



Draft Three Year Priority Product Work Plan (2018-2020)

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1.0 Introduction and Background

The mission of the Department of Toxic Substances Control (DTSC, or “Department”) Safer Consumer Products (SCP) Program is to advance the design, development, and use of products that are chemically safer for people and the environment.

The SCP Program is charged with accelerating the quest for safer chemicals in consumer products. Through a robust and transparent process, the SCP regulations aim to reduce toxic chemicals in consumer products, create new business opportunities in the emerging green chemistry industry, and help consumers and businesses identify what chemicals are in the products they buy.

To accomplish these goals, the regulations establish a four-step process:

1. Identifying potential harmful chemicals and designating those as Candidate Chemicals;
2. Evaluating the safety of those chemicals in specific products and listing potentially harmful product-chemical combinations in regulation as Priority Products;
3. Requiring manufacturers to assess potentially safer alternatives for listed Priority Products through a robust Alternatives Analysis process; and then
4. Determining how best to minimize the potential for adverse impacts to human health and the environment through appropriate regulatory responses.

Release of the Work Plan initiates a process that gives stakeholders an opportunity to do two things: participate in the prioritization planning process, and provide DTSC with information to make sound prioritization decisions. DTSC’s Safer Consumer Product regulations require that the Work Plan include two elements:

1. A description of “the product categories that the Department will evaluate to identify product-chemical combinations to be added to the Priority Products list during the subsequent three years”; and
2. A “general explanation of the decision to select the identified product categories for evaluation.”

This Work Plan provides a general explanation of how DTSC selected the specific product categories and brief descriptions of the selected categories. It is intended to provide a higher level of predictability regarding potential regulatory actions DTSC will take in the future.

After DTSC published the first Priority Product Work Plan in April 2015, the SCP Program facilitated stakeholder engagement through workshops and webinars on Work Plan chemicals and product groups under evaluation, and met directly with many interested stakeholders. Engagement with stakeholders on the 2015-2017 Work Plan included:

- Opportunities for public input on the Draft Work Plan
- A webinar providing an overview of DTSC’s progress toward Priority Product selection and outline opportunities for input (November 15, 2016)
- A public workshop, “Perfluoroalkyl and Polyfluoroalkyl Substances in Carpets, Rugs, Indoor Upholstered Furniture, and Their Care and Treatment Products” (January 31, 2017)
- A webinar, “Stakeholder Discussion of Aquatic Monitoring and Hazard Traits of NPEs and Triclosan” (January 11, 2017)

- A public workshop, “Potential Aquatic Impacts and Continued Uses of Nonylphenol Ethoxylates and Triclosan” (February 8, 2017)
- A public workshop, “Potential Health and Safety Impacts of Chemicals in Nail Products” (March 2, 2017)
- A public workshop, “Lead-Acid Batteries and Alternatives” (November 6, 2017)

We will continue to engage stakeholders in a variety of forums throughout implementation of the 2018-2020 Work Plan.

Extensive stakeholder feedback was used to shape this Draft Work Plan. As the SCP Program continues to implement the regulations through the final 2018-2020 Work Plan, it will build on the first Work Plan. To that end, this Work Plan provides a measure of continuity from the 2015-2017 Work Plan by maintaining similar policy priorities and continuing to evaluate several product categories. This will allow DTSC to continue active product research and to build on the knowledge gained about the chemicals and products in the prior Work Plan.

How Did DTSC Choose Product Categories?

DTSC used a broad approach to choose the product categories identified in this Work Plan. With the wide array of factors to consider, we used stakeholder input, the goals and policy statements described in section 2.0, and our discretion under the SCP regulations to select product categories.

DTSC invited any interested stakeholder to submit Work Plan product category recommendations from October 6, 2017, through November 6, 2017. All comments received during that comment period, as well as the more than three hundred public comments received regarding the 2015-2017 Work Plan, were carefully considered in choosing the product categories for this Work Plan. A variety of stakeholders submitted comments, including industry trade associations, the public, non-governmental organizations, other California state boards, departments, offices, and agencies, the U.S. Environmental Protection Agency, and academic researchers.

DTSC will work over the next three years to move from the broad categories identified in this plan to specific product-chemical combinations that warrant consideration as potential Priority Products. DTSC will then engage in a formal rulemaking process to identify specific product-chemical combinations as Priority Products.

2.0 Goals and Policy Statements

DTSC established the following goals for the 2018-2020 Work Plan:

- To protect children from exposures to harmful chemicals, especially carcinogens, mutagens, reproductive toxicants, neurotoxicants, developmental toxicants, and endocrine disruptors.
- To protect California’s valuable and limited water resources and aquatic ecosystems from consumer-product derived chemical contamination.
- To protect Californians from exposure to harmful chemicals found in the indoor environment.
- To address exposures from harmful chemicals that migrate from consumer products into food.

To help achieve these goals, DTSC adopted the following policy statements:

1. DTSC will strive to protect children, women of child-bearing age, and pregnant women from exposures to harmful chemicals, especially carcinogens, mutagens, reproductive toxicants, neurotoxicants, developmental toxicants, and endocrine disruptors.

