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**CLOSURE STATUS REPORT AND REQUEST FOR  
EXTENSION OF CLOSURE SCHEDULE FOR  
TANKS T-5 AND T-6**

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**LETTER**



**Department of Energy**  
**Fernald Environmental Management Project**  
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JUL 08 1993

DOE-2389-93

Donald R. Schregardus, Director  
Ohio Environmental Protection Agency  
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Dear Mr. Schregardus,

**CLOSURE STATUS REPORT AND REQUEST FOR EXTENSION OF CLOSURE SCHEDULE FOR TANKS T-5 AND T-6**

- Reference:
- 1) Letter, Mr. Donald R. Schregardus to Mr. Gerald W. Westerbeck, "CLOSURE PLAN APPROVAL," dated September 30, 1991.
  - 2) Letter, DOE-980-92, R. E. Tiller to Mr. Donald R. Schregardus, "Request for Extension of Plant 6 Pad and Tanks T5 and T6 Closures," dated February 28, 1992.
  - 3) Letter, DOE-1971-93, Thomas J. Rowland to Mr. Donald R. Schregardus, "Extension of Closure Schedules for the Trane Liquid Waste Incinerator, Storage Pad North of Plant 6, and the Bulk Storage Tanks T5 and T6," dated May 21, 1993.

The Fernald Environmental Management Project (FEMP) has determined that clean closure of the Bulk Storage Tanks T-5 and T-6 could not be achieved using the approach detailed in the approved Closure Plan Information and Data (CPID). However, Bulk Storage Tanks T-5 and T-6 have been pressure washed and emptied and the residual soil contamination does not pose an immediate threat to human health and the environment, allowing the removal of the tanks and containment pad, and the subsequent remediation/removal of soil contamination to be completed through the ongoing Comprehensive Environmental Response Compensation and Liabilities Act (CERCLA) actions at the FEMP. Consistent with recent discussion between representatives of the FEMP and the Ohio Environmental Protection Agency (OEPA) Southwest District Office, this closure status report provides information and data concerning Resource Conservation and Recovery Act (RCRA) closure actions that have been taken and discusses additional actions that will achieve the RCRA closure performance standards in OAC 3745-11 (40 CFR 264.111) for the Bulk Storage Tanks T-5 and T-6.

OEPA approval of the CPID for the Bulk Storage Tanks T-5 and T-6 was received on October 2, 1991 (Reference 1), and subsequent field activities were initiated in accordance with the approved closure document. In response to discussions with representatives of the OEPA Southwest District Office, a request for extension of the closures was submitted in February, 1992 (Reference 2). A preliminary evaluation of the analytical data from the closure activities indicated that clean closure had not been achieved. Submission of closure documentation has been delayed in order to complete validation and assessment of data and integrate CERCLA response actions to remove and remediate residual contamination. Subsequently, a second request was submitted in May, 1993 (Reference 3). This closure status report is being submitted to provide an update of closure actions and to request an extension of closure under OAC 3745-13(A)(1) and (2).

**SUMMARY of COMPLETED CLOSURE ACTIONS**

To date, the actions taken for closure of Tanks T-5 and T-6 have included:

- removing the waste, residues, and visible contamination from the Tanks T-5 and T-6;
- high pressure washing to clean and decontaminate Tanks T-5 and T-6 and associated piping;
- sampling and analyzing rinseate from Tanks T-5, T-6, T-3 and associated pump and piping for targeted waste constituents to evaluate the effectiveness of decontamination;
- collecting and analyzing soil samples from the adjacent soils to identify and evaluate possible contamination and determine if contamination is below the clean closure criteria as defined in the approved CPID. Soil sampling points are shown on the drawing in Figure 1 (see Enclosure 1).

