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U-005-305.23

COMMENTS - OU3 RI/FS/PP

11/13/95

OEPA DOE-FN
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COMMENTS



State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

November 13, 1995

RE: DOE FEMP
MSL 531-0297
HAMILTON COUNTY
COMMENTS - OU3 RI/FS/PP

Mr. Johnny Reising
U.S. Department of Energy, Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705

Dear Mr. Reising:

Ohio EPA has reviewed DOE's September 11, 1995 submittal OU3 Remedial Investigation and Feasibility Study, Proposed Plan. Ohio EPA has significant concerns with the document in its current form. Attached are Ohio EPA's comments detailing these concerns. Ohio EPA is available to meet with DOE to achieve a successful resolution of these comments.

If you have any questions feel free to contact Tom Ontko at (513) 285-6073 or me.

Sincerely,

Thomas A. Schneider
Fernald Project Manager
Office of Federal Facilities Oversight

cc: Jim Saric, U.S. EPA
Terry Hagen, FERMCO
Ruth Vandegrift, ODH
Sharon McClellan, PRC
Manager, TPSS/DERR, CO
Dave Ward, GeoTrans

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Response:
Action:

- 10.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Exe.Sum Pg #: ES-5 Line #: 27-29 Code: C
Original Comment #:
Comment: This paragraph suggests the 100 g mass WAC for Tc-99 applies only to OU3 materials into the cell yet the Proposed Plan on page 9 states, "the maximum amount of technetium-99 that could be safely stored in the on-site disposal facility is 105 grams." The text of the RI/FS and the Proposed Plan must be clarified. If the mass limit is for the cell as a whole, the documents need to discuss the mass contribution to the cell expected from the other operable units and how that affects the "conservatism" of the 59 gram contribution from OU3.
Response:
Action:

- 11.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.1.3 Pg #: 1-6 Line #: 28-29 Code: C
Original Comment #:
Comment: The document is unclear on defining when additional mixed wastes generated under OU3 that are to be treated consistent with the FFCA requirements. The text should discuss why all OU3 mixed wastes would not be treated in a manner similar to the mixed wastes treated under the FFCA. The text should provide additional detail on the criteria for treating materials via the FFCA treatment facilities to be developed on-site.
Response:
Action:

- 12.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.1.3 Pg #: 1-7 Line #: 1 Code: C
Original Comment #:
Comment: Revise the text to state that Ohio EPA has issued Director's Findings and Orders to assure implementation of the STP.
Response:
Action:

- 13.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.2.2.1 Pg #: 1-12 Line #: 19 Code: C
Original Comment #:
Comment: Isn't the OU3 Remedial Design Prioritization and Sequencing Report (PSR) to be revised based upon the \$276 million/yr budget, 10 year plan? If so please include a schedule within the text which states at what point this document will be submitted by DOE to the

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Section #: 3 Pg #: 3-17 Line #: 2 Code: c

Original Comment #:

Comment: Please amplify the statement that "thorium-230 contamination attributable to fuel processing operations is expected in areas of the site that were associated with these operations". Please state exactly which areas are involved or supply a reference to another part of this report which provides such information.

Response:

Action:

19.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.4.3.3 Pg #: 3-21 Line #: 16 Code: E

Original Comment #:

Comment: Revise "cadmium" to state "chromium."

Response:

Action:

20) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.4.3.4 Pg #: 3-22 Line #: 17 Code: E

Original Comment #:

Comment: Please revise this sentence to read "There is no Part B Screening Level for lead.

Response:

Action:

21.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3 Pg #: 3-25 Line #: 5 Code: c

Original Comment #:

Comment: It is not Ohio EPA's experience that hexachlorobutadiene is a constituent of cutting oils. Are there any other possibilities for the source of this substance?

