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**CATEGORICAL EXCLUSION DETERMINATION
SAFE SHUTDOWN ACTIVITIES, CY 1994 NEPA
DOC. NO. 441**

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CATEGORICAL EXCLUSION DETERMINATION
Safe Shutdown Activities, CY 1994
NEPA Document No. 441

Fernald Environmental Management Project
Fernald, Ohio

Proposed Action

The United States Department of Energy (DOE) at the Fernald Environmental Management Project (FEMP) proposes to take necessary actions to remove the threat of release of contaminants from the former Production Area that present a threat to the environment and to the health and safety of the workers at the site.

Location

The proposed actions would occur at various locations within the former Production Area, which comprises 136 acres of the FEMP site. The 1050-acre FEMP site is located 18 miles northwest of downtown Cincinnati, Ohio.

Background

The Feed Materials Production Center [FMPC (now FEMP)] produced uranium metal from uranium concentrate and recoverable uranium materials for over 35 years. The FEMP contains nine process plants along with numerous support buildings in which intermediate or finished products in the manufacturing of uranium fuel were produced. An abrupt cessation of process-related operations at the FEMP occurred in July 1989. At that time, much of the process equipment was scheduled to restart for process operations. The FEMP process mission was officially terminated in June 1991, without the restart of production processes or stabilization of intermediate products. As a result, both product and waste materials were left in pipelines, dust collectors, and other process equipment.

This equipment has deteriorated over the last several years, with leaks occurring from process vessels, piping, and dust collectors. Safe Shutdown of these facilities needs to be completed as soon as possible to prevent additional leaks and the potential for releases of radiological and hazardous material, which could pose a health hazard to on-site workers. In addition, DOE Order 5820.2A requires that program offices place facilities in a safe storage condition when they are no longer required to support programmatic needs. Therefore, Safe Shutdown of the FEMP process facilities is required to meet DOE directives and must be performed as soon as possible to prevent potential impacts to on-site workers.

This CX, an update to CX No. 427, "Safe Shutdown Activities - CY 1993," provides an updated list of activities scheduled for CY 1994.

Description of Proposed Action

The proposed Safe Shutdown activities covers the work to be accomplished in all of the process plants (Plants 1, 2/3, 4, 5, 6, 8, 9, and Pilot Plant), supporting structures, and other related equipment (including outside dust collectors and hazardous waste management units). However, the scope of this CX includes only the portion of the work which is scheduled for and can be accomplished during calendar year 1994. Safe Shutdown will entail a five-step process: 1) removing

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existing inventories stored within the former process plants; 2) isolating/disconnecting utilities to the equipment; 3) opening up equipment and cleaning out the gross loose hold-up material; 4) transferring hold-up material and residues to storage containers (drums); and 5) transferring the drummed material for storage. Below, the steps of the process are described in brief detail:

Step 1 of Safe Shutdown entails removing the containerized inventories that are currently being stored within the former process plants. The inventories would be consolidated on site in space made available by the removal and off-site shipment of waste under Removal Action No. 9 or nuclear materials identified for sale.

Step 2 of Safe Shutdown entails the isolating/disconnecting the former process plants' equipment from all sources of air, water, gas, steam, and electricity. If any energized equipment or utility lines are encountered, the lines would be disconnected, blanked, or another means utilized to deactivate the source.

Step 3 of Safe Shutdown entails opening of equipment and cleaning out the gross loose hold-up material. Independent portable vacuum units, equipped with high efficiency particulate air (HEPA) filters, will be used to remove residues by vacuuming rather than the in-place ventilation to existing dust collectors.

Step 4 of Safe Shutdown entails the transfer of hold-up material and residues to drums. Upon removal, process materials and residues will be managed according to all applicable radiological, hazardous, and solid waste rules and regulations.

Step 5 of Safe Shutdown entails transferring the drummed material for storage. The drummed material will be stored on site in existing storage areas until final disposition is determined.