Discrepancies in the analytes reported were a result of differences between the laboratory standards used by the 2 laboratories (see cross-reference lists for organic analytes in Table 1, Enclosure 1). The analyses for metals in the rinses for Tank T-6 was not conducted due to limitations in laboratory capacity at the time the samples were collected. Regardless, there is still sufficient information to support the conclusions discussed below. Copies of the laboratory data reports, supporting documentation for sampling activities and summaries of the available data are provided in Enclosure 2.

**Review and Evaluation of Decontamination Efforts**

The Hazardous Waste Management Unit (HWMU) containing Bulk Storage Tanks T-5 and T-6 has been cleaned to the point that there is no threat to human health and the environment prior to final remediation through the CERCLA process. Based on field observations and the rinseate analyses, the following conclusions have been made:

- 1) Decontamination of Tank T-6 was successful, as demonstrated by analytical results below the decontamination action levels listed in the CPID. Although metals analyses were not conducted, the preliminary data from analyses of the wastes in Tanks T-5 and T-6 (included in Appendix A to the CPID, see Enclosure 3) did not indicate high concentrations of metals. Also, analyses of rinse waters from Tank T-5 (which still contains residual organic contaminants) did not identify metal contaminants. Therefore, there is no reason to anticipate metal contamination in Tank T-6 above the decontamination action levels.
- 2) Residual lead contamination was found in the rinseate of the containment pad surface in excess of the Decontamination Action Limit specified in the CPID. However, this concentration is below the decontamination limit specified in the Ohio EPA "Closure Plan Review Guidance" (May 1991). This guidance was issued after the preparation of the CPID for Tanks T-5 and T-6 and is therefore considered an applicable and current basis for comparison. The decontamination of the containment pad is considered successful based on a comparison of the rinseate analyses to the decontamination levels specified in the May 1991, Ohio EPA closure guidance.
- 3) Residual solvent contamination was found in Tank T-5 including target compounds trichloroethane and dichloroethane in excess of the concentrations listed for the Decontamination Action Limits. Metal plates or vanes inside Tank T-5 interfered with the high pressure spray used for decontamination. The liquid residues and the majority of the contamination have been removed from T-5. Based on the current conditions, Tank T-5 is considered empty and the residual contamination inside Tank T-5 will not pose a threat of release prior to dismantling and removing the tank under the CERCLA process.
- 4) The transfer pump rinse contained a significantly elevated concentration of chromium (109 mg/L total chromium, and 67.03 mg/L TCLP) and selenium (4.02 mg/L total selenium, and 2.53 mg/L TCLP). This contamination with chromium and selenium was only found in the transfer pump rinseate and was not reported in the previous waste analyses included in the CPID (see Enclosure 2).
- 5) The levels of contamination found in the rinseates from Tank T-3 are below the decontamination action levels. These results have confirmed the assertion in the CPID that Tank T-3 was not used for storage of hazardous wastes.

A summary of the final rinseate analyses for Tanks T-5, T-6, T-3, the transfer pump and the containment pad are provided in Table 2 (Enclosure 1). Table 2 also provides comparisons to the CPID listed decontamination action levels and the revised decontamination limits based on the OEPA Closure Plan Review Guidance, May, 1991.

## Review and Evaluation of Soil Sampling and Analyses

A total of 22 soil samples were collected from 5 sample locations around the containment pad. The data indicates some limited contamination of the soil adjacent to the containment pad. Table 3 (Enclosure 1) provides a summary of soil data and Table 4 (Enclosure 1) presents the results of statistical analysis used to evaluate soil contamination.

The Kolmogorov-Smirnov procedure was used to statistically evaluate the normality of the data from closure soil samples data and the FEMP area background soil samples (i.e., the data from the FEMP CERCLA/RCRA Background Soil Study, March 1993). Based on the evaluation, it was determined that it would be more appropriate to run the non-parametric Mann-Whitney U Test (a procedure that is a direct corollary to the Wilcoxon Signed Rank or Rank Sum Test). Table 4 (Enclosure 1) provides the average concentrations for site and background lead levels in soils and identifies statistically significant differences based on the Mann-Whitney U Probability. Probability values less than 0.05 indicate significant differences with a 95% confidence level. Based on the statistical analyses, elevated levels of cadmium, chromium, and lead were identified at statistically significant levels.

