U.S. DOE & Navy Site

Radiello Sampler

Summary

Media:	Indoor/outdoor air
Study Type:	Routine indoor air monitoring report
Technology:	Accumulation
Peer Reviewed:	Yes
Publication Date:	October 2023

Study Description

The site is a high-security research and development facility located in California. Initial releases of hazardous materials began in the 1940s when the site was used as a naval base. Investigatory and remedial activities have been performed at the site since 1990. Although several historic buildings have been demolished, the site remains an active facility. The building under investigation is a two-story industrial building on a concrete slab located in the southeastern corner of the site. "The building consists primarily of manufacturing workshops but also has offices, conference rooms, breakrooms, kitchens, restrooms, a control room, and a shower."

Compounds: Volatile organic compounds (VOCs), metals, perchlorate, nitrate, HMX (octogen), polychlorinated biphenyls (PCBs), dioxins, furans, tritium, and uranium.

This building and several other buildings on site have been fitted with soil vapor extraction (SVE) systems to address vapor intrusion of VOCs. As part of the performance monitoring of the SVE system in this building, long-term indoor air monitoring has been performed biannually since 2020. Sampling events are performed during the summer and winter months each year, and include the collection of 20 indoor, two crawlspace, and three outdoor air samples.

Samples are collected using Radiello 130 passive diffusive samplers that are deployed for seven days. The samples are then submitted for laboratory analysis of VOCs.

Remedial Phase

Long-term indoor air monitoring is being conducted to evaluate potential vapor intrusion. The objective is to ensure that indoor air quality remains below regulatory screening levels for human health risk. Prior to 2020, long-term air monitoring was performed using active sampling methods.

Outcome

Passive sampling, using Radiello 130 passive diffusive samplers, successfully monitored indoor air concentrations of VOCs, allowing adjustments to be made to the active SVE system. During the July 2023 sampling event, exceedances of PCE and chloroform were identified and addressed.

Case Study Source

Building 511 Air Sample Results, July 11 to July 18, 2023, Lawrence Livermore National Research and Development Laboratory, Livermore Site, California. Written by the Environmental Restoration Department.

References

Demir, Zafer, Peter McKereghan, and Alexis Porubcan. 2021. Addendum to the Fifth Five-Year Review for the Lawrence Livermore National Laboratory Livermore Site. Livermore, CA: LLNL. LLNL-AR-809279.

U.S. DOE (U.S. Department of Energy). 2019. Evaluation of Factors that Influence Potential Vapor Intrusion from Subsurface Contamination. Livermore, CA: LLNL. LLNL-AR-785140.

U.S. DOE (U.S. Department of Energy). 2021. Assessment of Potential Vapor Intrusion from Subsurface Contamination into Buildings, Lawrence Livermore National Laboratory Livermore Site. Livermore, CA: LLNL. LLNL-AR-807881-REV-2.