

# Updates from the DTSC Human and Ecological Risk Office (HERO)

21<sup>th</sup> Annual CUPA Training Conference  
February 25, 2019  
Anaheim, CA

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# Topics

- Final Regulation: Toxicity Criteria for Human Health Risk Assessment (Toxicity Criteria Regulation)
- Risk Assessment Guidance Documents
- HHRA Note 8 on Polychlorinated Biphenyls (PCBs)
- Perfluoro and PolyfluoroAlkyl Substances (PFAS)



# Toxicity Criteria Regulation

- Effective September 4, 2018 (Codifies existing practice)
- Sections (68400.5 and 69020-69022) added to the California Code of Regulations, Title 22, Division 4.5:
  - Consistent with California Health and Safety Code
  - Ensure protection of the entirety of California's diverse population
  - Ensure toxicity criteria are consistently applied at **all** California sites
  - Establish an Applicable or Relevant and Appropriate Requirement (ARAR) for federal facilities in California.



# Toxicity Criteria Regulation

- **Specifies the following order for the source of toxicity criteria:**
  1. OEHHA's peer-reviewed criteria listed in Appendix I of the Rule
  2. U.S. EPA IRIS toxicity criteria
  3. Values from other sources
- For risk assessment, screening levels, and remediation goals
- Applicable to all hazardous waste & hazardous substances facilities in California



# DTSC Risk Assessment Guidance

- **Preliminary Endangerment Assessment (PEA) Guidance Manual** (Revised October 2015)
- **HERO Human Health Risk Assessment (HHRA) Notes**
- Vapor Intrusion guidance documents:
  - **Advisory - Active Soil Gas Investigations** (July 2015)
  - **Guidance for the Evaluation & Mitigation of Subsurface Vapor Intrusion to Indoor Air** (October 2011)
  - **Vapor Intrusion Mitigation Advisory** (October 2011)
  - **Vapor Intrusion Public Participation Advisory** (March 2012)



# HERO HHRA Notes on Methodology

- **HHRA Note 1:** Recommended DTSC Default Exposure Factors for Use in Risk Assessment (September 2014)
- **HHRA Note 3:** DTSC-modified Screening Levels (June 2018)
  - ✓ Soil, tap water and air screening values that differ from USEPA's Regional Screening Levels (RSLs)
- **HHRA Note 4:** Screening Level Human Health Risk Assessments (Updated October 2016)



# HERO HHRA Notes on Contaminants

- **HHRA Note 2:** Soil Remedial Goals for Dioxins and Dioxin-like Compounds (April 2017)
- **HHRA Note 5:** Health-based Indoor Air Screening Criteria for Trichloroethylene (April 2014)
  - ✓ Accelerated/Urgent Response Action Levels for residential and commercial/industrial scenarios (same as USEPA)
- **HHRA Note 6:** Recommended Methodology for Evaluating Site-Specific Arsenic Bioavailability in California Soils (9/2017)



# HERO HHRA Note 8 (April 2018)

## **Recommendations for Evaluating Polychlorinated Biphenyls (PCBs) at Contaminated Sites in California**

- ✓ Regulatory framework
- ✓ Sample collection
- ✓ Analytical methods
- ✓ Data evaluation
- ✓ Toxicity factors/risk assessment
- ✓ Threshold concentrations & cleanup goals





# HERO HHRA Note 8 (April 2018)

## Key Laws/Regulations

- ❑ California Code of Regulations (CCR), Title 22, Division 4.5
- ❑ USEPA Toxic Substances Control Act (TSCA):

<b>PCB Articles, Containers, Liquids (40 CFR 761.60)</b>	<b>PCB Remediation Waste (40 CFR 761.61)</b>	<b>PCB Bulk Product Waste (40 CFR 761.62)</b>
transformers, capacitors, circuit breakers, hydraulic fluids, cutting oils, PCB containers	soil, sediment, sludge, building floors and walls impacted by PCBs	fluorescent light ballasts; building products (caulking, adhesives, sealants, roofing/siding)



**Table 3.1 Available Sample Types for Evaluating Exposures and Health Risks**

SAMPLE TYPE	EXPOSURE PATHWAYS EVALUATED		
	Ingestion	Dermal	Inhalation
Soil or outdoor dust (a)	X (c)	X (c)	X (c)
Wipes (b)	X (d)	X (d)	(f)
indoor dust (a)	X (c)	X (d)	(f)
Chips and cores (a)	X (e)	X (e)	(f)
Air (a)	na	na	X (c)

**Notes: This table includes possible sample types and potentially complete exposure pathways (na: not applicable). For a specific site, the CSM will be used to determine which samples will be collected and which exposure pathways will be evaluated.**

(a) Units in milligrams or micrograms of PCBs per kilogram (for soil, bulk dust and chip/core samples) or per cubic meter (for air samples).