Response:

Action:

22.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.4.7 Pg #: 3-27 Line #: 27-28 Code: C

Original Comment #:

Comment: This paragraph suggests there are approximately 43,000 ft³ of mixed waste within OU3, yet line 29 on page 3 of the Executive Summary suggests there are 163,000 ft³ and Table 5-5 states there is 106,000 ft³. DOE should review the data, determine the appropriate volume, its impact upon cost, etc. and revise the document as appropriate.

Response:

Action:

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underground. The reviewer believes the waste line to the Pilot Plant sump was made of clay pipe and this pipe certainly contained materials that should be dispositioned off-site.

Response:

Action:

- 28.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Table 3-21 Pg #: Line #: Code: C
 Original Comment #:
 Comment: With 50% of the Tc-99 data qualified as estimated concentrations, Ohio EPA has significant concerns with the conservatism of DOE's decision to use 59 grams as the Tc-99 limit for OU3. These data concerns and questions regarding mass contributions from other operable units suggests additional administrative conservatism should be built into the disposition of OU3 wastes. Ohio EPA believes DOE should provide a graphical summary of Tc-99 mass by building or process area. This summary should be used to develop an ALARA approach to reduce the mass of Tc-99 entering the on-site disposal facility. It is Ohio EPA's intention to develop a practical method of limiting the possibility of exceeding the mass based WAC without incurring additional analytical expenses.
 Response:
 Action:
- 29.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 4.3.2 Pg #: 4-7 Line #: 12-16 Code: C
 Original Comment #:
 Comment: It is unlikely that screening of materials will be acceptable for unrestricted release and disposal at a commercial landfill. Landfills within the State of Ohio cannot accept wastes with radiological concentrations above background, thus the burden of proof for disposal of wastes from Fernald would be substantial and include more than screening with a radiological instrument.
 Response:
 Action:
- 30.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 4.3.2 Pg #: 4-7 Line #: 24-27 Code: C
 Original Comment #:
 Comment: The paragraph should include a discussion of the fact that the Plant 7 cost estimates will be high since an obvious lack of customer requirement definition occurred during the implementation of this technology evaluation. The fact that, significant quantities of steel were returned because of bending and crushing caused by demolition methods will impact the cost estimates. Had different demolition techniques or shipment preparation methods been implemented the costs may well have been lower.
 Response:
 Action:

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Section #: 5.5.2 Pg #: 5-24 Line #: 10-15 Code: C

Original Comment #:

Comment: The text should include a more substantial discussion of the requirements for disposal of ACM and the associated increase in disposal costs associated with such requirements. Examples of such cost should include containerization, additional personnel protection and training and impacts to other disposal operations.

Response:

Action:

- 41.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 5.5.2 Pg #: 5-24 Line #: 24-25 Code: C
 Original Comment #:
 Comment: CERCLA calls for perpetual monitoring of waste left on-site. Please see the previously approved OU2 ROD for acceptable language on this subject and revise appropriately.
 Response:
 Action:

- 42.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 5.5.2.1 Pg #: 5-25 Line #: 16 Code: C
 Original Comment #:
 Comment: It seems that working around the clock or at least extending working hours during the spring to summer months would help to expedite the placement of waste materials into the disposal cell, as well as help to off-set any delays which may occur during the winter shutdown months.
 Response:
 Action:

- 43.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 5.5.2 Pg #: 5-29 Line #: 8-13 Code: C
 Original Comment #:
 Comment: These materials would also have to meet Ohio EPA requirements regarding the disposal of radiologically contaminated material within solid waste landfills. The text should include a discussion of such requirements and their impact on this disposition alternative.
 Response:
 Action:

- 44.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 5 Pg #: Table 5-1 Line #: Code: c
 Original Comment #:
 Comment: The ratio of unbulked volume to bulked volume for FS Category A Accessible Metals

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is very much lower than this ratio for the other categories. Please re-check this.

