - 2014)	1400 (1130-1730)	1460 (1100-1980)	3250 (2780-3870)	5320 (4570-6120)	6740 (5450-9100)	509
Age 50+ years (2011 - 2012)	2050 (1700-2470)	2480 (1860-2890)	4450 (3520-5410)	7540 (6690-7830)	8720 (7500-9650)	351
Age 50+ years (2013 - 2014)	1780 (1530-2080)	1890 (1540-2140)	3550 (2930-4810)	6110 (4940-7990)	8120 (6100-	343
Males (2011 - 2012)	1780 (1450-2170)	2050 (1320-2660)	4100 (3390-4460)	7050 (5460-7790)	8410 (7680-9120)	525
Males (2013 - 2014)	1400 (1110-1760)	1430 (1010-2090)	3310 (2950-3660)	5650 (4390-7150)	8450 (5960-	470
Females (2011 - 2012)	1730 (1570-1910)	2000 (1640-2250)	3700 (3090-4200)	6510 (4570-7700)	7910 (6960-8880)	344
Females (2013 - 2014)	1590 (1370-1850)	1600 (1340-2020)	3310 (2560-4380)	5340 (4630-6310)	6670 (5860-8410)	407

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 2.0 and 3.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	338 (320-358)	342 (317-370)	594 (538-638)	930 (845-1030)	1360 (984-2120)	1318
Total population (2013 - 2014)	309 (281-340)	313 (281-346)	550 (501-611)	967 (854-1160)	1500 (1220-1830)	1361
Age 20-49 years (2011 - 2012)	336 (305-372)	342 (297-397)	623 (525-683)	949 (834-1050)	1200 (970-2270)	659
Age 20-49 years (2013 - 2014)	300 (276-326)	296 (270-333)	521 (484-583)	920 (737-1120)	1650 (976-2250)	666
Age 50+ years (2011 - 2012)	341 (313-370)	342 (291-411)	575 (492-649)	891 (809-1070)	1460 (904-2120)	659
Age 50+ years (2013 - 2014)	320 (278-367)	322 (278-391)	574 (501-691)	1010 (884-1240)	1500 (1240-1780)	695
Males (2011 - 2012)	408 (383-436)	422 (366-460)	659 (619-697)	992 (880-1110)	1390 (1030-1890)	628
Males (2013 - 2014)	353 (305-408)	362 (292-419)	630 (508-706)	1010 (888-1250)	1650 (1100-2470)	655
Females (2011 - 2012)	292 (265-321)	284 (248-323)	509 (473-568)	888 (721-1030)	1240 (851-2710)	690
Females (2013 - 2014)	277 (252-304)	274 (243-312)	505 (460-547)	884 (741-1110)	1460 (1100-1950)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 2.0 and 3.0, respectively.

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 33164-70-4

Metabolite of Crotonaldehyde

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1940 (1730-2170)	2170 (1850-2440)	3930 (3500-4700)	6290 (5650-7250)	7880 (6740-9140)	869
Total population (2013 - 2014)	1540 (1280-1850)	1770 (1430-2190)	3310 (2630-3980)	5360 (4570-6170)	6830 (5640-8380)	851
Age 20-49 years (2011 - 2012)	1660 (1420-1940)	1710 (1440-2070)	3400 (2700-4110)	5830 (5250-6560)	7630 (6450-8530)	518
Age 20-49 years (2013 - 2014)	1300 (1060-1600)	1450 (1080-1810)	2610 (2190-3270)	4970 (3530-5960)	6170 (5100-7590)	508
Age 50+ years (2011 - 2012)	2480 (2140-2870)	2890 (2410-3430)	4850 (3920-5710)	6780 (5710-8670)	8380 (5840-	351
Age 50+ years (2013 - 2014)	2240 (1900-2640)	2550 (2080-3050)	4360 (3810-4630)	6130 (4740-6830)	7000 (6080-9900)	343
Males (2011 - 2012)	1680 (1480-1920)	1820 (1350-2250)	3230 (2640-3770)	5810 (4260-6270)	7250 (5810-8790)	525
Males (2013 - 2014)	1240 (1020-1510)	1470 (1060-1840)	2580 (2300-2920)	4550 (3380-5390)	5590 (4290-9050)	469
Females (2011 - 2012)	2320 (1900-2840)	2810 (2270-3310)	5210 (3870-5830)	6930 (5830-8530)	9140 (7200-	344
Females (2013 - 2014)	1920 (1570-2350)	2080 (1630-2720)	3920 (3000-4810)	5960 (4730-6830)	6850 (6400-8480)	407

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	397 (367-428)	362 (326-399)	521 (484-563)	803 (706-977)	1230 (974-1480)	1317
Total population (2013 - 2014)	370 (331-414)	338 (311-368)	532 (487-613)	986 (851-1170)	1510 (1140-2030)	1360
Age 20-49 years (2011 - 2012)	369 (328-415)	316 (288-357)	483 (412-582)	770 (641-1130)	1330 (760-3180)	658
Age 20-49 years (2013 - 2014)	334 (294-380)	296 (274-325)	461 (404-517)	923 (593-1300)	1470 (817-2270)	666
Age 50+ years (2011 - 2012)	429 (401-459)	396 (362-429)	536 (495-595)	826 (720-938)	1080 (938-1310)	659
Age 50+ years (2013 - 2014)	421 (372-477)	390 (353-456)	640 (542-735)	1060 (868-1370)	1550 (1170-2270)	694
Males (2011 - 2012)	364 (343-386)	333 (302-364)	484 (433-530)	742 (623-938)	1020 (838-1300)	627
Males (2013 - 2014)	345 (302-394)	325 (289-356)	485 (430-594)	904 (668-1080)	1170 (984-1670)	654
Females (2011 - 2012)	424 (385-468)	378 (345-412)	539 (487-605)	881 (720-1110)	1330 (961-2250)	690
Females (2013 - 2014)	393 (353-437)	348 (312-381)	571 (512-695)	1060 (854-1510)	1630 (1160-2270)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Aminothiazoline-4-carboxylic acid (2011 – 2014)

CAS Number 40283-41-8

Metabolite of Cyanide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	118 (103-136)	128 (112-144)	238 (197-290)	439 (339-514)	610 (487-758)	869
Total population (2013 - 2014)	126 (110-144)	134 (114-160)	275 (223-330)	489 (426-554)	736 (517-894)	851
Age 20-49 years (2011 - 2012)	115 (99.3-134)	126 (107-148)	227 (190-252)	430 (311-524)	551 (439-683)	518
Age 20-49 years (2013 - 2014)	128 (110-150)	152 (118-172)	286 (228-342)	491 (436-531)	758 (502-894)	509
Age 50+ years (2011 - 2012)	123 (95.9-157)	134 (99.3-175)	264 (172-327)	487 (317-689)	721 (451-991)	351
Age 50+ years (2013 - 2014)	117 (101-136)	114 (89.6-140)	239 (187-302)	457 (352-607)	712 (458-957)	342
Males (2011 - 2012)	94.4 (79.4-112)	100 (81.4-126)	191 (165-234)	307 (247-359)	381 (294-635)	525
Males (2013 - 2014)	95.1 (78.2-116)	106 (87.7-124)	190 (154-257)	353 (275-474)	491 (317-637)	482
Females (2011 - 2012)	157 (134-184)	162 (143-189)	327 (238-439)	558 (439-744)	755 (536-997)	344
Females (2013 - 2014)	169 (139-206)	181 (149-225)	362 (294-457)	663 (471-826)	894 (693-1170)	396

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 15.0 and 15.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	96.0 (87.0-106)	103 (92.9-112)	191 (170-220)	327 (293-364)	442 (378-508)	1318
Total population (2013 - 2014)	88.9 (81.1-97.4)	91.2 (81.4-99.2)	189 (164-210)	345 (303-377)	449 (397-515)	1323
Age 20-49 years (2011 - 2012)	93.0 (81.3-106)	101 (82.4-111)	189 (160-226)	323 (272-408)	478 (342-543)	659
Age 20-49 years (2013 - 2014)	95.7 (85.9-107)	95.0 (85.4-114)	203 (176-228)	382 (334-421)	491 (432-554)	650
Age 50+ years (2011 - 2012)	99.3 (89.9-110)	108 (94.6-125)	192 (176-220)	331 (292-364)	414 (356-501)	659
Age 50+ years (2013 - 2014)	81.4 (70.6-93.8)	80.8 (69.1-101)	173 (146-209)	303 (255-352)	390 (344-458)	673
Males (2011 - 2012)	78.6 (69.4-89.0)	80.4 (69.2-94.6)	144 (131-175)	265 (217-386)	414 (285-524)	628
Males (2013 - 2014)	69.5 (60.7-79.7)	72.1 (61.7-82.3)	154 (134-173)	295 (245-345)	377 (337-429)	629
Females (2011 - 2012)	112 (99.0-127)	127 (104-149)	226 (194-257)	342 (315-375)	478 (404-521)	690
Females (2013 - 2014)	109 (98.9-119)	105 (95.0-121)	220 (193-248)	397 (319-459)	529 (457-606)	785

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 15.0 and 15.0, respectively.

Urinary 2-Aminothiazoline-4-carboxylic acid (creatinine corrected) (2011 – 2014)

CAS Number 40283-41-8

Metabolite of Cyanide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	130 (119-143)	133 (115-155)	248 (225-285)	412 (366-449)	516 (440-623)	869
Total population (2013 - 2014)	125 (112-140)	132 (104-152)	248 (232-280)	418 (363-483)	598 (465-703)	851
Age 20-49 years (2011 - 2012)	120 (108-133)	128 (113-151)	225 (208-252)	344 (285-406)	412 (366-514)	518
Age 20-49 years (2013 - 2014)	117 (102-133)	125 (103-145)	239 (223-274)	377 (347-452)	542 (447-598)	509
Age 50+ years (2011 - 2012)	148 (125-176)	140 (102-185)	327 (247-399)	477 (422-623)	635 (449-925)	351
Age 50+ years (2013 - 2014)	142 (127-160)	137 (107-175)	272 (230-301)	537 (377-703)	733 (589-988)	342
Males (2011 - 2012)	89.4 (79.9-100)	91.1 (81.1-101)	151 (133-167)	268 (210-326)	390 (286-477)	525
Males (2013 - 2014)	84.1 (72.3-97.9)	90.2 (74.7-100)	151 (134-185)	261 (214-344)	397 (258-632)	482
Females (2011 - 2012)	210 (192-231)	224 (207-258)	363 (307-411)	510 (440-575)	674 (450-925)	344
Females (2013 - 2014)	193 (169-219)	222 (190-237)	347 (290-381)	550 (427-598)	694 (562-988)	396

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	113 (103-123)	123 (112-135)	217 (196-237)	350 (316-372)	418 (372-489)	1317
Total population (2013 - 2014)	107 (96.4-118)	122 (107-139)	210 (194-236)	355 (286-414)	492 (393-559)	1322
Age 20-49 years (2011 - 2012)	102 (92.7-112)	112 (98.0-127)	194 (170-218)	315 (260-350)	374 (340-411)	658
Age 20-49 years (2013 - 2014)	106 (95.2-118)	125 (107-145)	204 (190-221)	321 (278-375)	437 (393-515)	650
Age 50+ years (2011 - 2012)	125 (113-138)	132 (118-148)	240 (220-280)	372 (333-415)	489 (418-546)	659
Age 50+ years (2013 - 2014)	109 (94.7-125)	120 (97.6-145)	219 (194-256)	378 (292-493)	528 (404-610)	672
Males (2011 - 2012)	70.1 (61.0-80.5)	69.0 (57.4-80.9)	126 (109-153)	228 (180-284)	322 (254-411)	627
Males (2013 - 2014)	67.9 (60.4-76.2)	72.1 (62.2-84.3)	125 (116-151)	219 (192-246)	283 (247-333)	628
Females (2011 - 2012)	163 (148-180)	170 (154-188)	274 (236-309)	377 (353-418)	478 (400-546)	690
Females (2013 - 2014)	155 (138-173)	175 (159-190)	263 (225-304)	431 (357-512)	549 (468-682)	785

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (2011 – 2014)

CAS Number 103974-29-4

Metabolite of N,N-Dimethylformamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	459 (400-527)	471 (407-573)	855 (746-1030)	1440 (1210-1790)	2050 (1570-2320)	869
Total population (2013 - 2014)	423 (358-499)	472 (397-533)	838 (690-969)	1360 (1110-1630)	1730 (1400-2110)	908
Age 20-49 years (2011 - 2012)	426 (368-492)	454 (387-534)	808 (704-950)	1260 (1120-1490)	1520 (1240-2050)	518
Age 20-49 years (2013 - 2014)	409 (336-498)	445 (375-523)	808 (683-938)	1320 (1070-1640)	1720 (1280-2110)	545
Age 50+ years (2011 - 2012)	517 (420-638)	552 (397-693)	944 (765-1220)	2010 (1470-2290)	2490 (1500-3590)	351
Age 50+ years (2013 - 2014)	470 (404-546)	507 (409-597)	909 (631-1060)	1420 (1110-1720)	1750 (1370-2460)	363
Males (2011 - 2012)	462 (376-568)	475 (363-614)	944 (750-1120)	1570 (1180-2050)	2050 (1400-2550)	525
Males (2013 - 2014)	388 (307-491)	424 (333-513)	788 (668-969)	1240 (1100-1400)	1630 (1320-1980)	506
Females (2011 - 2012)	456 (410-507)	466 (401-595)	808 (686-950)	1280 (1050-1650)	1660 (1440-2260)	344
Females (2013 - 2014)	462 (400-533)	502 (434-569)	847 (690-976)	1440 (1050-1850)	1880 (1360-2570)	432

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 6.26 and 6.26, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	124 (116-132)	130 (120-140)	248 (226-262)	401 (350-466)	526 (451-621)	1318
Total population (2013 - 2014)	108 (97.7-119)	113 (103-125)	215 (192-240)	361 (335-398)	472 (410-578)	1370
Age 20-49 years (2011 - 2012)	109 (96.3-124)	114 (102-124)	219 (186-251)	370 (302-429)	526 (355-661)	659
Age 20-49 years (2013 - 2014)	100 (90.7-111)	105 (90.7-123)	197 (176-219)	335 (305-363)	436 (369-524)	672
Age 50+ years (2011 - 2012)	142 (131-154)	145 (140-159)	284 (242-324)	422 (373-470)	526 (470-687)	659
Age 50+ years (2013 - 2014)	118 (106-132)	120 (109-136)	237 (195-271)	380 (336-451)	506 (390-657)	698
Males (2011 - 2012)	143 (131-156)	150 (132-174)	254 (234-283)	395 (333-442)	512 (422-594)	628
Males (2013 - 2014)	114 (102-128)	117 (103-135)	220 (186-255)	362 (317-424)	472 (415-548)	657
Females (2011 - 2012)	111 (101-122)	111 (103-123)	226 (202-262)	404 (333-491)	552 (451-702)	690
Females (2013 - 2014)	103 (92.3-115)	106 (95.8-117)	197 (174-242)	363 (319-417)	500 (398-613)	811

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 6.26 and 6.26, respectively.

