

**Preliminary Comments on
“DRAFT DOE AREAS RISK CHARACTERIZATION REPORT**

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Unreliable Technical Information Base

The draft DOE report states in the first sentence of page 1-1, *“This risk characterization report is based on risk estimates prepared by the University of California, Davis (UC Davis) at the Laboratory for Energy-Related Health Research (LEHR or the Site).”* As discussed in DSCSOC comments, some of the UCD risk estimates are based on technically invalid approaches such as the use of cooccurrence-based sediment quality guidelines. This issue is discussed further below. Further, the risk estimates are based on a limited set of constituents of concern compared to the vast number of potentially hazardous chemicals at the LEHR Superfund site. These issues have been discussed in detail in comments of provided to the RPMs, and UCD and DOE as responsible parties. The comments are on the DSCSOC website, <http://members.aol.com/dscsoc/dscsoc.htm>.

ATSDR Report

Beginning on page 1-2 the draft DOE report a summary of the ATSDR report for the LEHR site is presented. DSCSOC has provided detailed comments on the significant deficiencies of the ATSDR assessment of the hazards of chemicals at the LEHR site. The As discussed by DSCSOC, the ATSDR report is biased since it accepts as reliable the UCD and DOE responsible party statements on the role of the site as a source of hazardous chemicals for the environment and ignores the DSCSOC discussion of the issues. For example, DSCSOC has provided reliable information on the potential role of the LEHR site as a source of mercury that is leading to excessive bioaccumulation in Putah Creek fish.

Lee, G. F., "Comments on ATSDR's Final Public Health Assessment for the LEHR Site," Comments submitted to DSCSOC by G. Fred Lee & Associates, El Macero, CA, August (2004). <http://members.aol.com/dscsoc6/2004/LEHR-ATSDR-PHAccomments.pdf>

See DSCSOC website for the DSCSOC comments on the unreliability of the ATSDR evaluation of the impacts of LEHR pollutants

Designated Wastes

Page 1-4 of the draft DOE report states regarding the use of the CVRWQCB Designated Wastes approach, *“Next, site-specific “water quality goals” are selected, based on*

background water quality or accepted criteria and standards, to protect those beneficial uses.” As discussed by DSCSOC in its comments submitted to the RPM and UCD/DOE, this approach is not necessarily protective for constituents such as mercury since the current water quality objective is acknowledged by the US EPA to be an interim value that will be revised downward.

Lee, G. F., "UCD Report on Low Level Mercury Analysis of LEHR Superfund Site Stormwater Runoff," Comments submitted to DSCSOC by G. Fred Lee & Associates, El Macero, CA, May (2004).
<http://members.aol.com/dscsoc6/2004/LEHR-Hg-Rpt.pdf>

Unrecognized Pollutants

Sections 3 and 4 of the draft DOE report, beginning on page 3-1 and page 4-1, propose to present a discussion of human health and the ecological risk assessment. In order for these sections to be credible they must adequately and reliably discuss the numerous issues associated with the significant deficiencies in the LEHR site investigation relative to the fact that there can be many more COCs in LEHR site wastes, soils, stormwater runoff and groundwaters than considered in this risk characterization. Further these discussions must include approaches that DOE will follow in periodically reviewing the current state of knowledge on human health and ecological pollutants to determine if additional site remediation must be implemented to control environmental pollution by LEHR site waste constituents that were not included in the current site characterization.

Previously DSCSOC provided the LEHR RPMs and PRPs with information on the fact that the current approach allowed by the US EPA and DTSC for identifying COCs represents a very small part of the potential arena of hazardous and deleterious chemicals that are present at a site that has received a complex mixture of wastes/chemicals. Of particular importance is the Dr. C. Daughton's US EPA writings on the unrecognized pollutants in water and wastes. Recently Daughton (Chief of the Chemical Branch National Exposure Laboratory Las Vegas, NV) (daughton.christian@epa.gov) made available a paper on these issues,

Daughton, C., "Non-regulated Water Contaminants: Emerging Research," Environmental Impact Assessment Review 24(7-8) 711-732 (2004).
<http://epa.gov/nerlesd1/chemistry/pharma/images/EIAR.pdf>

This paper provides an overview of the magnitude of the unrecognized pollutant problem in risk characterization.

