



Los Alamos National Laboratory Hexavalent Chromium Plume FAQ



What is hexavalent chromium?

Chromium is a naturally occurring element found in rocks, soil, volcanic dust, and other sources. It is in several different forms, including trivalent chromium [chromium (III)] and hexavalent chromium [chromium (VI)]. Trivalent chromium is a nutrient found in vegetables, grains, meats, and some dietary supplements. Hexavalent chromium, which is produced through industrial processes, is a known carcinogen. Hexavalent chromium exposure occurs through inhalation, ingestion, or direct contact with the skin.

What is being done to address the hexavalent chromium plume at Los Alamos National Laboratory?

A network of 32 monitoring, extraction and injection wells has been installed in and around the hexavalent chromium plume. These wells and associated infrastructure support efforts to characterize the plume and to prevent the plume's advancement via an Interim Measure (IM). The focus of the IM has been predominately along the Los Alamos National Laboratory (LANL) southern boundary with the Pueblo de San Ildefonso. As of April 2021, the IM is now also operational along the eastern edge of the plume. While the IM is underway, aquifer and plume characterization is being conducted to refine the site conceptual and numerical models that will support development of a final remedy.

What is the status of the plume?

As reported by the Department of Energy (DOE) in various documents, including the semiannual performance monitoring reports, as a result of the IM, the plume along the LANL southern boundary with San Ildefonso, as defined by the New Mexico groundwater standard of 50 parts per billion, has

shrunk approximately 500 feet of where it was at the start of the IM in 2018. It is anticipated the IM will have a similar impact along the plume's eastern edge.

Is hexavalent chromium from this plume present in Los Alamos County water-supply wells?

No. Los Alamos County's water-supply wells are located outside the plume. DOE supports the county by supplementing their own monitoring of the water-supply wells. Additionally, two "sentinel" monitoring wells are located between the plume and the nearest downgradient water-supply well. These sentinel wells are sampled monthly and would detect any evidence of plume expansion before it would reach the county's well.

Are there pathways for hexavalent chromium from this plume to contaminate water-supply wells?

The actions of DOE and its cleanup contractor N3B are reducing the footprint of the plume while a permanent remedy is developed. As well, DOE and N3B are working closely with Los Alamos County to ensure that nearby water-supply wells are appropriately monitored so that the county can take action if it were to become necessary. There is no practical way for the chromium contamination to reach the Buckman Well Field, which serves as part of the water supply for the City of Santa Fe and Santa Fe County. The possibility of chromium from the plume reaching the Buckman Well Field is extremely unlikely due in part to the distance of the plume to the well field (five miles) and because of the protective actions being taken to prevent migration and reduce the plume footprint.

Is there a possibility hexavalent chromium is being unknowingly drawn into a Los Alamos County water-supply well?

It is extremely unlikely. Additionally, monitoring of sentinel wells located directly upgradient of the nearest county water-supply well would identify chromium that might be migrating towards it. The county's water-supply wells, which are also sampled for chromium on a quarterly basis, show chromium concentrations consistent with naturally occurring levels.

How close is the plume to the boundary with San Ildefonso?

As of May 2021, the southern edge of the plume is currently estimated to be approximately 500 feet from the LANL boundary with the Pueblo de San Ildefonso. At the start of the IM, the plume was approximately at the boundary.

Has the original source of hexavalent chromium contamination been cut off?

Yes. A non-nuclear power plant, the source of the chromium contamination, stopped releasing water with chromium from its cooling towers in 1972. There are no active sources of chromium at LANL.

The hexavalent chromium contamination was discovered in 2004. What has DOE been doing since?

Since the plume was discovered in 2004, wells have been installed to characterize and monitor the plume's behavior. Comprehensive groundwater models have been developed to guide locations of wells and to inform the IM strategy. The wells, treatment system, and several miles of piping necessary for the IM have also been installed. The IM is now fully operational and is underway along the plume's southern edge along the LANL boundary with San Ildefonso and along the plume's eastern edge.

How does the Interim Measure work?

Hexavalent chromium-contaminated groundwater is pumped from the regional aquifer via extraction wells and piped to a centrally located treatment system that utilizes a technology called ion exchange to remove chromium from the groundwater. The treated water is then pumped to injection wells located near the downgradient edge of the plume via a network of pipes. Over time, the injection of the treated water will reduce the hexavalent chromium concentrations at the edge of the plume and reduce the plume's size.

When will the Interim Measure be fully active?

The IM is fully operational.

What will the final strategy be for the treatment of the hexavalent chromium plume?

DOE and N3B are evaluating potential approaches to remediate the plume. The final remedy will be proposed to the New Mexico Environment Department (NMED) by DOE and is subject to NMED's approval process.

When will the final remedy be implemented?

No date has been established for final remediation. However, the goal of the IM is to ensure that the footprint of the chromium plume remains within the LANL boundary while the technical approach for final remedy is evaluated and approved. The timing of the final remedy will be dependent on the approach selected and a process that involves public participation and NMED approval.

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