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FERNALD SITE CLEAN UP REPORT - JULY, 1991

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FACT SHEET

FERNALD SITE CLEANUP REPORT

JULY 1991

The *Fernald Site Cleanup Report* is intended to update the community on activities associated with environmental studies and cleanup efforts at the U.S. Department of Energy's Fernald Site. The report is designed as a supplement to information provided at regular community meetings and through other communication activities. Included is a brief overview of the Remedial Investigation/Feasibility Study (RI/FS) being conducted under a Consent Agreement between the Department of Energy and the U.S. Environmental Protection Agency.

The next community meeting is scheduled for July 16 at the Meadowbrook Inn, 2398 Venice Blvd., in Ross. Fernald Site technical personnel will be on hand at 6 p.m. to explain exhibits on various cleanup activities. The general meeting will begin at 7 p.m. and include presentations by the Department of Energy, U.S. and Ohio Environmental Protection Agencies, and Fernald Residents for Environment, Safety, and Health (FRESH). A question-and-answer session will follow.

This *Fernald Site Cleanup Report* offers a brief description of activities which have occurred as part of the RI/FS since the last community meeting was held on March 19. Additional information, including more detailed reports, records, and other documents, is available at the Public Environmental Information Center located in the JAMTEK Building, 10845 Hamilton-Cleves Highway, just south of the Fernald Site.

Fernald Site RI/FS work continues

A key activity in the long-term environmental restoration of the Fernald Site is the effort under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to determine the nature and extent of the environmental problems associated with the site and develop recommended remedial actions to address those concerns. The investigation process under CERCLA to define the appropriate remedial actions for the site is called the Remedial Investigation/ Feasibility Study (RI/FS).

Under a Consent Agreement between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA), environmental restoration efforts at the Fernald Site have been divided into five Operable Units, addressing specific areas or facilities at the site. Separate reports and decision documents summarizing the results of the RI/FS process are being prepared for each Operable Unit.

Employing the Operable Unit approach allows design and remedial work to begin on more straightforward environmental concerns as soon as practical in the remedy selection process, while other, more complex units usually take longer to progress through the decision process. The Operable Units at the Fernald Site were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

Operable Unit 1 (the waste storage area) includes Waste Pits 1-6, the Burn Pit and the Clearwell.

Operable Unit 2 (the solid waste units) includes the sanitary landfill, lime sludge ponds, inactive fly ash disposal area, active fly ash pile, and the Southfield Area.

Operable Unit 3 (the former production area) includes the 136-acre production area and several other suspect areas such as the scrap metal piles, fire training area, and the site effluent line to the Great Miami River.

Operable Unit 4 (the silos) includes K-65 silos 1 and 2 which contain radium-bearing radioactive wastes, Silo 3 which contains dried uranium-bearing wastes, and Silo 4 which is empty.

Operable Unit 5 (environmental media) includes groundwater, surface water, soil, sediments, air, flora and fauna throughout the Fernald Site and surrounding areas.

The RI/FS involves extensive sampling and analysis of soil, water, and other media to detect and quantitatively measure levels of contamination present in the Operable Unit areas. Once the nature and extent of the contamination has been defined, analysis of alternatives for removing or immobilizing the contamination is undertaken. A Record of Decision (ROD) will be issued by the U.S. EPA to specify the selected remedial alternative(s) for each of the Operable Units.

The Department of Energy and the U.S. EPA currently are negotiating new RI/FS schedules for the Fernald Site.

During the course of the RI/FS effort, certain conditions can be identified which call for more immediate action. These actions are called "Removal Actions" and are initiated when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal Actions are coordinated with both the U.S. EPA and the Ohio EPA to ensure that they are consistent with the long-term corrective actions expected as a result of the RI/FS Records of Decision.

Operable Unit 1 - Waste Storage Area

RI/FS Activities

Pit Berm Sampling: In May, DOE completed the specifications and requirements needed to conduct field sampling and laboratory analysis of soil berms around Pit 3, Pit 5, and the Clearwell. Analysis of radioactive and chemical contaminants will be performed, as well as analysis to determine the geotechnical properties of the berm soils, so the stability of these retention structures can be ascertained.

Waste Characterization and Treatability: Additional sampling activities were initiated in the waste pit area in June, to provide information that is needed to complete Operable Unit 1 waste characterization and treatability studies. These activities involve the collection of samples and the installation of a number of shallow wells within several of the waste pits. Data generated from sample analysis will provide information about the chemical form and characteristics of the various materials in the waste pits, so better predictions can be made about the potential for contaminant migration. Samples of materials in the pits will be used to conduct tests and develop potential stabilization formulas for waste treatment technologies currently under consideration.