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 103974-29-4

Metabolite of N,N-Dimethylformamide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	507 (446-577)	536 (487-637)	853 (741-1000)	1190 (1080-1370)	1450 (1230-1650)	869
Total population (2013 - 2014)	431 (357-521)	472 (377-599)	742 (639-924)	1150 (973-1380)	1410 (1190-1760)	907
Age 20-49 years (2011 - 2012)	443 (391-503)	477 (373-564)	718 (628-870)	1080 (941-1310)	1340 (1150-1800)	518
Age 20-49 years (2013 - 2014)	378 (313-456)	405 (326-499)	675 (541-820)	1080 (823-1330)	1340 (1020-1660)	544
Age 50+ years (2011 - 2012)	626 (530-738)	693 (585-831)	1060 (845-1150)	1270 (1130-1580)	1540 (1200-1810)	351
Age 50+ years (2013 - 2014)	586 (492-698)	629 (559-698)	956 (745-1060)	1300 (1100-1550)	1570 (1280-2760)	363
Males (2011 - 2012)	437 (373-513)	467 (369-574)	718 (593-833)	1050 (807-1350)	1340 (938-1820)	525
Males (2013 - 2014)	346 (287-418)	374 (317-449)	636 (547-723)	924 (745-1050)	1140 (969-1330)	505
Females (2011 - 2012)	612 (528-709)	692 (583-813)	1060 (916-1150)	1340 (1150-1580)	1580 (1380-1810)	344
Females (2013 - 2014)	540 (438-666)	574 (460-689)	934 (699-1190)	1380 (1120-1570)	1580 (1340-2130)	432

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	145 (137-155)	147 (136-159)	245 (221-265)	369 (353-397)	442 (397-541)	1317
Total population (2013 - 2014)	129 (115-145)	136 (124-148)	230 (200-257)	342 (311-394)	462 (394-511)	1369
Age 20-49 years (2011 - 2012)	120 (109-132)	122 (113-133)	196 (178-219)	305 (246-379)	391 (319-442)	658
Age 20-49 years (2013 - 2014)	112 (95.6-130)	115 (97.8-135)	185 (158-235)	294 (243-362)	419 (314-483)	672
Age 50+ years (2011 - 2012)	179 (165-194)	175 (152-202)	308 (262-336)	422 (369-449)	541 (431-673)	659
Age 50+ years (2013 - 2014)	155 (138-173)	160 (137-191)	261 (236-286)	390 (338-422)	513 (402-665)	697
Males (2011 - 2012)	128 (117-139)	135 (118-147)	200 (187-227)	315 (261-358)	379 (331-484)	627
Males (2013 - 2014)	111 (99.6-124)	120 (106-131)	196 (168-222)	281 (245-315)	335 (314-411)	656
Females (2011 - 2012)	161 (150-173)	160 (146-176)	274 (248-313)	413 (363-440)	479 (424-655)	690
Females (2013 - 2014)	146 (127-168)	145 (131-165)	253 (221-298)	396 (347-458)	487 (407-629)	811

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Phenylglyoxylic acid (2011 – 2014)

CAS Number 611-73-4

Metabolite of Ethylbenzene and Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	308 (270-350)	344 (298-387)	560 (471-655)	900 (765-1040)	1140 (900-1530)	869
Total population (2013 - 2014)	304 (273-339)	307 (281-341)	581 (517-617)	869 (720-1060)	1130 (939-1450)	891
Age 20-49 years (2011 - 2012)	306 (260-361)	355 (298-412)	585 (460-687)	900 (731-1060)	1100 (900-1330)	518
Age 20-49 years (2013 - 2014)	309 (269-355)	332 (281-373)	590 (502-629)	887 (692-1070)	1110 (939-1450)	533
Age 50+ years (2011 - 2012)	310 (266-362)	324 (254-419)	527 (462-664)	864 (664-1290)	1280 (774-1730)	351
Age 50+ years (2013 - 2014)	297 (258-342)	278 (256-323)	540 (498-616)	845 (688-993)	1150 (803-1880)	358
Males (2011 - 2012)	338 (274-417)	390 (313-437)	624 (501-796)	1060 (810-1330)	1330 (901-1730)	525
Males (2013 - 2014)	319 (273-374)	332 (281-388)	617 (540-662)	924 (771-1100)	1280 (939-1810)	492
Females (2011 - 2012)	273 (248-301)	297 (248-347)	478 (446-566)	755 (660-819)	899 (778-994)	344
Females (2013 - 2014)	289 (262-319)	283 (265-312)	520 (466-581)	820 (616-1070)	1070 (688-1260)	426

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.0 and 12.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	159 (146-174)	184 (168-197)	298 (269-321)	420 (388-459)	559 (473-644)	1318
Total population (2013 - 2014)	147 (135-161)	157 (143-168)	275 (251-301)	408 (385-465)	555 (465-614)	1337
Age 20-49 years (2011 - 2012)	158 (139-180)	186 (161-211)	312 (274-359)	448 (393-551)	622 (514-726)	659
Age 20-49 years (2013 - 2014)	148 (139-159)	156 (142-171)	267 (246-301)	407 (389-421)	499 (438-575)	662
Age 50+ years (2011 - 2012)	160 (145-177)	181 (161-198)	278 (240-312)	402 (369-431)	486 (420-588)	659
Age 50+ years (2013 - 2014)	144 (127-163)	157 (139-179)	284 (243-310)	440 (367-546)	571 (465-755)	675
Males (2011 - 2012)	190 (168-216)	215 (189-248)	337 (304-371)	458 (413-523)	562 (508-630)	628
Males (2013 - 2014)	167 (146-191)	177 (156-202)	297 (261-353)	429 (396-503)	564 (454-629)	645
Females (2011 - 2012)	138 (125-153)	146 (135-169)	242 (221-284)	392 (347-438)	551 (406-722)	690
Females (2013 - 2014)	132 (120-147)	140 (124-155)	259 (224-290)	393 (357-455)	534 (412-668)	790

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.0 and 12.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Phenylglyoxylic acid (creatinine corrected) (2011 – 2014)

CAS Number 611-73-4

Metabolite of Ethylbenzene and Styrene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	340 (306-378)	362 (310-397)	518 (469-573)	681 (586-774)	786 (699-959)	869
Total population (2013 - 2014)	307 (268-353)	312 (270-371)	457 (397-524)	633 (565-740)	833 (683-958)	890
Age 20-49 years (2011 - 2012)	319 (285-357)	335 (279-383)	481 (416-536)	630 (559-707)	751 (630-841)	518
Age 20-49 years (2013 - 2014)	284 (248-326)	290 (247-341)	426 (366-502)	581 (530-667)	758 (628-901)	532
Age 50+ years (2011 - 2012)	375 (332-424)	390 (374-428)	576 (470-681)	726 (583-874)	874 (716-1120)	351
Age 50+ years (2013 - 2014)	365 (311-430)	373 (312-431)	506 (448-587)	782 (616-948)	965 (794-1430)	358
Males (2011 - 2012)	320 (283-362)	336 (285-389)	481 (404-528)	600 (536-717)	731 (583-874)	525
Males (2013 - 2014)	282 (248-320)	287 (253-321)	415 (387-466)	608 (515-742)	787 (628-986)	491
Females (2011 - 2012)	366 (310-434)	381 (302-471)	576 (471-677)	726 (617-841)	841 (716-1120)	344
Females (2013 - 2014)	337 (285-398)	342 (273-424)	495 (410-565)	638 (581-764)	887 (681-1090)	426

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	187 (173-201)	195 (179-209)	255 (242-270)	329 (313-357)	397 (358-426)	1317
Total population (2013 - 2014)	175 (158-194)	183 (164-202)	251 (231-272)	341 (305-419)	483 (376-595)	1336
Age 20-49 years (2011 - 2012)	173 (161-187)	177 (163-198)	235 (226-251)	303 (276-329)	366 (314-426)	658
Age 20-49 years (2013 - 2014)	164 (147-184)	170 (153-187)	226 (204-250)	309 (274-359)	416 (321-477)	662
Age 50+ years (2011 - 2012)	202 (187-218)	210 (195-227)	278 (260-291)	357 (329-379)	407 (360-452)	659
Age 50+ years (2013 - 2014)	189 (169-211)	202 (177-224)	272 (255-299)	393 (320-517)	543 (399-885)	674
Males (2011 - 2012)	170 (155-186)	173 (158-194)	228 (218-239)	304 (264-347)	360 (314-400)	627
Males (2013 - 2014)	162 (143-183)	170 (148-196)	229 (214-250)	309 (258-364)	401 (312-583)	644
Females (2011 - 2012)	201 (185-218)	207 (200-226)	274 (252-291)	349 (315-402)	413 (366-482)	690
Females (2013 - 2014)	187 (167-208)	185 (172-207)	270 (242-300)	392 (319-468)	504 (399-718)	790

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (2011 – 2014)

CAS Number 923-43-3

Metabolite of Propylene oxide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	57.4 (51.7-63.8)	60.2 (50.8-67.8)	118 (103-129)	198 (160-225)	269 (225-322)	869
Total population (2013 - 2014)	53.5 (47.5-60.2)	56.1 (52.3-59.6)	103 (87.5-126)	169 (138-216)	249 (187-421)	908
Age 20-49 years (2011 - 2012)	54.5 (47.8-62.1)	58.0 (49.4-64.6)	109 (87.0-129)	169 (149-197)	235 (197-272)	518
Age 20-49 years (2013 - 2014)	54.8 (48.1-62.5)	58.2 (50.5-65.0)	112 (90.3-129)	172 (136-239)	273 (190-428)	541
Age 50+ years (2011 - 2012)	62.4 (49.0-79.5)	61.3 (44.0-94.1)	124 (100-169)	228 (150-398)	314 (212-760)	351
Age 50+ years (2013 - 2014)	51.7 (43.2-61.9)	54.4 (43.8-66.2)	96.5 (76.9-112)	165 (123-204)	216 (154-447)	367
Males (2011 - 2012)	59.4 (50.9-69.3)	61.3 (53.8-72.8)	120 (94.7-140)	202 (148-244)	270 (216-398)	525
Males (2013 - 2014)	52.4 (44.9-61.0)	53.7 (45.9-62.4)	101 (79.3-122)	172 (133-232)	249 (192-362)	504
Females (2011 - 2012)	55.0 (48.8-62.0)	54.7 (46.6-64.0)	118 (101-127)	179 (155-219)	266 (181-375)	344
Females (2013 - 2014)	54.6 (48.2-61.9)	58.0 (50.2-67.3)	106 (89.7-126)	165 (136-211)	239 (163-501)	433

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.3 and 5.3, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	29.3 (26.3-32.7)	27.0 (24.2-30.8)	51.3 (45.1-60.2)	109 (94.7-130)	286 (171-392)	1318
Total population (2013 - 2014)	23.3 (20.8-26.2)	21.5 (19.0-24.4)	41.1 (35.7-51.0)	87.3 (77.1-106)	165 (114-200)	1351
Age 20-49 years (2011 - 2012)	31.4 (27.6-35.7)	29.7 (25.3-33.5)	58.0 (47.8-68.4)	114 (91.9-178)	250 (130-443)	659
Age 20-49 years (2013 - 2014)	24.1 (21.2-27.4)	22.1 (18.5-26.4)	41.8 (34.9-52.4)	85.4 (69.5-113)	172 (112-203)	665
Age 50+ years (2011 - 2012)	27.2 (22.8-32.5)	24.8 (20.9-29.7)	46.8 (37.9-57.4)	105 (73.3-171)	293 (113-569)	659
Age 50+ years (2013 - 2014)	22.2 (18.8-26.1)	20.3 (18.1-23.7)	40.9 (34.2-53.4)	87.5 (70.2-109)	154 (98.5-257)	686
Males (2011 - 2012)	32.5 (28.2-37.6)	31.2 (26.2-35.8)	51.3 (42.1-65.7)	93.0 (73.9-119)	199 (111-334)	628
Males (2013 - 2014)	26.3 (23.0-30.1)	23.3 (20.5-26.6)	43.2 (36.4-59.1)	98.5 (78.8-126)	179 (114-279)	650
Females (2011 - 2012)	27.0 (23.2-31.5)	22.9 (19.1-27.3)	51.3 (42.5-64.0)	126 (95.7-191)	313 (178-498)	690
Females (2013 - 2014)	21.1 (18.4-24.2)	20.2 (16.8-23.4)	39.2 (33.3-48.7)	83.7 (63.9-108)	135 (104-219)	799

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.3 and 5.3, respectively.

