

West Valley MAIN PLANT PROCESS BUILDING REMOVAL



Protecting the health and safety of our employees, surrounding community, and our environment remains our top priority.

Quick Facts

WHAT'S PLANNED?

The U.S. Department of Energy (DOE) is removing the Main Plant Process Building (MPPB) and is disposing the waste offsite at licensed disposal facilities as part of our ongoing cleanup efforts at the West Valley Demonstration Project (WVDP) site. Removal of the MPPB started in September 2022 and is expected to take approximately 30 months to complete.

WHAT IS THE MAIN PLANT PROCESS BUILDING (MPPB)?

The MPPB is a 35,100 square-foot building that operated as a commercial reprocessing facility, recovering reusable plutonium and uranium from spent nuclear reactor fuel. The MPPB was in operation from 1966 to 1972.

WHY?

The Department is demolishing the MPPB as the next step in its mission to decontaminate and decommission facilities at the West Valley Demonstration Project. This is the last major above-ground structure remaining to be demolished at the site.

WHAT ARE THE RISKS?

Significant work has been done over the past two decades to prepare the MPPB for removal in a manner that is protective of human health and the surrounding environment.

The site has worked to safely reduce remaining radioactivity in the facility by 98 %, through the removal of more than 7 miles of contaminated piping, and over 50 tons of contaminated equipment. These efforts were done to ensure that removal is **safe and protective** of the surrounding community. An extensive modeling and air monitoring system has been established to ensure any potential radiological exposure from removal activities is kept well below regulatory levels and is protective of the site's surroundings.

DOE and its cleanup contractor at West Valley are committed to keeping state and local officials, nearby residents and other stakeholders informed of the preparations and progress of the MPPB removal effort.

Your Safety and the Safety of Our Environment is Our Foremost Priority

The WVDP has developed a comprehensive monitoring plan that will strictly adhere to during demolition of the MPPB to protect the health and safety of the workforce, surrounding community, and environment. Experienced radiological personnel will monitor, provide guidance, and respond immediately to changing conditions to protect the health and safety of the workforce, surrounding community, and environment.

The WVDP has worked closely with the U.S. Environmental Protection Agency (EPA), U.S. Nuclear Regulatory Commission, local and State agencies, regarding our plans and approaches to demolish the MPPB in an open-air manner.

Work procedures include necessary requirements to minimize any potential for contaminant releases from the site, and to maintain compliance with regulatory standards. Demolition debris is packaged, shipped, and safely disposed of offsite, at licensed commercial waste disposal facilities.

QUARTERLY AMBIENT AIR MONITORING REPORT

Third Quarter 2023

Summary of Latest Monitoring Results

In the third quarter of 2023 (ending September 2023), no positive detection was observed at the hypothetical maximum potential exposure location, which is the direction of historically predominant prevailing downwind (north-northwest) (refer to the separate air monitoring data tables). The National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance limits, shown in the separate ambient air monitoring data sheet, are based on airborne concentrations present over a period of one year, resulting in a dose of 10 millirems (mrem) for a full calendar year. Based on the third quarter results, the associated dose to the north-northwest direction from the MPPB demolition activities was zero. The third quarter results of all isotopes can be viewed at: <https://www.chbwv.com/MPPB/Report/Ambient-Air-Concentrations-3rd-Qtr-2023.pdf>. A very low positive detection was observed this quarter in the west-northwest direction. The result represents only 0.03% of the annual NESHAP dose (mrem) limit value. A figure showing the ambient air monitoring locations is also included in the website link provided above.

WVDP Air Monitoring Systems

The WVDP permitted limit (measured in dose) from air emissions to a member of the public is 10 mrem per year. This means that the WVDP site may not release a concentration of airborne radioactivity that would cause an individual living at the site boundary 24 hours/day, 365 days/year to receive a radiological dose above 10 mrem per year, or, on average, more than 0.833 mrem/month.

As noted above, the quarterly results were far below the compliance limits and therefore, the hypothetical dose to a member of the public would be a small fraction of the 10 mrem dose limit.

On-Site Air Monitoring

Real-time on-site air monitoring, known as continuous air monitors (CAMs) ensures worker and community protection and provides early warning of a potential change in work area conditions.

Off-Site Ambient Air Monitoring

The WVDP Ambient Air Monitoring Network (AAMN) is an EPA-approved ambient air monitoring system. In 2021, the WVDP placed sixteen (16) ambient air samplers, one in each 16 compass sectors within approximately 1 to 2 miles of the Main Plant. The locations are in proximity to our nearest residents in each sector. This network of off-site continuous air samplers is used to demonstrate annual compliance with the NESHAP, established by the EPA.

The samples are collected every two weeks, composited, and analyzed on a quarterly basis. The resulting composite is utilized to evaluate trending and to validate that WVDP air emissions remain well below the EPA dose limit. This off-site monitoring system has effectively monitored the air quality surrounding the site during demolition activities. The network's detection limit meets (and is lower than) the required EPA detection limits. The system operates continuously and is used to demonstrate compliance with the EPA annual dose standard (10 mrem/year) in air (see page 4 for the explanation about 'dose').

