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**OU#2 - ALT SCREENING  
U.S. DOE - FERNALD  
OH6 890 008 976**

11-20-90

**USEPA/DOE-FMPC  
6  
LETTER**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

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REPLY TO ATTENTION OF:

Mr. Andrew P. Avel  
United States Department of Energy  
Feed Materials Production Center  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705

5HR-12

RE: OU#2 - Alt Screening  
U.S. DOE - Fernald  
OH6 890 008 976

Dear Mr. Avel:

On October 12, 1990, the United States Department of Energy (U.S. DOE) submitted a proposed Initial Screening of Alternatives (ISA) for Operable Unit #2 to the United States Environmental Protection Agency (U.S. EPA) for review and approval. Those who developed this report did not seem to benefit from any of the comments or experience from earlier ISA report. The report has very fundamental flaws and does not comply with the NCP or other applicable U.S. EPA guidance. Based on the review of the report, U.S. EPA is disapproving the document because of the following deficiencies:

**GENERAL COMMENTS:**

1. Methods used in establishing remedial action objective (RAO) cleanup goals are incorrect. The NCP requires the use of maximum contaminant levels (MCLs) for remediation goals when only one compound is the source of contamination. At the Fernald site, many contaminants contribute to the site's risk. Consequently, RAOs must be based on all contaminants and on summation of carcinogenic and non-carcinogenic effects. Therefore, the  $10^{-6}$  carcinogenic risk level and 1.0 Hazard Index (HI) level must be re-evaluated based on the summation of risks from all contaminants. More flexibility must be inherent in the RAO to reflect the differing levels of contamination in the different operable units, in order to achieve an overall risk level.
2. The alternatives or response actions developed in anticipation of the Feasibility Study (FS) are meant to

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for any of the above mentioned traits. Further, one or more innovative treatment technologies are required for comparison of the alternatives (40 CFR 300.430(e)(3)). The alternatives suggested are very simple (not innovative), as evidenced by the small amount of analysis needed to eliminate alternatives.

3. Preliminary Goals for Remediation are required in developing alternatives during the FS. Initially, preliminary remedial goals are developed and are based on a available information, such as chemical specific ARARs or the point of departure for the range of acceptable risk (40 CFR 300.430(e)(2)(i)). ARAR analysis is required by both U.S. EPA guidance (OSWER Directive 9355.3-01, 4-3) and the NCP (40 CFR 300.430(e)(2)(i)(A)), but is grossly insufficient in the ISA report.
4. The NCP states (40 CFR 300.430(e)(7)) states that alternatives may be eliminated during screening of alternatives based effectiveness, implementability, or grossly excessive cost. The ISA report incorrectly eliminates alternatives without the analysis required above. U.S. DOE did not support conclusions and decisions to eliminate alternatives. There are no quantifiable terms for decreasing toxicity, mobility, or volume through treatment. Additionally, U.S. DOE did not adequately address effectiveness.
4. The ISA report claims that there are low levels of contaminants in several waste areas of OU#2. RI sampling of these units, including the sanitary landfill, are needed before such statements can be made.
5. Approval for off-site pumping is not a justification for selecting or not selecting such an alternative.
6. The point of departure for establishing carcinogenic risk is  $10^{-6}$ . The NCP requires justification if a lower level of protection is to be used for RAOs.
7. The use of 25 percent of the  $10^{-6}$  or HI=1 concentration levels for cleanup goals is not necessarily protective of human health and the environment. Once RAOs are correctly established, a lower value could be used for cleanup if desired. However, the cumulative effect of all operable units must be reviewed to determine the effect of total site remediation on human health and the environment.
8. The sanitary landfill, lime sludge ponds, flyash piles, and south field have been addressed as similar sources of contamination. In reality, they have different physical characteristics and require different mechanical means of

remediation. It may be necessary to review each source area independently in order to develop area-specific remedial action to be combined into site-wide remedial alternatives. For example, it may be best to cap dry flyash areas because of low levels of contamination, whereas it may be best to stabilize and remove liquid lime sludge ponds.

9. U.S. DOE must specify whether the storm water retention basins, biodenitrification pond, and waste water treatment facility will be addressed under this operable unit or operable unit #3.
10. The Remedial Investigation/Feasibility Study (RI/FS) guidance suggests that technologies and process options should be evaluated. Process options should then be chosen from technologies used to develop alternatives. Figures 2-5 through 2-7 summarize the evaluation of process options performed in Section 2. It would be useful to have a figure in Section 2 or 3 that shows the process options selected for alternative development. If necessary, two process options from a single technology can be used in different alternatives, as was done with the interceptor trenches and pumping wells from the flow control technology.
11. There is limited discussion of the on-site disposal facility. The facility has been discussed in other reports, and these reports should be referenced for details. It should be clarified whether the cost listed for the storage facility listed is just for Operable Unit 2 or for all on-site storage.
12. No information is provided for review of cost estimates included in Section 5. Not all of the process options have been selected, so it does not seem possible to have cost estimates accurate to the nearest dollar. At this stage of alternative development, estimates to two significant figures would be more reasonable.