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 923-43-3

Metabolite of Propylene oxide

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	63.4 (56.6-71.1)	63.6 (54.5-71.8)	110 (91.4-129)	181 (148-218)	251 (191-337)	869
Total population (2013 - 2014)	54.2 (46.6-63.0)	55.6 (45.7-64.5)	97.8 (79.0-119)	149 (137-167)	218 (181-241)	907
Age 20-49 years (2011 - 2012)	56.8 (52.4-61.5)	55.6 (45.9-65.5)	104 (82.4-118)	160 (133-207)	218 (164-267)	518
Age 20-49 years (2013 - 2014)	50.2 (43.3-58.1)	50.7 (41.4-60.7)	92.6 (72.8-105)	136 (116-162)	190 (138-267)	540
Age 50+ years (2011 - 2012)	75.4 (60.2-94.3)	72.5 (58.0-84.7)	123 (92.9-171)	214 (144-337)	322 (155-793)	351
Age 50+ years (2013 - 2014)	64.1 (53.2-77.2)	65.7 (53.2-81.4)	120 (95.2-139)	181 (136-241)	239 (163-280)	367
Males (2011 - 2012)	56.3 (49.3-64.3)	54.7 (45.1-66.8)	86.5 (75.2-110)	139 (116-196)	201 (144-251)	525
Males (2013 - 2014)	46.0 (40.2-52.7)	45.0 (38.6-53.1)	78.8 (65.7-95.0)	134 (117-155)	185 (155-216)	503
Females (2011 - 2012)	73.8 (62.9-86.6)	74.7 (64.6-91.4)	139 (108-169)	216 (160-284)	284 (195-337)	344
Females (2013 - 2014)	63.8 (53.5-76.1)	67.3 (53.6-81.9)	113 (93.8-136)	162 (143-197)	231 (179-267)	433

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	34.4 (30.9-38.3)	28.5 (26.6-30.9)	50.2 (43.2-56.1)	101 (82.6-136)	291 (167-527)	1317
Total population (2013 - 2014)	27.8 (24.5-31.6)	24.6 (21.4-27.3)	41.1 (35.6-46.0)	86.8 (64.6-131)	193 (140-260)	1350
Age 20-49 years (2011 - 2012)	34.5 (31.1-38.2)	28.6 (27.2-30.9)	52.6 (46.9-59.2)	102 (79.3-167)	217 (105-516)	658
Age 20-49 years (2013 - 2014)	26.8 (23.1-31.0)	23.5 (20.7-27.2)	40.8 (34.4-45.4)	74.3 (58.5-117)	161 (86.4-288)	665
Age 50+ years (2011 - 2012)	34.3 (28.8-40.8)	28.4 (25.2-31.9)	45.9 (40.6-54.2)	99.2 (70.4-190)	366 (99.2-1050)	659
Age 50+ years (2013 - 2014)	29.0 (24.2-34.8)	25.1 (21.0-28.8)	41.2 (34.3-54.2)	101 (67.6-193)	207 (118-367)	685
Males (2011 - 2012)	29.0 (26.0-32.4)	26.7 (24.2-29.2)	41.3 (34.2-46.9)	66.6 (53.6-98.0)	128 (82.3-240)	627
Males (2013 - 2014)	25.4 (22.0-29.3)	22.9 (19.8-26.3)	37.5 (33.8-40.7)	75.2 (53.9-101)	161 (86.4-261)	649
Females (2011 - 2012)	39.3 (32.6-47.3)	30.9 (26.5-35.0)	60.0 (48.9-73.4)	163 (93.7-224)	516 (167-1240)	690
Females (2013 - 2014)	30.0 (25.8-34.9)	25.4 (22.1-28.1)	44.8 (35.4-57.1)	108 (71.3-162)	238 (138-351)	799

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (2011 – 2014)**

CAS Number 923-43-3

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.18 (.989-1.40)	.979 (.731-1.22)	2.20 (1.62-2.86)	4.34 (3.20-6.16)	6.21 (4.96-8.76)	869
Total population (2013 - 2014)	1.26 (1.13-1.40)	1.21 (1.07-1.35)	2.31 (2.01-2.71)	4.55 (3.77-5.10)	5.86 (5.01-7.45)	892
Age 20-49 years (2011 - 2012)	1.13 (.944-1.34)	.903 (.706-1.14)	2.04 (1.32-2.93)	4.72 (3.02-6.16)	6.26 (4.37-13.2)	518
Age 20-49 years (2013 - 2014)	1.21 (1.07-1.36)	1.12 (.860-1.30)	2.30 (1.95-2.70)	4.20 (3.37-5.01)	5.55 (4.80-7.40)	535
Age 50+ years (2011 - 2012)	1.26 (1.02-1.55)	1.22 (.813-1.44)	2.50 (1.63-3.20)	4.22 (3.20-6.02)	6.02 (4.10-6.96)	351
Age 50+ years (2013 - 2014)	1.41 (1.15-1.73)	1.34 (1.11-1.57)	2.34 (1.84-3.19)	5.10 (3.01-7.45)	7.29 (4.15-13.9)	357
Males (2011 - 2012)	1.29 (1.02-1.62)	1.11 (.706-1.44)	2.71 (1.86-3.26)	5.41 (3.44-6.75)	6.86 (4.72-17.2)	525
Males (2013 - 2014)	1.33 (1.15-1.54)	1.26 (1.01-1.51)	2.34 (1.95-3.01)	4.85 (3.66-5.59)	6.33 (5.01-8.37)	497
Females (2011 - 2012)	*	.898 (<LOD-1.11)	1.70 (1.32-2.20)	3.57 (2.59-4.75)	5.22 (3.26-9.12)	344
Females (2013 - 2014)	1.19 (1.06-1.34)	1.14 (.818-1.38)	2.30 (1.90-2.54)	3.99 (3.28-4.89)	5.54 (4.32-7.40)	425

**Concentrations of N-Acetyl-S-(1-phenyl-2-hydroxyethyl) and (2-phenyl-2-hydroxyethyl)-L-cysteine were measured together and are reported as N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine. †Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	.713 (<LOD-.832)	1.39 (1.25-1.65)	1.91 (1.70-2.24)	1318
Total population (2013 - 2014)	*	< LOD	.760 (<LOD-.990)	1.57 (1.30-1.76)	2.05 (1.83-2.42)	1341
Age 20-49 years (2011 - 2012)	*	< LOD	.795 (<LOD-.889)	1.60 (1.36-1.81)	2.08 (1.81-2.70)	659
Age 20-49 years (2013 - 2014)	*	< LOD	.773 (<LOD-1.00)	1.54 (1.21-1.80)	1.97 (1.64-2.49)	653
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.28 (.997-1.65)	1.75 (1.32-1.93)	659
Age 50+ years (2013 - 2014)	*	< LOD	.747 (<LOD-1.05)	1.60 (1.24-1.85)	2.26 (1.75-2.82)	688
Males (2011 - 2012)	*	< LOD	.795 (<LOD-.906)	1.66 (1.23-1.91)	2.03 (1.87-2.61)	628
Males (2013 - 2014)	*	< LOD	.870 (<LOD-1.07)	1.62 (1.18-1.98)	2.17 (1.73-3.00)	642
Females (2011 - 2012)	*	< LOD	< LOD	1.31 (1.07-1.58)	1.75 (1.39-2.16)	690
Females (2013 - 2014)	*	< LOD	< LOD	1.56 (1.24-1.82)	1.86 (1.72-2.39)	794

**Concentrations of N-Acetyl-S-(1-phenyl-2-hydroxyethyl) and (2-phenyl-2-hydroxyethyl)-L-cysteine were measured together and are reported as N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine. †Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 – 2014)**

CAS Number 923-43-3

Metabolite of Styrene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	1.30 (1.16-1.46)	1.26 (1.10-1.43)	2.35 (1.92-2.70)	3.59 (3.09-4.21)	4.88 (4.06-6.42)	869
Total population (2013 - 2014)	1.27 (1.15-1.41)	1.21 (1.09-1.39)	2.20 (1.89-2.39)	3.49 (2.98-3.84)	4.26 (3.67-5.73)	891
Age 20-49 years (2011 - 2012)	1.17 (1.01-1.36)	1.13 (.927-1.39)	2.03 (1.82-2.42)	3.30 (2.77-4.50)	4.95 (3.43-7.53)	518
Age 20-49 years (2013 - 2014)	1.11 (.986-1.24)	1.06 (.990-1.20)	1.84 (1.55-2.27)	2.88 (2.38-3.49)	3.81 (2.97-4.58)	534
Age 50+ years (2011 - 2012)	1.52 (1.33-1.73)	1.41 (1.23-1.64)	2.73 (2.03-3.10)	4.02 (3.29-4.64)	4.88 (4.02-7.03)	351
Age 50+ years (2013 - 2014)	1.75 (1.47-2.09)	1.61 (1.32-2.00)	2.77 (2.18-3.49)	4.19 (3.65-5.73)	6.22 (4.13-8.81)	357
Males (2011 - 2012)	1.22 (1.05-1.41)	1.10 (1.01-1.27)	1.96 (1.67-2.52)	3.43 (2.75-4.33)	5.07 (3.43-9.42)	525
Males (2013 - 2014)	1.18 (1.04-1.34)	1.09 (.982-1.29)	1.93 (1.61-2.36)	3.21 (2.58-3.75)	4.11 (3.13-6.22)	496
Females (2011 - 2012)	*	1.45 (<LOD-1.65)	2.52 (2.15-2.78)	4.02 (3.01-4.64)	4.88 (4.02-7.09)	344
Females (2013 - 2014)	1.38 (1.24-1.54)	1.32 (1.19-1.51)	2.32 (2.03-2.53)	3.65 (3.09-3.88)	4.34 (3.67-5.73)	425

**Concentrations of N-Acetyl-S-(1-phenyl-2-hydroxyethyl) and (2-phenyl-2-hydroxyethyl)-L-cysteine were measured together and are reported as N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine. †Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	1.21 (<LOD-1.27)	1.98 (1.77-2.15)	2.74 (2.25-3.48)	1317
Total population (2013 - 2014)	*	< LOD	1.27 (<LOD-1.46)	2.19 (1.90-2.49)	2.97 (2.67-3.81)	1340
Age 20-49 years (2011 - 2012)	*	< LOD	1.21 (<LOD-1.38)	1.98 (1.65-2.62)	2.91 (2.25-3.81)	658
Age 20-49 years (2013 - 2014)	*	< LOD	1.21 (<LOD-1.40)	1.83 (1.62-2.15)	2.37 (2.06-2.75)	653
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	1.83 (1.76-2.06)	2.36 (2.02-3.54)	659
Age 50+ years (2013 - 2014)	*	< LOD	1.38 (<LOD-1.65)	2.67 (2.16-3.27)	4.00 (2.75-5.04)	687
Males (2011 - 2012)	*	< LOD	.952 (<LOD-1.05)	1.38 (1.24-1.71)	1.98 (1.55-2.65)	627
Males (2013 - 2014)	*	< LOD	1.05 (<LOD-1.10)	1.56 (1.38-2.02)	2.60 (1.65-3.54)	641
Females (2011 - 2012)	*	< LOD	< LOD	2.15 (1.98-2.75)	3.30 (2.46-4.13)	690
Females (2013 - 2014)	*	< LOD	< LOD	2.48 (2.16-2.82)	3.30 (2.75-4.33)	794

**Concentrations of N-Acetyl-S-(1-phenyl-2-hydroxyethyl) and (2-phenyl-2-hydroxyethyl)-L-cysteine were measured together and are reported as N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine. †Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (2011 – 2014)

CAS Number 90-64-2, 611-71-2 (R), 17199-29-0 (S)

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	240 (208-276)	238 (210-300)	422 (386-508)	761 (614-871)	1030 (823-1250)	869
Total population (2013 - 2014)	227 (199-258)	227 (212-258)	426 (361-481)	721 (589-913)	978 (810-1220)	893
Age 20-49 years (2011 - 2012)	238 (198-287)	243 (204-319)	425 (386-517)	767 (578-931)	1030 (789-1380)	518
Age 20-49 years (2013 - 2014)	235 (199-277)	244 (213-281)	434 (370-481)	731 (569-992)	1020 (810-1220)	535
Age 50+ years (2011 - 2012)	242 (213-275)	223 (200-284)	410 (381-508)	761 (563-863)	1030 (814-1090)	351
Age 50+ years (2013 - 2014)	217 (193-243)	212 (187-240)	408 (310-506)	681 (551-821)	888 (698-1390)	358
Males (2011 - 2012)	260 (213-317)	270 (223-321)	543 (398-632)	863 (702-1090)	1250 (966-1380)	525
Males (2013 - 2014)	236 (189-294)	229 (200-290)	435 (359-547)	753 (569-1000)	1040 (766-1350)	497
Females (2011 - 2012)	216 (192-244)	219 (188-243)	386 (327-410)	567 (428-730)	740 (589-914)	344
Females (2013 - 2014)	217 (199-237)	221 (194-245)	407 (343-458)	710 (491-966)	966 (693-1270)	425

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.0 and 12.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	109 (98.1-121)	118 (103-133)	200 (165-228)	301 (269-329)	392 (346-449)	1318
Total population (2013 - 2014)	97.9 (88.9-108)	103 (95.9-111)	176 (165-192)	293 (270-322)	375 (340-408)	1323
Age 20-49 years (2011 - 2012)	116 (100-135)	129 (110-153)	221 (191-248)	327 (270-376)	429 (353-488)	659
Age 20-49 years (2013 - 2014)	103 (94.1-112)	111 (101-119)	183 (170-200)	289 (272-326)	379 (337-455)	650
Age 50+ years (2011 - 2012)	101 (92.8-111)	110 (95.0-124)	165 (146-200)	287 (219-316)	357 (301-416)	659
Age 50+ years (2013 - 2014)	92.1 (81.7-104)	95.9 (84.9-107)	168 (149-197)	298 (241-329)	366 (325-407)	673
Males (2011 - 2012)	134 (122-147)	141 (119-159)	217 (190-252)	319 (267-357)	407 (329-559)	628
Males (2013 - 2014)	110 (96.4-125)	120 (100-139)	191 (169-220)	312 (272-337)	378 (351-439)	636
Females (2011 - 2012)	92.4 (81.0-105)	100 (84.0-118)	166 (146-207)	292 (236-346)	381 (316-434)	690
Females (2013 - 2014)	89.1 (79.6-99.7)	93.4 (80.2-102)	167 (144-187)	286 (245-327)	376 (325-444)	782

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.0 and 12.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (creatinine corrected) (2011 – 2014)

CAS Number 90-64-2, 611-71-2 (R), 17199-29-0 (S)

Metabolite of Styrene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	265 (242-290)	266 (242-277)	407 (369-441)	598 (526-671)	742 (650-850)	869
Total population (2013 - 2014)	228 (196-266)	233 (195-285)	358 (312-413)	520 (426-633)	723 (536-955)	892
Age 20-49 years (2011 - 2012)	248 (225-274)	255 (225-272)	378 (362-414)	571 (510-670)	710 (634-768)	518
Age 20-49 years (2013 - 2014)	215 (181-255)	215 (185-254)	342 (288-408)	486 (408-633)	633 (494-781)	534
Age 50+ years (2011 - 2012)	292 (264-323)	277 (258-319)	440 (369-468)	598 (491-761)	821 (576-988)	351
Age 50+ years (2013 - 2014)	268 (230-313)	285 (220-321)	400 (323-464)	591 (447-862)	834 (570-1110)	358
Males (2011 - 2012)	246 (220-276)	239 (205-272)	372 (343-414)	613 (471-694)	715 (670-812)	525
Males (2013 - 2014)	205 (169-250)	196 (173-252)	335 (274-405)	486 (391-691)	604 (467-955)	496
Females (2011 - 2012)	290 (250-336)	283 (260-341)	459 (366-512)	557 (514-743)	743 (557-821)	344
Females (2013 - 2014)	254 (222-291)	254 (215-299)	373 (315-428)	569 (442-705)	750 (588-862)	425