Removal Actions

Waste Pit Area Stormwater Runoff Control Removal Action: The objective of this removal action is to collect and treat potentially contaminated stormwater runoff from the waste pit area to prevent it from reaching Paddy's Run Creek. DOE received U.S. EPA and Ohio EPA concurrence on the Work Plan for implementing the Waste Pit Area Stormwater Runoff Control Removal Action in April. The Sampling and Analysis portion of this Work Plan was modified as requested by the U.S. EPA and the Ohio EPA. These modifications include soil sampling for hazardous substance listed (HSL) contaminants in soils which are proposed to be disturbed during excavation operations as part of this removal action. Sampling and analysis for HSLs in the soils was completed in early June. The removal action will provide runoff control, as well as a collection system, designed to collect stormwater runoff from the waste pit area and allow it to pass through the Stormwater Retention Basin prior to discharge from the site. Work to remove contaminated soil, and excavation work to install drainage control structures, began in June. Project construction is scheduled for completion by July 1992, when the system is expected to be placed into full operation.

Operable Unit 2 - Solid Waste Units

RI/FS Activities

Sampling: Additional samples to support the Operable Unit 2 RI/FS have been obtained from the Lime Sludge Ponds, Southfield Area and the Inactive Fly Ash Pile. The Active Fly Ash Pile and the Sanitary Landfill are scheduled for sampling in July. These samples are being collected to supplement existing characterization data available for these facilities. The samples will be analyzed for a range of chemical and radiological parameters to support waste treatment studies and ongoing modeling efforts.

Treatability: DOE is currently reviewing a draft treatability study work plan which will be submitted to the U.S. EPA for approval. Data generated by the study will be used to support Operable Unit 2 treatment technology selection and remedy implementation.

Primary Reports: The Operable Unit 2 Initial Screening of Alternatives (ISA) Document-Task 12 was disapproved by the U.S. EPA. A revised ISA was prepared and resubmitted to U.S. EPA in April, and is being reviewed by the EPA. All other RI/FS documents are on hold pending receipt of the needed characterization and treatability data.

Removal Actions

Inactive Fly Ash Pile/Southfield Area Removal Action: This removal action focuses on low concentrations of surface contamination in the Inactive Fly Ash Pile/Southfield Area, which is located in a remote area on the Fernald Site. Fly ash is a waste residue that results from burning coal in the boiler plant. Results from sample analysis revealed locations with slightly elevated concentrations of uranium in the Inactive Fly Ash Pile/Southfield Area. Actions to be implemented include roping or fencing the areas to restrict access, and the installation of warning signs.

Operable Unit 3 - Production Area

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RI/FS Activities

RI/FS Work Plan Addendum: A task force has been formed to support the development of an addendum to the RI/FS Work Plan to define the work activities necessary to complete the RI/FS for Operable Unit 3. Consistent with the outcome of a dispute under the terms of the Consent Agreement between the DOE and the U.S. EPA, the definition of Operable Unit 3 has expanded to include all former process buildings, structures and equipment, and inventoried hazardous materials. The task force is comprised of personnel from the DOE, Westinghouse Materials Company of Ohio, Advanced Sciences Inc./International Technologies, and the Ralph M. Parsons Company. These personnel are examining the newly considered Operable Unit 3 facilities, existing sampling data, and historical records for the purpose of laying out a logical characterization program to support the completion of the RI/FS process. The date for submittal of the Work Plan Addendum is a subject of the ongoing negotiations between the DOE, U.S. EPA and Ohio EPA.

Removal Actions

Perched Groundwater Removal Action: This removal action was initiated to minimize the potential for uranium-contaminated groundwater to infiltrate the underlying aquifer from perched water zones located beneath some former production buildings. "Perched" water settles in underground pockets separated from the underlying aquifer by impermeable layers of clay. Volatile Organic Compounds (VOCs) were identified during initial pumping operations beneath Plant 6 in April 1990. Analysis of extracted water samples showed the presence of VOCs such as trichloroethylene and trichlorethane (typically-found solvents and degreasers used in the former metals fabrication plant). Pumping activities were halted at that time, and the removal action work plan was modified to address the VOC contamination. Pumping of groundwater from the extraction wells in Plant 6 resumed on May 31, 1991. The water is currently being collected in a tank located near Plant 6, pending the final completion and startup of a carbon adsorption water treatment system in Plant 8. The projected startup of the treatment system in Plant 8 is July 24, 1991. Following treatment for VOCs in Plant 8, the water will be sent through existing wastewater treatment facilities at the Fernald Site to address the uranium concentrations, and eventually discharged to the Great Miami River. Perched water has also been identified beneath Plant 2/3 and Plant 9. Four-inch testing wells, additional piping and a collection system will be installed in Plant 2/3 and Plant 9 in support of the Perched Water Removal Action. Pumping of perched groundwater from beneath those two plants is expected to begin late this summer. The treatment system in Plant 8 also will be used to address VOCs, as necessary, in the perched water collected from beneath these plants.