(b) Units in micrograms PCBs per unit surface area (typically 100 square centimeters with a wipe).



**Table 4.1 Common Laboratory Methods for PCB Analysis**

<b>Analysis</b>	<b>Method</b>	<b>Estimated Cost</b>	<b>Typical Reporting Limit</b>
Aroclors	EPA 8082 (GC-ECD*)	Low (\$50-150/sample)	~ 33 µg/kg (solid) ~ 1 µg/L (aqueous)
Homologs	EPA 680/8270 (GC-LRMS*)	Medium (~\$400/sample)	~ 1 µg/kg (solid) ~0.1 µg/L (aqueous)
Congeners	EPA 1668 (HRGC-HRMS*)	High (\$400-1000/sample)	~ 0.002 µg/kg (solid) ~ 0.00002 µg/L (aqueous)

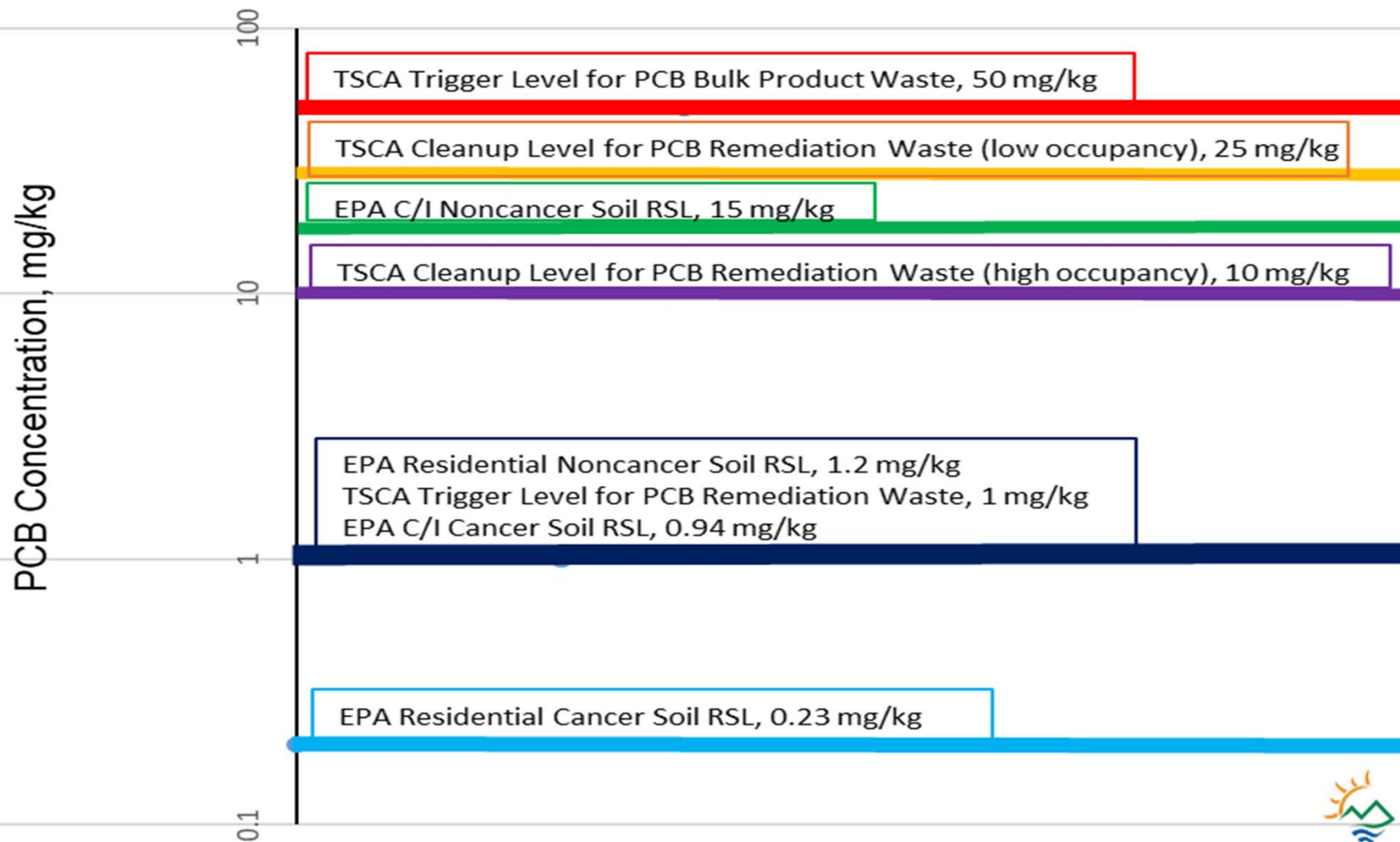
\*GC-ECD: gas chromatography - electron capture detector