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	128 (119-137)	124 (115-133)	168 (157-186)	245 (221-273)	306 (276-347)	1317
Total population (2013 - 2014)	116 (103-131)	119 (107-135)	170 (156-190)	253 (223-290)	332 (274-449)	1322
Age 20-49 years (2011 - 2012)	128 (118-138)	124 (116-133)	167 (155-188)	229 (208-276)	306 (263-347)	658
Age 20-49 years (2013 - 2014)	113 (98.7-130)	117 (105-131)	168 (152-191)	237 (204-286)	306 (271-373)	650
Age 50+ years (2011 - 2012)	128 (118-139)	125 (110-139)	169 (150-202)	255 (220-290)	303 (258-398)	659
Age 50+ years (2013 - 2014)	120 (108-134)	122 (107-140)	174 (156-194)	256 (228-318)	367 (256-764)	672
Males (2011 - 2012)	120 (113-126)	114 (105-124)	156 (141-166)	208 (189-239)	275 (241-306)	627
Males (2013 - 2014)	105 (93.9-118)	108 (95.1-122)	151 (131-168)	206 (179-258)	295 (224-400)	635
Females (2011 - 2012)	134 (123-147)	132 (122-145)	188 (169-202)	273 (229-304)	328 (299-383)	690
Females (2013 - 2014)	126 (110-144)	130 (114-146)	191 (168-217)	279 (235-332)	356 (283-558)	782

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (2011 – 2014)

CAS Number 111348-61-9

Metabolite of Tetrachloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	913
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	546
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	367
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	508
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	435

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 3.0 and 3.0, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1362
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	666
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	696
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	654
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	806

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 3.0 and 3.0, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 111348-61-9

Metabolite of Tetrachloroethene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	912
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	545
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	367
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	507
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	435

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1361
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	666
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	695
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	653
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	806

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (2011 – 2014)

CAS Number 19542-77-9

Metabolite of Toluene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	6.14 (5.50-6.87)	5.97 (5.33-6.87)	12.2 (9.69-16.1)	24.6 (17.5-32.1)	38.7 (29.9-54.4)	869
Total population (2013 - 2014)	7.10 (6.54-7.72)	6.72 (5.98-7.36)	14.5 (12.6-16.6)	35.9 (27.1-41.0)	55.0 (40.7-84.6)	912
Age 20-49 years (2011 - 2012)	6.22 (5.41-7.16)	6.04 (5.05-7.26)	12.3 (9.43-16.9)	26.9 (16.9-40.5)	40.5 (29.9-54.5)	518
Age 20-49 years (2013 - 2014)	7.49 (6.68-8.40)	6.91 (6.14-7.57)	15.0 (12.2-17.9)	37.5 (27.1-42.6)	54.6 (39.0-73.5)	544
Age 50+ years (2011 - 2012)	6.02 (5.17-7.02)	5.92 (5.08-7.28)	12.0 (8.37-17.3)	22.5 (17.5-27.9)	33.5 (25.4-46.5)	351
Age 50+ years (2013 - 2014)	6.66 (5.74-7.73)	6.02 (5.16-7.78)	14.2 (10.0-18.4)	34.5 (21.0-45.5)	59.6 (23.7-327)	368
Males (2011 - 2012)	6.63 (5.73-7.67)	7.09 (5.94-7.95)	13.9 (11.1-16.9)	26.9 (17.3-35.1)	35.1 (29.9-44.4)	525
Males (2013 - 2014)	6.51 (5.64-7.51)	6.38 (5.45-7.29)	12.6 (11.1-15.0)	24.6 (20.2-35.7)	48.9 (32.3-59.6)	508
Females (2011 - 2012)	5.58 (4.81-6.47)	5.33 (4.66-5.80)	10.6 (7.02-14.3)	20.8 (14.8-33.5)	40.5 (24.2-60.3)	344
Females (2013 - 2014)	7.77 (6.90-8.75)	7.07 (5.61-8.28)	16.5 (13.2-20.4)	38.6 (31.5-52.4)	68.2 (38.2-238)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	6.50 (5.98-7.07)	6.41 (6.00-6.97)	12.2 (10.2-14.4)	23.3 (19.7-29.1)	38.6 (29.9-54.9)	1318
Total population (2013 - 2014)	6.06 (5.46-6.74)	6.21 (5.37-6.70)	11.7 (10.5-13.8)	25.7 (21.6-29.4)	39.0 (35.6-41.3)	1364
Age 20-49 years (2011 - 2012)	6.65 (5.81-7.61)	6.31 (5.39-8.17)	12.4 (10.4-16.2)	28.4 (20.2-34.2)	43.6 (33.3-60.1)	659
Age 20-49 years (2013 - 2014)	6.31 (5.64-7.06)	6.24 (5.26-6.96)	11.9 (10.7-13.8)	26.0 (20.2-30.5)	38.9 (30.5-53.4)	668
Age 50+ years (2011 - 2012)	6.35 (5.78-6.97)	6.53 (5.89-7.21)	11.1 (9.86-13.4)	20.6 (18.0-25.3)	34.2 (25.5-39.7)	659
Age 50+ years (2013 - 2014)	5.87 (5.12-6.73)	6.07 (5.21-6.69)	11.7 (9.66-14.7)	24.4 (18.0-36.0)	39.1 (29.5-55.1)	696
Males (2011 - 2012)	6.97 (6.22-7.82)	6.74 (6.13-7.65)	12.3 (10.1-14.8)	22.8 (18.2-31.2)	39.7 (25.0-86.2)	628
Males (2013 - 2014)	5.80 (5.03-6.68)	5.90 (5.18-6.65)	10.3 (8.85-11.9)	24.4 (17.1-28.9)	37.3 (25.7-50.5)	658
Females (2011 - 2012)	6.15 (5.47-6.93)	6.18 (5.39-6.96)	12.1 (9.54-16.1)	25.3 (19.1-29.7)	37.0 (29.7-51.6)	690
Females (2013 - 2014)	6.30 (5.63-7.05)	6.33 (5.12-7.17)	13.4 (10.8-15.4)	27.1 (20.5-32.8)	38.5 (32.8-50.4)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 19542-77-9

Metabolite of Toluene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	6.78 (6.39-7.19)	6.02 (5.70-6.38)	11.2 (9.43-12.6)	19.7 (16.5-20.6)	26.2 (22.6-36.2)	869
Total population (2013 - 2014)	7.20 (6.44-8.04)	6.41 (5.67-7.27)	11.6 (10.1-13.7)	27.9 (19.2-32.9)	47.2 (28.8-72.9)	911
Age 20-49 years (2011 - 2012)	6.48 (5.95-7.06)	5.84 (5.41-6.53)	9.33 (8.50-11.3)	20.4 (13.9-21.0)	25.5 (20.5-40.0)	518
Age 20-49 years (2013 - 2014)	6.87 (6.09-7.74)	5.95 (5.26-7.26)	9.90 (9.24-12.0)	25.6 (17.2-32.4)	42.3 (28.0-65.1)	543
Age 50+ years (2011 - 2012)	7.28 (6.56-8.08)	6.12 (5.79-7.71)	14.3 (10.2-15.3)	19.5 (15.5-23.6)	29.3 (22.6-47.7)	351
Age 50+ years (2013 - 2014)	8.26 (6.92-9.86)	6.90 (5.89-8.33)	14.3 (11.2-17.9)	29.4 (20.7-51.5)	60.5 (22.9-241)	368
Males (2011 - 2012)	6.28 (5.77-6.83)	5.78 (5.36-6.26)	9.33 (8.50-11.2)	17.9 (15.2-20.4)	22.2 (20.4-27.5)	525
Males (2013 - 2014)	5.74 (5.13-6.41)	4.98 (4.50-5.73)	8.72 (7.60-9.33)	19.2 (13.8-28.4)	31.6 (21.4-43.0)	507
Females (2011 - 2012)	7.48 (6.45-8.68)	6.55 (5.44-7.52)	13.0 (10.2-15.2)	21.0 (16.5-28.3)	40.0 (25.3-51.8)	344
Females (2013 - 2014)	9.08 (8.05-10.2)	8.11 (7.27-9.18)	14.4 (12.4-15.8)	30.8 (22.8-54.7)	66.6 (29.0-114)	434

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	7.63 (7.06-8.25)	6.87 (6.31-7.58)	12.8 (11.3-14.4)	23.8 (19.3-28.1)	39.6 (29.7-51.4)	1317
Total population (2013 - 2014)	7.23 (6.48-8.07)	6.83 (6.10-7.46)	13.2 (11.6-14.7)	25.9 (21.7-31.8)	41.3 (34.9-48.8)	1363
Age 20-49 years (2011 - 2012)	7.31 (6.71-7.97)	6.48 (5.95-7.22)	12.0 (10.9-13.7)	22.2 (18.3-25.7)	36.4 (24.5-49.1)	658
Age 20-49 years (2013 - 2014)	7.00 (6.18-7.92)	6.34 (5.46-7.47)	12.6 (10.6-14.7)	23.6 (20.5-27.5)	35.2 (28.8-42.9)	668
Age 50+ years (2011 - 2012)	7.99 (7.26-8.79)	7.47 (6.59-8.01)	13.6 (11.5-16.0)	26.1 (18.2-37.3)	44.1 (31.0-55.5)	659
Age 50+ years (2013 - 2014)	7.69 (6.69-8.85)	7.10 (6.36-7.84)	13.9 (11.7-16.3)	29.7 (21.7-44.3)	50.4 (35.2-81.2)	695
Males (2011 - 2012)	6.23 (5.67-6.85)	5.76 (5.28-6.09)	8.96 (8.07-10.5)	17.4 (14.2-23.4)	32.0 (19.0-44.0)	627
Males (2013 - 2014)	5.65 (4.95-6.44)	5.32 (4.65-6.34)	9.23 (8.16-10.9)	16.4 (14.5-21.7)	25.3 (20.9-31.8)	657
Females (2011 - 2012)	8.95 (7.99-10.0)	8.11 (7.24-9.19)	15.3 (13.1-17.6)	26.1 (23.0-31.8)	44.7 (31.0-55.3)	690
Females (2013 - 2014)	8.88 (7.93-9.95)	7.95 (7.16-9.42)	16.1 (13.5-18.7)	32.4 (25.9-38.7)	50.3 (37.8-64.4)	805

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (2011 – 2014)

CAS Number 2148-31-4

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	866
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	514
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	352
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	476
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	416

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.6 and 12.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1282
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	636
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	646
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	616
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 12.6 and 12.6, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 2148-31-4

Metabolite of Trichloroethene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	865
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	513
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	352
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	475
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	416

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1281
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	636
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	645
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	615
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	760

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (2011 – 2014)

CAS Number 126543-43-9

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	882
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	524
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	358
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	495
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	416

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 4.7 and 4.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1333
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	649
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	684
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	645
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	784

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 4.7 and 4.7, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 126543-43-9

Metabolite of Trichloroethene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	881
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	523
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	358
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	494
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	416

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1332
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	649
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	683
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	644
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	784

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (2011 – 2014)

CAS Number 126543-43-9

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	841
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	500
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	341
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	471
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	398

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1318
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1299
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	637
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	662
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	628
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	624
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	767

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.5 and 0.5, respectively.

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (creatinine corrected) (2011 – 2014)

CAS Number 126543-43-9

Metabolite of Xylene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	869
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	840
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	518
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	499
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	351
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	341
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	525
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	470
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	344
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	398

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	1317
Total population (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	1298
Age 20-49 years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	658
Age 20-49 years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	637
Age 50+ years (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	659
Age 50+ years (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	661
Males (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	627
Males (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	623
Females (2011 - 2012)	*	< LOD	< LOD	< LOD	< LOD	690
Females (2013 - 2014)	*	< LOD	< LOD	< LOD	< LOD	767

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

< LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (2011 – 2014)

CAS Number 42013-20-7

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	97.5 (85.1-112)	105 (94.5-116)	180 (163-203)	276 (238-327)	396 (322-426)	869
Total population (2013 - 2014)	83.6 (68.0-103)	90.0 (71.2-110)	159 (137-192)	277 (211-358)	377 (286-534)	849
Age 20-49 years (2011 - 2012)	93.0 (79.0-110)	105 (92.6-113)	170 (155-192)	276 (232-304)	351 (276-434)	518
Age 20-49 years (2013 - 2014)	85.3 (67.3-108)	93.8 (70.8-115)	164 (137-200)	286 (211-373)	411 (260-587)	506
Age 50+ years (2011 - 2012)	105 (87.1-126)	104 (84.6-140)	192 (168-216)	300 (235-398)	423 (348-477)	351
Age 50+ years (2013 - 2014)	81.8 (69.1-96.7)	84.1 (65.0-107)	149 (126-176)	266 (192-315)	346 (258-613)	343
Males (2011 - 2012)	104 (83.4-131)	113 (95.7-148)	198 (168-232)	290 (243-396)	398 (300-475)	525
Males (2013 - 2014)	82.7 (63.5-108)	88.6 (65.4-120)	170 (142-202)	310 (216-414)	414 (286-701)	478
Females (2011 - 2012)	89.3 (80.2-99.5)	94.6 (89.1-104)	160 (133-179)	242 (204-303)	353 (242-434)	344
Females (2013 - 2014)	84.5 (71.3-100)	90.0 (71.4-108)	144 (122-180)	249 (190-309)	315 (211-475)	399

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.0 and 5.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	26.2 (23.2-29.5)	25.1 (21.4-27.9)	55.9 (48.6-64.4)	116 (95.0-144)	171 (135-227)	1318
Total population (2013 - 2014)	23.7 (20.5-27.5)	21.7 (19.0-28.3)	53.2 (44.9-61.1)	115 (93.4-128)	152 (136-172)	1225
Age 20-49 years (2011 - 2012)	28.7 (24.6-33.5)	26.0 (21.9-31.5)	62.3 (49.3-74.9)	127 (95.2-158)	188 (134-251)	659
Age 20-49 years (2013 - 2014)	24.8 (21.7-28.4)	22.5 (19.8-27.7)	53.9 (48.1-63.3)	115 (95.4-127)	150 (127-173)	591
Age 50+ years (2011 - 2012)	23.6 (20.1-27.8)	23.9 (18.4-28.5)	49.7 (39.4-62.3)	107 (77.8-148)	170 (118-224)	659
Age 50+ years (2013 - 2014)	22.4 (18.7-26.7)	21.5 (16.9-29.3)	51.2 (41.2-59.7)	113 (80.7-147)	154 (120-195)	634
Males (2011 - 2012)	31.3 (24.4-40.1)	27.4 (20.9-34.9)	65.3 (43.5-88.9)	158 (90.2-206)	206 (129-408)	628
Males (2013 - 2014)	28.5 (23.6-34.3)	29.2 (22.2-35.0)	57.8 (46.9-76.2)	129 (98.6-149)	165 (139-221)	599
Females (2011 - 2012)	22.7 (19.6-26.3)	22.7 (20.0-26.0)	51.1 (39.8-59.6)	99.8 (79.8-114)	138 (107-171)	690
Females (2013 - 2014)	20.3 (17.2-24.0)	19.7 (16.0-23.3)	48.8 (35.9-59.7)	98.2 (78.5-118)	145 (115-171)	711

