



**Department of Energy**

**Ohio Field Office  
Fernald Closure Project  
175 Tri-County Parkway  
Springdale, Ohio 45246  
(513) 648-3155**



NOV 22 2005

Mr. Gene Jablonowski, Remedial Project Manager  
United States Environmental Protection Agency  
Region V, SR-6J  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

DOE-0024-06

Mr. Thomas Schneider, Project Manager  
Ohio Environmental Protection Agency  
Southwest District Office  
401 East Fifth Street  
Dayton, Ohio 45402-2911

Dear Mr. Jablonowski and Mr. Schneider:

**IMPLEMENTATION OF CONTINGENCY ACTIONS FOR SILO 3**

- References:
1. Document 40430-RP-0026, "Final Record of Decision Amendment for Operable Unit 4 Silo 3 Remedial Actions," August 2003
  2. DOE Letter DOE-0103-04, William Taylor to Gene Jablonowski and Tom Schneider, "Silo 3 Remedial Design / Remedial Action Package, Revision 2," dated January 21, 2004
  3. DOE Letter DOE-0182-05, William Taylor to Gene Jablonowski and Tom Schneider, "Revised Transportation and Disposal plan for the Silo 3 Project," dated March 3, 2005

This letter documents proposed contingency actions necessary for completion of the packaging and disposal of Silo 3 material, and requests your approval for 1) implementation of the Contingency Remedy provisions specified in The ROD Amendment for Silo 3 (Reference 1); and 2) necessary changes to the design and methods specified in the Silo 3 Remedial Design / Remedial Action Package (Reference 2)

Mr. James A. Saric  
Mr. Tom Schneider

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Based upon the physical characteristics of the material currently being encountered near the bottom of Silo 3, and the impact of these characteristics on the pneumatic and mechanical retrieval systems, the department of Energy (DOE) feels that implementation of the contingency actions described below is 1) necessary to ensure worker safety, minimize personnel exposures, and facilitate timely completion of the Silo 3 remedy, and 2) consistent with the provisions provided in Reference 1 for implementation of contingency backup actions.

The potential for operational difficulties during retrieval and packaging of Silo 3 material, and resulting potential need for implementing an alternate approach, was recognized during development of the current Silo 3 remedy. The ROD Amendment for Silo 3 specifies that "Under the conditions where the costs and/or projected worker exposures associated with the application of one or more of the additives become disproportionate to the potential benefits gained..." DOE would implement a contingency approach, such as a double-packaging system, to ensure safe transportation and disposal of the Silo 3 material in lieu of conditioning with the liquid additive mixture. The ROD Amendment further specifies that after discussing the contingency approach with the United States Environmental Protection Agency (U.S. EPA), the Ohio Environmental Protection Agency (OEPA) and the public, and obtaining regulatory agency approval, the rationale for implementation of the contingency approach would be documented in a Remedial Design Fact Sheet to be placed on the Post-decision file.

### Background

As specified in the referenced documents, pneumatic retrieval, conditioning, and packaging has successfully dispositioned the majority of the material originally contained in Silo 3. As DOE has communicated during weekly status reports and conference calls, the east wall of the silo was opened in early October, and the mechanical excavator has been used to move remaining material within the silo to allow continued pneumatic retrieval. More than 1400 containers of Silo 3 material have been retrieved, conditioned, packaged, and disposed at Envirocare. Based upon observations of the inside of Silo 3 since opening the east wall, up to 350 additional containers are estimated to be required to package the remaining Silo 3 material.

As you are aware, the material encountered adjacent to the east wall of the silo since opening the silo wall has been different in character than the material processed previously, consisting of a combination of a mixture of hard-chunky material and moist, mud-like material. This combination of material has been very difficult to retrieve, leading to problems with plugging of retrieval equipment and significantly increasing the effort, time, and personnel exposures associated with retrieving the material using the existing system.

Attempts have been made, such as use of a 'profiler' attachment to break up the chunks, with no significant improvement in the ability to retrieve the material. Experience to date with the mechanical retrieval system indicates that the physical characteristics of the material currently being encountered results in a very time and labor-intensive retrieval process. The nature of the material has also resulted in frequent plugging of the mechanical retrieval conveyor system, requiring manual opening and cleaning of the conveyor.

