PADUCAH GASEOUS DIFFUSION PLANT FACT SHEET

The mission of NCSL's Nuclear Legislative Workgroup (NLWG) is to provide legislative members with the opportunity to learn about the cleanup of federal nuclear weapons production and research facilities, the transportation and storage of radioactive wastes, and nuclear energy issues that affect our nation and states. This fact sheet is part of this effort.

Overview

The Paducah Gaseous Diffusion Plant (PGDP) in western Kentucky, was first used to produce enriched uranium for military reactors and the nation's nuclear weapons program. Located 3 miles from the Ohio River on 3,556 acres, the Paducah site hosts nation's sole remaining gaseous diffusion plant that continues to produce enriched uranium for use in nuclear fuel. The plant is owned by the U.S. Department of Energy and is leased to the United States Enrichment Corporation. The DOE's Office of Environmental Management oversees activities at the Paducah site, including environmental management, waste management, depleted uranium hexafluoride conversion, and decontamination and decommissioning.

State: Kentucky
Size: 3,556 acres
Original Purpose: Enriched Uranium Production
Estimated Cleanup Completion: Beyond 2040

Scale of the Contamination

Expected cleanup will dispose of 1.5 million-4 million cubic yards of hazardous soils, metals, debris and other materials. Buildings and facilities are contaminated with radioactive materials and asbestos. Onsite and offsite groundwater, surface water and soils have been contaminated with chemicals such as trichloroethylene, polychlorinated biphenyl, technetium-99, and uranium, and pollutants from the plant have been found in nearby creeks that feed to additional water sources.

DOE's Environmental Management Activities

DOE-EM will continue remedial activities at Paducah site. DOE has begun planning for future decontamination and decommissioning of the entire gaseous diffusion plant facility and the full-scale cleanup operations will begin after the plant has ceased operations.

Groundwater Treatment
Pump and Treat systems have successfully treated contaminated groundwater and will continue to be used in future remedial activities. An Electrical Resistance Heating System was used in 2010 to treat and remove trichloroethylene from contaminated groundwater. The treatment was successful only 20-60 feet below ground. DOE is considering alternative operations to complete remediation of the deeper aquifer and expects to begin operations in 2014.

Demolition
The C-410 Feed Plant consisted of nine facilities that produced uranium hexafluoride (UF6). Demolition of the plant includes the removal of asbestos material, UF6 piping, and 15 cold traps. Cleanup began in 2011 and decommissioning activities were accelerated under the American Recovery and Reinvestment Act. The C-340 Metals Plant is a 5,000 square foot facility that was used to make uranium metal. Demolition began in 2011, five years ahead of schedule.

Other Activities

The Water Policy
In 1988 DOE discovered trichloroethylene and technetium-99 in off-site water wells forcing local residents to use alternative water supplies. As a result, DOE created a Water Policy that provides alternative water sources to residents that may be affected by contaminated groundwater at no cost. In exchange, residents must agree to refrain from using the groundwater. This policy is used to prevent the public from potential exposure to contaminants.

DUF6
The DOE has constructed Depleted Uranium Hexafluoride Conversion Facilities at both Paducah and Portsmouth (Ohio) gaseous diffusion plants. These facilities convert depleted uranium hexafluoride, such as power plant waste, into the more stable form of uranium oxide powder. This conversion will allow the uranium to be disposed of and will produce hydrofluoric acid that has commercial industrial value. As of 2012, both conversion facilities are operational.

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Timeline for Cleanup Completion

Current estimates have the cleanup at Paducah site extending beyond 2040. By 2019, 70 percent of site is expected to be available for reuse and reindustrialization. DOE cleanup began in 1988 and full scale decontamination and decommissioning operations will begin in 2013.