

## **OHIO EPA INVOLVEMENT AT MOUND**

This fact sheet describes the U.S. Department of Energy (DOE) Miamisburg Environmental Management Project (MEMP) cleanup activities at the DOE Mound Plant. The Ohio Environmental Protection Agency (Ohio EPA) and the U.S. EPA share in the regulatory oversight of cleanup activities at the site. All state regulatory efforts with regard to cleanup activities and environmental monitoring of off site releases are coordinated through Ohio EPA's Federal Facilities Program. Ohio Department of Health (ODH) provides technical assistance to Ohio EPA with regard to radioactive contaminants and monitoring.

## **Background**

The DOE Mound Plant is located on 306 acres in the southwest section of Miamisburg, Ohio. The Mound Plant was established in late 1946 as a facility to support atomic weapons research and energy programs. It was operated by Monsanto from its opening until 1988. The primary mission of the Mound Plant over the years has been the development, engineering, manufacturing and evaluation of explosive components for the U.S. nuclear defense stockpile.

The Mound Plant was placed on the National Priorities List in 1989 due to past waste disposal practices and releases to the environment. As a result, cleanup efforts were initiated under the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA, also known as "Superfund").

## **Threats and Contaminants**

**Radioactively contaminated soils:** Historically, radioactive materials were used in processes on the SMPP (Special Metallurgical/Plutonium Processing) Hill, the southeastern of two distinct elevated areas at the site. The northwestern hill, known as the Main Hill, was the site of tritium processes, isotopic research, and radioactive waste operations. Radioactive wastes were transferred from the SMPP hill to the Main Hill for treatment, processing and storage via underground waste lines. In connection with these operations, along with several waste storage operations, various releases of radioactive materials to soils have occurred over time at different locations across the site. The resulting contaminated soils contain plutonium, thorium and other radionuclides.

**Ground water:** The western edge of the Mound Plant overlies a Buried Valley Aquifer (BVA). The BVA is a sole source aquifer which provides drinking water to the Mound Plant and the surrounding community of Miamisburg. This area of the property, also known as Operable Unit 1 (OU1) contains historical waste burning and disposal areas. Approximately 85% of OU1 waste was removed in 2007. The main concern in this area is the migration of VOC's (volatile organic compounds) to the BVA and ultimately to drinking water supplies. VOC's have also been detected in ground water at other locations on site, as well as in ground water at other locations on site, as well as in ground water seeps along the northwest border of the Main Hill.

## **Cleanup Strategy: Mound 2000**

When the Mound site was placed on the NPL, DOE developed the Operable Unit concept, dividing the site geographically into nine cleanup areas. Each operable unit contained unique cleanup issues as well as individual investigation requirements, schedules and cleanup remedies. This approach began to change in 1994 due to major funding reductions and a directive from DOE's Assistant Secretary for Environmental Management to perform a Strategic Milestone Review in order to reexamine the cleanup strategy with respect to limited funding.

As a result, Ohio EPA and U.S. EPA Region V have joined DOE Mound in the development of the Mound 2000 program. The program is designed to lessen the effects of budget cuts and to accelerate cleanup, allowing for release of property for economic development as an industrial/commercial center for the City of Miamisburg. Under Mound 2000, the Operable Unit concept was replaced by "release blocks", or parcels, which are scheduled to be evaluated, cleaned up and released for industrial/commercial use. Each release block contains numerous Potential Release Sites (PRS's which are reviewed by a core team consisting of DOE Mound, U.S. EPA, and Ohio EPA. PRS's are areas of potential contamination. ODH provides technical assistance on radiological issues. The core team determines whether potential or existing contamination requires no further assessment (for example, further sampling or data gathering), further assessment or a response action cleanup.

In fiscal year 1996 the Mound 2000 process resulted in a cost savings of approximately \$4.5 million. This savings can be attributed to streamlining of the decision-making process, reduction in paperwork and increased efficiency in the cleanup process. Projected overall savings for cleanup of the Mound site approach \$400 million.

## **Cleanup Verification**

All response and remedial actions at the Mound site are sampled subsequently to verify cleanup in accordance with CERCLA. Ohio EPA participated in split and independent sampling to verify DOE Mound results.

## **Decontamination and Decommissioning**

The Decontamination and Decommissioning (D&D) program combines decontamination (cleanup of facilities contaminated by radioactive materials) and decommissioning (dismantlement and removal of contaminated facilities that have no further use). Initially, CERCLA involvement was minimal, consisting of the review of sampling and analysis plans for soils at the location of demolished buildings. However, upon the early success of Mound 2000, the D&D decision making was integrated with the Mound 2000 process in order to facilitate the release of buildings for reuse. The first building determined to be releasable under the integrated process is Building 89, a former explosive materials warehouse.