**SPECIFIC COMMENTS:**

13. **Section 1.5.2.2 and .3, page 10, paragraphs 1 and 4:** The volume for sludge stored in the South and North Ponds should be recalculated, or the text should be revised to discuss only the storage area dimensions, excluding the berms.
14. **Section 1.5.2.4, page 13, paragraph 4:** The basis for the estimate of uranium in the oil should be explained or referenced.
15. **Section 2.2.4, page 3, paragraph 5:** The basis for establishing acceptable intake levels in water must be revised. Several values are not reported accurately or are

omitted. U.S. EPA's Integrated Risk Information System (IRIS) and Health Effects Assessment Summary Tables (HEAST) should be reviewed. Information listed in Table 2-4 should be updated.

16. **Section 2.2.4, page 6, top of page:** In accordance with the NCP, the point of departure for target risk levels is  $10^{-6}$ .
17. **Table 2-2, Page 2-5;** Since Table 2-1 lists Ra-226 and RA-228 as potential radionuclides of concern, the MCL for each (5 pCi/l) must be listed in Table 2-2 as an ARAR.
18. **Section 2.2.5, page 6:** The requirement of the NCP that the cancer risk be below 25% of the goal set forth in the NCP for all media is addressed by the individual media goals set forth in Figure 2-1 in which each media is allowed to expose individuals to the  $2.5 \times 10^{-5}$  to  $2.5 \times 10^{-7}$ . Additionally, the annual dose limits proposed in this section allows 25% of 100 mrem (25 mrem) for each media, instead of 25 mrem for the entire OU#2.
19. **Section 2.2.5.5, page 9, paragraph 2:** The reference to Table 2-6 is incorrect.
20. **Figure 2-2, page 18:** A screening comment should be provided for physical barriers.
21. **Figure 2-2, page 20:** Precipitation should be included as a process option under perched ground-water treatment.
22. **Figure 2-2, page 22:** Rail and truck are means of transportation to an off-site disposal facility. Available disposal facilities should also be included.
23. **Figure 2-3, page 25:** See Figure 2-2, page 20 comment.
24. **Figure 2-3, page 26:** Segregation of waste from lime sludge ponds could apparently be eliminated.
25. **Figure 2-3, page 27:** See Figure 2-2, page 22 comment.
26. **Figure 2-4, page 31:** See Figure 2-2, page 20 comment.
27. **Figure 2-4, page 33:** See Figure 2-2, page 22 comment.
28. **Figure 2-6, page 49:** Lime sludge has a high moisture content. Removal with a bulldozer, backhoe, or clamshell would be difficult.
29. **Figure 2-6, page 51:** Solid/liquid separation should be included in Figure 2-3.

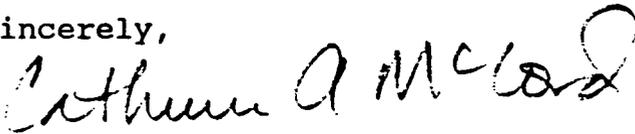
30. **Section 3.1.3, page 11, paragraph 1:** Figure 3-5 should be Figures 3-6 through 3-8.
31. **Section 3.1.3.1, page 17, Water Treatment:** The difference between the water treatment flows and the ground-water treatment flows should be defined.
32. **Section 3.1.3.1, page 17, paragraph 3:** The FS process involves review and evaluation of process options. There is no discussion of treatment options except in this section. If the evaluation occurred in another Operable Unit, the appropriate report should be referenced.
33. **Figure 3-13:** A sump and extraction well are apparently needed for this alternative.
34. **Section 3.1.5.2, page 30, Removal of Solid Wastes:** The characteristics of the sludge area are needed to finalize the alternative and develop costs. The process option review and evaluation for sludge removal are part of the FS process and should be documented.
35. **Section 3.1.5.2, page 31, paragraph 1:** Section 3.1.3.1, page 17, states that the ground water is contaminated and must be treated. There should be no question that the ground water in this alternative must be treated.
36. **Section 3.1.6.4, page 45, paragraph 1:** The review and evaluation of sludge dewatering process options should be included in the final draft FS.
37. **Section 3.1.6.5, page 46, paragraph 3:** The volumes stated do not account for the increase in volume resulting from lime sludge stabilization.
38. **Section 3.2.5, page 55, Alternative 4:** The volume reduction via compaction option is not discussed in the text for Alternative 4.
39. **Section 5.1.6.3, page 6, paragraph 4:** There appears to be an Operation and Maintenance cost of greater than \$20,000,000 when compared to Alternative 4. The fact that there is no Operation and Maintenance cost for materials disposed of off-site must also be presented.
40. **Section 5.4.3.2 and 4.2, page 17:** The implementability of the alternative refers to the ability to install the option. The small volume of water to be collected by the ground-water collection system does not reduce its implementability.

41. **Section 6.6, page 5, Table 6-1:** Scoring of alternatives can be very subjective. Alternatives 2 or 3 should be retained for detailed analysis. This would provide a wider range of alternatives.
42. **Appendix B:** See Section 2.2.4, page 3, paragraph 5 comment.

U.S. DOE should revise the ISA report for OU#2 to address the above deficiencies. The revised document is to be submitted within thirty (30) days of the date of this letter.

Please contact me at (312/FTS) 886-4436, if you have any questions.

Sincerely,



Catherine A. McCord  
Remedial Project Manger

cc: Richard Shank, OEPA  
Graham Mitchell, OEPA-SWDO  
Leo Duffy, U.S. DOE  
Joe LaGrone, U.S. DOE