

Comments on
**Draft Final Record of Decision for DOE Areas at the Laboratory for Energy-Related
Health Research University of California, Davis June 2009**

Submitted by

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Presented below are our comments on the June 2009 draft ROD for the LEHR Superfund site DOE areas. Many of these comments have been made previously in comments that the Davis South Campus Superfund Oversight Committee (DSCSOC) has submitted to the LEHR Superfund site Remediation Program Managers (RPMs). Previously submitted comments on the adequacy of site investigation and proposed remediation approaches are available on the DSCSOC website, <http://gfredlee.com/DSCSOC/DSCSOC.htm> in the LEHR documents section <http://www.gfredleecom/dscsoc/doc.htm>. Additional information on the issues discussed below is available in DSCSOC reports on its website.

Overall

It is concluded that the overall aspects of the DOE LEHR Superfund site investigation and proposed remediation approaches are in accord with conventional US EPA Superfund guidance; the focus is on a limited list of potential pollutants (Constituents of Concern, COC) out of the many millions of chemicals that have been used in commerce and that could be present at the LEHR site. As DSCSOC has repeatedly pointed out, there can readily be hazardous or otherwise deleterious chemicals in the LEHR site and groundwaters that have not been identified. An example of this deficiency was found with 1,4-dioxane; DSCSOC recommended that the groundwaters at the LEHR site be examined for that chemical because it had been used on the UCD campus as part of a scintillation cocktail for experimental studies involving certain radioisotopes. Subsequent studies on LEHR groundwaters found 1,4-dioxane in some groundwater samples.

The DOE's "response" to DSCSOC comments on page 3-3 of its "**3.1.2 Comments Provided at Public Meeting**" failed to adequately address the issues raised in the DSCSOC comments on how yet-unidentified pollutants in the LEHR DOE areas will be addressed by DOE to protect public health and the environment. The "response" to that question was a circuitous non-response that indicated that DOE will address such issues to the least extent that the regulatory agencies require. If protection of public health is at all on the regulatory agenda, DOE should be pro-active in searching for yet-unidentified chemicals that could be adverse to human health and the environment.

Another major deficiency in this draft LEHR Superfund DOE areas ROD is its failure to list mercury as a COC in surface soils that causes exceedance of its water quality criterion in stormwater runoff from these areas. DOE needs to present and discuss the potential adequacy of various available methods for controlling mercury in stormwater runoff from its area of

responsibility at the LEHR site. This ROD needs to be revised in all those sections where surface soil mercury as a COC should be presented and controlled.

Specific Comments

Section **2.1.2 Areas Requiring Additional Action** page 2-2 states,

“The following areas of the LEHR Federal Facility require additional action because they contain contaminants that present potential excess cancer risks of above 1 in 1 million (see Section 2.13.4.4 for discussion of risk) or have the potential to impact groundwater quality within the next 500 years by increasing contaminant concentrations in groundwater above background concentrations:”

As DSCSOC has pointed out in previous comments, the period of concern was arbitrarily established to be 500 years; that period may not be adequate to address the hazards of chemicals that can migrate to groundwaters over time. In order to reliably protect groundwater quality, the period of time of concern should be specified to be “as long as the chemicals in the soils represent a threat to pollute groundwater.”

Beginning on page 2-4 in **2.4 Scope and Role of Response Action 2.4.1 Past Response Actions** is a listing of past response actions. That listing is, in some situations, misleading as it could cause a reader to believe that some data were collected when, in fact, the data were not collected or data collected were not reliable. An example is found in the statement on page 2-5:

“Between August and September 1996, the Agency for Toxic Substances and Disease Registry (ATSDR) collected four composite samples each of Putah Creek fish, sediments, and water to determine if the LEHR site activities had impacted the creek. The fish, sediment, and water samples were analyzed for radionuclides, metals, pesticides, and SVOCs (ATSDR, 1997).”

As discussed in DSCSOC comments to the RPMs, while the US EPA (not ATSDR) collected fish samples from Putah Creek, due to problems with the US EPA’s handling of the samples the fish were not analyzed for pesticides.

A deficiency in Section **2.5.5 Types of Contamination and Affected Media** page 2-15 is that it only addresses COCs that pose concerns for human health impacts in groundwater. This draft ROD fails to address the role of mercury in the surface soils of DOE areas that contributes, through stormwater runoff, to excessive bioaccumulation of mercury in Putah Creek fish and that causes exceedances of water quality criteria. These issues have been discussed in detail in DSCSOC reports available on its website and in a professional paper,

Lee, G. F., and Jones-Lee, A, “LEHR Superfund Stormwater Runoff and Putah Creek Mercury Issues,” *Journal Remediation*, **19(2)**:123-134, Spring (2009).
<http://www.gfredlee.com/SJR-Delta/LEHRrunoffHgRemediation.pdf>

Page 2-16 states with regard to modeling the transport of soil-associated pollutants to groundwater:

“• Infiltration: 10.8 cm/year corresponding to 25% of the mean annual precipitation rate was used. The infiltration was assigned to the model at a constant rate resulting in continuous vertical flux towards the water table. The infiltration rate represents a reasonable maximum in

an area with high evapotranspiration rates which reverse the direction of infiltration flux throughout most of the year.”

DSCSOC has repeatedly pointed out that that approach for assessing pollutant transport through the soil column to groundwater is unreliable. It is well-known that chemical transport in the vadose zone is primarily through wetted front preferential pathway transport. The rate of transport of pollutants from soil to groundwater can be much shorter than that estimated by the approach used by DOE.

Page 2-24 in **2.7.2 Ecological Risk Assessment** makes reference to the UC Davis (2006) ecological risk assessment. At the time that that risk assessment was proposed, DSCSOC provided detailed discussions of the technical invalidity of the approach that was used, namely co-occurrence-based so-called “sediment quality guidelines.” The US EPA Region 9 staff attempted to justify the use of that approach for evaluating the ecological significance of chemicals associated with sediments. However, there is a vast amount of data that show that that approach is not technically valid, including the data recently collected in California as part of the State Water Resources Control Board (SWRCB) Sediment Quality Objective (SQO) development studies. Those studies consisted of several million dollars of studies investigating quantification of relationships between chemical concentrations in sediments and impacts of sediment-associated chemicals on aquatic life. In the end it was concluded (as would be expected based on fundamentals of aquatic chemistry) that co-occurrence-based approaches are not valid for evaluating impacts of chemicals in sediments on aquatic life; the SWRCB SQOs adopted by the Board rejected that approach. Basically all of the UCD ecological risk assessments that were based on co-occurrence based approaches are invalid.

A deficiency in Section **2.8 Remedial Action Objectives** (page 2-26) is deficient in that it fails to address the elevated mercury in DOE area surface soils that leads to excessive mercury in surface water runoff from those areas. The DOE needs to be responsible and control mercury from the surface soils in its areas that cause the exceedance of water quality criteria for protection of human health and wildlife.