Mr. James A. Saric  
Mr. Tom Schneider

Based upon evaluation of the characteristics of the material being encountered in the silo, the existing pneumatic and mechanical retrieval and packaging systems will be continue to be utilized when possible. The contingency approach outlined below is intended for use as a third option for retrieval and packaging of material, such as that currently encountered adjacent to the silo wall opening, that does not lend itself to the other two methods. Once the contingency option is implemented, Silo 3 operations management will retrieve and package the remaining Silo 3 material by selecting from the three available methods (pneumatic retrieval, mechanical retrieval, or contingency direct loadout) based upon observation and assessment of the characteristics of the material being encountered in the silo

Contingency Approach

The contingency approach being proposed by the DOE to be utilized as necessary, in combination with the existing pneumatic and mechanical retrieval and packaging systems, to complete the retrieval, packaging, and offsite disposal of Silo 3 material consists of the following changes to the approach documented and approved in Reference 2:

1. A manned, enclosed cab, front-end loader will be utilized to retrieve material from Silo 3 and load it directly into a disposal package in the excavator room. Local ventilation will be provided in the immediate vicinity of the package to collect airborne emissions during filling operations. A description of the operational approach for direct filling of the containers is provided in Enclosure 1.
2. No liquid additive solution will be added to the material.
3. As already documented in Design Change Notice (DCN) 40430-JEG-287, the Ventilation flow in the Silo 3 remediation Facility has been reconfigured to maximize airflow from the excavator maintenance room through the excavator room, into Silo 3 and thereby maximize containment of airborne emissions during mechanical retrieval and direct loading (see Enclosure 2).
4. A fabricated structure will be erected connecting the excavator maintenance room and the cargo bay to prevent spread of contamination during movement of containers (Enclosure 3)
5. The package will consist of a 96ft<sup>3</sup> double layer, coated woven polypropylene soft-sided package, with a double 6-mil poly liner rather than the sealed 30-mil PVC inner liner. The new soft-sided package configuration has been tested (drop and stacking tests) to verify compliance with Department of Transportation (DOT) IP-2 requirements.

The soft-sided packages would be closed as currently done, loaded into an overpack (ISO) container (4-8 packaged per overpack), and loaded onto a flatbed truck for transportation to Envirocare.

An alternate package configuration, consisting of a 96ft<sup>3</sup> soft-sided package with a single inner liner, may also potentially be used. These packages would be closed and loaded into an IP-2 certified Sea/Land container for shipment to Envirocare.

Mr. James A. Saric  
Mr. Tom Schneider

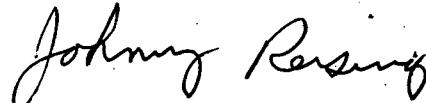
Details of the modified packaging configuration are documented in the attached change pages to the Silo 3 Transportation and Disposal Plan (Enclosure 4). This information will be communicated to appropriate state and local authorities along the transportation route.

Based on the information presented above, the contingency actions proposed by DOE present the most effective approach for completing the remediation of Silo 3 in a safe, cost-effective, and timely manner. As specified in the ROD Amendment for Silo 3, the rationale for implementing this contingency approach will be discussed with stakeholders, and documented in a Remedial Design Fact Sheet upon receipt of your approval. A draft fact sheet is included as Enclosure 5.

Our current schedule is to implement the contingency approach outlined above early in December of 2005. Your review and approval as soon as possible will be appreciated.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,



Johnny W. Reising  
Director

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Mr. James A. Saric  
Mr. Tom Schneider

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DOE-0024-06

Enclosure:

cc w/enclosures:

J. Sattler, OH/FCP  
T. Schneider, OEPA-Dayton (three copies total of enclosure)  
J. Saric, USEPA-V, SR-6J  
F. Bell, ATSDR  
M. Cullerton, Tetra-Tech  
M. Shupe, HSI-GeoTrans  
R. Vandegrift, ODH  
S. Beckman, Fluor Fernald, Inc./MS20  
D. Carr, Fluor Fernald, Inc./MS84  
AR Coordinator, Fluor Fernald, Inc./MS78  
ECDC, Fluor Fernald, Inc./MS52-7

ENCLOSURE 1

MANUAL DIRECT LOADING and SAMPLING OF SILO 3 MATERIAL

OPERATIONAL APPROACH

If material consistency in the bottom layers of Silo 3 is found to contain a high moisture content or compacted fractional sizes indicating that processing through the vertical incline conveyor or pneumatic retrieval systems is not appropriate, an alternative approach consisting of bulk retrieval and direct loadout will be employed. This work would be performed utilizing a manned enclosed cab, front-end loader retrieving material from inside the silos and loading the material into containers in the excavator room.