The following is a brief description of the major activities that occurred in the aforementioned process plants and the related equipment, and the hazards associated with the proposed action:

- Plant 1 - Past Plant 1 activities included the operation of a sampling line for incoming uranium materials. Safe Shutdown of Plant 1 involves the five-step process discussed above for the following types of equipment: nondestructive isotopic verification equipment; slag milling equipment; drum reconditioning equipment; scrap drum baler; dust collectors and related equipment; storage tanks; detrixt still; pincutter sample line; and safe geometry system. Three hazards associated with this equipment would include contaminated solvents and sludges in the detrixt still, uranyl nitrate (UNH) solutions in storage tanks and magnesium fluoride (MgF_2).

- Plant 2/3 - Past Plan 2/3 activities included the operation of nitric acid digestion system, a metal dissolving system, a liquid-liquid extraction system, a boil-down and de-nitration system where purified UNH was converted to orange oxide (UO_3), a nitric acid recovery system, the combined raffinate and hot raffinate system, a refinery sump system, and dust collectors. Hazardous materials present would include UNH, orange oxide (UO_3), nitric acid (HNO_3), tri-butyl phosphate (TBP) and kerosene.

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- Plant 4 - Past Plant 4 activities included the operation of reactors to convert orange oxide (UO_3) to brown oxide (UO_2) or black oxide (U_3O_8) and then to green salt (UF_4). Safe Shutdown of Plant 4 involves the five-step process discussed above for the following types of equipment: hydrofluorination reactor banks; stainless steel fluid bed reactors; screw conveyors; packaging station; weigh bins; HF recovery system; dust collectors; scrubber systems; heat exchangers, vaporizers, and condensers; control panels and transformers; substations; drumming stations; heaters, filters, and fans; electric, gas, steam, and water lines; ammonia disassociators; nitrogen generators; and maintenance shop. Four hazards associated with this equipment would include anhydrous hydrofluoric acid, UO_3 , UO_2 , UF_4 , U_3O_8 , anhydrous ammonia (NH_3), and potassium hydroxide (KOH).
- Plant 5 - Past Plant 5 activities included derby production that featured jolters, F-machines, Rockwell furnaces, breakout system, slag milling, and liner preparation. Other operations include ingot manufacturing that featured vacuum remelt casting furnaces, crucible charge and burnout areas, ingot separation, mold cleaning and painting, ingot sawing and saw blade sharpening, a Hilco oil reclaiming system, and dust collectors. Hazardous materials present would include magnesium (Mg), MgF_2 , U_3O_8 , and uranium metal.
- Plant 6 - Past Plant 6 activities included machining processes to heat treat ingots before shipping for extrusion, cropping extruded ingots, heat treating blank cores, machining cores to a finished target element, cleaning and briquetting chips, and machining pillow shaped ingots for sizing and scalping. Other activities included operation of a rolling mill system, a waste water processing system, and electrostatic precipitators. Hazardous materials present would include U_3O_8 , HNO_3 , sodium hydroxide (NaOH), and uranium metal.
- Plant 8 - Past Plant 8 activities included the operation of several types of furnaces, liquid filtering systems, a halide acid metal dissolution area, a drum washer, a ball mill, and dust collectors. Hazardous materials present would include U_3O_8 , NaOH, UF_6 , UF_4 , sump cakes, uranium precipitants and uranium metal.
- Plant 9 - Past Plant 9 activities included ingot casting in the N-Reactor vacuum remelt casting furnaces. Safe Shutdown of Plant 9 involves the five-step process discussed above for the following types of equipment: reduction furnaces; remelt furnaces; saws; lathes; boring and milling machines, drill press, and grinder; Zirnlo scrap decladding system; Hilco system; water treatment; dust collectors, HEPA filters, portable dust collectors, precipitators, and related equipment; tanks; cranes, hoists, conveyors, scales, transformers, and welding equipment; heaters, fans, steam system, condensate system, and sprinkler system; and air, gas, electric, water, and steam lines. Hazards associated with this equipment would include U_3O_8 , hydrofluoric acid (HF), HNO_3 , NaOH, and uranium metal.
- Pilot Plant - Past Pilot Plant activities included small-scale operation of all the production processes for the FEMP. In early 1980s, a production scale UF_6 to UF_4 unit was installed and operated. In the late 1980s, a new uranium hexafluoride (UF_6) to UF_4 unit was installed in a newly constructed building; however, it was never operated. Hazardous materials present would include UF_4 , UF_6 , HNO_3 , HF, thorium nitrate, TBP and Diamyl-amyl-phosphonate (DAAP).