## **Evaluation of Risk**

When all response and remedial actions have been performed within a release block, it is necessary to evaluate risks to human health due to any residual contamination that may remain in the given release block. A risk evaluation is performed to determine that future industrial/commercial use of the land will not subject users to unacceptable health risks. The evaluation is performed prior to transfer of the release block.

The Mound 2000 Residual Risk Evaluation Methodology (RREM) was developed by DOE

Mound and Ohio EPA as a guide for evaluating residual risks for each release block at the Mound site. The methodology was derived from the CERCLA baseline risk assessment process. However, it is used to evaluate residual risk (after cleanup) rather than to determine the need for a response action (prior to cleanup). The RREM takes into account final sampling data across a release block and quantifies risk associated with residual contamination. The RREM is used in part to prepare a Residual Risk Evaluation Report (RRER) for each release block or parcel. The evaluation is reviewed by the core team and made available for public comment. This document plays a key role in the determination that release of property will not impose unacceptable human health risks to the future users.

### **Environmental Monitoring**

Ohio's environmental monitoring activities began at the Mound Plant near the end of 1994. These activities are intended to monitor any releases from Mound which are primarily due to production activities, on-site cleanup, and decontamination and decommissioning (D&D) activities. Regularly sampling air, ground water, surface water, sediment, fish, vegetation, and produce monitored potential off-site contamination under an Agreement in Principle grant. In addition, on site sampling of soil, surface water, air, and ground water was conducted to monitor cleanup investigations and cleanup under a Cost Recovery grant. Ohio's off property program worked closely with the DOE Environmental Monitoring Program. It conducted a review of DOE's program, including the evaluation of sampling location, frequency, media and parameters, in order to determine the appropriateness of the program. Ohio EPA prepared the AIP 1995 Annual Report to the Public on the Mound Plant to document environmental monitoring oversight activities. The report provides interested parties a source of information regarding the state's regulatory, environmental monitoring, public outreach and planning activities for the 1995 calendar year. A similar report was completed for 1996 and 1997.

In addition to regular environmental monitoring, the program responded to events occurring on site as well as to citizen concerns. In response to an October 1996 tritium release, Ohio EPA staff used Geographical Information System (GIS) modeling to determine sampling locations. Ohio EPA collected soil, surface water, vegetation, and air samples to determine any effects from the release, and prepared a public fact sheet detailing the event and data results. ODH provided laboratory support and technical assistance at the Emergency Operations Center in Columbus.

Ohio EPA has also responded to citizen concerns regarding the safety of property surrounding the site. Staff collected soil and surface water samples from residential property near the Mound Plant. Results were provided to the residents with an explanation of the data.

In 1996, Ohio EPA established an air monitoring program at the Mound site. Two high volume air samplers were installed at the site, and a background sampler was installed in Eaton, Ohio. Ohio EPA sampled for select radionuclides with this equipment. In 1997 Ohio EPA added tritium sampling at three locations and tritium split sampling at selected DOE Mound sampling locations.

### **Future Use**

EPA works with DOE Mound, U.S. EPA, the City of Miamisburg and its citizens toward the goal of making the Mound site available for commercialization while maintaining standards which are protective of human health and the environment. Ohio EPA has been an active

participant on the Mound Reuse Committee, a group designed to promote and resolve issues regarding the reuse of the Mound Plant. The Mound Reuse Committee worked with the Miamisburg Mound Community Improvement Corporation (MMCIC), which was formed to facilitate the transfer of DOE Mound Plant property to industrial or commercial users. Ohio EPA provided input to the Mound Reuse Plan, which provides the vision for future use of the site.

### **Public Outreach**

Ohio continues to be active in the support of DOE Mound's public outreach activities. The Mound Action Committee (MAC) was formed in 1996 by DOE Mound in order to bring together DOE, regulators, the City of Miamisburg, citizens and other stakeholders to discuss transition of the site. MAC meetings provided a forum for stakeholders to present progress, issues, plans, and concerns with regards to the site. The meetings provided citizens the opportunity to become actively involved in the transition process. Ohio EPA was available at all MAC sessions to provide technical and regulatory assistance, and to update stakeholders on Ohio EPA programs at the Mound site. Other outreach activities include the development of fact sheets, web pages, involvement in public meetings, and regular contact with interested stakeholders.

See [DOE's fact sheet](#) for more Mound information.