

# Ambient Air Monitoring

Hanford’s ambient air monitoring system has been operating for many years and is designed to provide a retrospective report of general air quality. The frequency of collecting and analyzing samples makes it an effective system for observing long-term trends; it is not intended to be relied upon for monitoring or controlling potential airborne contamination from specific cleanup activities such as PFP.

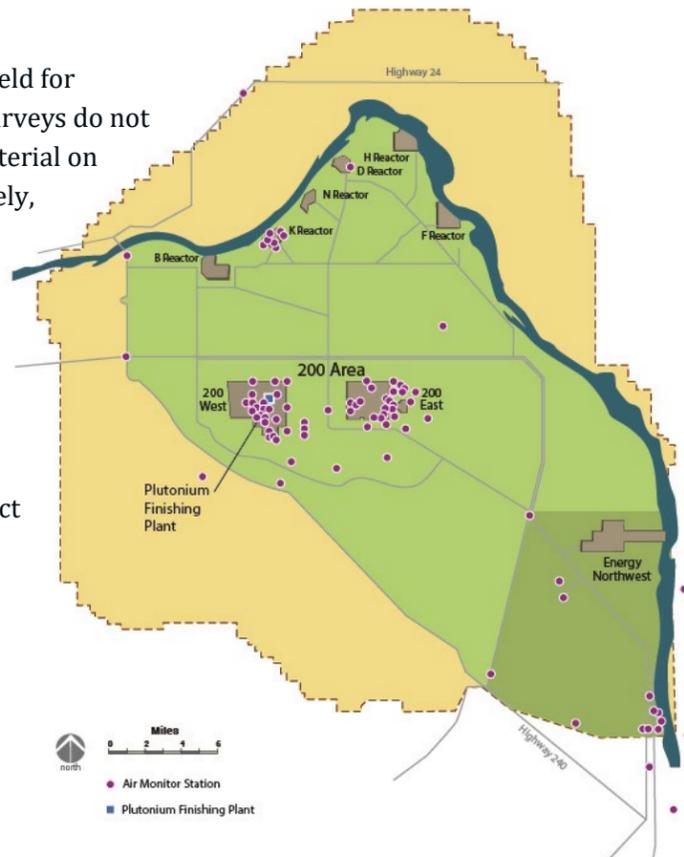
## Ambient Air Monitors

A network of 97 monitors across the Hanford Site is used to determine if site operations are causing any changes in the ambient air over long periods of time. The Washington State Department of Health also operates ambient air monitors on the Hanford Site, and some are located next to DOE air monitors. Results of ambient air monitoring are used, along with data from Hanford Site emission sources, to produce an annual report that compares radionuclide air emissions to the regulatory limit of 10 millirem of exposure for a member of the public from Hanford Site operations. Reports going back several years are available on [www.hanford.gov](http://www.hanford.gov).

Filters are collected every two weeks and checked in the field for contamination (called gross contamination, because the surveys do not determine specific contaminants). Because radioactive material on a single filter is typically too small to be measured accurately, samples over a six-month period of time are compiled and analyzed as a combined sample in order to be able to detect minute changes in air quality over time. The sample analysis will determine whether specific hazards are present and identify the type and concentration of contaminants. Some of the ambient air monitors are located in the vicinity of PFP but are not part of the PFP monitoring system used to control contamination or protect personnel.



Ambient Air Monitor



Ambient air monitors are located across the Hanford Site and surrounding areas.

