



## Preliminary Questions for Soil Smarts Workshops

DTSC should plan to address the following questions/issues in the upcoming Soil Smarts workshops on November 20, 2024, and December 10, 2024.

### 1. What about Radionuclides?

Why are these workshops focused on “*background cleanup of chemical contaminants*” but not background cleanup of radionuclides?

### 2. Building Structural Debris Defined as Soil.

The 2010 AOC focused on demonstrating cleanup to background in soil using soil lookup table values (LUTV) as the decision level (DL). However, the AOC also strangely defined soil to include “*debris, structures, and other anthropogenic materials*” yet was silent on how to demonstrate background for such building structural debris. In 2021, DTSC challenged/demanded DOE to show that its demolition debris (concrete, steel, wood, drywall, miscellaneous construction materials, etc.) from four non-radiological buildings meet the AOC soil LUTV requirements,<sup>1</sup> an impossible and scientifically meaningless objective. To quote DTSC,

*“The proposed characterization shall demonstrate if the building materials have detectable radiological contamination above local background (based on comparison with the Draft Provisional Radiological Look-Up Table Values and following measurement quality objectives and data quality objectives consistent with those cited in Section 2.12 of the AOC.)”* [Underline added for emphasis]

The EPA’s Radiological Background Study and Area IV Radiological Study focused on surface soil, sub-surface soil and sediment. EPA did not sample, analyze or establish LUTVs for any “*debris, structures, and other anthropogenic materials.*”

DOE declined this impossible directive and consequently, DTSC forced DOE to send all

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<sup>1</sup> Letter from Steven Becker (DTSC) to John Jones (DOE). “Revisions to Standard Operating Procedures and Associated Documents for Demolition of the Four Remaining Buildings at the Energy Technology Engineering Center, Santa Susana Field Laboratory. Simi Valley, California.” February 11, 2021.  
[https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable\\_documents%2F6300267100%2FLetter%20to%20DOE%20Dated%2020210211%20Regarding%20SOP%20Revision%20for%20ETEC%20Buildings%204038%204057%204462%204463.pdf](https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable_documents%2F6300267100%2FLetter%20to%20DOE%20Dated%2020210211%20Regarding%20SOP%20Revision%20for%20ETEC%20Buildings%204038%204057%204462%204463.pdf).

Highlighted version.

[https://philrutherford.com/SSFL/doe\\_building\\_demolition/Letter\\_to\\_DOE\\_Dated\\_20210211\\_Regarding\\_SOP\\_Revision\\_for\\_ETEC\\_Buildings\\_4038\\_4057\\_4462\\_4463\\_highlighted.pdf](https://philrutherford.com/SSFL/doe_building_demolition/Letter_to_DOE_Dated_20210211_Regarding_SOP_Revision_for_ETEC_Buildings_4038_4057_4462_4463_highlighted.pdf)



clean building debris to a low-level radioactive waste disposal site.

### 3. Cleanup to Background.

It has taken fourteen years for DTSC to recognize that implementing “cleanup to background” is an unattainable goal (“*potential challenges*”, “*laboratory capabilities*”, “*backfill availability*”). This is something that RPs have known since 2010 as evidenced by DOE’s and NASA’s attempts to distance themselves from the 2010 AOC in their respective EISs. DOE’s preferred alternative is a risk-based open-space land use scenario.<sup>2</sup> NASA’s preferred alternative in its 2020 ROD is a risk-based suburban-residential land use scenario.<sup>3</sup> Neither of these preferred alternatives comply with the draconian requirements of the 2010 AOC. Does DTSC plan to acknowledge these documents and discuss the state of negotiations with DOE and NASA? Is it finally time for DTSC to throw out the 2010 AOC?