Plant 1 Pad Continuing Release Removal Action: The purpose of this removal action is to protect surface soils and regional groundwater from continuing releases of hazardous materials resulting from storage activities on the eight-acre Plant 1 storage pad. This removal action includes the installation of three covered storage structures with a combined 103,500 square feet over an addition to be built adjacent to the existing pad, and the installation of a polyethylene liner and epoxy coating over the existing pad surface to minimize contaminant migration to the environment. Also being requested are two, 27,000-square-foot sprung structures to be installed over portions of the existing pad surface. A revised work plan incorporating U.S. EPA comments was resubmitted to the U.S. EPA in mid-June 1991. Construction work is expected to begin later this year.

Fernald Site Cleanup Report is prepared by Westinghouse Materials Company of Ohio periodically for the U.S. Department of Energy, to inform the community about cleanup progress at the Fernald Site.

Address all inquiries regarding the *Fernald Site Cleanup Report* to :

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Operable Unit 4 - K-65 Silos

RI/FS Activities

Treatability: A Treatability Work Plan is being prepared for U.S. EPA approval. The Work Plan will describe the specific testing that will be performed on samples of K-65 and Silo 3 materials to evaluate whether some identified waste treatment technologies can be applied in a practical manner to the Operable Unit 4 waste materials. Treatability options include: 1) heavy metals separation from the residues by chemical extraction, 2) stabilization of the waste with concrete, and 3) vitrification (transforming the waste into glass). The technologies are being tested to determine which one provides the most environmentally sound, cost-effective and implementable method for treating the wastes prior to final disposal.

K-65 Vertical (Berm) Borings: Four vertical borings were completed in June into the earthen berms surrounding the K-65 silos. Samples were collected from these borings for the purpose of determining if measurable quantities of residual materials or radon gas have leaked or diffused from the walls of the silos into the surrounding berms. Analytical results from the collected samples are expected back from the laboratories later this summer. This information is required to support the completion of the Remedial Investigation and Feasibility Study reports for Operable Unit 4.

K-65 Low-Angle (Slant) Borings: Efforts are continuing to complete five slant borings beneath the K-65 silos for purposes of determining if residual materials have migrated from the tanks or the associated underdrain system into the underlying soils or perched groundwater. Two borings were advanced in the ground until significant quantities of perched groundwater were encountered in the boring. Upon encountering the water, drilling operations were terminated and samples of the groundwater were obtained. Preliminary sample analysis from the on-site laboratory indicates the concentration of contaminants are within the natural background range. Full chemical and radiological analysis to confirm preliminary findings is being performed at an off-site laboratory. A third boring is being advanced in the ground beneath the K-65 Decant Sump Tank. A steel casing is being installed in the boring to permit drilling to proceed through any encountered perched groundwater. All slant borings are expected to be completed by the end of August. Analytical results from the collected samples are anticipated to be received from the off-site laboratory by the end of February 1992.

Resampling of K-65 Residues: Planning and pre-mobilization activities are in progress in support of the proposed resampling of the contents of the K-65 Silos (Silos 1 and 2). A Revised Sampling and Analysis Plan and Health and Safety Plan are currently under review by the U.S. EPA and the Ohio EPA. Modifications to the K-65 Radon Treatment System (RTS) are now taking place. RTS modifications include the installation of a new blower motor, minor piping repairs, and the installation of eight electrically-activated valves on the K-65 manway covers. Sampling activities are expected to be initiated in mid-July following RTS repairs. Resampling is expected to be completed in late August, with sample analysis results tentatively scheduled to be available in January 1992. Resampling of the silo contents is necessary because the amount of material retrieved during previous sampling operations was inadequate to be representative of the entire contents of the silos.

Removal Actions

K-65 Decant Sump Tank Removal Action: This removal action was completed April 16, 1991, when approximately 8,000 gallons of contaminated water was pumped from the K-65 Decant Sump Tank. The removed water is being stored in above-ground tanks near Plant 2/3 at the Fernald Site. The K-65 Decant Sump Tank was used to store liquid that was drained from the K-65 silos after solid material had settled. Removal of this water from the underground sump tank reduces the potential for leakage of contaminated water into surrounding soils. Samples of the liquid removed from the sump tank are being analyzed and characterized to determine proper treatment and final disposition. In addition, samples were recovered in June from a layer of sludge located at the base of the interior of the decant sump tank. These samples are currently being analyzed at an off-site laboratory. Further attempts are under way to obtain additional samples from some hardened sludge discovered at the base of the tank.