The material transfer will involve one operator inside a front-end loader placing the material into a container staged inside a containment structure with dedicated ventilation; otherwise the excavator room will be unoccupied. Additional workers will be staged in the excavator maintenance area dressed in the same level of Personal Protective Equipment (PPE).

The outer roll-up door will be positioned slightly opened to maximize airflow velocity into the maintenance bay prior to opening of the inner roll-up door. The inner roll-up door will be opened for placement and/or removal of the container and frame from the containment structure, through use of an electric fork-truck. After moving the containers into, or out of, the excavator room containment structure, the inner roll-up door will be closed with the outer roll-up door positioned to ensure an inbound airflow.

The filled containers will be partially closed prior to movement into the excavator maintenance room for full closure of the inner and outer package. The container and frame will then be moved out of the maintenance area, through an adjoining fabricated structure connecting it to the cargo load-out area. Once in the cargo load-out area, the container will be lifted from the frame with an overhead crane, inspected, weighed and have a radiological survey performed before placement in a shipping container. All movements of containers and frames will be accomplished through use of a forklift.

Empty frames will then be prepped with a new container arrangement and repeat the above.

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ENCLOSURE 2

SILO 3 REMEDIATION FACILITY VENTILATION FLOW

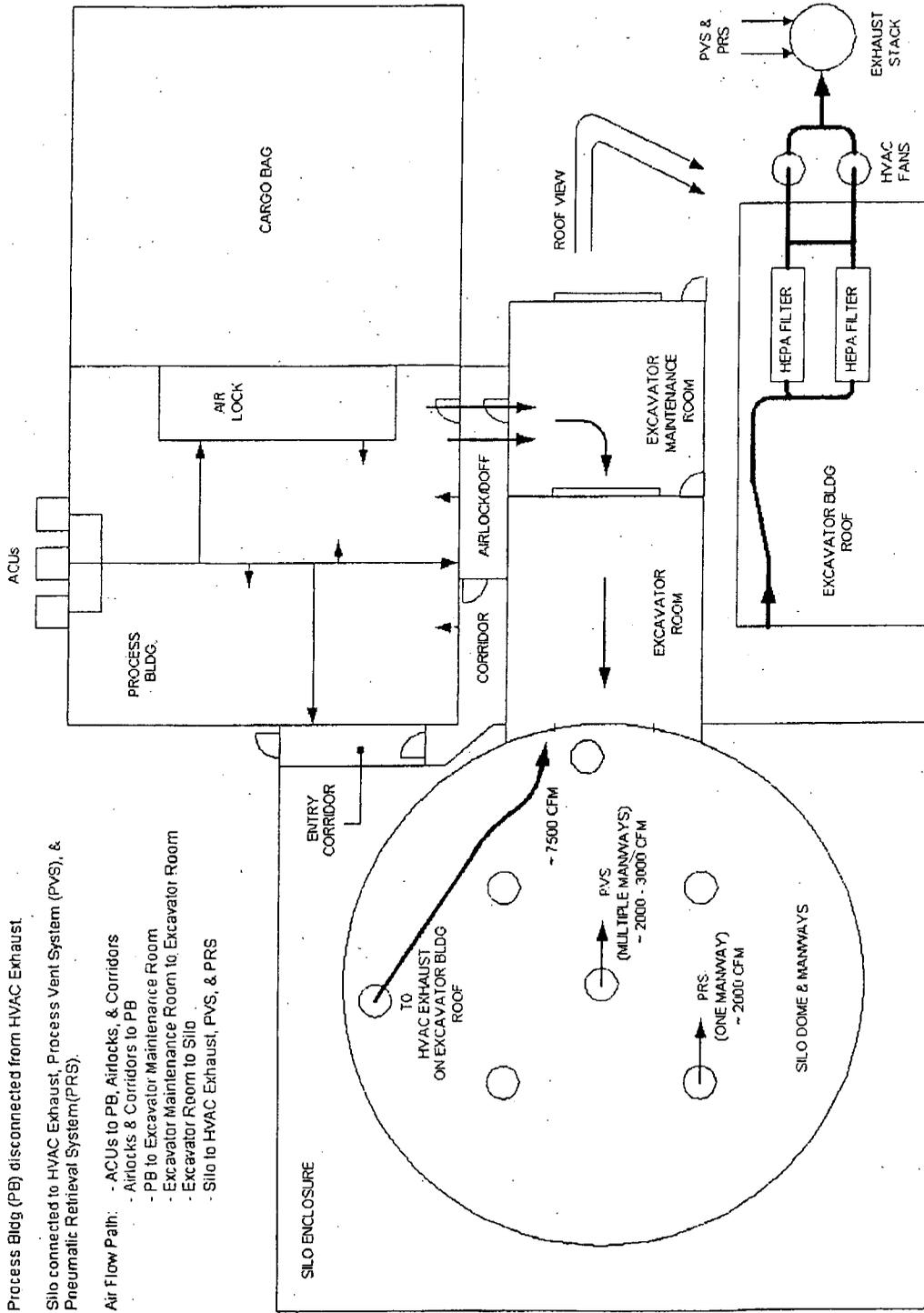
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**DCN 40430-JEG-287. HVAC MODIFICATION**

