Environmental Screening Levels

FREQUENTLY ASKED QUESTIONS

February 24, 2016

1. **How often are the ESLs revised?**
   The ESLs are revised periodically to reflect changes in toxicity values, changes in our understanding of the fate and transport of contaminants, and other developments in environmental risk assessment. The revision schedule is dictated by practical considerations and limited staff resources. Major updates are published every few years, and users are notified via our Listserv (mentioned in a separate FAQ below). Minor updates (e.g., fix errors, update a toxicity value) may or may not trigger a notification. We also prioritize items for updating which means that lower priority items, for example certain references for seldom-used screening levels, may not be addressed in the next update but at some point in the future. Because the ESLs are "evergreen," they are never "final." We also use the term "interim final" to reflect that situation. If you think you found an error or have suggestions for new topics or clarifications to be included in a future update, please let us know by contacting the ESL Team at esls.esls@waterboards.ca.gov. We appreciate comments from users and try to address them or incorporate them in future updates to the extent possible.

2. **How do I know if I have the most recent version of the ESLs?**
   The most recent version of the ESLs will be available on the website: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml. The filename of the ESL files will include the date of the revision. The date of the revision also appears in the footer of any printed ESL tables.

3. **How can I find out about updates?**
   If you would like to be notified when new ESL updates are available, you may subscribe to our Listserv on the following web page (Environmental Screening Levels are the third checkbox from the top):
   http://www.waterboards.ca.gov/resources/email_subscriptions/reg2_subscribe.shtml

4. **Which are the official ESL documents?**
   The ESLs consist of five components: 1) Cover Memo; 2) Microsoft Excel Workbook; 3) Summary ESL Tables (PDF); 4) User's Guide; and 5) Frequently Asked Questions (FAQs).

5. **The ESLs for compound X changed last month. The Regional Water Board had approved our work plan six months ago. The cleanup goals are based on the old ESLs. Do we have to submit a new work plan?**
   Existing work plans do not have to be changed just because an ESL update was posted. ESLs incorporate the knowledge and priorities of the time they are posted and are considered reasonably protective for a typical site in the San Francisco Bay Area but they are recommendations, not cleanup numbers. If a new approach or new information about a chemical becomes available, the ESLs for one or more chemicals can change. Most

changes are fairly minor. In contrast, the cleanup numbers in the work plan are agreed-upon numbers that guide the cleanup effort.

6. **Can the ESLs be used to determine when reporting to an agency is necessary?**
The ESLs are not intended to be used for determining when to report the presence of contamination to an agency. In California, the requirements for reporting generally are based on the quantity of the release, not a concentration. We recommend reviewing the Governor's Office of Emergency Services Spill Release Reporting webpage: http://www.caloes.ca.gov/FireRescueSite/Pages/Spill-Release-Reporting.aspx. This webpage includes a list of essential documents that provide guidance regarding spill notification and the types of releases that are reportable.

7. **Can the ESLs be used to determine clean import fill?**
The ESLs are not intended to be used for defining clean fill soil for import to sites. Rather the ESLs are used for screening of sites to assess the degree of contamination and need for further investigation, evaluation or remediation.

   Clean fill soil is defined as soil that has concentrations of naturally occurring chemicals (e.g., metals) at or below background levels while concentrations of manmade chemicals (e.g., trichloroethene) are absent (non-detect). The October 2001, DTSC *Information Advisory – Clean Imported Fill Material* provides an appropriate fill source evaluation approach and frequency of sampling and analytical methods for determining what is clean fill.

   When determining clean fill, the nature of the source and handling practices should be considered. For instance, quarried rock can have higher naturally occurring concentrations of metals than local soils, which would not necessarily represent contamination. Consultation with the overseeing regulatory is recommended for situations where the best approach is not clear.

8. **Can the ESLs be used to determine whether marginally contaminated soils can be reused onsite?**
For cleanup sites under regulatory agency oversight, the ESLs potentially can be used to evaluate whether marginally contaminated soils can be reused with regulatory approval provided that representative testing has been conducted, an appropriate evaluation performed, and the soil is not considered hazardous waste.

   The evaluation of soil reuse on a regulated site must consider where and how such material will be placed so as not to be a risk to human health, the environment, or water quality. Water quality concerns include both leaching to groundwater as well as contact with stormwater, which could result in dissolution of contaminants or erosion of soil. Soil reuse evaluations must typically consider the fate and transport characteristics of the contaminant(s) in water as well as vapor and site conditions. Reuse is better supported in locations where the material is less likely to be contacted (e.g., beneath roadways or buildings for non-volatile chemicals) or less likely to be mobilized in water or vapor. Typically, for groundwater or surface water concerns, setback distances are employed.

   In general, stained or smelly soil suggests chemical impacts should not be re-used unless testing demonstrates it is below appropriate ESLs. Further information regarding the evaluation and reuse of petroleum-impacted soil is presented in the October 20, 2006, Draft *Technical Resource Document – Characterization and Reuse of Petroleum Hydrocarbon Impacted Soil as Inert Waste* (Regional Water Board 2006). This document is being considered for revision.