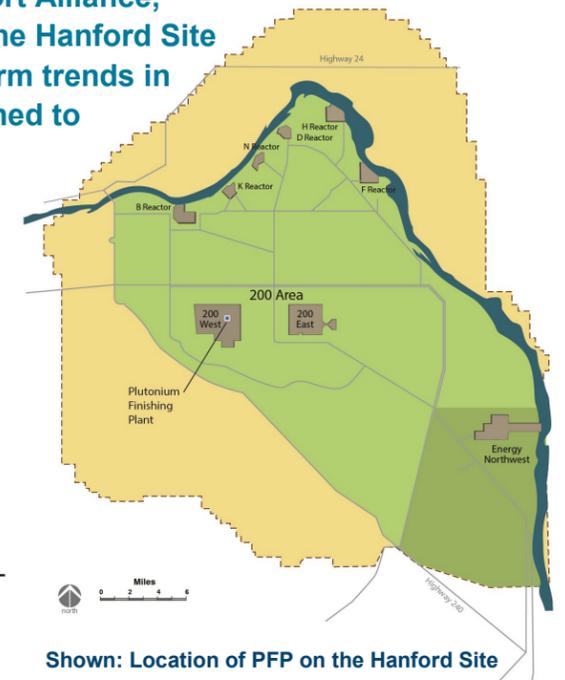
# THE HANFORD SITE

Protecting workers from occupational exposures to radiation is a top priority for the Department of Energy (DOE) at the Hanford Site. Cleanup contractors operate monitoring systems at facilities and projects, like the Plutonium Finishing Plant (PFP), that provide real-time or daily readings to ensure personnel are not exposed to radiation above protective limits. Hanford Site services contractor, Mission Support Alliance, operates an ambient air monitoring system as part of the Hanford Site Environmental Monitoring program to measure long-term trends in air quality across the site, but that system is not designed to protect workers from occupational exposures.

The PFP monitoring program is designed to detect contamination during the demolition of PFP. Results from these devices are gathered frequently and analyzed for contamination. Monitoring devices include:

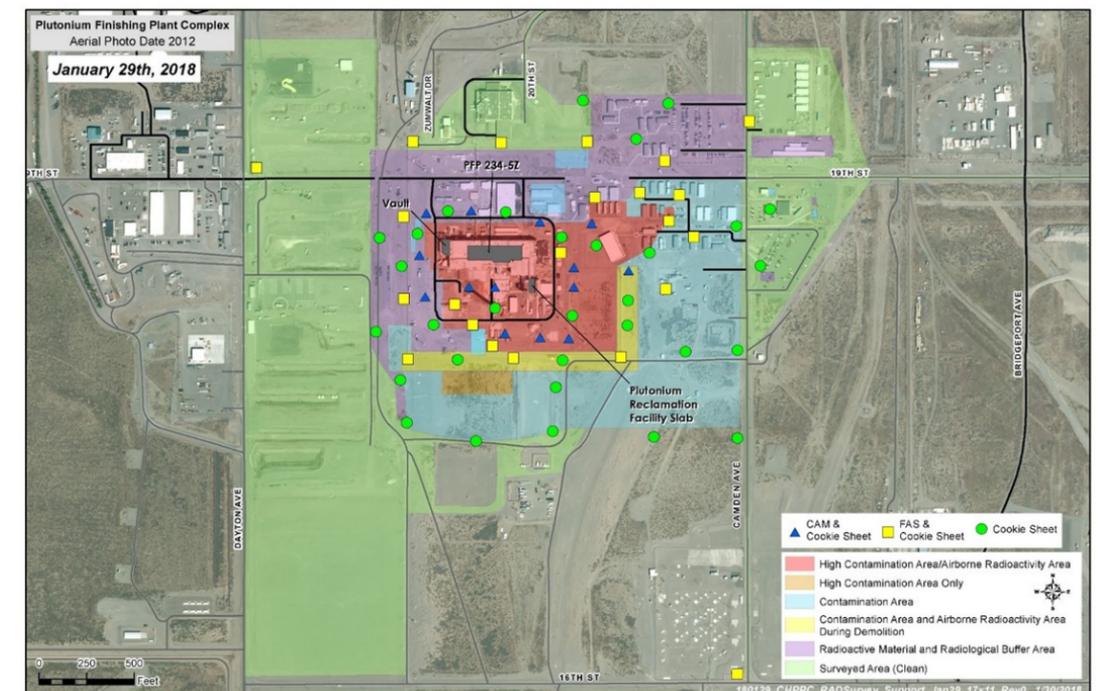
- Continuous air monitors
- Surface monitors (cookie sheets)
- Fixed air samplers
- Lapel air samplers

Monitoring devices are placed at strategic locations to provide real-time or frequent results that contractors use to determine if personnel are at risk of exposure to airborne radioactivity or contamination.



