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**PROGRESS REPORT OPERABLE UNIT 1 WASTE
PIT AREA JUNE 1993**

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Remedial Investigation/ Fernald Project Feasibility Study 4537-

PROGRESS REPORT

JUNE 1993

Operable Unit 1 WASTE PIT AREA

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project. The nature and extent of contamination at the Fernald site and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The Fernald site has been divided into five sections, known as Operable Units, for environmental investigation and cleanup. The Operable Units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified which call for more immediate action. These actions are called "Removal Actions" and are initiated where there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal Actions are coordinated with the U.S. EPA and the Ohio EPA.

Following is a progress report on Operable Unit 1 including its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work being done to alleviate near-term concerns.

Background

Operable Unit 1 includes the six waste pits, the burn pit and the clearwell. The six waste pits, built between 1952 and 1979, contain waste from past operations at the Fernald site. No waste has been placed in any of the pits since the mid-1980s. Pits 1-3 are covered with soil. Pit 4 is covered with bentonite clay and a synthetic cover. Pits 5 and 6 are lined with synthetic membranes. The pits range in size from that of a football field to a baseball diamond and vary in depth from 13 to 30 feet. It is estimated that the six pits

contain approximately 475,000 tons of waste, including uranium, thorium and other radioactive and chemical elements.

The burn pit, built in 1957, was used to burn laboratory chemicals and general refuse before it was taken out of service in 1970.

The clearwell was a settling basin for stormwater runoff from portions of the waste pit area including Pits 1-3 and Pit 5. Sediment in the base of the clearwell is estimated to be 3.5 feet deep and contains concentrations of radionuclides and chemical constituents.

RI/FS Activities

Site Characterization: All initial site characterization activities associated with the Operable Unit 1 Remedial Investigation/Feasibility Study (RI/FS) have been completed. Data from the chemical and radiological analyses of Operable Unit 1 has been received and validated. This information is required to complete the RI/FS reports on Operable Unit 1.

Data validation is a process in which a team of chemists, radiochemists, statisticians, quality assurance and other technical personnel, systematically review all aspects of data collection and laboratory analyses against an established set of criteria. Data validation is used to judge the quality of the field and analytical data.

Treatability: Materials from the pits are being used to test waste treatment technologies (called treatability studies). Solidification (stabilizing the waste with cement), encapsulation (binding the waste with polyethylene), and vitrification (transforming the waste into glass) are being tested.

The U.S. EPA's Guidance for Conducting Treatability Studies outlines a three-tiered approach to

conducting treatability studies: 1) Remedy Screening; 2) Remedy Selection, and 3) Remedy Design.

The Remedy Selection portion of cementation tests is now in progress and is expected to be completed in July 1993. As part of these tests, each of the cement mixtures is subjected to a series of physical and chemical tests, such as leaching the waste in acid, to determine which cement mix design has the best ability to retain its physical form and stabilize the waste.

The Remedy Selection portion of vitrification tests also is expected to be completed in June 1993. Laboratory-scale Remedy Design treatability testing is progressing at GTS Duratek and Catholic University of America with the operation of a 100 kilograms/per day glass melter located on the campus of Catholic University.

Encapsulation studies: A relatively new technology, polymer encapsulation, uses commonly available non-toxic plastics such as polyethylene (the same material used in milk and food containers) to securely surround and bind together particles of dried waste material. The stabilized waste is then either pressed or extruded into solid forms prior to disposal.

Some of the characteristics that make this technology attractive are: 1) its use of inexpensive, recycled, readily available non-toxic materials; 2) its safe and impact resistant form for shipping; 3) it can be made in any size and shape according to shipping and disposal requirements; and 4) it appears to be tolerant of a large range of waste composition.

The resulting waste form is lighter than many other waste forms; however, this reduced density corresponds to an increase in waste volume.

Reports: The Remedial Investigation (RI) Report for Operable Unit 1, including all validated analytical data from sampling activities, is presently being prepared by DOE and contractor personnel at Fernald. The RI Report is scheduled to be submitted to U.S. EPA by October 12, 1993. The RI Report will provide details about the nature and extent of contamination in Operable Unit 1 and establish remedial action objectives. The report also will include a Baseline Risk Assessment for Operable Unit 1. This Baseline Risk Assessment, now in progress, evaluates the pathways of exposure for existing conditions prior to any remedial activities in Operable Unit 1.

The Feasibility Study (FS) Report for Operable

Unit 1 is scheduled to be submitted to U.S. EPA in March 1994. Data obtained from the Remedial Investigation is used during the Feasibility Study to identify potential treatment options, screen and evaluate treatment technologies, and assemble that information into cleanup alternatives for the waste pit area.

Removal Actions

Waste Pit Area Containment Improvement

(Removal Action No. 22): This Removal Action is designed to reduce the potential for wind or water erosion of contaminated materials from access roads and exposed surfaces in the Operable Unit 1 area. U.S. EPA and Ohio EPA comments have been incorporated into the work plan, and both EPAs have approved the final work plan. The south berm of Pit 4 will be stabilized. Drainage ditches along Pits 3, 4, 5, and 6 will be regraded. Roads between Pits 3, 4, 5, and 6 will be resurfaced. The pit area has been reseeded for erosion control. Some existing stormwater ditches in the waste pit area are being regraded to promote drainage. This Removal Action is on schedule for completion by August 1993.

Cleanup Alternatives

Five alternatives to cleanup the waste pit area have been identified.

The first alternative would involve stabilizing the waste in place, removing and treating standing water, and construction of a slurry wall, subsurface drains and a groundwater extraction system. This alternative would leave the waste in place, but would provide treatment of the waste and a system to prevent contamination from migrating into the groundwater.

The second alternative would involve removing the waste, contaminated soils and liner materials that surround the pits, from their current location, and stabilizing or treating the waste, treating and discharging standing water, and permanent disposal of the stabilized/treated waste in an engineered structure at the Fernald site.

The third alternative is identical to the second, but with permanent disposal at an off-site facility.

The fourth alternative is similar to the second alternative and would involve removing the waste from the pits, but leaving in place and capping the contaminated soils and liner materials that surround the pits.

The fifth alternative is the same as the fourth

alternative except the soils would be treated in place prior to capping.

More information about Operable Unit 1 is available in the Public Environmental Information Center (PEIC), where Fernald Project cleanup

documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.

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