Process Bldg (PB) disconnected from HVAC Exhaust.

Silo connected to HVAC Exhaust, Process Vent System (PVS), & Pneumatic Retrieval System (PRS).

- Air Flow Path:**
- ACUs to PB, Airlocks, & Corridors
  - Airlocks & Corridors to PB
  - PB to Excavator Maintenance Room
  - Excavator Maintenance Room to Excavator Room
  - Excavator Room to Silo
  - Silo to HVAC Exhaust, PVS, & PRS



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ENCLOSURE 3

FABRICATED STRUCTURE BETWEEN EXCAVATOR BUILDING AND CARGO BAY



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ENCLOSURE 4

PAGE CHANGES TO TRANSPORTATION AND DISPOSAL PLAN FOR SILO 3

# SILO 3 PROJECT TRANSPORTATION AND DISPOSAL PLAN

## 40430-PL-0008, REV. 6

*November 2005*

APPROVED BY:

_____ Mark Cherry, Operations Manager	_____ Date
_____ Robert F. Schulten, Shipping and Receiving	_____ Date
_____ Donna J. Allen, Shipping Manager	_____ Date

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FERNALD CLOSURE PROJECT  
FERNALD, OHIO

U.S. DEPARTMENT OF ENERGY

## RECORD OF ISSUE/REVISIONS

EFFECTIVE DATE	REV. NO.	DESCRIPTION
05/20/2004	0	New plan issued to describe transportation and disposal operations for Silo 3 material, comments by USEPA and OEPA incorporated.
07/07/2004	1	Section 2.3, 3 <sup>rd</sup> paragraph, 2 <sup>nd</sup> sentence, revised to add "actions to take in the event of severe weather." Third sentence of same section revised to indicate FCP access to the satellite tracking system. Section 4.2, deleted reference to IHASP. Section 5.3, 2 <sup>nd</sup> paragraph revised to indicate notifications to state and tribal emergency response organizations and add reason for not providing individual shipment information.
2/15/2005	2	Revised plan issued to reflect disposal at Envirocare
2/23/2005	3	Revised to incorporate minor editorial revisions prior to USEPA / OEPA Review
3/4/05	4	Revision to Section 3 in response to comments from USEPA review
3/31/05	5	Revision to Section 2.3.1 to correct shipping route and to section 3.3 to reflect revised packaging configuration
11/14/05	6	Revision to 3.3 to reflect packaging for contingency option

#### 4.6 SECURITY

Areas where Silo 3 material will be loaded and staged pending the completion of shipment will be within the site fence and provided with the appropriate levels of security and lighting. FCP Security monitors site access by using stationary posts, conducting walking, driving, and perimeter patrols on a 24-hour basis.