Although the approved CPID indicated samples below the containment pad would be collected, there are three other storage tanks located within the diked area with Tank T-5 and Tank T-6. These tanks include two empty tanks (Tank T-3 and Tank T-4) and Tank T-2 which contains over 7,000 gallons of thorium nitrate. As a result, it was concluded that the importance of maintaining the integrity of existing secondary containment warrants delaying collection of additional soil samples under the pad until secondary containment is no longer required.

While soil samples indicate concentrations of cadmium, chromium, and lead above those specified within the CPID, the concentrations are relatively low and, based on the required dilution in the extraction procedure (SW-846 Method 1311), do not exceed TCLP levels. The level and extent of contamination indicated by the sample analyses does not pose an immediate threat to human health or the environment.

## **REMOVAL/REMEDICATION OF RESIDUAL CONTAMINATION THROUGH CERCLA RESPONSE ACTIONS**

The FEMP will complete actions necessary to remove the five storage tanks and the containment pad and evaluate and conduct any required remediation of soil contamination under the CERCLA process. The removal and remediation of residual contamination from the Bulk Storage Tanks T-5 and T-6 will be achieved under a combination the Interim and Final Records of Decision (RODs) for OU3 and under CERCLA Removal Action No. 12 "Safe Shutdown." Contaminated soil and debris generated from these activities will be managed according to Removal Action No. 17 "Improved Storage of Soil and Debris."

## CERCLA Background Discussions

In 1986, the U. S. Department of Energy (DOE) initiated the ongoing Remedial Investigation/Feasibility Study (RI/FS) to evaluate and determine remediation requirements pursuant to CERCLA. Consistent with the scope of National

Contingency Plan (NCP) and the Amended Consent Agreement between DOE and USEPA, all remediation activities and any resulting changes to facility schedules must be coordinated and integrated with the RI/FS and CERCLA removal and remedial response actions. Additionally, all remediation activities, including RCRA closure activities, must be consistent with the Final ROD for the operable unit containing the HWMU.

In accordance with 40 CFR 300.400(g), CERCLA response actions must identify other Applicable or Relevant and Appropriate Requirements (ARARs), unless justifiably waived, including OEPA and USEPA requirements for HWMU closures. Pursuant to the Amended Consent Agreement, the FEMP management will:

- Characterize chemical and radiological contamination at the FEMP and establish site cleanup objectives;
- Conduct necessary short-term response actions to eliminate or minimize immediate threats to human health and environment (i.e. removal actions); and
- Implement necessary long-term monitoring and surveillance of the facility and surrounding environment.

Based on the RI/FS, a proposed plan will be recommended for the CERCLA ROD for each Operable Unit. The Final ROD for each Operable Unit will specify the required final remediation or removal of contaminated media, equipment and structures.

During the RI/FS investigations, Removal Action (RA) No. 12, and RA No. 17 (discussed below) have been initiated to provide immediate response actions necessary to stabilize or remove contamination for protection of human health and the environment. Removal action work plans have been prepared for review and comment by the OEPA and USEPA with final approval granted by the USEPA under CERCLA.

In addition, an Interim ROD is currently being planned to expedite the demolition of equipment and structures in OU3 prior to the issuance of the Final ROD. Remedial Design/Remedial Action (RD/RA) plans will be prepared to implement the requirements of the RODs (Interim and Final) to remediate each Operable Unit.

RA No. 12, the Safe Shutdown Program, was created to perform the safe shutdown of all process facilities in preparation of final remediation. Safe Shutdown essentially entails the engineering, planning, and scheduling for isolation of process equipment, piping systems, and associated utilities; and removing residual and excess materials, supplies, and combustibles to appropriate disposition and approved storage locations.