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 5.0 and 5.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (creatinine corrected) (2011 – 2014)

CAS Number 42013-20-7

Metabolite of Xylene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	108 (97.3-119)	113 (98.8-130)	195 (175-214)	330 (255-376)	388 (338-459)	869
Total population (2013 - 2014)	83.8 (65.9-107)	90.5 (70.8-117)	150 (123-198)	264 (188-366)	352 (263-515)	848
Age 20-49 years (2011 - 2012)	96.9 (87.3-108)	94.8 (85.1-107)	189 (163-204)	324 (239-348)	378 (333-453)	518
Age 20-49 years (2013 - 2014)	76.5 (60.6-96.5)	83.0 (68.2-111)	145 (120-182)	228 (187-293)	307 (263-394)	505
Age 50+ years (2011 - 2012)	127 (110-147)	137 (123-155)	206 (182-245)	332 (252-398)	423 (330-486)	351
Age 50+ years (2013 - 2014)	102 (79.6-131)	104 (86.1-128)	177 (126-279)	332 (170-652)	460 (255-886)	343
Males (2011 - 2012)	98.9 (82.7-118)	99.3 (83.6-121)	171 (127-214)	303 (200-376)	376 (333-423)	525
Males (2013 - 2014)	73.7 (57.6-94.4)	79.3 (60.7-103)	146 (115-187)	250 (189-323)	340 (263-515)	477
Females (2011 - 2012)	120 (98.4-146)	140 (104-166)	229 (187-270)	330 (270-398)	438 (330-495)	344
Females (2013 - 2014)	95.9 (74.6-123)	101 (76.3-128)	163 (122-227)	288 (164-460)	368 (229-568)	399

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	30.7 (27.5-34.3)	29.0 (25.8-33.5)	60.6 (53.7-68.4)	123 (98.9-137)	168 (134-232)	1317
Total population (2013 - 2014)	28.2 (24.1-33.2)	28.0 (24.2-34.6)	60.1 (53.4-68.1)	112 (95.5-126)	163 (119-223)	1224
Age 20-49 years (2011 - 2012)	31.6 (28.0-35.8)	30.0 (26.7-34.7)	60.6 (47.5-69.5)	100 (85.9-140)	173 (100-292)	658
Age 20-49 years (2013 - 2014)	26.8 (22.6-31.8)	26.7 (21.5-33.1)	56.3 (47.8-60.3)	95.5 (78.6-114)	162 (108-218)	591
Age 50+ years (2011 - 2012)	29.8 (25.9-34.2)	28.0 (21.8-35.2)	60.8 (51.8-72.3)	133 (110-142)	162 (146-204)	659
Age 50+ years (2013 - 2014)	29.9 (24.9-35.8)	29.6 (25.3-37.4)	66.6 (54.0-80.0)	119 (103-135)	166 (123-299)	633
Males (2011 - 2012)	28.0 (22.7-34.7)	26.8 (22.1-33.5)	56.3 (42.1-75.9)	100 (84.3-136)	159 (100-307)	627
Males (2013 - 2014)	27.9 (23.7-32.9)	28.0 (24.2-33.7)	57.8 (50.3-63.2)	112 (88.2-122)	158 (114-290)	598
Females (2011 - 2012)	33.0 (29.6-36.8)	30.9 (26.7-36.6)	62.6 (55.1-69.5)	133 (109-140)	180 (146-207)	690
Females (2013 - 2014)	28.5 (23.3-34.8)	27.6 (21.6-37.3)	61.1 (50.0-70.5)	113 (87.9-142)	169 (126-223)	711

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3-and 4-Methylhippuric acid (2011 – 2014)

CAS Number 27115-49-7, 27115-50-0

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	676 (583-784)	730 (599-868)	1310 (1160-1560)	2170 (1970-2410)	2860 (2400-3580)	869
Total population (2013 - 2014)	595 (521-679)	622 (535-729)	1190 (1090-1340)	2070 (1800-2530)	2840 (2330-3260)	913
Age 20-49 years (2011 - 2012)	629 (520-760)	730 (565-879)	1260 (1110-1410)	1940 (1700-2380)	2650 (2190-3010)	518
Age 20-49 years (2013 - 2014)	599 (511-703)	628 (521-777)	1230 (1090-1410)	2040 (1650-2640)	2930 (2200-3410)	548
Age 50+ years (2011 - 2012)	758 (640-898)	731 (590-1050)	1440 (1140-1970)	2420 (1940-3930)	3610 (2430-4490)	351
Age 50+ years (2013 - 2014)	599 (523-687)	607 (502-695)	1170 (844-1530)	2110 (1700-2630)	2730 (2150-3120)	365
Males (2011 - 2012)	726 (576-915)	868 (599-1070)	1500 (1190-1810)	2290 (1900-2960)	3170 (2100-3940)	525
Males (2013 - 2014)	601 (489-737)	622 (470-830)	1290 (1100-1610)	2330 (1800-2820)	2970 (2510-3610)	507
Females (2011 - 2012)	619 (545-702)	649 (590-801)	1110 (994-1210)	1990 (1670-2400)	2430 (2060-2860)	344
Females (2013 - 2014)	589 (538-645)	624 (544-680)	1130 (1010-1190)	1770 (1530-2410)	2620 (1710-3120)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 8.0 and 8.0, respectively.

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	173 (158-189)	165 (143-192)	372 (313-462)	824 (701-979)	1370 (1040-1560)	1318
Total population (2013 - 2014)	160 (139-184)	154 (130-179)	380 (328-445)	822 (684-976)	1130 (897-1400)	1367
Age 20-49 years (2011 - 2012)	172 (147-201)	159 (136-202)	376 (298-469)	844 (690-1040)	1330 (921-1630)	659
Age 20-49 years (2013 - 2014)	164 (142-190)	158 (130-191)	378 (312-475)	794 (680-961)	1090 (846-1380)	671
Age 50+ years (2011 - 2012)	174 (151-200)	169 (134-208)	361 (291-506)	789 (609-1070)	1370 (1020-1590)	659
Age 50+ years (2013 - 2014)	155 (132-182)	146 (128-178)	387 (330-445)	853 (626-1020)	1130 (853-1590)	696
Males (2011 - 2012)	200 (162-247)	186 (143-227)	396 (293-615)	949 (690-1370)	1560 (1200-1660)	628
Males (2013 - 2014)	184 (155-219)	188 (146-235)	410 (344-488)	853 (693-1010)	1120 (880-1700)	655
Females (2011 - 2012)	154 (135-175)	150 (131-168)	353 (273-467)	730 (609-897)	1190 (895-1420)	690
Females (2013 - 2014)	143 (122-167)	134 (102-161)	361 (302-455)	782 (629-961)	1130 (810-1380)	810

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 8.0 and 8.0, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3-and 4-Methylhippuric acid (creatinine corrected) (2011 – 2014)

CAS Number 27115-49-7, 27115-50-0

Metabolite of Xylene

Geometric mean and selected percentiles of concentrations (in µg/g of creatinine) for the U.S. adult population from the National Health and Nutrition Examination Survey by smoking status.

Cigarette Smokers (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	747 (672-831)	820 (772-870)	1320 (1150-1540)	2000 (1700-2220)	2260 (2060-2500)	869
Total population (2013 - 2014)	605 (517-709)	667 (576-790)	1060 (909-1250)	1600 (1360-1990)	2130 (1720-2630)	912
Age 20-49 years (2011 - 2012)	655 (582-737)	695 (607-822)	1190 (1080-1360)	2000 (1540-2110)	2220 (2050-2490)	518
Age 20-49 years (2013 - 2014)	552 (473-644)	626 (503-733)	967 (834-1150)	1520 (1270-1820)	2020 (1800-2280)	547
Age 50+ years (2011 - 2012)	916 (809-1040)	950 (831-1090)	1550 (1210-1700)	2050 (1700-2470)	2470 (1960-2890)	351
Age 50+ years (2013 - 2014)	747 (631-883)	806 (686-892)	1220 (986-1440)	1750 (1400-2630)	2630 (1500-3370)	365
Males (2011 - 2012)	687 (573-825)	716 (584-902)	1120 (965-1380)	1770 (1400-2080)	2110 (1890-2380)	525
Males (2013 - 2014)	534 (449-634)	609 (471-736)	986 (842-1170)	1480 (1240-1930)	2140 (1670-2470)	506
Females (2011 - 2012)	830 (703-979)	971 (773-1160)	1600 (1300-1810)	2120 (1990-2290)	2500 (2080-3080)	344
Females (2013 - 2014)	688 (586-808)	733 (637-840)	1140 (914-1390)	1730 (1390-2050)	2090 (1810-2620)	436

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Nonsmokers† (Survey Years)	**Geometric Mean** (95% conf. interval)	**50th Percentile** (95% conf. interval)	**75th Percentile** (95% conf. interval)	**90th Percentile** (95% conf. interval)	**95th Percentile** (95% conf. interval)	**Sample Size**
Total population (2011 - 2012)	203 (189-217)	166 (149-186)	403 (342-463)	770 (723-853)	1060 (958-1210)	1317
Total population (2013 - 2014)	192 (166-222)	168 (141-210)	429 (342-495)	758 (670-877)	1040 (878-1390)	1366
Age 20-49 years (2011 - 2012)	189 (169-210)	155 (139-184)	384 (310-447)	642 (540-767)	784 (721-1020)	658
Age 20-49 years (2013 - 2014)	182 (155-214)	156 (130-197)	389 (319-461)	652 (593-758)	917 (704-1410)	671
Age 50+ years (2011 - 2012)	219 (197-243)	169 (149-193)	460 (342-590)	966 (803-1060)	1300 (1030-1610)	659
Age 50+ years (2013 - 2014)	206 (175-241)	179 (148-222)	459 (352-628)	871 (716-964)	1090 (889-1460)	695
Males (2011 - 2012)	179 (151-212)	147 (121-181)	342 (231-472)	647 (530-765)	867 (691-1140)	627
Males (2013 - 2014)	179 (152-210)	156 (135-183)	402 (294-468)	655 (575-793)	871 (704-1160)	654
Females (2011 - 2012)	224 (207-242)	182 (162-206)	447 (384-538)	858 (770-1030)	1290 (974-1470)	690
Females (2013 - 2014)	204 (173-241)	175 (134-229)	449 (335-587)	862 (728-955)	1090 (920-1410)	810

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Appendix A. Procedure to Estimate Percentiles

Including percentiles whose estimate falls on a value that is repeated multiple times in the dataset

A common practice to calculate confidence intervals from survey data is to use large-sample normal approximations. Ninety-five percent confidence intervals on point estimates of percentiles are often computed by adding and subtracting from the point estimate a quantity equal to twice its standard error. This normal approximation method may not be adequate, however, when estimating the proportion of subjects above or below a selected value, especially when the proportion is near 0.0 or 1.0 or when the effective sample size is small. In addition, confidence intervals on proportions deviating from 0.5 are not theoretically expected to be symmetric around the point estimate. Further, adding and subtracting a multiple of the standard error to an estimate near 0.0 or 1.0 can lead to impossible confidence limits (i.e., proportion estimates below 0.0 or above 1.0). The approach used for the *Report* data tables (and for previous *Reports*) produces asymmetric confidence intervals consistent with skewed (nonnormal) biologic data distributions.

The method we use to estimate percentiles and their confidence limits for the *Report* data tables and for previous reports is adapted from a method proposed by Woodruff (1952) for percentile estimation and a method described by Korn and Graubard (1998) for estimating confidence intervals for proportions. This method essentially involves first obtaining an empirical point estimate of the desired percentile by creating a rank ordered listing of the sampled observations along with their sampling weights. From this listing and the sampling weights, it is possible to determine an empirical percentile estimate for the target population. After this point estimate of the percentile has been obtained, the fraction of results below the estimate is calculated. The fraction below the point estimate should be very close to the proportion corresponding to the desired percentile, but can deviate from this proportion depending on the frequency of non-unique sampled observations in the vicinity of the empirical percentile estimate and depending on the sampling weight associated with the sampled observation. For example, when measuring some compounds as part of NHANES there may be multiple results below a common limit of detection (LOD) or multiple results with identical measured values due to the reporting limitations of the instrument. This phenomenon coupled with the sampling weight assigned to each measured result and with the limitations of statistical software can lead to difficulties in accurately estimating some percentiles and their corresponding confidence limits because an exact percentile may fall within a large group of results with identical measured values. We circumvented this potential problem for the *Report* data tables by adding a unique, negligibly small number to each measured result. This small number was later subtracted from the percentile estimate without affecting the percentile estimate and without altering any of the original measured results.

By adding a unique, negligibly small number to each sampled observation, it was possible to associate a single sampled observation with the percentile estimate and thus to minimize the difference between the fraction below the point estimate and the proportion corresponding to the desired percentile. However, due to sample weighting, it is still possible to obtain a different point estimate (which will only differ by the difference between numerically adjacent analyte values) depending on how the data are sorted before adding the unique number to each result. We circumvented this potential problem by replacing actual sample weights with an average sample weight where the average is computed across subjects in the same demographic domain who have identical measured results. We computed standard error

estimates in a separate step using the original (unaltered) data. Clopper-Pearson 95% confidence intervals around the estimated proportion are obtained using the method described by Korn and Graubard (1998).

We describe below how SAS Proc Univariate and SUDAAN can be used to carry out this method of percentile and confidence interval estimation. SAS code for calculating these confidence intervals can be downloaded from http://www.cdc.gov/exposurereport. In the narrative that follows, the term 'demographic domain' refers to a demographic group of interest, for example non-Hispanic blacks. The term 'set of subsample weights' refers to the sampling weights that correspond to the variable for which percentiles will be estimated, for example the set of subsample weights associated with total blood mercury measurements. The term 'analyte' refers to the biological or chemical compound measured in a group of subjects and for which percentiles are to be estimated.

