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## San Francisco Bay Regional Water Quality Control Board

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SUBJECT: Update to Environmental Screening Levels

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Water Board staff has completed an update to the Environmental Screening Levels (ESLs), which consists of this cover memo in addition to four main elements:

1. ESL Workbook (Microsoft Excel 2010 Workbook) – includes the following:
  - a) Tier 1 and Summary Tables
  - b) Tier 2 Interactive Tool
  - c) Screening Level Calculation Tables
  - d) Input Parameter Tables
2. PDF Version of ESL Summary Tables – includes all groundwater, soil, and vapor ESLs
3. User's Guide: Derivation and Application of Environmental Screening Levels
4. Frequently Asked Questions (FAQs)

All four elements were previously updated in December 2013. This cover memo provides a summary of changes made to the Workbook and User's Guide for this update.

### **ESLs Workbook Update**

The Workbook structure and look have been significantly revised, although many screening levels are the same or similarly derived as previous. The primary changes were:

- Workbook structure: We re-organized the Workbook and reduced the number of tables by about half. The basic structure consists of four groups of tables listed above (items 1a through 1d).
- All ESLs:
  - The former ceiling value ESLs combined both nuisance/odor and gross contamination concerns into one screening level. However, since they are very different environmental concerns we have split them into separate screening levels.

- TCE indoor air response action levels and trigger levels for soil gas and groundwater are identified on ESL Table T2-1 when TCE is selected, consistent with our October 2014 *Draft Interim Framework for Assessment of Vapor Intrusion at TCE-Contaminated Sites in the San Francisco Bay Region*.
- Screening levels for TPH Stoddard solvent have been added.
- Groundwater ESLs:
  - Dermal contact was added to the health-risk-based groundwater direct exposure Drinking Water ESLs, which are now called Tapwater ESLs.
  - The new, default groundwater vapor intrusion scenario is based on shallow groundwater (first groundwater less than 10 feet bgs) and coarse-grained soil. Previously, the groundwater vapor intrusion scenarios were only for deep groundwater ( $\geq 10$  feet bgs) and no screening levels were available for a shallow-groundwater scenario.
  - Surface water quality standards for bioaccumulation and human consumption of aquatic organisms previously were presented in a specific ESL Workbook table, but were not considered by the interactive tool or the Tier 1 ESL. These values are now automatically evaluated for selection of the final Ecological Aquatic Habitat ESL. These criteria are listed as Seafood Ingestion screening levels in Table W-2.
- Soil ESLs: The urban terrestrial habitat soil ESLs have been removed because the methodology is outdated.
- Subslab/Soil Gas ESLs: Default subslab soil gas to indoor air attenuation factors for residential and commercial buildings have been adopted and incorporated into the subslab/ soil gas ESLs. Technical justification for these attenuation factors is presented in a separate memorandum (Appendix B of the User's Guide).
- Input Tables – The toxicity values were checked and updated in 2015. The toxicity value hierarchy is called out in the User's Guide. Exposure factors also were updated.
- General – CAS numbers have been added to all tables. For the composite exposure ESLs (e.g., soil direct contact that addresses incidental ingestion of soil particles, inhalation of dust and vapors, and dermal contact), the intermediate calculations are shown in the calculations tables.

### **User's Guide Update**

The User's Guide has been significantly revised. The new structure is:

- Chapter 1 introduces the ESLs, discusses the environmental concerns in the Basin Plan, and how the ESLs are used in site evaluations;
- Chapter 2 presents the default conceptual site model inherent to the Tier 1 ESLs and a step-by-step guide how to select Tier 2 ESLs.

- Chapters 3 through 8 summarize the methodologies used to develop:
  - Ch. 3 – Human Health Direct Exposure (ingestion, inhalation, and dermal contact) ESLs for All Media;
  - Ch. 4 – Vapor Intrusion ESLs for Soil Gas and Groundwater;
  - Ch. 5 – Ecological Aquatic Habit ESLs for Groundwater;
  - Ch. 6 – Leaching to Groundwater ESLs for Soil;
  - Ch. 7 – Nuisance/Odor ESLs for All Media; and
  - Ch. 8 – Gross Contamination ESLs for Soil and Groundwater.
- Chapter 9 presents the development of screening levels for the various chemical mixtures addressed in the ESLs. Previously Total Petroleum Hydrocarbons (TPH) mixtures were addressed in a separate TPH chapter while the other chemical mixtures such as PCBs and PAHs were discussed in the Additional Considerations chapter. Now all mixtures are combined in Ch. 9. As part of the update to the TPH subsection 9.7, staff reviewed the literature and developed a site-specific approach for the evaluation of the intermediate breakdown products of petroleum hydrocarbons. The technical resource document Site-Specific Evaluation Approach for Petroleum Degradates is included as Appendix F to the User's Guide.
- Chapter 10 addresses a number of considerations such as laboratory data issues, naturally occurring background or ambient levels of chemicals, bioavailability, degradation products, chemical-specific considerations, chemical mixtures or groups (other than TPH), and sediment.

### **Future changes**

Water Board staff continues to track developments in risk assessment and maintain a list of topics to be addressed in future ESL updates.

You may sign up for electronic notifications regarding the ESLs on the [Water Board's website](#) (or from the Water Board's home page, click "Email Subscriptions"). Once there, click the ESL box under the "General" category.

### **Questions**

Please refer to our "Frequently Asked Questions" document on the Water Board's [ESLs webpage](#). For further information or to make suggestions for future updates, please contact the ESL Team at [esls.esls@waterboards.ca.gov](mailto:esls.esls@waterboards.ca.gov) or Nicole Fry at 510-622-5047.