### 5.0 EMERGENCY RESPONSE

#### 5.1 INTRODUCTION

This section documents the emergency response procedures that are in place to respond to transportation accidents involving shipments of Silo 3 material. The scope of this discussion focuses on off-site occurrences and references procedures for on-site occurrences.

DOE Order 151.1B, Comprehensive Emergency Management System, provides for a DOE Emergency Management System (EMS). This order requires sites and facilities to have emergency plans and procedures in place and to address transportation emergencies for onsite and offsite. The FCP has established plans and procedures. Also, pursuant to DOE O 151.1, EM has authority to maintain the Transportation Emergency Preparedness Program, which assists Department of Energy (DOE) and other federal, state, tribal and local authorities to prepare for response to a transportation incident involving DOE shipments of radioactive material. DOE O 151.1 also addresses DOE's responsibilities under the National Contingency Plan (NCP) and the Nuclear Rad Annex of the National Response Plan.

##### 5.1.1 Department of Energy Requirements

DOE Order 435.1, Radioactive Waste Management and associated manual DOE M 435.1-1, Chapter IV, Section L.2, Transportation, also state that the volume of waste and number of waste shipments shall be minimized to the extent practical. This requirement was considered in development of the Silo 3 waste form and associated transportation planning.

#### 5.2 FCP EMERGENCY RESPONSE PREPAREDNESS PLANS

The FCP Transportation Emergency Plan (TEP), PL-3043, is part of the DOE-FCP Transportation Emergency Preparedness Program. The FCP TEP provides a centralized program approach to off-site transportation emergency response including products, samples, waste, and rail shipments.

The FCP TEP describes the overall DOE/FCP process developed for the coordination of response efforts to off-site transportation incidents. This assistance planning is

accomplished by adherence to applicable federal, state, and local transportation-related emergency response requirements, plus utilizing existing DOE programs designed to protect the well-being of citizens and the environment from accidental release of transported materials.

Procedures for on-site emergencies are addressed in PL-3020, FCP Emergency Plan, which details the procedures to be followed at the FCP in the event of an accident or emergency, highlights FCP safety features, and governs the spill response actions. The FCP Emergency Plan is distributed to participating mutual aid organizations, such as local fire departments and hospitals, in the general vicinity of the FCP. Silo-specific emergency procedures are addressed in EM-0030, Silos Area Emergency Procedure. Loading of soft-sided containers, including response to a damaged container is directed by procedure 11-C-044, "Loading of Silo 3 Soft Sided Shipping Containers for Off site Shipment." Response to a spill or release is directed by procedure 11-E-006, "Silo 3 Abnormal/Emergency Events Response."

### 5.3 EMERGENCY RESPONSE FOR THE FCP OFF-SITE SHIPMENTS

A Silo 3 material shipment will become an off-site shipment at the point when the entire shipment crosses the facility boundary. When the shipment is off-site, the motor carrier will be responsible for providing emergency response support to the local authorities in proximity of any incident. The carrier also has contractors available for containment and cleanup as necessary. The FCP will provide technical assistance via the 24-hour emergency response telephone number. DOE will advise and provide support as requested by the local response authority (49 CFR 172.604). Local response personnel including police, firefighters, and emergency responders, typically are the first to arrive on the scene of an incident. They must be provided with the technical information needed by first responders to accurately identify the hazards involved in the incident. Information contained in the shipping papers includes source terms, health and safety concerns, and recommended protective actions. The information is consistent with the DOT, Research and Special Programs Administration publication, North American Emergency Response Guidebook, Guide 162.

Consistent with the procedure for other shipments to Envirocare, advance notification will be provided to state and tribal emergency response organizations prior to the beginning of the Silo 3 shipping campaign. The notification will include information such as the number of shipments, the type of material and packaging configuration, the projected dates for initiation and completion of shipments, and on-site contact information. Primarily for security reasons, current policy for waste shipments does not provide for notification of the date, time, and route of individual Silo 3 waste shipments. A contact list of the organizations notified prior to initiating shipments will be provided to OEPA and USEPA for information.