Children are especially susceptible to environmental toxicants like carcinogens, mutagens, reproductive toxicants, developmental toxicants, neurotoxicants, and endocrine disruptors. As they grow, children are more susceptible to harm from genetic damage and developmental toxins than adults. At the same time, certain exposure pathways are unique to children and can increase the amount of chemicals they are exposed to from the environment. Chemical exposures occur even before birth in utero. Post-natal ingestion may occur through breast milk and food sources or through non-dietary means such as hand-to-mouth behavior. Increased vulnerability coupled with increased exposures drives concern about this sensitive sub-population.

2. DTSC will strive to protect California's valuable and limited water resources and aquatic ecosystems from consumer-product derived chemicals contamination.

Many chemicals in consumer products are washed down the drain or transported in runoff to contaminate aquatic ecosystems. Some of these chemicals may not be removed by wastewater treatment plants. Untreated chemicals may be discharged from treatment plants to surface waters where they may adversely impact fish and other wildlife or end up in drinking water. Further, storm water typically flows directly to water bodies without treatment, carrying any pollutants with it.

3. DTSC will strive to protect Californians from chemicals found in the indoor environment.

People spend much of their time indoors – in their homes, places of employment, and schools. Chemicals released from products found indoors may accumulate in the indoor environment and present a cumulative exposure risk. The chemical content of durable goods found in the indoor environment may be especially impactful because of the long-term implications for exposures.

4. DTSC will strive to protect Californians from chemicals that migrate into food from food packaging.

A number of studies have shown that chemicals can migrate directly into food from some consumer products. Because some chemicals can move from product packaging into food, potential exposures to Californians may be significant and widespread. Numerous stakeholders identified this category as important and requested that DTSC address this route of exposure.

As DTSC evaluates product categories through the lens of these policy goals, we will take steps to consider especially vulnerable populations, and all of California's citizens. Note that a variety of other factors may also be considered depending on the nature of specific products. These factors may include,

for example: whether products in the category may disproportionately affect people who live or work in environmental justice communities; whether products in the category may disproportionately affect workers; the availability of biomonitoring data; or the potential for long-term or repeated exposures to Candidate Chemicals.

3.0 Product Categories

DTSC selected seven product categories that align with the Work Plan goals and policy statements. Five categories have been carried over from the 2015-2017 Work Plan:

- Beauty, personal care, and hygiene products
- Cleaning products
- Household, school, and workplace furnishings and décor
- Building products and materials used in construction and renovation
- Consumable office, school, and business supplies

Note that the names and definitions of some these carry-over categories have been modified from the 2015-2017 Work Plan for clarity or consistency with industry or regulatory naming conventions or to change the category scope.

DTSC has also added two additional categories – food packaging and lead-acid batteries. Clothing products and fishing and angling equipment will not be evaluated under this Work Plan. DTSC acknowledges that there are many other product categories that could have been included in this Work Plan, and other categories will be considered for subsequent Work Plans.

DTSC has endeavored to describe each product category in clear and concise terms. Where possible, DTSC has relied on existing statutory or regulatory definitions to help describe product categories.¹ This is important in providing clarity to the regulated community. It provides an opportunity for manufacturers to take proactive measures to consider the role of and necessity for any harmful chemicals in their products. As DTSC works to evaluate these product categories, we will engage product manufacturers and other stakeholders to gather additional information that will help to identify and evaluate products within each category.

The Work Plan does not specifically identify any product-chemical combinations as Priority Products, but only identifies categories from which we will propose future Priority Products. Per the regulations, we may only designate a Priority Product that falls within one of these categories unless we are instructed to take action on a chemical, product, or both through a legislative mandate or executive order, or if we grant a petition to add a product-chemical combination.²

We may solicit information from manufacturers and their supply chain partners as well as trade associations and others with relevant expertise. We may also: make targeted information requests to

¹ The Safer Consumer Product Regulations require DTSC to consider a variety of factors in evaluating products, including existing regulatory programs. In implementing this Work Plan, DTSC will carefully consider existing regulatory programs to avoid conflict with existing laws.

² The petition process is set forth in CAL. CODE REGS. tit. 22, §§ 69504-69504.1.

specific industry sectors; gather information through public workshops and comment periods; and issue “information call ins” as described in the SCP regulations.³ In keeping with our commitment to transparency, we will make as much of this information as possible publicly available consistent with the protections for trade secrets outlined in our regulations. We expect to engage in discussion with industry experts about product formulations, supply chain considerations, and industrial toxicology studies among other topics that can expand and refine our knowledge for the purposes of selecting Priority Products.

Beauty, Personal Care, and Hygiene Products

This category includes products that make contact with, or are intended to be rubbed, poured, sprinkled, sprayed on, or otherwise applied to the body for the purpose of maintaining hygiene, cleansing, beautifying, or altering the appearance.⁴ Examples of products in this category include cosmetics, hair care products, personal care products, and skin care products such as soaps, lotions, and cleansers. Many of these products are commonly found in the health and beauty sections of drug and department stores or used in spas and salons. This category was also included in the 2015-2017 Work Plan.