### 4. Lack of a Single Set of Site-wide Final LUTVs.

On January 30, 2013, DTSC issued its Draft Provisional Look-up Table Values, for a short list of radionuclides.<sup>4</sup> These have been imposed on all the three RPs. Why are these still called “*draft provisional*” and not “*final*”? The reason is that these values were chosen by DTSC to be identical to the EPA’s “reference radiological concentrations (RRC)” for Lab B established from the EPA Radiological Background Study and Area IV Radiological Characterization Survey.<sup>5,6</sup>

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<sup>2</sup> DOE, “Final Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory - Summary”, DOE/EIS-0402, November 2018.  
<https://www.energy.gov/sites/prod/files/2018/12/f58/final-eis-0402-etec-2018-12-summary.pdf>.

<sup>3</sup> NASA. “Record of Decision – Supplemental Environmental Impact Statement for Soil Cleanup Activities at Santa Susana Field Laboratory, Ventura County, California.” September 2020.  
[https://www.nasa.gov/wp-content/uploads/2015/04/ssfl\\_soil\\_rod\\_final\\_signed.pdf?emrc=abd3a0](https://www.nasa.gov/wp-content/uploads/2015/04/ssfl_soil_rod_final_signed.pdf?emrc=abd3a0).

<sup>4</sup> DTSC. “Draft Provisional Radiological Look-Up Table Values.” January 30, 2013.  
[https://www.dtsc-ssfl.com/files/lib\\_look-upables/radiological/66513\\_65861\\_Draft\\_Provisional\\_Radiological\\_Look-Up\\_Table\\_Values\\_1-30-13.pdf](https://www.dtsc-ssfl.com/files/lib_look-upables/radiological/66513_65861_Draft_Provisional_Radiological_Look-Up_Table_Values_1-30-13.pdf).

<sup>5</sup> EPA/HGL. “Final Technical Memorandum Look-Up Table Recommendations, Santa Susana Field Laboratory, Area IV Radiological Study.” November 27, 2012. [https://www.dtsc-ssfl.com/files/lib\\_doe\\_area\\_iv/epaareaivsurvey/techdocs/65778\\_Final\\_Tech\\_Memo\\_Lookup\\_Table\\_Recommendations\\_112712.pdf](https://www.dtsc-ssfl.com/files/lib_doe_area_iv/epaareaivsurvey/techdocs/65778_Final_Tech_Memo_Lookup_Table_Recommendations_112712.pdf).

<sup>6</sup> EPA/HGL. “Development and Use of Radionuclide Reference Concentrations.” November 28, 2012.  
[https://www.dtsc-ssfl.com/files/lib\\_doe\\_area\\_iv/epaareaivsurvey/techdocs/67106\\_EPA\\_Final\\_Radiological\\_Characterization\\_o](https://www.dtsc-ssfl.com/files/lib_doe_area_iv/epaareaivsurvey/techdocs/67106_EPA_Final_Radiological_Characterization_o)



Radiological Reference Concentrations (RRC) were calculated by EPA based on the results of its Radiological Background Study and the results of its Area IV Radiological Characterization Study. Numerical values may be found in Attachment B of the RRC document in footnote 6. Equations used to derive RRCs are,

$$\text{RRC} = \text{AL} + 1.645U_M$$

AL = Action Level = maximum (BTV :  $2\sigma$  UCL MDC)

where  $U_M$  = method (measurement) uncertainty of EPA characterization data

MDC = minimum detectable concentration of EPA characterization data

EPA recommended calculation of the Look-Up Table Values (LUTV) based on the BTV, and the MDC and  $U_M$  of the laboratory used in the future remediation and closure phases. Of course, EPA was not able to provide numerical values of LUTVs but provided the relevant equations in Section 2.3 of the LUTV document in footnote 5,

$$\text{LUTV} = \text{CL} + 1.645U_M$$

CL = Cleanup Level = maximum (BTV :  $2\sigma$  UCL MDC)

where  $U_M$  = method (measurement) uncertainty of future remediation/closure data

MDC = minimum detectable concentration of future remediation/closure data

Note the similarity of the equations. BTV is identical, however the MDC and  $U_M$  values will differ and be dependent on the laboratory(ies) used in future remediation and closure phases. For this reason, EPA was explicit that the numerical RRCs it provided should NOT be used for LUTVs.