Procedure to calculate percentile estimates and their confidence intervals

Step 1: Obtain a percentile estimate using the original (unaltered data):

Create a separate file with original data (ORIG_DATA). Use SAS (SAS Institute Inc. 1999) Proc Univariate (with default percentile definition equivalent to option PCTLDEF = 5 and with the Freq option variable equal to the original subsample sampling weight) to obtain a point estimate of the percentile (PTLE_ORIG) of an analyte's original results for the demographic domain of interest, for example, the 95th percentile of total blood mercury results for adults aged 20+ years.

Step 2: Obtain a percentile estimate using the altered data:

Create a separate file for use with altered data (ALTR_DATA). Sort the data by analyte measured value separately for each particular demographic domain and set of subsample weights. Use SAS Proc Means to compute the average sampling weight (WT_{AVE}) for each unique measured result. For each unique measured result, use a counter from 1 to the total number of subjects with identical values to create a unique integer to associate with each measured observation. Each of these numbers should then be divided by 1,000,000,000 and added to the corresponding measured observation. This will result in each measured observation having an additional fractional amount beyond the fourth decimal as long as there are less than 10,000 subjects with the same measured result. Use SAS Proc Univariate (again with default percentile definition equivalent to option PCTLDEF = 5 but now with the Freq option variable equal to WT_{AVE}) to obtain a point estimate of the percentile (PTLE_ALTR) of an analyte's altered results for the demographic domain of interest.

Step 3: Sort the data in the ORIG_DATA file by the stratum (sdmvstra) and primary sampling unit (sdmvpsu) variables. Use SUDAAN (SUDAAN Users Manual, 2001) Proc Descript with Taylor Linearization DESIGN = WR (i.e., sampling with replacement), with proper NEST statement, and with the original subsample sampling weight variable to estimate the proportion (P_ORIG) of subjects with results below the percentile estimate (PTLE_ORIG) obtained in Step 1 and discard P_ORIG but retain the standard error (SEMEAN_ORIG) associated with PTLE_ORIG.

Step 4: Sort the data in the ALTR_DATA file by the stratum (sdmvstra) and primary sampling unit (sdmvpsu) variables. Use SUDAAN (SUDAAN Users Manual, 2001) Proc Descript with Taylor Linearization DESIGN = WR (i.e., sampling with replacement), with proper NEST statement, and with the average sampling weight variable (WT_AVE) to estimate the proportion (P_ALTR) of subjects with results below the percentile estimate (PTLE_ALTR) obtained in Step 2 and keep

P_ALTR but discard the standard error (SEMEAN_ALTR) associated with PTLE_ALTR. Compute the degrees-of-freedom adjusted effective sample size

(1) $n_{df} = ((t_{num}/t_{denom})^2)P_ALTR(1 - P_ALTR)/(SEMEAN_ORIG^2)$

where t_{num} and t_{denom} are 0.975 critical values of the Student's t distribution with degrees of freedom equal to the actual sample size minus 1 and the number of primary sampling units (PSUs) minus the number of strata, respectively. Note: the degrees of freedom for t_{denom} can vary with the demographic domain of interest (e.g., males).

Step 5: After obtaining an estimate of P_ALTR (i.e., the proportion obtained in Step 4), compute the Clopper-Pearson 95% confidence interval ($P_L(x,n_{df})$, $P_U(x,n_{df})$) as follows:

(2) $P_L(x,n_{df}) = v_1 F_{v1,v2}(0.025)/(v_2 + v_1 F_{v1,v2}(0.025))$

&

$P_U(x,n_{df}) = v_3 F_{v3,v4}(0.975)/(v_4 + v_3 F_{v3,v4}(0.975))$

where x is equal to P_ALTR times n_{df}, $v_1 = 2x$, $v_2 = 2(n_{df} - x + 1)$, $v_3 = 2(x + 1)$, $v_4 = 2(n_{df} - x)$, and $F_{d1,d2}(\beta)$ is the β quantile of an F distribution with d_1 and d_2 degrees of freedom. (Note: If n_{df} is greater than the actual sample size or if P_ALTR is equal to zero, then the actual sample size should be used in place of n_{df}.) This step will produce a lower and an upper limit for the estimated proportion obtained in Step 4.

Step 6: Use SAS Proc Univariate (again with default percentile definition equivalent to option PCTLDEF = 5 and with the Freq option variable equal to WT_{AVE}) to determine the analyte values that correspond to the desired percentile (proportion) and to the lower and upper proportion limits obtained in Step 5. Round these results to 2 or 3 decimals depending on the significant figures associated with the original measured values.

Example:

To estimate the 95th percentile of total blood mercury in adults 20+ years of age in the 2013-2014 survey, create two separate files: name one ORIG_DATA and the other ALTR_DATA. For the ORIG_DATA file use SAS Proc Univariate with the Freq option and the subsample sampling weight (or in this case the full sample sampling weight because total blood mercury is the analyte of interest) to get a weighted point estimate of the analyte value that corresponds to the 95th percentile (PTLE_ORIG). For this example the value is 4.88 µg/L.

Sort the results in the ALTR_DATA file by analyte measured value. Use SAS Proc Means to compute the average sampling weight (WT_{AVE}) for each unique analyte measured value. For each unique measured result, use a counter from 1 to the total number of subjects with identical values to create a unique integer to associate with each measured observation. Divide each counter value by 1,000,000,000 and add this amount to the corresponding measured observation. For this altered data file (ALTR_DATA) use SAS Proc Univariate with the Freq option and WT_AVE to get a weighted point estimate of the analyte value that corresponds to the 95th percentile (PTLE_ALTR). For this example the value is also 4.88 µg/L.

For the ORIG_DATA file use SUDAAN to estimate the weighted proportion (P_ORIG) of subjects with results below the value of PTLE_ORIG (which can differ from 0.95 depending on the number of results with identical values; for this example the proportion is 0.9491) and the standard error (SEMEAN_ORIG) associated with P_ORIG (for this example SEMEAN_ORIG = 0.0044).

For the ALTR_DATA file use SUDAAN to estimate the weighted proportion of subjects (P_ALTR) with results below the value of PTLE_ALTR (which should also be very close to 0.95 regardless of the number of original results with identical values; for this example the proportion is also 0.9491). Then obtain a confidence interval on P_ALTR by computing the weighted Clopper-Pearson 95% confidence limits (equation 2 above) using the degrees-of-freedom adjusted effective sample size as described in equation 1 above. For this example the effective sample size is 2113.64 resulting in lower and upper confidence limits of 0.93885 and 0.95808, respectively. Then use SAS Proc Univariate (with the Freq option variable equal to WT_{AVE}) to determine the analyte values corresponding to the weighted 93.9^{th} and 95.8^{th} percentiles. These point estimates are the lower and upper confidence limits on the 95th percentile estimate. Round the 95th percentile estimate and its confidence limits to 2 or 3 decimals depending on the significant figures associated with the original measured values. For this example the rounded point estimate is 4.88 µg/L with lower and upper confidence limits of 4.36 and 5.21 µg/L, respectively.

Appendix C. Limit of Detection Table

The analytical limit of detection (LOD) for each of the different chemical measurements is presented in the table below. The LOD is the concentration at which the measurement has a 95% probability of being greater than zero (Taylor, 1987). As analytical methods improve, LODs will often change. For this reason, LOD values are reported by survey periods (e.g., 1999-2000, 2001-2002, etc.).

Reference: Taylor JK. Quality Assurance of Chemical Measurements. Chelsea (MI): Lewis Publishing. 1987.

Adducts of Hemoglobin

Chemical, *in packed rbcs, pmol/g hemoglobin*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Acrylamide	--	--	3.0	0.11	--	--	--	--	--
Glycidamide	--	--	4.0	0.66	--	--	--	--	--

Tobacco Metabolites

Chemical, *matrix, units*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Cotinine *in serum, ng/mL*	0.05	0.05	0.015	0.015	0.015	0.015	0.015	0.015	--
Hydroxycotinine *in serum, ng/mL*	--	--	--	--	--	--	--	0.015	--
NNAL *in urine, pg/mL*	--	--	--	--	1	0.6	0.6	--	--

Disinfection By-Products

Chemical, *in blood, pg/mL*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Bromodichloromethane	--	0.233	0.62	0.620	0.620	0.620	0.620	6.00	6.00
Dibromochloromethane	--	0.271	0.62	0.620	0.620	0.620	0.620	5.00	5.00
Tribromomethane (Bromoform)	--	0.596	1.5	1.00	1.00	1.00	1.00	5.00	5.00
Trichloromethane (Chloroform)	--	2.37	2.11	2.10	2.10	2.10	2.10	8.00	8.00

Personal Care and Consumer Product Chemicals and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Benzophenone-3	--	--	0.3	0.4	0.4	0.4	0.4	0.4	--
Bisphenol A	--	--	0.4	0.4	0.4	0.4	0.4	0.2	--
Bisphenol F	--	--	--	--	--	--	--	0.2	--
Bisphenol S	--	--	--	--	--	--	--	0.1	--

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
4-*tert*-Octylphenol	--	--	--	0.2	0.2	0.2	--	--	--
Triclocarban	--	--	--	--	--	--	--	0.1	--
Triclosan	--	--	2.3	2.3	2.3	2.3	2.3	1.7	--
Butyl paraben	--	--	--	0.2	0.2	0.2	0.2	0.1	--
Ethyl paraben	--	--	--	1.0	1.0	1.0	1.0	1.0	--
Methyl paraben	--	--	--	1.0	1.0	1.0	1.0	1.0	--
n-Propyl paraben	--	--	--	0.2	0.2	0.2	0.2	0.1	--
2,4-Dichlorophenol	--	--	0.17	0.2	0.2	0.2	0.2	0.1	--
2,5-Dichlorophenol	--	--	0.12	0.2	0.2	0.2	0.2	0.1	--

Flame Retardant Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Bis(1-chloro-2-propyl) phosphate (BCPP)	--	--	--	--	--	--	--	0.1	--
Bis(2-chloroethyl) phosphate (BCEtP)	--	--	--	--	--	--	--	0.08	--
Bis(1,3-dichloro-2-propyl) phosphate (BDCPP)	--	--	--	--	--	--	--	0.11	--
Dibenzyl phosphate (DBzP)	--	--	--	--	--	--	--	0.05	--
Dibutyl phosphate (DBuP)	--	--	--	--	--	--	--	0.05	--
Di-o-cresylphosphate (DoCP)	--	--	--	--	--	--	--	0.05	--
Di-p-cresylphosphate (DpCP)	--	--	--	--	--	--	--	0.05	--
Diphenyl phosphate (DPhP)	--	--	--	--	--	--	--	0.16	--
2,3,4,5-Tetrabromobenzoic acid (TBBA)	--	--	--	--	--	--	--	0.05	--

Fungicides and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
ortho-Phenylphenol	--	--	0.1	0.1	0.1	0.2	--	--	--
Ethylene thiourea	--	--	0.1	0.24	0.21	--	--	--	--
Pentachlorophenol	--	--	0.5	--	--	--	--	--	--
Propylene thiourea	--	--	0.1	0.37	0.36	--	--	--	--

Herbicides and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Atrazine	--	--	--	--	0.5	--	--	--	--
Atrazine mercapturate	--	--	--	--	0.5	--	--	--	--
Desethyl atrazine	--	--	--	--	0.25	--	--	--	--
Desisopropyl atrazine	--	--	--	--	0.25	--	--	--	--
Desisopropyl atrazine mercapturate	--	--	--	--	0.1	--	--	--	--
Diaminochlorotriazine	--	--	--	--	0.5	--	--	--	--
2,4-Dichlorophenoxyacetic acid	0.952	0.2	0.1	--	0.4	0.15	--	--	--
2,4,5-Trichlorophenoxyacetic acid	1.2	0.1	0.1	--	0.10	0.1	--	--	--

Sulfonyl Urea Herbicides

Chemical *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Bensulfuron-methyl	--	--	0.05	0.05	0.05	--	--	--	--
Chlorsulfuron	--	--	0.06	0.06	0.06	--	--	--	--
Ethametsulfuron-methyl	--	--	0.1	0.1	0.1	--	--	--	--
Foramsulfuron	--	--	0.05	0.05	0.05	--	--	--	--
Halosulfuron	--	--	0.1	0.1	0.1	--	--	--	--
Mesosulfuron-methyl	--	--	0.06	0.06	0.06	--	--	--	--
Metsulfuron-methyl	--	--	0.05	0.05	0.05	--	--	--	--
Nicosulfuron	--	--	0.1	0.1	0.1	--	--	--	--
Oxasulfuron	--	--	0.06	0.06	0.06	--	--	--	--
Primisulfuron-methyl	--	--	0.07	0.07	0.07	--	--	--	--
Prosulfuron	--	--	0.05	0.05	0.05	--	--	--	--
Rimsulfuron	--	--	0.05	0.05	0.05	--	--	--	--
Sulfometuron-methyl	--	--	0.05	0.05	0.05	--	--	--	--
Sulfosulfuron	--	--	0.1	0.1	0.1	--	--	--	--
Thifensulfuron-methyl	--	--	0.08	0.08	0.08	--	--	--	--
Triasulfuron	--	--	0.07	0.07	0.07	--	--	--	--

Chemical *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Triflusulfuron-methyl	--	--	0.05	0.05	0.05	--	--	--	--

Insect Repellent and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
N,N-Diethyl-*meta*-toluamide (DEET)	--	--	--	--	0.083	0.083	0.083	0.083	--
3-(Diethylcarbamoyl) benzoic acid (DCBA)	--	--	--	--	0.93	0.475	0.475	0.475	--
N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB)	--	--	--	--	0.089	0.089	0.089	0.089	--

Carbamate Pesticide Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Carbofuranphenol	0.4	0.4	0.4	--	--	--	--	--	--
2-isopropoxyphenol	1.1	0.4	0.4	--	--	--	--	--	--

Organochlorine Pesticides and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,4,5-Trichlorophenol	--	--	0.1	0.1	0.1	0.1	--	--	--
2,4,6-Trichlorophenol	--	--	0.5	0.5	0.5	0.5	--	--	--

Organophosphorus Insecticides: Specific Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Acephate	--	--	0.1	0.25	0.27	--	--	--	--
Dimethoate	--	--	0.1	0.25	0.1	--	--	--	--
Methamidophos	--	--	0.1	0.37	0.41	--	--	--	--
Omethoate	--	--	0.1	0.14	0.1	--	--	--	--
Malathion dicarboxylic acid	2.64	--	--	--	0.5	0.5	--	--	--
2-Isopropyl-4-methyl-pyrimidinol	7.2	0.7	--	--	0.1	0.1	--	--	--
para-Nitrophenol	0.8	0.1	--	--	0.1	0.1	--	--	--
3,5,6-Trichloro-2-pyridinol	0.4	0.4	--	--	0.1	0.1	--	--	--

