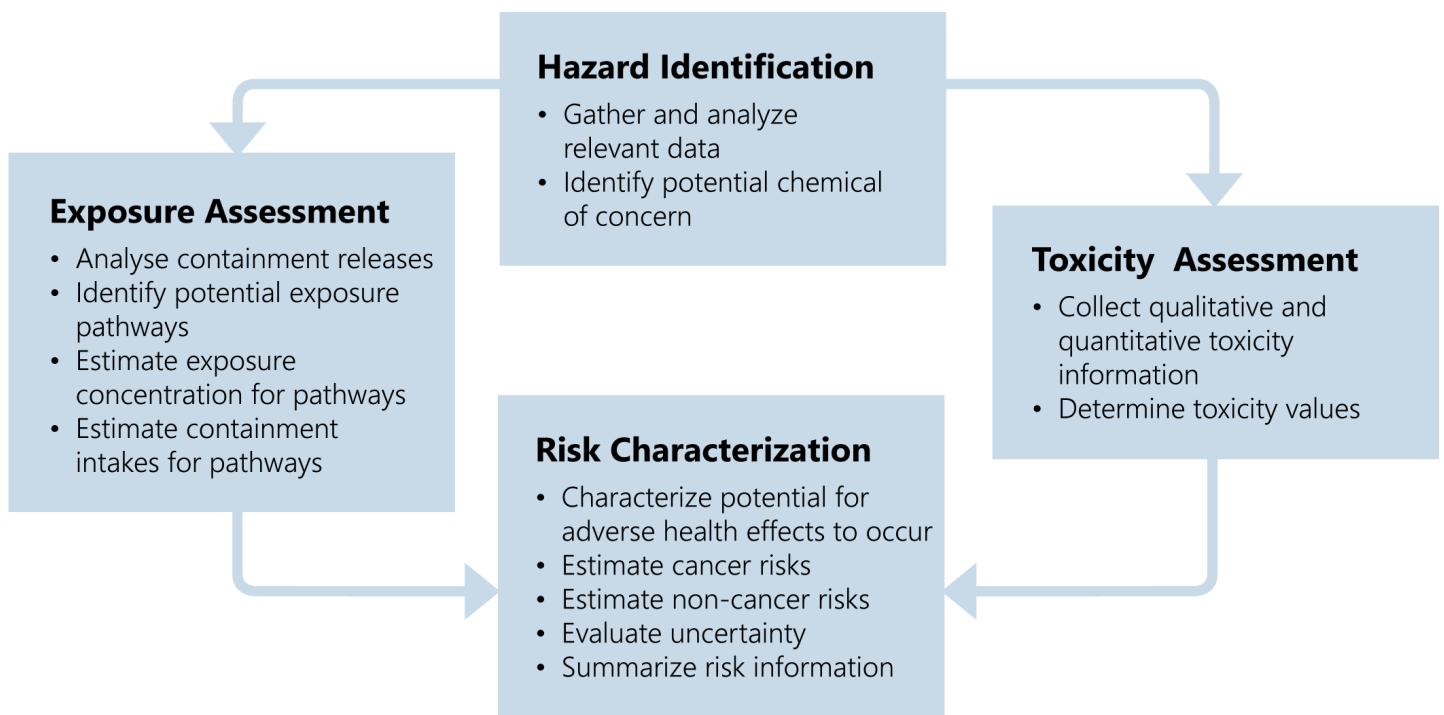


DTSC's Human Health Risk Assessments Quick Reference Guide

A Human Health Risk Assessment (HHRA) is a process to determine if contaminants detected at a site are of concern to human health and the environment. The HHRA falls under the evaluation step of the voluntary agreement process, and involves using environmental data to estimate the nature, magnitude, and probability of adverse health effects on people who may be exposed to the contaminated environmental media (e.g., soil, soil gas, groundwater, surface water), now and in the future. Voluntary agreement projects use the HHRA to make decisions about allowable use or reuse of the property, and to facilitate an effective assessment and cleanup strategy to ensure safe end use. DTSC's Human and Ecological Risk Office (HERO) should be involved in the scoping meeting for new voluntary agreements in order to provide feedback and guidance on the HHRA process.



Source: [Risk Assessment Guidance for Superfund \(RAGS\)](#)

There are four steps to the HHRA process:

- **Hazard Identification:** Data collected at a site are used to determine what chemicals are present and whether they can cause effects (both cancerous and noncancerous) harmful to people who may come in contact with the contaminated media.
- **Exposure Assessment:** This step identifies current and potential future populations who may come in contact with the site's contaminants; the various media that may have been affected by the contamination; pathways of exposures for potentially exposed populations (through ingestion, inhalation, or absorption through the skin); and estimated contaminant concentrations (intake rates) that may be taken up via the various exposure pathways.
- **Toxicity Assessment:** This step incorporates toxicity information of the chemicals into the HHRA process. DTSC recommends first consulting [Appendix I of the Toxicity Criteria Rule](#). The [Toxicity Criteria Rule](#) is a list of required toxicity values for specific chemicals to be used in human health risk assessments, risk-based screening levels and the development of risk-based remediation goals. If toxicity values for the chemical of interest are not listed in the Toxicity Criteria Rule, consult [U.S. EPA's Regional Screening Level](#) tables. Please consult HERO for additional guidance.
- **Risk Characterization:** This step combines information from the previous steps to evaluate cumulative cancer risks and noncancer hazards posed by contaminants at the site to potentially exposed humans. This information is used to determine whether the site is safe, or if contaminants are present at levels posing unacceptable risks to people and the environment,

requiring remediation of contaminated media. Risk management decisions are developed based on the results of cumulative cancer risk and noncancer hazard estimates for the site.

An Uncertainty Analysis is included as part of the risk assessment process to discuss: (a) the sources and degrees of uncertainty associated with the data collected at the site; (b) exposure assumption and toxicity information used to estimate cancer risks and noncancer hazards to populations; (c) and assumptions and input variables associated with the models employed in the assessments. This information should also be used by the risk managers and incorporated into the risk management decisions for the site, such as the need for remediation and/or operation and maintenance.

Please visit [DTSC's HERO website](#) for details on risk assessment guidance and documents, including:

[DTSC's Preliminary Endangerment Assessment Guidance Manual](#) for the Human Health Screening Evaluation, as well as DTSC's perspective on data collection, analysis, and reporting

[DTSC HHRA Note 1](#): Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities

[DTSC HHRA Note 2](#): Soil Remedial Goals for Dioxins and Dioxin-like Compounds for Consideration at California Hazardous Waste Sites

[DTSC HHRA Note 3](#): DTSC-modified Screening Levels (DTSC-SLs)

[DTSC HHRA Note 4](#): Screening Level Human Health Risk Assessments

[DTSC HHRA Note 5](#): Health-based Indoor Air Screening Criteria for Trichloroethylene (TCE)

[DTSC HHRA Note 6](#): Recommended Methodology for Evaluating Site-Specific Arsenic Bioavailability in California Soils

[DTSC HHRA Note 8](#): Recommendations for Evaluating Polychlorinated Biphenyls (PCBs) at Contaminated Sites in California and [DTSC's PCB Evaluation Quick Reference Guide](#)

[Ecological Risk Assessment](#) section on the HERO website for details on the Ecological Risk Assessment process

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