

**Comments on
"Draft Site-Wide Risk Assessment, Volume I: Human Health Risk Assessment
(Part B-Risk Characterization for DOE Areas)" Draft E, dated August 20, 2005**

September 7, 2005

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DSCSOC

Julie,

On behalf of DSCSOC I have reviewed the "Draft Site-Wide Risk Assessment, Volume I: Human Health Risk Assessment (Part B-Risk Characterization for DOE Areas)" Draft E, dated August 20, 2005. My comments are presented below. These comments focus on the bigger picture issues, with particular reference to the overall adequacy of site investigation and the long-term public health and environmental protection associated with the DOE areas of the site. I have reviewed the US EPA's and the other RPMs' comments on the human health risk characterization for each of the waste management units covered in this DOE draft report. I have also reviewed the responses to RPM comments provided by DOE and, based on the last RPM meeting, understand that the RPMs in general find that DOE's proposed changes, as presented in Revision E, are satisfactory. Unless there is a major change in an RPM's assessment of the red-lined version of Revision E, I find that DSCSOC can support this version, with respect to individual waste management unit human health risk characterization.

Overall

This draft of the DOE Human Health Risk Assessment contains several of the same deficiencies that DSCSOC has repeatedly commented on in previous drafts. This situation is another example of the significant deficiencies in the US EPA Superfund site investigation/risk characterization that is allowed when the site investigation is limited to the minimum needed to conform to US EPA guidance. These issues have been repeatedly discussed in DSCSOC comments to the RPMs and in peer-reviewed articles that have been published in the technical literature. Specific examples are presented below.

Specific Comments

Executive Summary Table ES-1 and ES-2 list constituents of potential concern and constituents of concern. These tables and the text associated with them are deficient in failing to indicate that the constituents listed on these two tables could represent a small part of the chemicals present at the LEHR site in DOE areas that are a threat to public health and the environment. There can readily be thousands of chemicals in the wastes that have been deposited at LEHR as well as transformation products of the waste chemicals that at some time in the future, when more adequate COPC and COC identification procedures are used, could be found to represent a threat to public health and the environment. These tables should carry a footnote that indicates that there could

readily be unidentified hazardous chemicals at the LEHR site that will need to be monitored for and possibly require future remediation.

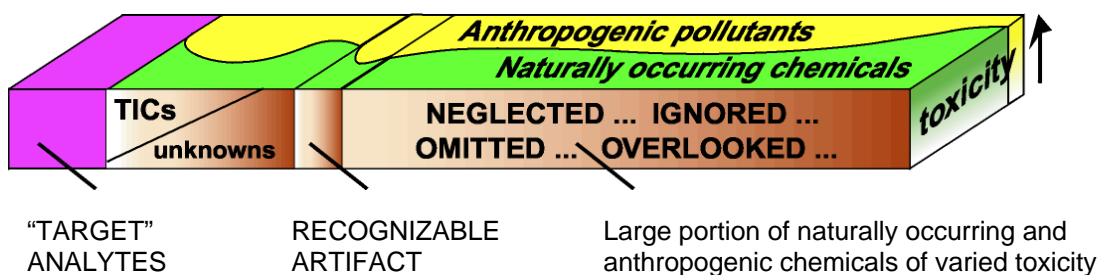
As I indicated in my September 2, 2005, comments to DSCSOC regarding the adequacy of the monitoring of UCD's wastewaters discharged to Putah Creek to detect LEHR site hazardous chemicals in the wastewater treatment plant discharge, the inadequacy of current regulatory programs in defining hazardous chemicals has been discussed by Dr. Christian Daughton, Chief of the Environmental Chemistry Branch, National Exposure Research Laboratory, Office of Research and Development, US EPA, Las Vegas, Nevada, in his presentation, "Overview of Science Involved with Pharmaceuticals," that was made on August 23, 2005. Daughton stated in one of his PowerPoint slides,

"Further Truisms Regarding Environmental Monitoring

- *What one finds usually depends on what one aims to search for.*
- *Only those compounds targeted for monitoring have the potential for being identified and quantified.*
- *Those compounds not targeted will elude detection.*
- *The spectrum of pollutants identified in a sample represent but a portion of those present and are of unknown overall risk significance."*

He presented a diagram of this situation, which is presented in Figure 1. Dr. Daughton's presentation at the Las Vegas workshop is available from gfredlee@aol.com upon request. While this presentation focused on pharmaceuticals, as he has discussed in other presentations and his writings, it is applicable to the full arena of hazardous chemicals that are not adequately identified, monitored and regulated.