Cooccurrence Based Sediment Quality Guidelines

Page 5-18 of the draft DOE report makes the same significant error that UCD made in attempting to use Long and Morgan cooccurrence based approach to estimate the significance of chemicals in sediments. The draft report stated, "*However, it cited the National Oceanic & Atmospheric Administration (NOAA) approach (Long and Morgan 1991) for developing effects-range low (ERL) sediment benchmarks (i.e., the low sediment benchmarks) as the basis for their approach. Therefore, to develop high benchmarks, an approach consistent with the Long and Morgan effects range median (ERM) development*

(i.e., the high sediment benchmarks) was used.” As DSCSOC has documented in several sets of comments provided to the RPMs and UCD/DOE this approach is obviously technically invalid and should not be used for any purpose. It is also contrary to US EPA Superfund headquarters policy for evaluating the water quality significance of chemicals in sediments.

Lee, G. F., "Review of the UCD Ecological Risk Assessment Revised Draft," Comments submitted to DSCSOC by G. Fred Lee & Associates, El Macero, CA, September (2004). <http://members.aol.com/dscsoc6/2004/LEHR-EcoRA-comments.pdf>

Lee, G. F., "Use of Cooccurrence Based “SQGs” in UCD LEHR Ecological Risk Assessment," Comments submitted to DSCSOC by G. Fred Lee & Associates, El Macero, CA, November 7 (2004). <http://members.aol.com/dscsoc6/2004/RothEcoSed11-07-04.pdf>

The Society for Environmental Toxicity and Chemistry (*SETAC*) recently held its World Congress in Portland, OR. At that conference several papers were presented on the relationship between cooccurrence based sediment quality guidelines (SQG) and sediment toxicity. Grapentine et al. (2004) reported on a large study of the relationship between chemically based SQG and sediment toxicity in selected nearshore sediments in the US-Canadian Great Lakes. They found that the exceedance of cooccurrence based sediment quality guidelines was a poor predictor of sediment toxicity.

Bay et al. (2004) also reported that exceedance of cooccurrence based SQG was a poor predictor of sediment toxicity in southern California coastal bays and nearshore marine sediments even when applied to limited areas.

MacDonald et al. (2004) presented a paper in which a comparison was made between sediment toxicity and SQG values. One of areas he discussed was the Grand Calumet River in Northern Indiana. Lee (2004) has discussed the unreliability of using MacDonald’s cooccurrence based SQG to predict toxicity in Grand Calumet River sediments.

References

Grapentine, L.; Milani, D. & Reynoldson, T. (2004). “Assessment of Ecological Effects of Contaminated Sediments in the Laurentian Great Lakes.” Presentation at Fourth SETAC World Congress, Portland, OR.

Bay, S.; Vidal, D.; Field, L. & Myre, P., “Effect of Spatial Scale on Relationships between Sediment Quality Guidelines and Toxicity.” Presentation at Fourth SETAC World Congress, Portland, OR (2004).

MacDonald, D.; Ingersoll, C.; Smorong, D.; Sparks, D.; Smith, J.; Meyer, J.; Gouguet, R.; Wong, N. & Braun, G., “A Comparison Between Regional and National Data Sets for Freshwater Sediments.” Presentation at Fourth SETAC World Congress, Portland, OR. (2004).

Lee, G. F. "Comments on January 13, 2004, Draft Preliminary Problem Formulation Technical Memorandum for the West Branch of the Grand Calumet River, Lake County, Indiana," Prepared by Tetra Tech for the US Fish and Wildlife Service. Comments Submitted to the U.S. Fish and Wildlife Service on behalf of the Sanitary District of Hammond, Indiana, by G. Fred Lee & Associates, El Macero, CA (2004).
<http://www.gfredlee.com/Hammond-GCR-Comments.pdf>

Modeling Vadose Zone Transport

There has been a chronic problem with DOE's using unreliable modeling of the transport of pollutants found in the soil column to groundwaters. As discussed in previous DSCSOC comments, the vadose modeling of transport must include saturated front transport to estimate the potential rate of groundwater pollution by soil column pollutants.

Further there has been another chronic problem with DOE's using pure solution K_d (sorption/desorption) coefficients to predict rate of transport of pollutants from the soil column to groundwater. As DSCSOC has repeatedly commented, this approach is likely to be in considerable error since the characteristics of the sorption sites and the water from which exchange with the sorption sites occurs influences the degree of sorption of a pollutant. The DOE risk characterization report should not only mention this problem but also discuss the potential magnitude of the error that could be occurring and its implications for adequacy of site risk characterization. A discussion of how DOE plans to address this problem in post site ROD adoption activities to determine if the potential errors in estimating the rate of groundwater pollution are occurring should be presented.

Overall there is need to eliminate the technically invalid approaches included in the draft DOE report. Where this is not possible, such as defining the full range of COCs, a statement should be made in the risk characterization report, or some other document, that presents a commitment for long term post ROD activities that DOE will implement to insure protection of public health and the environment at the LEHR site.

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