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

Chemical, *in urine, µg/L*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
Diethylphosphate (DEP)	0.2	0.2	0.1	0.37	0.37	--	--	--	--
Dimethylphosphate (DMP)	0.58	0.5	0.5	0.47	0.47	--	--	--	--
Diethylthiophosphate (DETP)	0.09	0.1	0.2	0.56	0.56	--	--	--	--
Dimethylthiophosphate (DMTP)	0.18	0.4	0.5	0.55	0.55	--	--	--	--
Diethyldithiophosphate (DEDTP)	0.05	0.1	0.1	0.39	0.39	--	--	--	--
Dimethyldithiophosphate (DMDTP)	0.08	0.1	0.1	0.51	0.51	--	--	--	--

Pyrethroid Insecticide Metabolites

Chemical, *in urine, µg/L*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.1	0.1	--	--	0.6	0.6	--	--	--
cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.1	0.1	--	--	0.5	0.5	--	--	--
4-Fluoro-3-phenoxy-benzoic acid	0.2	0.2	--	--	0.1	0.1	--	--	--
3-Phenoxybenzoic acid	0.1	0.1	--	--	0.1	0.1	--	--	--

Metals and Metalloids

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
Antimony *in urine, µg/L*	0.04	0.04	0.07	0.032	0.032	0.032	0.041	0.022	0.022
Arsenic, Total *in urine, µg/L*	--	--	0.74	0.74	0.74	0.74	1.25	0.26	0.26
Arsenic (V) Acid *in urine, µg As/L*	--	--	1.0	1.0	1.0	1.0	0.87	0.79	0.79
Arsenobetaine *in urine, µg As/L*	--	--	0.4	0.4	0.4	0.4	1.19	1.16	1.16
Arsenocholine *in urine, µg As/L*	--	--	0.6	0.6	0.6	0.6	0.28	0.11	0.11
Arsenous (III) Acid *in urine, µg As/L*	--	--	1.2	1.2	1.2	1.2	0.48	0.12	0.12
Dimethylarsinic Acid *in urine, µg As/L*	--	--	1.7	1.7	1.7	1.7	1.8	1.91	1.91
Monomethylarsonic Acid *in urine, µg As/L*	--	--	0.9	0.9	0.9	0.9	0.89	0.20	0.20
Inorganic-related Arsenic Species, in urine, µg As/g	--	--	--	--	--	--	--	--	--
Trimethylarsine oxide *in urine, µg As/L*	--	--	1.0	1.0	1.0	1.0	0.25	--	--
Barium *in urine, µg/L*	0.12	0.12	0.31	0.12	0.12	0.12	0.1	0.06	0.06

Chemical, *matrix, units*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Beryllium *in urine, µg/L*	0.13	0.13	0.13	0.072	0.072	0.072	--	--	--
Cadmium *in blood, µg/L*	0.3	0.3	0.14	0.2	0.2	0.2	0.16	0.1	0.1
Cadmium *in urine, µg/L*	0.06	0.06	0.06	0.042	0.042	0.042	0.056	0.036	0.036
Cesium *in urine, µg/L*	0.14	0.14	0.2	0.066	0.066	0.066	0.12	0.086	0.086
Chromium *in blood, µg/L*	--	--	--	--	--	--	--	--	0.41
Cobalt *in blood, µg/L*	--	--	--	--	--	--	--	--	0.6
Cobalt *in urine, µg/L*	0.07	0.07	0.08	0.041	0.041	0.041	0.048	0.023	0.023
Copper *in serum, µg/dL*	--	--	--	--	--	--	2.5	2.5	--
Lead *in blood, µg/dL*	0.3	0.3	0.28	0.25	0.25	0.25	0.25	0.07	0.07
Lead *in urine, µg/L*	0.1	0.1	0.33	0.1	0.1	0.1	0.08	0.03	0.030
Manganese *in blood, µg/L*	--	--	--	--	--	--	1.06	0.99	0.99
Manganese *in urine, µg/L*	--	--	--	--	--	--	0.08	0.13	0.130
Mercury, Total *in blood, µg/L*	--	--	0.2	0.33	0.33	0.33	0.16	0.28	0.28
Mercury, Inorganic *in blood, µg/L*	--	--	0.42	0.4	0.35	0.35	0.27	0.27	0.27
Mercury, Ethyl *in blood, µg/L*	--	--	--	--	--	--	0.16	0.16	0.16
Mercury, Methyl *in blood, µg/L*	--	--	--	--	--	--	0.12	0.12	0.12
Mercury *in urine, µg/L*	--	--	0.14	0.11	0.08	0.08	0.05	0.13	0.13
Molybdenum *in urine, µg/L*	0.8	0.8	1.5	0.92	0.92	0.92	0.99	0.80	0.800
Platinum *in urine, µg/L*	0.04	0.04	0.07	0.009	0.009	0.009	--	--	--
Selenium *in blood, µg/L*	--	--	--	--	--	--	30.0	24.5	24.5
Selenium *in serum, µg/L*	--	--	--	--	--	--	4.5	4.5	--
Strontium *in urine, µg/L*	--	--	--	--	--	--	2.5	2.34	2.340
Thallium *in urine, µg/L*	0.02	0.02	0.02	0.015	0.015	0.015	0.02	0.018	0.018
Tin *in urine, µg/L*	--	--	--	--	--	--	0.22	0.09	0.090
Tungsten *in urine, µg/L*	0.04	0.04	0.04	0.021	0.021	0.021	0.026	0.018	0.018
Uranium *in urine, µg/L*	0.004	0.004	0.005	0.002	0.002	0.0017	0.0033	0.002	0.002
Zinc *in serum, µg/dL*	--	--	--	--	--	--	2.9	2.9	--

Perchlorate and Other Anions *in urine*

Chemical, *matrix, units*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Nitrate, *mg/L*	--	0.7	--	0.7	0.7	0.7	0.7	0.7	--
Perchlorate, *µg/L*	--	0.05	0.05	0.05	0.05	0.05	0.05	0.05	--
Thiocyanate, *mg/L*	--	0.02	--	0.02	0.02	0.02	0.02	0.02	--

Perfluoroalkyl and Polyfluoroalkyl Substances: Surfactants

Chemical, *in serum, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Perfluorobutane sulfonic acid (PFBS)	--	--	0.4	0.1	0.1	0.1	0.1	0.1	--
Perfluorodecanoic acid (PFDA)	0.2	--	0.3	0.2	0.2	0.1	0.1	0.1	0.1
Perfluorododecanoic acid (PFDoA)	0.2	--	1	0.2	0.2	0.1	0.1	0.1	0.1
Perfluoroheptanoic acid (PFHpA)	0.4	--	0.3	0.4	0.4	0.1	0.1	0.1	--
Perfluorohexane sulfonic acid (PFHxS)	0.1	--	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Perfluorononanoic acid (PFNA)	0.1	--	0.1	0.1	0.082	0.082	0.082	0.1	0.1
Perfluorooctanoic acid (PFOA)	0.1	--	0.2	0.1	0.1	0.1	0.1	--	--
n-Perfluorooctanoic acid (n-PFOA)	--	--	--	--	--	--	--	0.1	0.1
Branched Perfluorooctanoic acid isomers (Sb-PFOA)	--	--	--	--	--	--	--	0.1	0.1
Perfluorooctane sulfonic acid (PFOS)	0.2	--	0.4	0.2	0.2	0.2	0.2	--	--
n-Perfluorooctane sulfonic acid (n-PFOS)	--	--	--	--	--	--	--	0.1	0.1
Perfluoromethylheptane sulfonic acid isomers (Sm-PFOS)	--	--	--	--	--	--	--	0.1	0.1
Perfluorooctane sulfonamide (PFOSA or FOSA)	0.05	--	0.1	0.1	0.1	0.1	0.1	0.1	--
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (EtFOSAA)	0.2	--	0.4	0.2	0.2	0.1	0.1	0.1	--
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (MeFOSAA)	0.174	--	0.523	0.174	0.174	0.087	0.087	0.1	0.1
Perfluoroundecanoic acid (PFUnDA)	0.2	--	0.3	0.2	0.2	0.1	0.1	0.1	0.1

Phthalate and Phthalate Alternatives Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Mono-benzyl phthalate (MBzP)	0.576	0.216	0.072	0.216	0.216	0.216	0.3	0.3	0.3
Mono-3-hydroxybutyl phthalate (MHBP)	--	--	--	--	--	--	--	0.4	0.4

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Mono-*n*-butyl phthalate (MnBP)	0.9	1.1	0.4	0.6	0.6	0.4	0.4	0.4	0.4
Mono-isobutyl phthalate (MiBP)	--	1	0.3	0.3	0.3	0.2	0.2	0.8	0.8
Mono-2-methyl-2-hydroxypropyl phthalate (MHiBP)	--	--	--	--	--	--	--	0.4	0.4
Mono-cyclohexyl phthalate (MCHP)	1.81	0.603	0.402	0.603	0.603	0.402	--	--	--
Mono-ethyl phthalate (MEP)	0.792	0.594	0.264	0.528	0.462	0.396	0.6	1.2	1.2
Mono-2-ethylhexyl phthalate (MEHP)	1.2	1	0.9	1.2	1.1	0.5	0.5	0.8	0.8
Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)	--	1	0.3	0.7	0.7	0.2	0.2	0.4	0.4
Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)	--	1.1	0.5	0.7	0.6	0.2	0.2	0.2	0.2
Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)	--	--	0.3	0.6	0.5	0.2	0.2	0.4	0.4
Mono-(carboxynonyl) phthalate (MCNP)	--	--	--	0.6	0.5	0.2	0.2	0.2	0.2
Mono-isononyl phthalate (MiNP)	1.23	1.23	1.54	1.23	1.23	0.77	0.6	0.9	0.9
Mono-oxoisononyl phthalate (MONP)	--	--	--	--	--	--	--	--	0.4
Mono-(carboxyoctyl) phthalate (MCOP)	--	--	--	0.7	0.7	0.2	0.2	0.3	0.3
Mono-methyl phthalate (MMP)	--	0.2	1	1.1	1.1	0.5	0.5	--	--
Mono-(3-carboxypropyl) phthalate (MCPP)	--	0.4	0.2	0.2	0.2	0.2	0.2	0.4	0.4
Mono-*n*-octyl phthalate (MOP)	1.51	1.68	1.68	1.85	1.85	0.84	--	--	--
Cyclohexane-1,2-dicarboxylic acid mono hydroxyisononyl ester (MHNCH)	--	--	--	--	--	--	0.4	0.4	0.4
Cyclohexane-1,2-dicarboxylic acid mono carboxyisooctyl ester (MCOCH)	--	--	--	--	--	--	--	--	0.5
Mono-2-ethyl-5-carboxypentyl terephthalate (MECPTP)	--	--	--	--	--	--	--	--	0.2
Mono-2-ethyl-5-hydroxyhexyl terephthalate (MEHHTP)	--	--	--	--	--	--	--	--	0.4

Phytoestrogens and Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Daidzein	0.5	1.6	0.3	0.4	0.4	0.4	--	--	--
Enterodiol	0.8	1.5	0.3	0.04	0.04	0.04	--	--	--
Enterolactone	0.6	1.9	0.3	0.1	0.1	0.1	--	--	--
Equol	3	3.3	0.3	0.06	0.06	0.6	--	--	--
Genistein	0.3	0.8	0.3	1	0.2	0.2	--	--	--
O-Desmethylangolensin	0.2	0.4	0.2	0.2	0.2	0.2	--	--	--

Polycyclic Aromatic Hydrocarbon Metabolites

Chemical, *in urine, units*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2-Hydroxyfluorene *ng/L*	--	--	5.0	5.0	5.0	10.0	10.0	8.0	--
3-Hydroxyfluorene *ng/L*	--	2.0	5.0	5.0	5.0	10.0	10.0	8.0	--
9-Hydroxyfluorene *ng/L*	--	--	5.0	5.0	5.0	10.0	10.0	--	--
1-Hydroxyphenanthrene *ng/L*	--	3.5	5.0	5.0	5.0	10.0	10.0	9.0	--
2-Hydroxyphenanthrene *ng/L*	--	3.2	5.0	5.0	5.0	10.0	10.0	--	--
3-Hydroxyphenanthrene *ng/L*	--	3.6	5.0	5.0	5.0	10.0	10.0	--	--
2- & 3-Hydroxyphenanthrene *ng/L*	--	--	--	--	--	--	--	10.0	--
4-Hydroxyphenanthrene *ng/L*	--	--	5.0	5.0	--	--	--	--	--
1-Hydroxypyrene *ng/L*	--	--	5.0	5.0	5.0	10.0	10.0	70.0	--
1-Hydroxynaphthalene (1-Naphthol), *µg/L*	--	--	0.047	0.048	0.045	0.044	0.044	0.06	--
2-Hydroxynaphthalene (2-Naphthol), *µg/L*	--	0.002	0.031	0.013	0.042	0.042	0.042	0.09	--

Heterocyclic Amines

Chemical, *in urine, ng/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole (Trp-P-1)	--	--	--	--	--	--	--	0.79	--
2-Amino-3-methyl-9H-pyriodo[2,3-b]indole (MeA-α-C)	--	--	--	--	--	--	--	0.33	--
2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (Ph1P)	--	--	--	--	--	--	--	0.34	--
2-Amino-9H-pyrido[2,3-b]indole (A-α-C)	--	--	--	--	--	--	--	0.62	--
2-Amino-3-methylimidazo[4,5-f]quinoline (IQ)	--	--	--	--	--	--	--	0.37	--
2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole (Glu-P1)	--	--	--	--	--	--	--	0.31	--
2-Aminodipyrido[1,2-a:3',2'-d] imidazole (GLU-P2)	--	--	--	--	--	--	--	0.83	--
1-Methyl-9H-pyrido[3,4-b]indole (Harman)	--	--	--	--	--	--	--	4.59	--
1-Methyl-3-amino-5H-pyrido[4,3-b]indole (Trp-P-2)	--	--	--	--	--	--	--	0.63	--
9H-pyrido[3,4-b]indole (Norharman)	--	--	--	--	--	--	--	12.6	--

Volatile Organic Compounds (VOCs)