9. Why did you remove the Soil ESLs for Urban Terrestrial Habitats?

The Soil ESLs Urban Terrestrial Habitats were based on an approach developed by the Ontario Ministry of the Environment (MOEE) in the document *Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario* (MOEE 1996). These screening levels were superseded by the April 15, 2011, document entitled *Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario* (MOEE 2011). The new document incorporates significantly more complexity, and our recommendation is to proceed directly to a site-specific ecological risk analysis. Therefore, we removed the old screening levels and do not plan to replace them at this time.

10. Why are the Groundwater Vapor Intrusion ESLs lower than in the 2013 version of the ESLs?

The previous groundwater vapor intrusion ESLs were based on scenarios where groundwater was deep (10 feet below ground surface or deeper), and soil gas sampling was recommended for shallow groundwater conditions. During 2014, we developed a shallow groundwater scenario as part of our *Draft Interim Framework for Assessment of Vapor Intrusion at TCE-Contaminated Sites in the San Francisco Bay Region* (Regional Water Board 2014). The 2016 ESLs include this shallow groundwater scenario, which is now the default scenario for the Tier 1 ESLs. The Tier 2 ESLs include two deep groundwater scenarios. The fine-coarse scenario screening levels are about the same as the 2013 ESLs. Further information is presented in the ESL User's Guide.

11. Why are the subslab ESLs the same as soil gas ESLs? Shouldn't there be some attenuation as VOCs migrate from deeper soils?

The subslab/soil gas ESLs conservatively assume that the only attenuation is the result of an intact concrete slab that limits the amount of vapor transported into the building and then the dilution of those vapors by mixing with indoor air. While there can be additional attenuation as vapors diffuse through the soil from a deeper VOC vapor source (primarily due to soil moisture), there are other factors that can result in less attenuation than otherwise expected through the soil profile:

- The slab capping effect results from the presence of concrete slabs or buildings that limit VOC release to the atmosphere. Soil gas concentration profiles beneath slabs or buildings have less attenuation than in unpaved areas. We liken this effect to a traffic backup. Cross-sectional illustrations of this effect are provided in *Conceptual Model Scenarios for the Vapor Intrusion Pathway* (USEPA 2012a).
- A soil moisture shadow can develop beneath buildings or paved areas that prevents rainwater from infiltrating.
- Further, significant attenuation for coarse-grained soils (sand or gravel) is not usually observed unless there is significant soil moisture (nearly saturated conditions) or the thickness of the vadose zone above the VOC vapor source is great.

Consequently, we chose to apply the same attenuation factor to non-subslab soil gas and renamed the soil gas ESLs to subslab/soil gas ESLs.

12. The soil direct contact ESLs for TPH diesel are lower than TPH gasoline. Is that an error?

No, that is not an error. The User's Guide includes a section discussing total petroleum hydrocarbons (TPH) and presents the fraction approach for evaluating TPH mixtures including surrogates, toxicity values and physical factors, and calculation of weighted-average values for each TPH mixture (e.g., TPH diesel). Gasoline is composed of two fractions, the low carbon number aliphatic fraction and low carbon number aromatic fraction. However, the low carbon number aromatic fraction consists of benzene, toluene, ethylbenzene, and xylenes (BTEX), and these compounds typically are separately tested in site investigations. Our fraction approach excludes consideration of these compounds and, by extension, the entire low carbon aromatic fraction for TPH gasoline to avoid double-counting. Thus, TPH gasoline is based solely on the low carbon number aliphatic fraction, which is treated as less toxic than either the medium carbon aromatic fraction or the medium carbon aliphatic fraction, of which diesel is largely composed.

13. If silica gel cleanup (SGC) is not performed on extractable TPH (diesel or motor oil) samples, will concentrations be much higher? If so, will this mean an undefined groundwater plume and the need for more investigation or remediation?

Since making the recommendation in the December 2013, ESL User's Guide Section 8.4.2 to analyze samples both with and without SGC, we have observed that for some sites concentrations are marginally higher while others are significantly higher. We suspect these differences relate to the nature of the release, site-specific conditions, and degree of weathering. While extractable TPH analysis without SGC may result in delineation of a somewhat larger TPH plume with higher TPH concentrations, we expect that the need for additional investigation would mainly be focused on sites with significant TPH source mass remaining, and/or sites with nearby groundwater or surface water receptors. Although we recommend the analysis of extractable TPH without SGC for comparison to ESLs, we still encourage the analysis of samples both with and without SGC at least a couple of times during the course of a project to get a sense of the relative proportions of the hydrocarbons versus degradates and see if those proportions significantly change.

As discussed in the February 2016, User's Guide Section 9.7.3, our overall approach to petroleum site cleanup remains the same: adequate investigation and delineation; source control to the extent practicable; groundwater plume remediation (natural attenuation where appropriate); sufficient monitoring to demonstrate plume stability; and institutional controls (e.g., deed restrictions, risk management plans, etc.) when necessary.

14. Where can I find an ESL for asbestos?

The hazards posed by airborne asbestos fibers differ from those of typical chemicals addressed in the ESLs. Several aspects of asbestos are addressed by the DTSC fact sheet http://www.dtsc.ca.gov/HazardousWaste/upload/OAD_FS_Asbestos.pdf or by the Air Resources Board at http://www.arb.ca.gov/toxics/asbestos/asbestos.htm.