DTSC correctly recognized that it and the RPs needed an immediate set of LUTVs for planning purposes and therefore deviated from EPA's recommendation by using the minimum of Lab A RRC and Lab B RRC as the "draft provisional" LUTV. This appeared reasonable at the time (almost twelve years ago). In both cited LUTV and RRC documents, EPA was clear that the RRCs should NOT be used for the "final" LUTVs. Final LUTVs would therefore differ from the "draft provisional" LUTVs proposed by DTSC in 2013. DTSC and the RPs appear to have conveniently overlooked this wrinkle.

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[f Soils Report - Appendix K - RRCs.pdf](#).

See Attachment B for two sets of RRCs for Lab A (GEL) and Lab B (TAL).



EPA provided an impractical, unworkable recommendation for establishing cleanup goals (LUTVs). EPA actually recommended that DTSC procure a single laboratory for DOE's remedial/closure work in Area IV. Understandably, EPA failed to anticipate that DTSC would impose LUTVs on all three RPs, including Boeing, via the 2022 Settlement Agreement. In reality, all three RPs plan their remediation separately and could use different laboratories. Even if two RPs chose the same laboratory they could use differing DQOs and MQOs, resulting in differing MDCs, U<sub>MS</sub> and therefore different LUTVs. A single RP could also use more than one laboratory, resulting in multiple LUTVs.

EPA faced the same issue when it used two different labs (Lab A and Lab B) for its Area IV sampling and ended up with two sets of RRCs. This lesson-learned resulted in EPA's recommendation for one laboratory.

This overly complex process has arisen because of the 2010 AOC "cleanup-to-background" mandate. The process is unable to establish a credible background cleanup goal. Cleanup goals that are dependent on which laboratory is doing the sample analysis, are untenable. For example, DTSC's LUTV list includes two radionuclides that have LUTVs that are a factor of 10 different. Nickel-59 has LUTVs of 10.9 and 0.875 pCi/g. Strontium-90 (an important Area IV contaminant) has LUTVs of 1.02 and 0.117 pCi/g.<sup>7</sup> The cleanup question becomes "what is background?" not "what is safe?"

In recognition that the LUTV process is a mess, EPA judiciously distanced itself from any responsibility in Section 1.1 of its LUTV recommendation document. EPA stated,

*"The AOC was issued under the regulatory authority of the DTSC and is a principal guiding document in the development of the Area IV Study Area remediation standards. The AOC is an agreement between DTSC and DOE. USEPA is not a party to the AOC but has agreed to assist with limited activities pending funding from DOE. USEPA agreed to provide DTSC assistance on the development of LUT values. DTSC has the authority and responsibility to develop and approve final LUT values." [Underlines added for emphasis]*

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<sup>7</sup> DTSC. "Draft Provisional Radiological Look-Up Table Values." January 30, 2013.

[https://www.dtsc-ssfl.com/files/lib\\_look-upables/radiological/66513\\_65861\\_Draft\\_Provisional\\_Radiological\\_Look-Up\\_Table\\_Values\\_1-30-13.pdf](https://www.dtsc-ssfl.com/files/lib_look-upables/radiological/66513_65861_Draft_Provisional_Radiological_Look-Up_Table_Values_1-30-13.pdf).



Although the preceding has focused on the radionuclide LUTVs, it would seem likely that the same laboratory analysis issues would apply to chemical LUTVs.

DTSC needs to acknowledge its decision to not follow EPA's recommendations.

DTSC should make a public announcement that it will throw out the 2010 AOC. Instead, DTSC should adopt the EPA's established risk-based CERCLA protocols, and/or DOE's dose-based 25 mrem/y plus ALARA standard in DOE-STD-1241-2023.<sup>8</sup>

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<sup>8</sup> DOE Technical Standard. "Implementing Release and Clearance of Property Requirements." Section 4.7 Release of Real Property and Section 4.8 Release of Soils. March 2023.  
<https://www.standards.doe.gov/standards-documents/1200/1241-AStd-2023/@@images/file>.