Californians use products in this category on a regular basis, and many contain Candidate Chemicals. According to surveys, the average person uses between six and 12 personal care products each day. According to a 2010 study of personal care product use in California households, personal care products are widely and frequently used by all ages, sexes, and socioeconomic groups [1]. Many products in that study were used daily, and many were used multiple times a day. Higher use of these products among women may be especially important for women of child-bearing age. Concurrent use of different products containing the same chemicals may contribute to aggregate exposures to those chemicals. Exposure to multiple chemicals in personal care products raises questions about chemical interactions and the effects of chemical mixtures.

There is a potential for prolonged and continual exposures to the Candidate Chemicals contained in personal care products because of repeated use and because some are designed to remain on the hair or skin for long periods of time. Products in this category may release volatile chemicals, vapors, or mists that increase the potential risk of inhalation exposures. According to data collected through the California Safe Cosmetics Program between 2009 and 2015, over 57,000 cosmetic products from nearly 500 manufacturers sold in California contained one or more of 77 unique chemicals identified as a carcinogen or a reproductive or developmental toxicant. Table 1 shows examples of some Candidate Chemicals that may be found in these products.

³ CAL. CODE REGS. tit. 22, § 69501.4(b)(2).

⁴ Part of this description was taken from the definition of “Cosmetics” in section 321, paragraph (i) of the federal Food, Drug and Cosmetics Act: <https://www.gpo.gov/fdsys/pkg/USCODE-2010-title21/pdf/USCODE-2010-title21-chap9-subchapII-sec321.pdf>. Although the Beauty, Personal Care, and Hygiene Products category in this Work Plan may contain products that aren’t normally considered “cosmetics,” the federal definition provides a good description of many types of products that may be included in this category.

Table 1. Selected examples of Candidate Chemicals found in beauty, personal care, and hygiene products

Chemicals or Chemical Classes	Functional Use	Hazard
Benzophenone-3	Protection against ultraviolet (UV) radiation	Endocrine toxicity, dermatotoxicity
Bisphenol A	Constituent of plastic coatings on some containers	Reproductive toxicity, developmental toxicity, endocrine toxicity
Diethanolamine	Preservative	Carcinogenicity, respiratory toxicity, cardiovascular toxicity, hematotoxicity
Formaldehyde	Fixative	Carcinogenicity, respiratory toxicity, hepatotoxicity, ocular toxicity
Phthalates	Plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Parabens	Preservative	Endocrine toxicity, reproductive toxicity
Triclosan	Antimicrobial/preservative	Endocrine toxicity, dermatotoxicity
Titanium dioxide	Protection against UV radiation	Carcinogenicity
Toluene	Fixative	Developmental toxicity, respiratory toxicity, cardiovascular toxicity, neurotoxicity, hepatotoxicity
Volatile organic compounds	Solvents	Carcinogenicity, respiratory toxicity, neurotoxicity, reproductive toxicity, developmental toxicity, endocrine toxicity

Biomonitoring data demonstrate human exposures to some of the Candidate Chemicals that may be found in these products [2, 3]. Additionally, the health of workers, including workers who live or work in environmental justice communities, may be adversely impacted by exposure to Candidate Chemicals in beauty, personal care, and hygiene products.

The Candidate Chemicals in these products may also impact the aquatic environment and drinking water. Some personal care products are designed to be rinsed off after they are applied; others may inadvertently be washed down the drain when people wash their hands or bathe. Products that are washed down the drain could be transported to surface waters, where the Candidate Chemicals may adversely impact fish and other wildlife or drinking water. The U.S. Geological Survey has detected personal care products in effluent from wastewater treatment plants [4] – an indication of inadequate removal of the chemical by the treatment plant.

DTSC will continue research on this category with a focus on chemicals and endpoints related to children, women of child-bearing age, and aquatic impacts. Special consideration may be given to workers who use these products.

Cleaning Products

This product category comprises air care products, automotive products, general cleaning products, or polish or floor maintenance products used primarily for janitorial, domestic, or institutional cleaning purposes. This conforms to the definition of “Designated Products” in the California Cleaning Product Right to Know Act of 2017.⁵ These sub-categories are further defined in the Act:

- “Air care product” means a chemically formulated consumer product labeled to indicate that the purpose of the product is to enhance or condition the indoor environment by eliminating unpleasant odors or freshening the air. Air fresheners are an example.
- “Automotive product” means a chemically formulated consumer product labeled to indicate that the purpose of the product is to maintain the appearance of a motor vehicle, as defined in Section 670 of the Vehicle Code, including products for washing, waxing, polishing, cleaning, or treating the exterior or interior surfaces of motor vehicles. “Automotive product” does not include automotive paint or paint repair products.
- “General cleaning product” means a soap, detergent, or other chemically formulated consumer product labeled to indicate that the purpose of the product is to clean, disinfect, or otherwise care for fabric, dishes, or other wares; surfaces include, but are not limited to, floors, furniture, countertops, showers, and baths or other hard surfaces such as stovetops, microwaves, and other appliances.
- “Polish or floor maintenance product” means a chemically formulated consumer product, such as polish, wax, or a restorer, labeled to indicate that the purpose of the product is to polish, protect, buff, condition, temporarily seal, or maintain furniture, floors, metal, leather, or other surfaces.