Chemical, *in whole blood, ng/mL except as noted*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
1,1,1-Trichloroethane (Methyl chloroform)	--	--	0.048	0.01	0.01	0.01	0.01	0.01	0.011
1,1,1,2-Tetrachloroethane	--	--	--	--	0.04	0.04	0.04	0.04	0.040
1,1,2,2-Tetrachloroethane	--	--	0.05	0.01	0.01	0.01	0.01	--	--
1,1,2-Trichloroethane	--	--	0.01	0.01	0.01	0.01	0.01	--	--
1,2,3-Trichloropropane	--	--	--	--	0.04	--	--	0.04	0.040
1,1-Dichloroethane	--	--	0.01	0.01	0.01	0.01	0.01	--	--
1,1-Dichloroethene (Vinylidene chloride)	--	--	0.009	0.009	0.009	0.009	0.009	--	--
1,2-Dibromo-3-chloropropane (DBCP)	--	--	0.1	0.1	0.1	0.1	--	--	--
1,2-Dibromoethane	--	--	--	--	0.015	0.015	0.015	0.015	0.015
1,2-Dichlorobenzene (*o*-Dichlorobenzene)	--	--	0.1	0.1	0.025	0.025	0.025	0.025	0.025
1,2-Dichloroethane (Ethylene dichloride)	--	--	0.01	0.01	0.01	0.01	0.01	0.01	0.010
cis-1,2-Dichloroethene	--	--	0.01	0.01	0.01	0.01	0.01	--	--
trans-1,2-Dichloroethene	--	--	0.01	0.01	0.01	0.01	0.01	--	--
1,2-Dichloropropane	--	--	0.008	0.008	0.01	0.01	0.01	--	--
1,3-Dichlorobenzene	--	--	0.05	0.05	0.025	0.025	0.025	0.025	0.025
1,4-Dichlorobenzene (Paradichlorobenzene)	--	0.12	0.12	0.011	0.04	0.04	0.04	0.04	0.04
1,4-Dioxane	--	--	--	--	--	0.5	0.5	0.5	0.500
2,5-Dimethylfuran	--	--	0.012	0.011	0.011	0.011	0.011	0.011	0.011
Benzene	--	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
Benzonitrile	--	--	--	--	--	--	--	--	0.150
Chlorobenzene	--	--	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Chloroethane	--	--	--	--	--	--	--	0.045	0.045
Cyclohexane	--	--	--	--	--	--	--	0.02	0.020
Dibromomethane	--	--	0.03	0.03	0.03	0.03	0.03	--	--
Dichloromethane (Methylene chloride)	--	--	0.07	0.25	0.25	0.25	0.25	0.25	0.250
Diethyl ether	--	--	--	--	--	--	--	0.04	0.040
Ethyl acetate	--	--	--	--	--	--	--	0.158	0.158

Chemical, *in whole blood, ng/mL except as noted*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Ethylbenzene	--	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
Furan	--	--	--	--	0.025	0.025	0.025	0.025	0.025
Heptane	--	--	--	--	--	--	--	0.1	0.100
Hexane	--	--	--	--	--	--	--	0.122	0.122
Hexachloroethane	--	--	0.011	0.011	0.011	0.011	0.011	--	--
Isobutyronitrile	--	--	--	--	--	--	--	--	0.040
Isopropylbenzene (Cumene)	--	--	--	--	0.04	0.04	0.04	0.04	0.040
Methylcyclopentane	--	--	--	--	--	--	--	0.02	0.020
Methyl-*tert*-butyl ether (MTBE), *pg/mL*	--	0.232	2.0	1.4	1.4	1.40	1.40	10.0	10.0
Nitrobenzene	--	--	0.3	0.3	0.32	0.32	0.32	0.32	0.320
Nitromethane, *pg/mL*	--	--	--	--	0.32	65.0	65.0	--	--
Octane	--	--	--	--	--	--	--	0.1	0.100
Styrene	--	0.03	0.03	0.03	0.03	0.03	--	--	--
Tetrachloroethene (Perchloroethylene)	--	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048
Tetrachloromethane (Carbon tetrachloride)	--	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Tetrahydrofuran	--	--	--	--	--	--	--	0.125	0.125
Toluene	--	0.025	0.025	0.025	0.025	0.025	--	0.025	0.025
Trichloroethene (Trichloroethylene)	--	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
ααα-Trifluorotoluene	--	--	--	--	--	--	--	0.04	0.040
Vinyl bromide	--	--	--	--	--	--	--	0.045	0.045
m-/p-Xylene	--	0.34	0.034	0.034	0.034	0.034	0.034	0.034	0.034
o-Xylene	--	0.049	0.049	0.024	0.024	0.024	0.024	0.024	0.024

Volatile Organic Compound (VOC) Metabolites

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
N-Acetyl-S-(2-carboxyethyl)-L-cysteine	--	--	--	6.96	--	--	6.96	6.96	--
N-Acetyl-S-(3-hydroxypropyl)-L-cysteine	--	--	--	13.0	--	--	13.0	13.0	--
N-Acetyl-S-(2-carbamoylethyl)-L-cysteine	--	--	--	2.20	--	--	2.20	2.20	--
N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine	--	--	--	9.40	--	--	9.40	9.40	--

Chemical, *in urine, µg/L*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
N-Acetyl-S-(2-cyanoethyl)-L-cysteine	--	--	--	0.500	--	--	0.500	0.500	--
N-Acetyl-S-(2-hydroxyethyl)-L-cysteine	--	--	--	0.791	--	--	0.791	0.791	--
N-Acetyl-S-(phenyl)-L-cysteine	--	--	--	0.600	--	--	0.600	0.600	--
N-Acetyl-S-(*n*-propyl)-L-cysteine	--	--	--	1.20	--	--	1.20	1.20	--
N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine	--	--	--	5.25	--	--	5.25	5.25	--
N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine	--	--	--	0.700	--	--	0.700	0.700	--
N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine	--	--	--	0.700	--	--	0.700	0.700	--
N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine	--	--	--	0.600	--	--	0.600	0.600	--
2-Thioxothiazolidine-4 carboxylic acid	--	--	--	11.2	--	--	11.2	11.2	--
N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine	--	--	--	2.0	--	--	2.0	3.00	--
2-Aminothiazoline-4-carboxylic acid	--	--	--	15.0	--	--	15.0	15.0	--
N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine	--	--	--	6.26	--	--	6.26	6.26	--
Phenylglyoxylic acid	--	--	--	12.0	--	--	12.0	12.0-	--
N-Acetyl-S-(2-hydroxypropyl)-L-cysteine	--	--	--	5.30	--	--	5.30	5.30	--
N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine	--	--	--	0.700	--	--	0.700	0.700	--
Mandelic acid	--	--	--	12.0	--	--	12.0	12.0	--
N-Acetyl-S-(trichlorovinyl)-L-cysteine	--	--	--	3.00	--	--	3.00	3.00	--
N-Acetyl-S-(benzyl)-L-cysteine	--	--	--	0.500	--	--	0.500	0.500	--
N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine	--	--	--	12.6	--	--	12.6	12.6	--
N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine	--	--	--	4.70	--	--	4.70	4.70	--
N-Acetyl-S-(dimethylphenyl)-L-cysteine	--	--	--	0.500	--	--	0.500	0.500	--
2-Methylhippuric acid	--	--	--	5.00	--	--	5.00	5.00	--
3- & 4-Methylhippuric acid	--	--	--	8.00	--	--	8.00	8.00	--

Organochlorine Pesticides and Metabolites (Pooled Samples after 2004)

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Aldrin	--	5.94	7.8	--	--	--	--	--	--
Dieldrin	--	10.5	7.8	--	--	--	--	--	--
Endrin	--	5.09	7.8	--	--	--	--	--	--

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
Heptachlor epoxide	--	10.5	7.8	--	--	--	--	--	--
Oxychlordane	14.5	10.5	7.8	1.46	1.4	14.14	0.92	1.3	--
trans-Nonachlor	14.5	10.5	7.8	0.77	1.4	2.19	0.92	1.3	--
p,p'-DDT	20.7	17.4	7.8	1.46	1.4	2.19	0.92	1.3	--
p,p'-DDE	18.6	8.3	7.8	4.02	1.4	3.68	3.1	1.8	--
o,p'-DDT	--	17.4	7.8	--	--	--	--	--	--
Hexachlorobenzene	118	31.4	7.8	4.17	1.4	3.11	1.7	1.3	--
beta-Hexachlorocyclohexane	9.36	6.76	7.8	1.46	1.4	2.19	0.92	1.3	--
gamma-Hexachlorocyclohexane	14.5	10.5	7.8	1.46	1.4	2.19	0.92	--	--
Mirex	14.6	10.5	7.8	1.46	1.4	2.19	0.92	1.3	--

Polybrominated Diphenyl Ethers and PBB 153 (Pooled Samples after 2004)

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,2',4'-Tribromodiphenyl ether (BDE 17)	--	--	1.0	0.6	0.6	0.59	0.33	0.26	--
2,4,4'-Tribromodiphenyl ether (BDE 28)	--	--	0.8	0.6	0.6	0.66	0.48	0.26	--
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)	--	--	4.2	1.6	0.6	0.64	0.70	1.0	--
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)	--	--	1.0	0.6	0.6	0.44	0.41	0.73	--
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)	--	--	2.4	0.6	0.6	0.44	0.19	0.26	--
2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)	--	--	5.0	1.2	0.6	0.56	0.37	0.44	--
2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)	--	--	1.4	0.6	0.6	0.44	0.71	0.26	--
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)	--	--	2.2	0.6	0.6	0.6	0.18	0.26	--
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)	--	--	0.8	0.6	0.6	0.58	0.18	0.26	--
2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)	--	--	1.7	0.6	0.6	0.49	0.21	0.26	--
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)	--	--	--	6	5.8	2.19	1.13	1.3	--
2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)	--	--	0.8	0.6	0.6	0.92	0.18	0.18	--

Polychlorinated Dibenzo-*p*-dioxins (Pooled Samples)

Chemical, *in serum, pg/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD)	55.9	10.3	13.0	2.4	4.22	4.5	--	--	--

Chemical, *in serum, pg/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	--	9.0	11.9	0.2	0.26	0.28	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	20.1	9.1	12.3	0.1	0.2	0.22	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD)	20.3	9.3	12.3	0.1	0.13	0.14	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD)	329.0	319.0	218.0	13.0	22.6	24	--	--	--
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD)	14.2	6.0	4.5	0.6	1.08	1.1	--	--	--
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)	12.1	5.8	3.8	0.4	0.74	0.78	--	--	--

Polychlorinated Dibenzofurans (Pooled Samples after 2004)

Chemical, *in serum, pg/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	13.5	7.0	8.6	1.03	1.78	1.9	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	7.0	8.6	0.19	0.33	0.35	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	12.7	6.5	7.4	0.3	0.51	0.55	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.6	6.1	7.9	0.1	0.18	0.19	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	12.7	6.0	8.3	0.2	0.35	0.37	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.9	5.8	8.2	0.11	0.2	0.21	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	35.6	21.0	12.0	1.37	2.37	2.6	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	13.2	5.8	7.1	0.47	0.81	0.85	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	12.7	5.5	6.8	0.51	0.88	0.92	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	11.9	5.2	6.0	0.26	0.45	0.48	--	--	--

Dioxin-like Polychlorinated Biphenyls: Coplanar PCBs (Pooled Samples after 2004)

Chemical, *in serum, pg/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	68.4	26.8	13.1	1.86	3.23	3.5	--	--	--
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	23.2	10.8	13.9	1.32	2.29	2.5	--	--	--
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	27.0	11.0	15.9	1.33	2.31	2.5	--	--	--

Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs (Pooled Samples after 2004)

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	12.4	10.5	0.4	0.31	0.3	0.37	0.19	0.26	--

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)	--	--	--	0.31	0.3	0.44	0.18	0.26	--
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	12.5	10.5	0.6	0.72	0.3	0.44	0.19	0.26	--
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	--	--	--	0.31	0.3	--	--	--	--
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	12.5	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	12.5	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	12.4	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	--	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--

Polychlorinated Biphenyls: Non-Dioxin-Like (Pooled Samples after 2004)

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,4,4'-Trichlorobiphenyl (PCB 28)	32.4	--	1.7	2.54	0.7	0.92	0.50	0.27	--
2,2'3,5'-Tetrachloro biphenyl (PCB 44)	--	--	0.4	0.36	0.3	--	--	--	--
2,2',4,5'-Tetrachloro biphenyl (PCB 49)	--	--	0.4	0.31	0.3	--	--	--	--
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	12.5	12.4	0.8	0.33	0.3	--	--	--	--
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	12.4	12.4	0.8	0.4	0.3	0.69	0.26	0.26	--
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	12.4	10.5	0.8	0.31	0.8	0.78	0.26	0.27	--
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	--	10.5	0.4	0.31	0.3	--	--	--	--
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)	12.5	10.5	0.6	0.31	0.3	0.44	0.18	0.26	--
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	25.7	10.5	0.6	0.59	0.3	--	--	--	--
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)	--	10.5	0.8	0.31	0.3	--	--	--	--
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	12.4	10.5	0.4	0.31	0.3	--	--	--	--
2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158)	41.1	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	12.4	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149)	10.5	--	0.4	0.31	0.3	--	--	--	--
2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)	--	10.5	0.4	0.31	0.3	--	--	--	--
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	55.6	10.5	1.1	0.31	0.3	0.59	0.21	0.26	--
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	17.2	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	12.5	10.5	0.4	0.31	0.3	--	--	--	--
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	12.5	10.5	0.4	0.31	0.3	--	--	--	--

Chemical, *in serum, ng/g lipid*	**1999-2000**	**2001-2002**	**2003-2004**	**2005-2006**	**2007-2008**	**2009-2010**	**2011-2012**	**2013-2014**	**2015-2016**
2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)	12.4	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	28.2	10.5	0.4	0.31	0.3	0.44	0.21	0.26	--
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	12.4	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	12.4	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)	--	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)	--	28.1	0.7	0.31	0.3	--	--	--	--
2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)	--	10.5	0.4	0.31	0.3	0.44	0.18	0.26	--
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)	--	10.5	0.4	0.31	0.3	0.44	0.7	0.26	--
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	--	28.1	0.7	0.31	0.3	0.44	1.1	0.26	--
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)	--	--	0.7	0.31	0.3	0.44	0.18	0.26	--

Appendix D. References for Biomonitoring Analytical Methods

Adducts of Hemoglobin

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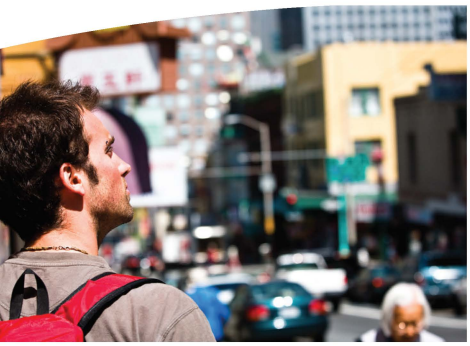

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