

LAWRENCE LIVERMORE NATIONAL LABORATORY SUPERFUND CLEANUP PROGRAM

PARTNERING TO MEET CLEANUP GOALS: A MULTI-PHASE PROCESS

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was established by the federal government in 1980 to provide a process for cleaning up hazardous waste sites that resulted from accidents, spills, or other contaminant releases to the environment.

Administered by the U.S. Environmental Protection Agency (EPA), CERCLA (also known as "Superfund") is a multi-phase process that includes the assessment and characterization of contaminants and agreed upon actions necessary to clean up a contaminated area. Protecting public health and the environment is a tenet of CERCLA.

Lawrence Livermore National Laboratory (LLNL) has partnered with the following agencies to clean up legacy waste material at Livermore Site and Site 300: U.S. Department of Energy (DOE), EPA, California Department of Toxic Substances Control and Regional Water Quality Control Boards. Administration and financing of LLNL's Superfund sites, per Federal Facility Agreements at Livermore Site and Site 300, will continue until cleanup goals have been met.

LLNL has shown through past reporting that soil and groundwater contamination at the Livermore Site and Site 300 does not pose a health risk to the surrounding community or environment.



Wells at Site 300 are used to monitor groundwater quality

LLNL WATER FACTS

LLNL has drilled more than **700** wells each at the Livermore Site and Site 300 to characterize, monitor, and clean up groundwater contaminants.

LLNL staff collects and analyzes approximately **5,400** groundwater samples per year to track groundwater contaminant plumes and evaluate cleanup performance.

At Site 300, more than **450 million** gallons of groundwater have been pumped and treated.

Since cleanup activities first began at the Livermore Site approximately **6 billion** gallons of groundwater have been pumped and treated.

Contaminated mass removed from groundwater at Site 300 totals more than **140 kilograms** and at Livermore Site more than **1,700 kilograms** since the start of cleanup activities.

USING INDUSTRY-TESTED TECHNOLOGIES FOR CLEANUP

LLNL utilizes a variety of industry-tested technologies to test and treat contaminated groundwater. A combination of physical, chemical, and biological treatments are used. Granular activated carbon is used to remove volatile organic compounds (VOCs); ion-exchange resins capture toxins by forming ionic bonds with contaminants. Air stripping is a method of forcing air through contaminated groundwater to pull VOCs out. In some cases, monitored natural attenuation is preferable, allowing contaminants to remain in place while they degrade or decay naturally. Alternative technologies, such as in situ bioremediation, chemical reductive dehalogenation, and thermal methods are continually evaluated in efforts to accelerate site cleanup.



Livermore Site treatment facility



Soil samples are tested to identify contaminant release sites

LLNL'S LIVERMORE SITE

Off-site groundwater contamination was first detected near the Livermore Site in the early 1980s. The contamination consists primarily of VOCs, such as solvents and degreasers, that were used to clean airplane engines when the site served as a U.S. Naval Air Station during World War II. Subsequent site soil and groundwater contamination has been attributed to early research activities, localized spills, leaking tanks, and unlined landfills after the Atomic Energy Commission, and later, DOE became owners of the property. The site was placed on the Superfund National Priorities List in 1987.

LLNL'S SITE 300

Site 300 began operation in 1955 primarily as a high-explosives test facility supporting the LLNL weapons program in research, development, and testing. During past LLNL Site 300 testing, a number of contaminants were released into the environment. Groundwater contamination was detected in shallow aquifers on site in 1981. Site 300 was placed on the Superfund list in 1990. DOE and LLNL began performing groundwater and soil remediation at Livermore Site and Site 300 soon after being added to the Superfund list in 1987 and 1990, respectively.



Analyzing logging drilling cuttings to understand the geology beneath Site 300

For more information contact the LLNL Public Affairs Office at 925-422-4599.