This product category was also included in DTSC’s 2015-2017 Work Plan.

Cleaning products are ubiquitous – used on a regular basis for a wide variety of applications. People may be exposed to Candidate Chemicals in these products both during and after use. People may get cleaning products directly on their skin or in their eyes. They may inhale vapors from volatile Candidate Chemicals emitted by cleaning products. This may be especially problematic when cleaning products are used indoors where ventilation may not be adequate.

⁵ CAL. HEALTH & SAF. CODE §§ 108952(a), (b), (f) & (n).

According to the National Institute of Occupational Health Sciences, 2.3 million people work in building custodial service occupations in the U.S., and another 1.4 million are employed as maids in hotels or in healthcare facilities.⁶ These workers can be expected to be at higher risk for exposure to Candidate Chemicals in cleaning products than the general public because of the amount of time they spend using these products on the job. A 2004 study estimated that the inhalation exposure to chemicals in cleaning products is significant in Californians [5].

There are studies suggesting that chemicals in cleaning products may adversely impact worker health [6].⁷ The California Department of Public Health has published several reports and fact sheets on work-related asthma among workers exposed to cleaning products.^{8,9} Epidemiological studies of cleaning workers and janitors have found that respiratory and dermatological diseases are the most common health maladies affecting these workers, and the occurrence of some of these adverse impacts is associated with the use of cleaning agents [7]. Table 2 highlights some of the Candidate Chemicals that may be found in cleaning products.

DTSC is concerned about additional factors that may make workers in this sector and their children especially vulnerable. Many of the cleaning professions are dominated by people of color, many of whom live in environmental justice communities and are subject to multiple environmental stressors. Hispanic and Asian women respectively comprise 47.3 percent and 17.3 percent of the work force in the “maids and housekeeping services” sector.¹⁰ The cleaning work force and related occupations are predominantly female, and many of those workers are of child-bearing age or pregnant. This raises concerns about in utero chemical exposures.

Table 2. Selected examples of Candidate Chemicals found in cleaning products

Chemicals or Chemical Classes	Functional Use	Hazard
Nonylphenol ethoxylates (NPEs)	Surfactants	Bioaccumulation, environmental toxicity
Acetaldehyde	Solvent	Carcinogenicity, respiratory toxicity, neurotoxicity, ocular toxicity, dermatotoxicity
2- Butoxyethanol	Solvent, glass cleaner	Respiratory toxicity
2-Butanone	Solvent	Bioaccumulation and environmental persistence

⁶ <https://www.cdc.gov/niosh/topics/cleaners/default.html>

⁷ https://www.osha.gov/Publications/OSHA_3569.pdf

⁸ <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Cleaning-Products.aspx>

⁹ <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/Pages/CLASS-Materials.aspx>

¹⁰ <https://www.bls.gov/cps/cpsaat11.htm>

1,4-Dioxane	Degreaser	Carcinogenicity, respiratory toxicity, cardiovascular toxicity, hepatotoxicity, ocular toxicity
Ethanolamines	Surfactant	Carcinogenicity, respiratory toxicity
Perchloroethylene	Solvent, spot remover	Carcinogenicity, neurotoxicity, respiratory toxicity, ocular toxicity
Phthalates	Emulsifier, plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Triclosan	Antimicrobial	Endocrine toxicity, dermatotoxicity
Formaldehyde	Preservative, chemical reactant	Carcinogenicity, respiratory toxicity, hepatotoxicity, ocular toxicity
Other volatile organic compounds (e.g., methyl ethyl ketone, toluene)	Solvents	Carcinogenicity, respiratory toxicity, neurotoxicity, reproductive toxicity, developmental toxicity, endocrine toxicity

In addition to the potential impacts of chemicals from cleaning products on human health, DTSC is concerned that cleaning products may get washed down the drain and enter aquatic ecosystems. In studies of contaminants in streams across the country, the U.S. Geological Survey found persistent detergent degradation products in 69 percent of streams tested and disinfectants in 66 percent of streams tested.¹¹

In deciding to include this product category in the Work Plan, DTSC concluded that this category strongly aligns with our policy concerns about women, children, and aquatic impacts. DTSC is also concerned that Candidate Chemicals contained in cleaning products may disproportionately adversely impact the health of lower-income workers that may live or work in environmental justice communities.

