

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) Portsmouth Gaseous Diffusion Plant (PORTS) is located on a 5.8-square-mile site in a rural area of Pike County, Ohio. The site is 2 miles east of the Scioto River. PORTS, which produced enriched uranium via the gaseous diffusion process from 1954 to 2001, is one of three former uranium enrichment plants used for national security and the commercial sector.



Fox at the Portsmouth Site

Since 1989 DOE's Office of Environmental Management (EM) has been conducting environmental cleanup at PORTS. DOE and its contractors' activities at the site include:

- Environmental remediation, or the cleanup of soil, groundwater and other environmental media from past operations;
- Decontamination and demolition of gaseous diffusion process buildings and associated facilities;
- Disassembly and removal of equipment, removal of wastes including asbestos, PCBs, and hazardous waste, and deactivation of utilities and other systems;
- Reuse and recycling of excess equipment, clean scrap materials, and other items with priority given to transfer to the local community;
- Characterization and disposal of wastes stored or generated on site, including monitoring and maintenance of closed landfills; and
- Conversion of depleted uranium hexafluoride cylinders.

DOE conducts environmental monitoring to assess the impact, if any, that site activities may have on public health and the environment. In 2020, more than 10,000 samples of air, water, external radiation, soil, sediment, vegetation, fish, and wildlife were collected from on and around PORTS and analyzed for radioactive and nonradioactive contaminants.

Each year DOE PORTS prepares the Annual Site Environmental Report (ASER) according to the requirements of DOE Order 231.1B, Environment, Safety, and Health Reporting. The ASER is a key component of DOE's effort to keep the public informed about environmental conditions at PORTS. This report and previous ASERs can be found at www.energy.gov/pppo/downloads/portsmouth-annual-site-environmental-reports-0.

Chapters within the ASER provide a more detailed overview of the activities at PORTS, including:

Chapter 1: an introduction to the activities at the site;
Chapter 2: a summary of compliance with laws and regulations;
Chapter 3: details about environmental programs conducted on site;
Chapter 4: radiological environmental monitoring conducted at the site;
Chapter 5: non-radiological monitoring, such as metals and PCBs;
Chapter 6: groundwater monitoring; and
Chapter 7: a summary of the actions taken to ensure the quality of information collected from the monitoring programs.

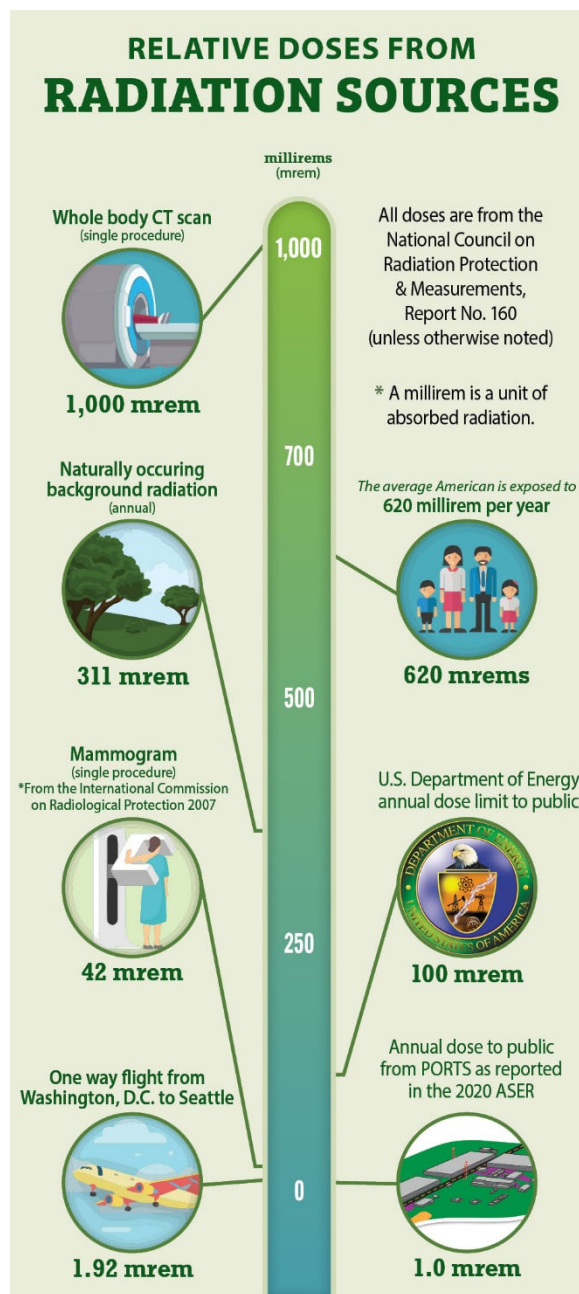
Major components of the environmental monitoring completed by DOE in 2020 are summarized below:

- Discharges of radionuclides, chemicals, and other water quality parameters to Little Beaver Creek, the Scioto River, or other water bodies were measured at 11 locations called National Pollutant Discharge Elimination System (NPDES) outfalls.
- External radiation was measured continuously at 24 on and off-site locations. The measurements were collected quarterly.
- Ambient air was sampled at 19 locations on and off site and analyzed for radionuclides and/or fluoride. Five new ambient air monitoring stations began sampling in 2020 for non-radiological air pollutants that could be released due to decontamination and decommissioning (D&D) activities: particulate matter, metals, volatile organic compounds (VOCs) and asbestos.
- Surface water samples were collected semiannually from 14 locations on and off-site and analyzed for radionuclides.
- Sediment was sampled at 18 locations and analyzed for radionuclides, metals, and PCBs.
- Soil samples were collected at 15 locations, including on-site, fence line, off-site and background locations and analyzed for radionuclides.
- Biota samples, including vegetation, deer, fish, food crops, milk, and eggs, were analyzed for radionuclides. Fish were also analyzed for PCBs.
- Approximately 300 wells were sampled at varying frequencies to monitor remedial actions, movement of groundwater contaminants, and groundwater quality.

2020 Environmental Performance Summary

In 2020, DOE's monitoring performance at PORTS is summarized below:

- Environmental monitoring data collected in 2020 were similar to data collected in recent years indicating radionuclides, metals, and other chemicals released by PORTS would have a minimal effect on human health and the environment.
- The dose of radiation (based on calculations) that could be received by a member of the public from all pathways of exposure was 1.0 millirem (mrem)/year, which is less than 1% of the DOE annual dose limit of 100 mrem/year.
- Concentrations of most contaminants detected within the groundwater plumes at PORTS were stable or decreasing in 2020. Concentrations of trichloroethene (TCE) or metals were increasing in a few wells in the monitoring areas. These areas continue to be closely monitored. Changing TCE concentrations in the X-701B monitoring area and near the Little Beaver Creek are being further investigated.
- Results for the residential water supply monitoring program indicated that PORTS has not affected drinking water wells outside the site boundaries.
- Ambient air monitoring contaminant levels for both radionuclides and fluoride continued to be either not detected, detected below DOE standards, or within background levels.
- Ambient air monitoring at the stations installed in 2020 indicated that levels of particulate matter, metals, VOCs, and asbestos, if detectable, were within health-based standards.
- Surface water monitoring contaminant levels for radionuclides at on-site and off-site locations upstream and downstream from PORTS continued to be either not detected or below DOE standards.
- Sampling of sediment in 2020 for metals indicated that no appreciable differences were evident in the concentrations upstream and downstream from PORTS. Contaminant levels for radionuclides were within background levels or below DOE standards.



- Concentrations of PCBs in on-site and off-site sediment samples were below the level of concern established by regional screening levels of the U.S. Environmental Protection Agency (EPA) and Ohio EPA.
- Contaminant levels for radionuclides in soil and food crops were within background levels or below DOE standards.
- Contaminant levels for radionuclides in deer were below DOE standards.
- Radionuclides were not detected in samples of fish, milk, and eggs collected in 2020.
- In 2020, PCBs were detected in fish caught in off-site creeks within the range of concentrations detected in recent years. The detections were within the consumption advisory limits set by the Ohio Department of Health.
- PCBs detected in one sample of fish collected from an on-site creek contained PCBs above consumption advisory limits set by the Ohio Department of Health. PCBs are being addressed at PORTS as a part of the ongoing site cleanup mission.

During 2020, PORTS reported the following:

- Two water discharge locations called NPDES outfalls exceeded discharge limits set by Ohio EPA for total suspended solids, which are sediments and particulate matter in water that can make the water cloudy. These exceedances were caused by a combination of excessive rainfall and operational issues. Operational issues were corrected. One outfall exceeded discharge limits for mercury. These mercury exceedances are being addressed in accordance with the compliance schedule in the NPDES permit. One outfall had a single exceedance of a daily discharge limitation for chlorine. This exceedance lasted no longer than 4 hours based on samples collected before and after the exceedance.
- Four unplanned on-site releases were reported to Ohio EPA and other national, state, and/or local authorities (as required by the specific regulations pertaining to each release). Two releases were groundwater contaminated with TCE due to piping component failures in the on-site groundwater extraction systems, one release was sewage from an equipment blockage in a screen station at the site Sewage Treatment Plant, and one release was a transformer oil leak in the X-530 Switchyard. Equipment repairs were completed as needed to place the systems back in operation. The releases were cleaned up and no other actions were required by Ohio EPA.

DOE and its contractors at PORTS are committed to enhancing environmental stewardship and to reducing any impacts that site operations may cause to the environment. PORTS implements sound stewardship practices in the protection of land, air, water, and other natural or cultural resources potentially impacted by their operations. A report of progress in achieving specified Environmental Management System (EMS) goals is submitted annually to DOE Headquarters. The environmental stewardship scorecard for PORTS in fiscal year 2020 was green, which indicates standards for the Environmental Management System implementation were met.

A complete summary of the environmental programs can be found in the chapters following this Executive Summary.