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ENCLOSURE 5

DRAFT FACT SHEET



U.S. Department of Energy  
Ohio Field Office  
Fernald Closure Project

Remedial Design Fact Sheet For Operable Unit 4  
Silo 3 Remedial Action – Contingency Packaging  
Approach

November 2005

Overview

This Remedial Design Fact Sheet documents planned contingency actions necessary for completion of the packaging and disposal of Silo 3 material. The contingency approach involves the option for utilizing an alternate retrieval and packaging approach to the Pneumatic and mechanical retrieval and packaging approaches outlined in the existing Remedial Design for Silo 3. The alternate approach will be utilized as necessary, in combination with the existing pneumatic and mechanical retrieval and packaging systems, to complete the retrieval, packaging, and offsite disposal of Silo 3 material. The contingency approach consists of:

1. A manned, enclosed cab, front-end loader will be utilized to retrieve material from Silo 3 and load it directly into a disposal container in the excavator room.
2. No liquid additive solution will be added to the material.
3. The package would consist of a 96ft<sup>3</sup> double layer, coated woven polypropylene soft-sided package, with a 6-mil poly liner rather than the sealed 30-mil PVC inner liner. The new soft-sided package configuration will be tested (drop and stacking tests) to verify compliance with Department of transportation (DOT) IP-2 requirements.

The soft-sided packages would be closed as currently done, loaded into an overpack container (4-8 packaged per overpack), and loaded onto a flatbed truck for transportation to Envirocare.

Based upon evaluation of the characteristics of the material being encountered in the silo, the existing pneumatic and mechanical retrieval and packaging systems will be continue to be utilized when possible. The contingency approach outlined below is intended for use as a third option for retrieval and packaging of

material, such as that currently encountered adjacent to the silo wall opening, that does not lend itself to the other two methods. Once the contingency option is implemented, Silo 3 operations management will retrieve and package the remaining Silo 3 material by selecting from the three available methods (pneumatic retrieval, mechanical retrieval, or contingency direct loadout) based upon observation and assessment of the characteristics of the material being encountered in the silo.

Background

More than 1400 containers of Silo 3 material have been successfully retrieved, conditioned, and packaged as outlined in the Remedial Design Based upon observations of the inside of Silo 3 since opening the east wall, up to 350 additional containers are estimated to be required to package the remaining Silo 3 material.

The material encountered adjacent to the east wall of the silo since opening the silo wall has been different in character than the material processed previously, consisting of a combination of a mixture of hard-chunky material and moist, mud-like material. This combination of material has been very difficult to retrieve, leading to problems with plugging of retrieval equipment and significantly increasing the effort, time, and personnel exposures associated with retrieving the material using the existing system.

Basis for the Change

The potential for operational difficulties during retrieval and packaging of Silo 3 material, and resulting potential need for implementing an alternate approach, was recognized during development of the current Silo 3 remedy. The

ROD Amendment for Silo 3 specifies that "Under the conditions where the costs and/or projected worker exposures associated with the application of one or more of the additives become disproportionate to the potential benefits gained..." DOE would implement a contingency approach, such as a double-packaging system, to ensure safe transportation and disposal of the Silo 3 material in lieu of conditioning with the liquid additive mixture.

Based upon the physical characteristics of the material currently being encountered near the bottom of Silo 3, and the impact of these characteristics on the pneumatic and mechanical retrieval systems, the

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change documented above is necessary to ensure worker safety, minimize personnel exposures, and facilitate timely completion of the Silo 3 remedy, and is consistent with the current remedy for Silo 3.

For additional information concerning this change, please contact Gary Stegner, DOE – Ohio Field Office Public Affairs at (513) 246-0074, or e-mail at [gary.stegner@ohio.doe.gov](mailto:gary.stegner@ohio.doe.gov). This Fact Sheet, and other documentation concerning implementation of the Silo 3 remedy, is available on the Fernald Closure Project web site ([www.fernald.gov](http://www.fernald.gov)) or at the Fernald Closure Project Public Environmental Information Center, 690 East Crescentville Road, Cincinnati Ohio 45246, (513) 648-5051.

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