¹¹ <https://toxics.usgs.gov/highlights/mixtures/index.html>

Household, School, and Workplace Furnishings and Décor

This product category description was, in part, adapted from the definition of “furniture article” in the federal Consumer Product Safety Act regulations.¹² “Furniture article” means functional or decorative furniture articles including products such as beds, bookcases, chairs, chests, tables, dressers, desks, pianos, drapes, blinds, and sofas. This category also includes items that may be described as décor or decorative products including wall hangings or any other objects intended to beautify or add visual interest or utility to the interior space of a building. This category may also include some floor treatments, such as throw rugs and carpets, but does not include wall-to-wall carpets or other floor coverings that are permanently or semi-permanently affixed to the building by use of tack strips, adhesives, mortar, masonry, or glues. This product category also does not include electronic appliances or fixtures that are permanently affixed to the building as part of the building’s construction or renovation. A more limited version of this product category was included in DTSC’s 2015-2017 Work Plan, and multiple commenters support continued inclusion of this category in the Work Plan. The category has been expanded in two ways. First, we included mention of school furnishings and décor to be consistent with the Consumer Product Safety Act definition. Secondly, all Candidate Chemicals may be considered rather than the previous restriction to perfluoroalkyl and polyfluoroalkyl substances and flame retardants.

The Candidate Chemicals contained in these products may adversely impact the indoor environment [8]. Examples of the types of Candidate Chemicals that may be found in indoor air and dust are shown in Table 3. The average home takes up to three hours to fully exchange the indoor air.¹³ As a result, volatile chemicals released from furnishing and décor products may accumulate in indoor air to levels much higher than those found in outdoor air. The more time people spend indoors, the greater the potential for long-term exposure to the volatile Candidate Chemicals that may be released from these products.

Other Candidate Chemicals may be transferred from these products directly to the skin or released from these products into household dust, thereby increasing the potential for dermal or ingestion exposures. Numerous Candidate Chemicals have been detected in indoor dust [9]. Of particular concern is that there are Candidate Chemicals that persist in the environment for a long period of time, resulting in ongoing exposures.

Many of the Candidate Chemicals found in furnishings may be especially harmful to children because of their potential for endocrine disruption, neurotoxicity, and reproductive and developmental toxicity. Further, children have certain behaviors and resultant exposure pathways that increase their uptake of these chemicals. For instance, hand-to-mouth behavior in young children may result in the direct ingestion of chemicals released from furnishings and décor to indoor dust. Human biomonitoring studies in California have shown that the chemicals found in indoor dust can be found in the blood of children [10].

¹²16 C.F.R. § 1303.2(b)(4).

¹³ <https://www.cpsc.gov/Safety-Education/Safety-Guides/Home/The-Inside-Story-A-Guide-to-Indoor-Air-Quality/>

Table 3. Selected examples of Candidate Chemicals found in household, school, and workplace furnishings and décor

Chemicals or Chemical Classes	Functional Use	Hazard
Bisphenol A	Plastic constituent, flame retardant	Reproductive toxicity, developmental toxicity, endocrine toxicity
Chlorinated or brominated compounds and organophosphates	Flame retardants	Carcinogenicity, bioaccumulation, environmental persistence, endocrine toxicity
Formaldehyde	Adhesives, preservatives	Carcinogenicity, respiratory toxicity, hepatotoxicity, ocular toxicity
Lead	Present in some decorative items, electrical cords, rubber	Carcinogenicity, developmental toxicity, reproductive toxicity, neurotoxicity, bioaccumulation
Perfluoroalkyl and polyfluoroalkyl substances	Water and stain repellants	Reproductive toxicity, developmental toxicity, hepatotoxicity
Perchloroethylene	Solvent additive in certain sealants and polishes	Carcinogenicity, neurotoxicity, respiratory toxicity, ocular toxicity
Phthalates	Plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Triclosan	Antimicrobial	Endocrine toxicity, dermatotoxicity
Volatile organic compounds	Adhesives, plasticizer	Carcinogenicity, respiratory toxicity, neurotoxicity, reproductive toxicity, developmental toxicity, endocrine toxicity

Lastly, the Candidate Chemicals found in these products may have an impact on the aquatic environment. Some studies have shown that perfluoroalkyl compounds found in stain repellants that are often used to treat furnishings are ubiquitous in aquatic environments [11]. DTSC aims to protect California’s water resources and aquatic ecosystems by including this category in the Work Plan.

Building Products and Materials Used in Construction and Renovation

This product category includes products or materials used to construct, renovate, or repair any building designed or intended as a commercial, office, industrial, or child-occupied space where people work or learn, or that is designed for human habitation, or that contains a habitable space. Building products are integrated into the building structure as a permanent or semi-permanent part of the structure and are typically affixed to the building or comprise an integral part of the structure. This product category includes products such as cabinets, countertops, wall-to-wall carpets, tiles, linoleum, laminates, and wood that are permanently or semi-permanently fixed in place by means of adhesives, tack strips, or by other means, or that are designed to remain in place once installed. This product category does not include appliances such as ranges, refrigerators, dishwashers, clothes washers and dryers, air conditioners, humidifiers, and dehumidifiers.

