



## Laboratory for Energy-Related Health Research, California, Site

A CERCLA site

This fact sheet provides information about the **Laboratory for Energy-Related Health Research, California, Site**. Long-term stewardship responsibilities for this are managed by the **U.S. Department of Energy Office of Legacy Management** under the **Comprehensive Environmental Response, Compensation, and Liability Act**.

### Site Information and History

The former Laboratory for Energy-Related Health Research (LEHR) is located at the University of California, Davis (UC Davis), about 1.5 miles south of the main UC Davis campus and is surrounded by UC Davis research facilities and farmland. UC Davis owns the property, which comprises about 15 acres.

Former research activities at LEHR generated a variety of radiological and nonradiological wastes that were disposed of on-site. As a result, the U.S. Environmental Protection Agency (EPA) listed the facility on the National Priorities List (NPL) in 1994. Listing of a site on the NPL requires that environmental restoration and waste management be conducted in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also known as Superfund) and the National Contingency Plan.

The U.S. Department of Energy (DOE) sponsored research at LEHR from the early 1950s until 1988. Initial studies involved the irradiation of beagles and focused on the health effects of chronic exposure to radionuclides, primarily strontium-90, and radium-226.

Constituents of concern include radionuclides, metals, semivolatile organic compounds, nitrate, and pesticides in soil and gravel at the facility.

DOE-sponsored research at the LEHR site ended in 1988, and a decommissioning program began in 1990. A 1997

Memorandum of Agreement divided responsibility for environmental restoration between DOE and UC Davis. The division of responsibilities was formally defined in a Federal Facilities Agreement in December 1999. The portion of the site for which DOE has cleanup responsibility consists of six areas: the Western Dog Pens, Eastern Dog Pens, Southwest Trenches, Radium and Strontium Treatment System, DOE Disposal Box, and Domestic Septic System. DOE is also responsible for monitoring storm water runoff from the LEHR Federal Facility. UC Davis is responsible for remediation of three landfills, disposal trenches located south and east of one of the landfills, 49 waste holes, a former wastewater treatment plant, groundwater contaminated by leachate from the landfills and possibly other UC Davis areas, and storm water runoff in the UC Davis portion of the site.

Remediation at the LEHR Federal Facility is complete. All buildings have been decontaminated and decommissioned, and ownership has been transferred to UC Davis for continued use. Except for the Eastern Dog Pens area, most of the contaminated soil was removed from the source areas and disposed of at licensed off-site disposal facilities. Excavations were backfilled with clean soil. The Eastern Dog Pens area is located over Landfill Disposal Unit 2, which is within the scope of UC Davis' responsibility; DOE's cleanup of this area consisted only of removing the dog pens, asphalt, concrete, and chain link fences. Gravel and subsurface soils have not been disturbed because of the presence of the underlying landfill. DOE negotiated an agreement with UC Davis to include the gravels that lined the dog pens and the subsurface soil in the area as part of the Landfill Disposal Unit 2 remedial action.

### Remedial Action

As a CERCLA site, the LEHR Federal Facility was remediated to risk-based standards that were derived from site-specific exposure assumptions and are protective of human health

and the environment. Risk-based remediation goals were established for each contaminant of concern on the basis of probable future use of the site as a research or industrial facility. Site characterization data were used to identify soils at each DOE area that contained constituents in concentrations statistically above background. Those constituents were considered to be contaminants of concern for that area. Contaminant concentrations were compared to risk-based screening levels to guide the soil removal process. The remediation goals represented reductions in risk from exposure to contaminants, which were classified as either carcinogens or noncarcinogens.

For carcinogens, the goal was to achieve a probability of an excess cancer risk (compared to the norm for the area) in the CERCLA risk range for the population of one per 10,000 to one per 1 million. Noncarcinogens were evaluated according to a set of exposure assumptions that resulted in a calculated hazard quotient for each contaminant. The remediation goal for noncarcinogens was to achieve hazard quotients of less than one. The risk evaluation indicated the goal for carcinogens and noncarcinogens was achieved in all DOE areas for existing and anticipated land uses.

Groundwater modeling results indicate that residual subsurface contamination at some DOE source areas could eventually affect groundwater. In most cases, the effect of residual contamination is expected to be minimal and will require no further remedial activities. A site-wide risk assessment and a site-wide feasibility study are the basis for a Record of Decision (ROD) for the LEHR federal facility. The ROD serves a legal function by documenting that the remedy selection process was conducted in compliance with the requirements of CERCLA and the National Contingency Plan. The ROD is also a public document that provides a concise history and characteristics of the site, any risks posed by conditions at the site, a summary of the cleanup alternatives, and the rationale behind the selected remedy.

## Institutional Controls

Because the site is being cleaned up to ensure the remedy remains protective of human health and the environment, certain land use restrictions and controls were imposed for some areas of the LEHR facility. These include restrictions to prevent residential use of a small area at the site and a soil management plan to ensure future development and site maintenance activities do not disturb soil potentially containing residual contaminants.

## Legacy Management Activities

The DOE Office of Legacy Management (LM) submitted the Proposed Plan for the LEHR site, which summarizes the remedial alternatives for the final remedy and identifies the preferred alternative to the public. LM conducted a public meeting to solicit input in October 2008. LM and EPA issued the ROD in September 2009. LM completed the Remedial Design/Remedial Action Work Plan in November 2010. New monitoring wells were installed in January 2011, and groundwater monitoring commenced in March 2011. LM will be responsible

for completing any required remedial action and for preparing remaining closeout documentation to support requirements for partial deletion from the NPL.

LM completed the first CERCLA Five-Year Review in September 2016. The review concluded that LM needed to collect additional data to fully evaluate the risk pathway for vapor intrusion. The vapor intrusion evaluation was completed in July 2018 and an addendum was issued to the first Five-Year Review. The evaluation demonstrates that the remedy is protective of human health and the environment. LM began the second Five-Year Review in March 2020 and completed the report in June 2021. The Second Five-Year Review Report demonstrates that the remedy remains protective. All groundwater monitoring will continue as required. The process for the partial deletion of the LEHR Federal Facility from the NPL would also begin once remediation is determined complete. LM's on-site responsibilities would then be completed, and the only long-term responsibilities would be maintenance of historical and current site records and responding to stakeholder inquiries.



## CONTACT INFORMATION

**IN CASE OF AN EMERGENCY AT THE SITE,  
CONTACT 911**

**LM TOLL-FREE EMERGENCY HOTLINE:  
(877) 695-5322**

Site-specific documents related to the **Laboratory for Energy-Related Health Research, California, Site**, are available on the LM website at [www.energy.gov/lm/laboratory-energy-related-health-research-lehr-california-site](http://www.energy.gov/lm/laboratory-energy-related-health-research-lehr-california-site)

For more information about LM activities at the **Laboratory for Energy-Related Health Research, California, Site**, contact:

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