Shown: Location of PFP on the Hanford Site

Map showing locations of three types of monitors around or near the Plutonium Finishing Plant: continuous air monitors, cookie sheets, and fixed air samplers.



The Plutonium Finishing Plant (PFP) monitoring systems are designed to assist in analyzing and controlling the spread of contamination during demolition.



Continuous Air Monitor

### Continuous Air Monitor

The continuous air monitor is the only air monitor at Hanford that sounds an alarm when potential contamination is detected.

The alarm is triggered after a pre-determined level of radioactivity is detected. The continuous air monitor provides real-time information about the level of airborne radioactivity, allowing employees to respond appropriately.

Continuous air monitors are strategically placed at locations near the PFP demolition zone. Filters are collected and analyzed daily to provide additional information about any detectable level of airborne radioactivity. There are 14 continuous air monitors\* in and around PFP. Contamination values are expressed as “derived air concentrations” times hours (DAC-hours).



Surface Monitor or “cookie sheet”

### Surface Monitor

Surface monitors, or “cookie sheets,” are flat and metal with a smooth surface, and are designed to monitor removable contamination (such as windblown dirt or dust) from a potentially contaminated area.

The flat surface provides a good environment for dust and or dirt to collect, which allows workers to take samples for testing.

To survey the cookie sheets, workers wipe the surface of the cookie sheet with smear paper and hold the paper to a hand-held contamination detector. There are 67 cookie sheets\* in the PFP demolition zone, which are monitored and tested up to twice daily.

### Fixed Air Sampler

Fixed air samplers are stationary monitors that provide retrospective, not real-time, data about the presence and type of airborne radioactivity.

The monitors are fitted with filters that are collected daily for analysis. Unlike ambient air monitors that are part of Hanford’s environmental monitoring system, fixed air samplers monitor contamination from a specific project like the demolition of PFP. Samplers are set up near the work zone and remain in place for an extended period of time. Air samples are collected and analyzed daily.

There are 24 fixed air samplers\* located near PFP. Contamination values are expressed as derived air concentrations times hours (DAC-hours).

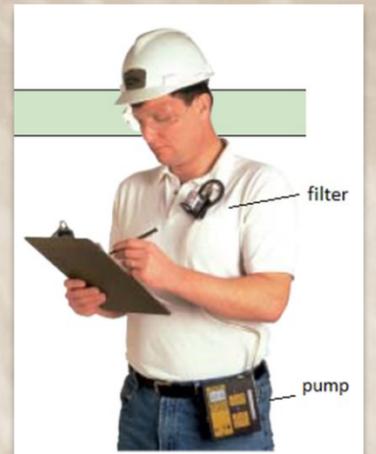


Fixed Air Sampler

### Lapel Air Sampler

Lapel air samplers are worn by workers working in or near high contamination areas.

A battery-powered pump is placed around a worker’s waist. The pump is then attached by a hose with a filter to the collar (lapel) of the worker. The filters are collected from the lapel air samplers after each entry by the worker into the contaminated area and are analyzed to determine if airborne radioactivity was present, and if so, at what levels. The results will determine if a worker is at risk of inhaling or ingesting airborne radioactivity. The measurements are called “personal samples” because they measure the air in the breathing zone of an individual worker while they are in the work area.



Lapel Air Sampler

Type of monitor	Number of monitors (as of Feb 2018)	Samples collected	Alarm detection
Surface monitor (cookie sheets)	67	Up to twice daily	No
Continuous air monitor	14	Continuously	Yes
Fixed air sampler	24	Daily	No
Lapel air sampler	varies	After each worker entry into a highly contaminated area	No

\*number of monitors as of February 2018