DTSC is concerned about the potential for products in this category to adversely impact the indoor environment. There is a strong desire to develop more energy-conserving buildings in North America, which has correlated with the development and use of more synthetic building materials. Improved energy conservation has been achieved mainly by reducing exchanges between outdoor and indoor air. The combination of lower ventilation rates and the increased use of synthetic building materials has resulted in elevated levels of certain chemicals in the indoor environment, including some Candidate Chemicals [12]. When considered in concert with the increased time people spend indoors, there is high potential for long-term exposure to any Candidate Chemicals found in building products.

Examples of some Candidate Chemicals in building materials are shown in Table 4 [13]. Biomonitoring studies show that people are exposed to some of the Candidate Chemicals in these products and that human exposure is widespread. The presence of other Candidate Chemicals has been demonstrated by the fact that they have been detected in indoor air and house dust.

Table 4. Selected examples of Candidate Chemicals found in building products and materials used in construction and renovation

Chemical or Chemical Class	Functional Use	Hazard
Acrylates	Acrylic coatings	Carcinogenicity, respiratory toxicity, dermatotoxicity, neurotoxicity
Bisphenol A	Plastic constituent	Reproductive toxicity, developmental toxicity, endocrine toxicity
Chlorinated or brominated compounds and organophosphates	Flame retardants	Carcinogenicity, bioaccumulation, environmental persistence, endocrine toxicity
Chlorinated paraffins	Plasticizer, lubricant	
Formaldehyde	Adhesives and resins	Carcinogenicity, respiratory toxicity, hepatotoxicity, ocular toxicity
Isocyanates and diisocyanates	Polyurethane systems, adhesives	Carcinogenicity, respiratory toxicity, dermatotoxicity

Perfluoroalkyl and polyfluoroalkyl substances	Water and stain repellants	Reproductive toxicity, developmental toxicity, hepatotoxicity
Phthalates	Plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Styrene	Constituent of polystyrene and rubber products	Carcinogenicity, developmental toxicity, reproductive toxicity, ocular toxicity, neurotoxicity
Volatile organic compounds	Solvents	Carcinogenicity, respiratory toxicity, neurotoxicity, reproductive toxicity, developmental toxicity, endocrine toxicity

Candidate Chemicals in building products raise many of the same concerns seen in the previous section on furnishings and décor. Products in these categories have the potential for similar exposures and adverse impacts for both children and the aquatic environment. In the case of children, concerns arise about the potential for endocrine disruption, neurotoxicity, and reproductive and developmental toxicity. With regard to aquatic environments, similar exposure pathways and impacts are of concern. Perfluoroalkyl and polyfluoroalkyl substances are persistent bioaccumulative chemicals that are ubiquitous in the aquatic environment and are found in the tissues of wildlife all over the world [11].

Note that the Building Products category in the 2015-2017 Work Plan was narrower in scope, and focused on painting products, adhesives, sealants, and flooring. Stakeholders recommended retaining building products because of concerns about flame retardants, adhesives, composite wood products, insulation, coatings, and formaldehyde in building products. Although this category has been broadened from the prior Work Plan, we believe there is ample opportunity to streamline decision-making by leveraging progress made by manufacturers, retailers, large institutional buyers (hospitals, universities, and large corporations), and non-governmental agency efforts in reducing harmful chemical content in the built environment (e.g., the U.S. Green Building Council’s Building Health Initiative, the Healthy Building Network’s Pharos Building Product Library, the Health Product Declaration® Collaborative).¹⁴

Consumable Office, School, and Business Supplies

This product category includes any product that may be described as a consumable product that is used regularly within an office, place of business, home office, or school classroom during normal business or learning operations, and that is replaced on a regular, periodic basis. Consumables are used recurrently and depleted in the process of use. Examples include receipt tape, specialty paper products, markers, pencils, pens, tapes, glues, adhesives, 3D printer feedstocks, and ink and toner cartridges. This product category does not include durable goods¹⁵ such as printers, fax machines, other business machines, or furnishings.

¹⁴ <https://www.triplepundit.com/podium/buyers-club-flexes-market-muscle-favor-healthier-building-materials/>

¹⁵ Durable goods are not for immediate consumption and are able to be kept for an extended period of time.

Examples of Candidate Chemicals that may be found in these products are shown in Table 5 and include bisphenol A (BPA), bisphenol S (BPS), styrene, and some volatile organics. BPA and BPS are found in some specialty papers, and one study found that dermal exposure to BPA from these types of papers may lead to prolonged human exposures [14]. Styrene is emitted from the thermal ABS plastic feedstock used in desk-top 3D printers and may adversely impact indoor air quality [15, 16].