GC-LRMS: gas chromatography - low resolution mass spectrometry

HRGC-HRMS: high resolution gas chromatography - high resolution mass spectrometry



Figure 7.1 Regulatory Threshold Values for PCBs



# Additional Resources

- HERO Note 8: Frequently Asked Questions (FAQs)
- DTSC Voluntary Agreements: Polychlorinated Biphenyl (PCB) Evaluation Quick Reference Guide (2018)
- USEPA, PCB Facility Approval Streamlining Toolbox (FAST) – A Framework for Streamlining PCB Site Cleanup Approvals (May 2017)



## DTSC's Polychlorinated Biphenyl (PCB) Evaluation Quick Reference Guide

Polychlorinated biphenyls (PCBs) are mixtures of 200-plus individual chlorinated compounds (known as congeners). PCBs were used in many applications like coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs ended in the U.S. in the late 1970s because they can cause harmful effects to human health and the environment. PCBs can be found in sources such as fluorescent light ballasts and electrical devices with PCB capacitors, hydraulic oils, and building materials. PCBs are toxic, highly persistent in the environment, and bioaccumulate. There are no known natural sources of PCBs.

Although the Department of Toxic Substances Control (DTSC) is a lead regulatory agency for site cleanups in California, engagement with the U.S. Environmental Protection Agency (U.S. EPA) is required when addressing PCB contaminated sites. Since Toxic Substances Control Act (TSCA) PCB regulations are not delegated, U.S. EPA is the regulatory lead for the cleanup of PCBs under the TSCA PCB cleanup requirements in 40 CFR 761. For more details, see Section A(4)(e), PCB FAST (PCB Facility Approval Streamlining Toolbox.)

If PCBs are detected at levels that may require cleanup:

- 1 DTSC will notify U.S. EPA of PCB contamination before full characterization/cleanup plan formulation.
- 2 U.S. EPA may require additional PCB characterization and/or information to determine if TSCA applies.
- 3 If U.S. EPA determines PCBs are not subject to TSCA, DTSC will remain the lead, and U.S. EPA may be available for technical support.
- 4 If subject to TSCA, U.S. EPA will assume the lead only for the cleanup of PCBs, will review reports and other deliverables, and will continue to closely coordinate with DTSC on site-specific PCB matters.
- 5 Some contaminants (e.g., chlorobenzene) that U.S. EPA cannot address under TSCA may enhance the mobility of PCBs. In those situations, U.S. EPA will work closely with DTSC in the context of impacts on the cleanup of PCBs.
- 6 If an institutional control is needed because PCBs are left in place above the unrestricted land use goals, DTSC will implement a Land Use Covenant in consultation with U.S. EPA; see Section III.B.10, PCB FAST.

### Resources

There are several documents to guide the data collection/evaluation of PCBs in California:

[Human Health Risk Assessment \(HHRA\) Note 8: Recommendations for Evaluating Polychlorinated Biphenyls \(PCBs\) at Contaminated Sites in California – April 2018](#)

[U.S. EPA Regional Screening Levels](#)

[Preliminary Endangerment Assessment Guidance Manual](#)

[Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers](#)

[U.S. EPA's PCB Facility Approval Streamlining Toolbox \(PCB FAST\)](#)

The PCB Facility Approval Streamlining Toolbox (PCB FAST), used for U.S. EPA-lead projects, is designed to help parties interested in cleaning up a PCB-impacted site. PCB FAST focuses on establishing a collaborative working relationship and includes tools to prepare adequate and appropriate cleanup notifications and applications. A discussion on cleanup levels is also included. DTSC recommends the use of PCB FAST along with aforementioned DTSC resources.

### Analytical Methodology and Action Levels

DTSC and U.S. EPA require Method 8082 for PCB analysis, and recommend Method 1668 or 680 on select samples to provide a detailed speciation of PCBs in certain situations. U.S. EPA's regulations require the use of Method 3540C (Soxhlet) or 3550C (Ultrasonic) for extraction of PCBs. U.S. EPA prefers the use of PCB extraction Method 3540C.

U.S. EPA publishes [Regional Screening Levels \(RSLs\)](#) for total PCBs (0.23 and 0.94 mg/kg for residential and commercial/industrial use, respectively) and individual Aroclors and dioxin-like congeners. For detailed information on the application of RSLs refer to the resources list above).

For more information, contact:

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**HERO Quarterly Updates:**

<http://www.dtsc.ca.gov/AssessingRisk/index.cfm>