OUTSIDE DUST COLLECTORS AND HWMUs

As a part of operations and over the years, several dozen dust collectors were operated that exhausted to the environment. Many of the dust collectors (15 have been identified) are located outside and adjacent to the process buildings. Outside dust collectors are subject to weather conditions and deterioration; therefore, they are considered a potential environmental threat to the atmosphere and to the workers. A release from any one of these units would present an potential airborne radiological exposures for personnel traveling in proximity of the source. Presently, there is evidence that several (approximately 7) of these outside units are, or have been, leaking, and the potential exists for each unit listed to become a source of leaks in the near future.

HWMUs have also been identified as high priority safety and health considerations because they too present a potential threat to the health and safety of the workers and to the environment. The HWMUs listed have been identified to the Ohio Environmental Protection Agency (OEPA). There are closure schedules that may be impacted by not completing the cleanout in a timely manner. Some of these units are within the contaminated zones of the FEMP former process buildings while others, e.g., tank cars, are in the area.

To ensure safety, all activities under Safe Shutdown activities will be performed in accordance with existing site Best Management Practices (BMPs) and existing Standard Operating Procedures (SOPs).

Categorical Exclusion to be Applied

The authority for finding these proposed actions to be subject to two (2) Categorical Exclusions is contained in Subpart D of 10 CFR Part 1021, entitled "National Environmental Policy Act Implementing Procedures and Guidelines." The Final Rule and Notice, effective May 26, 1992, includes a list of categorical exclusions that are classes of actions that normally do not require the preparation of either an Environmental Impact Statement or an Environmental Assessment. The two categorical exclusions applicable to the proposed actions are as follows:

(1) The Final Rule and Notice specifically lists in Part 1021, Appendix B to Subpart D, Sec. 1021.410, B6.1 (b), the following as types of actions that are Categorical Exclusions applicable to Specific Agency Actions:

B6.1 Removal actions under CERCLA (including those taken as final response actions and those taken before remedial action) and removal-type actions similar in scope under RCRA and other authorities (including those taken as partial closure actions and those taken before corrective action), including treatment (e.g., incineration), recovery, storage, or disposal of wastes at existing facilities currently handling the type of waste involved in the removal action. These actions will meet the CERCLA regulatory cost and time limits or satisfy either of the two regulatory exemptions from those cost and time limits (National Contingency Plan, 40 CFR part 300). These actions include, but are not limited to:

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(b) Removal of bulk containers (for example, drum, barrels) that contain or may contain hazardous substances, pollutants, contaminants, CERCLA-excluded petroleum or natural gas products or hazardous wastes (designated in 40 CFR part 261), if such actions would reduce the likelihood of spillage, leakage, fire, explosion, or exposure to humans, animals, or food chain.

(2) The Final Rule and Notice specifically lists in Part 1021, Appendix B to Subpart D, Sec. 1021.410, B2.5, the following as types of actions that are Categorical Exclusions applicable to Specific Agency Actions:

B2.5 Safety and environmental improvements of a facility, including replacement and upgrade of facility components, that do not result in a significant change in the expected useful life, design capacity, or function of the facility and during which operations may be suspended and then resumed. Improvements may include, but are not limited to: Replacement/upgrade of control valves, in-core monitoring devices, facility air filtration systems,

These Categorical Exclusions are appropriate since the proposed action as described would include removal actions under CERCLA, and safety and environmental improvements of a facility. These proposed actions will not violate applicable statutory, regulatory, or permit requirements; they will not require siting and construction nor major expansion of waste disposal, recovery or treatment facilities. The proposed actions will have no significant adverse impact on any environmentally sensitive areas (e.g., wetlands, floodplains, or the sole-source aquifer underlying the site).

Compliance Action

I have determined that the proposed actions meet the requirements for the CXs referenced. Therefore, the proposed actions are categorically excluded from further NEPA review and documentation.

Approval: 
J. Phil Hamric, Manager
U.S. Department of Energy, Fernald Office

Date: 1/21/94