Table 5. Selected examples of Candidate Chemicals found in consumable office, school, and business supplies

Chemicals or Chemical Classes	Functional Use	Hazard
Bisphenol A and S	Color developer in cash register receipts/thermal papers	Reproductive toxicity, developmental toxicity, endocrine toxicity
Phthalates	Stabilizer/Plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Other volatile organic compounds (e.g., methyl ethyl ketone, toluene)	Solvents	Carcinogenicity, respiratory toxicity, neurotoxicity, reproductive toxicity, developmental toxicity, endocrine toxicity
Styrene	Component of ABS thermoplastic filament in 3D printers	Carcinogenicity, developmental toxicity, reproductive toxicity, ocular toxicity, neurotoxicity

DTSC included this product category due to concerns that people may be exposed to Candidate Chemicals when they use or handle these products. Some of these products may also release Candidate Chemicals that adversely impact indoor air. Children who use these products in school may also be at risk of exposure.

Food Packaging

Food packaging is any product that is used to package hot, cold, or room-temperature food items for wholesale sale to restaurants and grocery stores or for retail sale to consumers. Food packaging may be used for a variety of reasons including food preservation, transport and delivery to points of retail sale, to make a food product more attractive to consumers, to provide tampering resistance, or to provide a convenient means of transport by the consumer (e.g., cups for liquids or wrappers for fast-food items). The principal functions of modern food packaging are to protect food from external damage and contamination, contain the food to allow for transportation, and provide information to the consumer. Food packaging may be made from a variety of materials including paper, ceramic, plastic, glass, and metals.

DTSC included this product category in the Work Plan due to concerns regarding exposure to the Candidate Chemicals that are contained in food packaging. Some food packaging products contain Candidate Chemicals that have been detected in foods. Numerous studies have demonstrated that chemicals can migrate directly from food packaging into packaged foods – becoming what are known as “indirect food additives.” The migration of food package ingredients into foods provides a clear pathway for human dietary exposure, and numerous studies have shown that people are exposed to the chemical ingredients used in food packaging [17]. Table 6 identifies some of the Candidate Chemicals that may be found in food packaging.

A number of studies have demonstrated a correlation between the ingestion of packaged foods and exposure to certain Candidate Chemicals such as phthalates, BPA, and perfluorochemicals [18-20]. In fact, the primary route of BPA exposure is food, and perfluorochemicals used in food packaging are detectable in human serum and milk [21]. A recent study reported that 175 chemicals with known hazard properties are used in food contact packaging in Europe and the United States, and some of these have been classified as carcinogens, mutagens, or reproductive toxins [22].

Table 6. Selected examples of Candidate Chemicals found in food packaging

Chemical or Chemical Class	Functional Use	Hazard
Bisphenol A and S	Constituent of plastic resin lining food and beverage cans	Reproductive toxicity, developmental toxicity, endocrine toxicity
Perfluoroalkyl and polyfluoroalkyl substances	Create grease-proof and water-proof coatings for food packaging	Reproductive toxicity, developmental toxicity, hepatotoxicity
Phthalates	Plasticizer	Carcinogenicity, endocrine toxicity, reproductive toxicity, developmental toxicity, environmental persistence
Styrene	Constituent of polystyrene and rubber products	Carcinogenicity, developmental toxicity, reproductive toxicity, ocular toxicity, neurotoxicity

DTSC is concerned that individuals who live and work in environmental justice communities may be at especially high risk for dietary exposure to certain Candidate Chemicals found in food packaging products. A report by the U.S. Department of Agriculture concluded that the largest food expenditure by the lowest-income households is for foods that included canned and packaged prepared foods, and in a study of highly consumed canned foods, BPA was found in 91 percent of the canned foods tested [23].¹⁶ DTSC is also concerned about potential adverse impacts to children from Candidate Chemical exposure from food packaging. Some Candidate Chemicals found in food packaging may be especially harmful to children due to the potential for endocrine disruption, neurotoxicity, and reproductive and developmental toxicity. A study of U. S. preschool children ages 23 to 64 months suggests that diet contributes 95 percent of childhood exposure to BPA, and that solid food is a significant contributor [24].

¹⁶ <https://www.ers.usda.gov/publications/pub-details/?pubid=44191>

DTSC is also concerned about the potential impact of some food packaging ingredients on the environment throughout the product life-cycle. Some food packaging may be recycled, while other food packaging, especially fast-food packaging, is typically discarded after use [25]. Hazardous chemicals found in food packaging may be a problem if those chemicals are incorporated into new products. This provides an additional exposure pathway to downstream users. Some food packaging ends up in the municipal waste stream headed for the local landfill. Increased municipal efforts to recycle compost organic waste may result in further exposures as compost is applied to land. However, much food packaging simply becomes litter. This discarded food packaging may leach chemical ingredients into the environment. Perfluoroalkyl and polyfluoroalkyl substances compounds found in some fast-food packaging are persistent and bioaccumulative chemicals ubiquitous in the aquatic environment and are found worldwide in wildlife tissues.¹⁷ BPA has also been found in aquatic ecosystems and fish [26].

Stakeholder concerns about food packaging have increased. DTSC received a petition for listing BPA in food cans as a Priority Product. While DTSC denied the petition, the petitioner provided strong support that this potential source of BPA exposure may warrant further investigation. There are proposed legislative actions in several states including California to address concerns about harmful chemicals in food packaging. In researching this category, DTSC will take special care to consider other regulatory authorities and whether or not they are providing adequate protections to people and the environment.