Safe Shutdown management activities include: developing appropriate safety documentation (Risk Assessment, Risk Management Plan, Health & Safety Plan, Safety Assessment); preparing Training Plans and Task-Specific Lesson Plans; reviewing SOPs and updates; performing preliminary assessments for all process buildings and process equipment; evaluating preliminary assessments; preparing Task Orders to address equipment isolation and cleanout; continuing efforts to

dispose of the surplus equipment and materials; evaluating process buildings for future use or demolition; and initiating the development of engineering studies and packages to guide equipment isolation/de-energization activities.

Safe Shutdown field work activities include: isolation of process equipment; removing excess equipment and materials, supplies, and combustibles; initiating the process of removing residual materials from process equipment; and initiating decontamination efforts. All buildings are being inventoried for residual material and excess equipment. Necessary documentation is being processed to identify proper disposition of these materials.

RA No. 17 provides for the improved management of soil and debris in two phases. Phase I defines soil and debris management during the design and construction of four proposed storage facilities. Phase II addresses soil and debris management from the time the facilities are constructed until final remedial alternatives for FEMP are selected. RA No. 17 provides specific criteria for the management of soil and debris contamination and identifies options for its disposition including decontamination, disposal off-site, or storage in controlled stockpiles or an improved storage facility.

#### CERCLA Response Actions to Remove and Remediate Residual Contamination

The following sequence of events will be used to complete the removal and final remediation of OU3, including this HWMU, in a manner that will also achieve the RCRA closure performance standards under OAC 3745-66-11 (40 CFR 265.110):

- 1) Materials being stored in Tank T-2 will be removed under the ongoing Safe Shutdown Program. Safe Shutdown procedures will also be used to conduct any additional decontamination required.
- 2) All five tanks, associated pumps and piping, and containment pad will be dismantled and decontaminated under the remedial design/remedial action (RD/RA) work plan for the Interim Record of Decision for Operable Unit 3 (OU3).
- 3) The clean up level required to achieve acceptable final remediation of soils and potential contamination of the concrete in direct contact with contaminated soils will be defined by the final RODs for OU3 and OU5. Final removal or remediation of residual contamination in subsurface structures and utilities and in the environmental media will be conducted under the RD/RA work plans for OU3 and OU5.

This integrated approach to RCRA closure and CERCLA remediation will enable the FEMP to achieve an environmentally sound and cost-effective final remediation that is protective of human health and the environment and consistent with the intent of both the Ohio and federal regulations. Table 5, Enclosure 1, identifies the current schedule/status established under the Amended Consent Agreement between the USEPA and DOE for implementation of the CERCLA response actions identified for removal and remediation of residual contamination.

In accordance with OAC 3745-66-13(A)(1) and (2), the FEMP is requesting that

the Director of the OEPA allow the FEMP the time necessary to complete the CERCLA response actions. The actions outlined in this closure status report and update will, by necessity, take longer than 180 days to complete. Until the tanks are removed, The FEMP will continue to maintain HWMU inspections and conduct the activities required for emergency and contingency planning as provided through the FEMP Spill Prevention Control and Countermeasure Plan. As they are developed, response action work plans, reports of sampling and analytical data, and documentation of the CERCLA response actions will be provided to the OEPA for review and comment. In addition, the OEPA will be notified at least five (5) business days in advance of significant activities that will accomplish RCRA closure objectives. Significant activities include removal of Bulk Storage Tanks T-5 and T-6, removal of the containment pad, decontamination actions to remove residual contamination from Tank T-5 and additional soils sampling that may be conducted adjacent to and under the containment pad.

If you or your staff have questions regarding the information provided in this letter, our staff contact is Mr. John Sattler at (513) 648-3145.

Sincerely,

  
Mr. Raymond J. Hansen  
Acting Manager

FN: Sattler

cc w/ enc:

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