K-65 Silos 1 and 2 Removal Action: Bentonite clay is scheduled for installation beginning in October. The clay will be applied over the silo residues to reduce radon levels in the silos, and to provide protection from releases to the environment in the event of silo dome collapse. This removal action is scheduled for completion by December 1991.

Operable Unit 5 - Environmental Media

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RI/FS Activities

Paddy's Run Seepage Investigation Study: An investigation continues to determine how Paddy's Run Creek interfaces with the Great Miami Buried Valley Aquifer at points south of the South Groundwater Contamination Plume. Interfaces under evaluation include the impact on local groundwater flow due to the leakage of surface water through the body of Paddy's Run Creek. This study involves the installation and sampling of a series of wells along Paddy's Run and the completion of a series of stream gaging measurements on the creek. Data collected over the next several months will be included in the final Remedial Investigation and Feasibility Study reports.

Removal Actions

South Groundwater Contamination Plume Removal Action: The purpose of this removal action is to protect public health by limiting access to the use of uranium-contaminated groundwater in an area south of the Fernald Site. This removal action, broken into five parts, also is designed to prevent further southerly migration of the contamination plume.

Part 1 includes installation of an alternate water source to two industries affected by the contamination plume. The project involves the installation of production wells outside the plume area and a distribution system to the industries. Testing of the selected well field, to determine adequacy of the quality and quantity of the extracted water, will begin in July. Drawings and specifications for the project are nearing completion. Construction is scheduled to begin in late 1991.

Part 2 involves the installation of a groundwater recovery well system to pump groundwater from the leading edge of the South Plume back to the Fernald Site for monitoring and discharge to the Great Miami River. Drawings and specifications are currently under review. Construction is expected to begin in early 1992.

Part 3 involves construction of an Interim Advanced Wastewater Treatment (IAWWT) unit. The IAWWT unit will remove uranium from site wastewater streams and, by doing so, will reduce the current level of uranium discharged to the Great Miami River. The design of the IAWWT system has been approved and issued for bid. Construction is expected to begin in late 1991.

Part 4 of the removal action involves groundwater monitoring and institutional controls to prevent the use of contaminated groundwater. This activity is being implemented through the existing Fernald Site Groundwater Monitoring Program. The program has been expanded to include more frequent monitoring of private wells located near areas of known contamination.

A recently added Part 5 involves groundwater modeling and geochemical investigations. This activity will determine the southernmost extent of uranium contamination. This activity will also evaluate the location of plumes associated with the Paddy's Run Road Site (PRRS) and the impact on these plumes from the planned pumping of the South Groundwater Contamination Plume Removal Action Part 2 wells. The PRRS is a separate environmental investigation being conducted by the Ohio EPA and industries in that area. The PRRS is unrelated to the Fernald Site RI/FS.

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CLEANUP REPORT

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Administrative Record RI/FS Additions

The following RI/FS documents have been added to the Administrative Record since the last community meeting took place on March 19, 1991. The Fernald Site's Administrative Record is located in the Public Environmental Information Center, JAMTEK Building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.

- EE/CA South Groundwater Contamination Plume U.S. DOE Fernald
- Comments on Draft South Groundwater Contamination Plume EE/CA
- General comments on IT South Groundwater Contamination Plume EE/CA Report
- DOE-FMPC Response to Citizens' Comments/Questions
- Ohio EPA Comments on Operable Unit 4 (K-65 Silos) Initial Screening of Alternatives Report
- Estimates of Radon Flux from FMPC Waste Pits 1, 2, and 3, and Silo 3
- Initial Screening of Alternatives for Operable Unit 5 (Environmental Media)
- Revised Work Plan for South Groundwater Contamination Plume Removal Action Part 1 - Alternate Water Supply
- Response to U.S. EPA comments on South Groundwater Contamination Plume Removal Action Part 1 - Alternate Water Supply Work Plan
- Response to Ohio EPA comments on South Groundwater Contamination Plume Removal Action Part 1 - Alternate Water Supply Work Plan
- Operable Unit 4 Dispute Resolution
- Response to Ohio EPA Comments on the October 1990, Operable Unit 1 (Waste Storage Area) Initial Screening of Alternatives
- Remedial Investigation Report for Operable Unit 4
- Comments on final Initial Screening of Alternatives for Operable Unit 1 Response Risk Issues
- Ohio EPA comments on final Initial Screening of Alternatives for Operable Unit 1