Lead-Acid Batteries

In 2016 Governor Brown and the California Legislature required that DTSC include lead-acid batteries in its 2015-2017 Work Plan for consideration as a potential Priority Product.^{18,19} DTSC began research on exposures and hazards associated with lead-acid batteries in 2017 and will continue that work under this Work Plan. As part of its preliminary research, DTSC held a public workshop to gather stakeholder input on November 6, 2017. DTSC continues to actively evaluate whether lead-acid batteries (in all their forms) should be designated a Priority Product.

Lead-acid batteries are found in a wide variety of forms and functions (see Table 7), the most common being 12-volt car batteries. Lead-acid batteries contain three Candidate Chemicals: lead, arsenic, and sulfuric acid. Exposures of lead to workers and neighboring areas may occur during recycling and manufacturing operations. Lead exposures are known to cause neurological as well as other effects, and arsenic is a carcinogen. Lead exposure to children is especially of concern since there is no known threshold concentration for neurological effects.

Inclusion of this category in the Work Plan allows DTSC to finalize evaluation of lead-acid batteries as a potential Priority Product.

Table 7. Types of lead-acid batteries

Category	Examples
Vehicle starting, lighting, and ignition	Cars, motorcycles, trucks, buses, recreational vehicles
Small, sealed forms	Consumer electronics, mining lanterns

¹⁷ https://www.niehs.nih.gov/health/materials/perflourinated_chemicals_508.pdf

¹⁸ February 17, 2016: <https://www.gov.ca.gov/news.php?id=19317>

¹⁹ CAL. HEALTH & SAF. CODE § 25253.5.

Mobility applications	Scooters, golf carts, forklifts
Uninterruptible power supply	Emergency lighting, cell-phone towers, hospitals, computer centers
Utility-scale energy storage	Wind farms, solar installations

4.0 Implementation of the Work Plan

As DTSC implements this Work Plan, it expects to continue productive interactions with stakeholders and to implement other lessons learned over the previous three years.

Publication of this Work Plan is only the beginning of the process for evaluating products over the next three years. Initial information will be gathered about potential Priority Products via extensive research, information call-ins, and public workshops. Priority Products will be identified from the seven product categories after robust scientific review and information exchange with all stakeholders, including industry experts, government agencies, academic researchers, and non-governmental organizations. Multiple iterations of research and stakeholder engagement may be necessary to properly identify and define products in advance of rulemaking. DTSC will continue to seek and welcome input from a wide variety of sources. Engagement with all stakeholders has been, and will continue to be, critical for us to successfully implement this Work Plan.

Listing a product category in the Work Plan does not mean it is subject to regulation, and the simple act of listing a product category in the Work Plan does not create any new legal obligations. For example, the listing of a product category or specific product in the Work Plan does not mean that DTSC intends to prohibit or restrict the sale of any products. The identification of a product category is also not meant to imply that we have made any determinations regarding the safety of any products that might be included within that category. The listing of a product category in the Work Plan means only that DTSC intends to evaluate products within that category. Only specific products that are eventually designated as Priority Products after stakeholder engagement and through a formal rulemaking process would be subject to any regulatory requirements. Any listing of a product as a Priority Product simply begins a process where manufacturers of that product are asked to determine if the product can be made safer through the Alternatives Analysis process. An outcome is not predetermined when listing a Priority Product; rather, the outcome is determined in response to the alternatives that manufacturers evaluate and propose.

Because the Work Plan does not identify any Priority Products, it similarly does not identify any responsible entities or establish any requirements on manufacturers for compliance with the SCP regulations.

5.0 Notes on Terminology

Safer Consumer Products Regulations – References to the SCP regulations in this document are to Chapter 55 of Division 4.5 of Title 22 of the California Code of Regulations.

Priority Product – The SCP regulations define a Priority Product as “a product-chemical combination identified and listed as a Priority Product by the Department [of Toxic Substances Control] under section

69503.5 [of title 22 of the California Code of Regulations].” While a product-chemical combination does not formally become a Priority Product until DTSC regulations designating it as such take effect, this document sometimes refers to a “proposed” or “potential” Priority Product. The word “proposed” should be interpreted broadly here. A proposal could be an informal announcement made by releasing a draft document, a statement at a public workshop, or publication of a Notice of Proposed Rulemaking.

Candidate Chemical/Chemical of Concern – The SCP regulations identify a set of authoritative lists.²⁰ Any chemical on any of those authoritative lists is a Candidate Chemical. DTSC has established a searchable Candidate Chemical database.²¹ However, it should be noted that the database requires updating from time to time because the authoritative lists can, and do, change. Anytime an authoritative list identified in the SCP regulations is updated to add new chemicals, those chemicals automatically become Candidate Chemicals, regardless of whether the Candidate Chemical database has been updated to include those chemicals.

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²⁰ CAL. CODE REGS. tit. 22, § 69502.2.

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