The Ambient Air Monitoring System consists of samplers that continuously pull the air across filters that capture small particulates. Samples are sent to a qualified off-site laboratory where radioactive materials are analyzed by very sensitive instruments. Their analytical processes provide detection sensitivity for low levels of airborne radioactivity—up to one million times more sensitive than real-time monitors.

QUARTERLY OFF-SITE SURFACE WATER MONITORING REPORT

Third Quarter 2023

Summary of Latest Monitoring Results

The third quarter of 2023 monitoring results at a downstream surface water monitoring location were only 0.05% or less of the DOE-STD-1196-2022, "Derived Concentration Technical Standard" (DCS) guideline values (please refer to separate surface water data tables). The DCS values ($\mu\text{Ci}/\text{mL}$) are defined as the concentration of a radionuclide that a member of the population, based on conditions of continuous exposure for one year by one exposure mode (e.g., air, water, food), would result in a dose of 100 mrem. The third quarter monthly water monitoring results for strontium-90 and cesium-137 at a downstream sampling location can be viewed at: <https://www.chbvw.com/MPPB/Report/Off-Site-Surface-Water-Concentrations-3rd-Qtr-2023.pdf>.

What Does This Mean?

As noted above, the recent results for the off-site, downstream monitoring locations were well below the DCS values. The third quarter of 2023 monitoring results are also comparable to prior monitoring results at these locations. The WVDP models the annual waterborne dose to off-site individuals and reports the results in the WVDP Annual Site Environmental Reports (ASER).

Off-Site Surface Water Monitoring

Waters from the WVDP site eventually drain into Buttermilk Creek, which flows northward, east of the site. Buttermilk Creek converges with Cattaraugus Creek north of the site, and Cattaraugus Creek then flows westward away from the WVDP and drains into Lake Erie. Off-site surface water is sampled at three stream locations, one background location upstream of the site from Buttermilk Creek (not affected by WVDP activities), one downstream of the WVDP from Buttermilk Creek, and one further downstream of the WVDP from Cattaraugus Creek.

What is Off-Site Surface Water Monitoring?

The water samples are collected once every two weeks and combined into semiannual samples at the Buttermilk Creek sampling locations and into monthly samples at the Cattaraugus Creek sampling location. Creek water samples are collected with a continuous water sampling system and then shipped to a certified laboratory for radiological and chemical analyses.

The samples collected at these three stream locations are used to ensure that the off-site surface water is safe and complies with DOE's guidelines for ingested water.



The WVDP models the annual dose to off-site individuals through all water pathways, using comprehensive waterborne radiological data, including site discharges into these creeks. Members of the public do not have access to the WVDP site or the on-site water. No potable drinking water is drawn from Cattaraugus Creek, downstream of the WVDP site. As previously mentioned, the modeling results are included in the WVDP ASER and continually show the dose to be a very small fraction of the DOE limit of 100 mrem/year.

The Department has safely and successfully conducted numerous open-air demolitions throughout the DOE complex and will utilize lessons learned, modeling and other data to ensure the safe removal of the MPPB. The WVDP Annual Site Environmental Report (ASER) can be found at: <https://www.wv.doe.gov>.

For questions about the WVDP quarterly reports, contact information can be found at www.wv.doe.gov.

The Low Down on Millirems

WHAT IS A MILLIREM?

A millirem is a unit of absorbed radiation dose by a human being.

MILLIREMS AND YOU

The WVDP permitted limit (measured in dose) from air emissions is 10 millirem per year (mrem/yr.) to the Maximally Exposed Off-Site Individual (MEOSI). This means that the WVDP site cannot release an amount of radiation that would cause an individual at the site boundary line to receive a radiological dose above 10 mrem/yr.

The estimated potential dose for approximately 30-month removal of the MPPB is 0.08 mrem. This dose estimate for the entire project period represents less than 1% of the 10 mrem/yr standard and less than 5% of the radiological dose one would receive by taking a one-way flight from Washington, D.C. to Seattle, WA. The annual dose release from the WVDP in 2022, including both airborne and waterborne pathways, to MEOSI was 0.017 mrem/yr.

Radiation in Your Everyday Life

WHAT IS BACKGROUND RADIATION?

Background radiation exists all around us, no matter where we live. Most background radiation occurs naturally. It mainly comes from natural minerals, some of which are even found in the human body, and cosmic radiation.

DOES THIS MEAN THE AVERAGE AMERICAN IS EXPOSED TO RADIATION EVERY DAY?

Yes. In fact, according to the National Council on Radiation Protection and Measurements, the average American is exposed to 620 mrem/yr, about half of which comes from natural background radiation.

The Amount of Radiation Absorbed by a Person is Measured in Dose

To ensure the safety and protection of workers and the public, a worldwide body of experts has established basic principles to safely regulate radiation exposure, including dose limits. These global principles date back to 1928 and are part of the International Atomic Energy Agency (IAEA)'s Basic Safety Standards for Radiation Protection. The IAEA's standards are published jointly with the World Health Organization, the International Labor Organization, and the Organization for Economic Cooperation and Development (OECD)'s Nuclear Energy Agency.

DOE and Environmental Monitoring

The Department of Energy (DOE) works hard to ensure communities near our facilities maintain safe and healthy environments while meeting national and state environmental standards. The Department of Energy is committed to working with the community and the state to ensure the safety, health and protection of our workforce, the general public and the environment.

Relative Doses from Radiation Sources