Figure 1
Chemical Analysis Output for a Typical Environmental Sample



TICs = tentatively identified compounds

from: C.G. Daughton, US EPA (July 2002)

This figure is cited from the following web page: "The Critical Role of Analytical Chemistry," C.G. Daughton, July 2002
<http://www.epa.gov/nerlesd1/chemistry/pharma/critical.htm>

As discussed in previous DSCSOC comments on the adequacy of the LEHR Superfund site investigation, there can readily be chemicals in the LEHR site wastes, soils, surface water runoff and groundwater that are not being considered as constituents of potential concern. A properly conducted Superfund site investigation must acknowledge this situation and prepare for it in the selection of remediation approaches and in developing and implementing the *ad infinitum* water quality monitoring that will be needed at the LEHR site. With unrecognized pollutants being identified with increasing frequency, the LEHR site post-ROD monitoring must be adjusted for previously unrecognized pollutants that have been found to be important.

Pages 1-2 and 1-3 present the conclusions of the ATSDR “Public Health Assessment” for the LEHR site without comment by DOE. As DSCSOC has pointed out on several occasions (including to ATSDR before submitting their final report), some of the conclusions of ATSDR regarding the potential exposure of the public to site-derived pollutants are not reliable. A prime example of this is the statement by ATSDR, as the first bulleted item on page 1-3, that the excessive mercury in Putah Creek fish is not related to discharges from the LEHR site. ATSDR states,

“• Exposure to mercury is possible for people who consume Putah Creek fish, primarily largemouth bass. This contaminant is not believed to be related to the Site.”

As DSCSOC has repeatedly pointed out, the stormwater runoff from the LEHR contains sufficient mercury to contribute to the excessive mercury in Putah Creek fish. A properly developed report on this issue would have included a statement by DOE that the stormwater runoff from the LEHR site contains mercury at concentrations that could be contributing to excessive bioaccumulation of mercury in Putah Creek fish. This has been repeatedly demonstrated by the monitoring of stormwater runoff from the LEHR site. Therefore, the LEHR site is a potential source of mercury that is accumulating to excessive levels in Putah Creek fish.

Page 1-4 presents a discussion of the CVRWQCB designated-levels approach for establishing cleanup objectives. This section states,

“These cleanup levels are referred to as designated-levels (DL) and are calculated by first determining the bodies of water that may be affected by a waste and the present and probable future beneficial uses of these waters. Next, site-specific “water quality goals” are selected, based on background water quality or accepted criteria and standards, to protect those beneficial uses. Finally, these water quality goals are multiplied by factors that account for environmental attenuation and leachability of the constituent in question.”

DSCSOC has repeatedly pointed out that the approach used by DOE to develop attenuation factors for pollutants at the LEHR site, which involves pure solution K_d values, is likely not reliable for predicting the rate of transport of chemicals in the vadose zone and in the saturated zone of the aquifer underlying the LEHR site. K_d values are influenced by the chemical characteristics of the surfaces of the solid phase. In complex

mixtures of wastes, such as at the LEHR site, where there is appreciable total organic carbon in the wastes and in some soils, as well as groundwaters, the surfaces of the solid phase, which are the points of partitioning between the liquid phase and the solid, are significantly altered from the pure solution conditions that were used to develop the K_d values. This makes the DOE estimates of amounts of attenuation (rates of migration) of LEHR site pollutants, unreliable. Further, as DSCSOC has repeatedly pointed out, the vadose zone modeling that DOE used, which does not consider wetted front transport and preferential pathways, is another reason why the DOE estimates of migration time for pollutants from their current locations to groundwaters are likely to be highly unreliable. A credible report covering CVRWQCB designated-level analyses should discuss these issues.

The unreliability of DOE's estimates of rates of transport for pollutants in the LEHR site soils and wastes will need to be adequately considered in developing the post-ROD water quality monitoring program that will need to be developed for the DOE areas of the LEHR Superfund site.

The remainder of the report addresses specific DOE area waste management unit chemicals of concern. At this time I find that version E of this report appears to present an adequate discussion of these issues.