Response:

Action:

- 45.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Table 5-5 Pg #: Line #: Code: C
 Original Comment #:
 Comment: This table seems to contradict the text which suggests that Painted Light-Gauge metals are not considered hazardous wastes. Please clarify this discrepancy.
 Response:
 Action:
- 46.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Figure 5-4 Pg #: Line #: Code: C
 Original Comment #:
 Comment: Please update this figure to be consistent with the current OU2 design (e.g., no dog-leg on the cell).
 Response:
 Action:
- 47.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Figure 5-5 Pg #: Line #: Code: C
 Original Comment #:
 Comment: This figure represents that 7,290,000 cubic feet of material with an average concentration of 2.9 pCi/g will contain 59 grams of Tc-99. Given this data it is difficult to believe that an additional 59 or more grams of Tc-99 will not be contributed by the other operable unit wastes being disposed of in the cell. Based upon this information and that previously presented in these comments Ohio EPA does not believe the Tc-99 WAC is sufficiently conservative.
 Response:
 Action:
- 46.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 6.3.2.3 Pg #:6-14 Line #: 6-8 Code: C
 Original Comment #:
 Comment: Please refer to OU2 ROD for acceptable language regarding long-term monitoring of the disposal facility.
 Response:
 Action:
- 47.) Commenting Organization: Ohio EPA Commentor: OFFO

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Section #: 6.3.2.6 Pg #: 6-24 Line #: 26-34 Code: C

Original Comment #:

Comment: This section should include a discussion of the administrative difficulty in getting material disposed at an off-site sanitary landfill.

Response:

Action:

48.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 6.3.2.7 Pg #: 6-25 Line #: Code: C

Original Comment #:

Comment: Since cost would appear to be DOEs primary reason for selecting Alternative 2 as the preferred alternative, additional detail needs to be included within this section. Details should include the per cubic yard or foot costs for disposal and maintenance, additional costs for OU3 materials such as ACM and TSCA wastes, off-site costs for disposal including representative commercial facilities for LLW and sanitary waste, treatment cost, etc.

Response:

Action:

49.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 6.4.1.1 Pg #: 6-34 Line #: 12-15 Code: C

Original Comment #:

Comment: In most scientific analyses 80% certainty is not considered high and is often consider unacceptable for drawing conclusions. Ohio EPA recommends deletion of the term "high."

Response:

Action:

50.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 6.4.2.5 Pg #: 6-38 Line #: 8-11 Code: C

Original Comment #:

Comment: It would seem appropriate that the per unit costs for OU3 be substantially higher than the costs of wastes from other operable units. We base this assertion on the unique handling and disposal requirements of the OU3 wastes. OU3 materials will be a major limiting factor in the operation of the facility and thus should appropriately bear an additional burden of cost.

Response:

Action:

51.) Commenting Organization: Ohio EPA Commentor: OFFO

Section #: Appendix A Pg #: A-67 Line #: 20 Code: c

Original Comment #:

Comment: Please discuss the significance of the phrase "samples... will be considered potentially

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hazardous".
Response:
Action:

52.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: Figure A-13 Line #: Code: e
Original Comment #:
Comment: Please add a clarifying legend explaining the significance of the two bold horizontal lines in the Figure.
Response:
Action:

53.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.2.3.1 Pg #: B-7 Line #: 18-21 Code: C
Original Comment #:
Comment: DOE has not provided a sufficient basis for the percent CRUD and holdup within this section. These numbers seem low to the reviewer. Were measurements used to make these determinations? What experience was used to make these assumptions? Additionally, the sensitivity analysis only evaluated scenarios where less material existed rather than larger quantities leaving to question the impact of an underestimation of these percentages.
Response:
Action:

54.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.2.3.5 Pg #: B-8 Line #: 17-20 Code: C
Original Comment #:
Comment: An assumption concerning the percentage of CRUD and holdup material within the clay piping should be included within the source term calculations. It is likely that substantial CRUD exists within the pipes and contains elevated levels of radionuclides. Assuming the pipe is at baseline values will result in underestimating the source term. DOE should revise the calculations of the source term and incorporate an estimate for CRUD and/or holdup within the clay pipe.
Response:
Action:

55.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.2.3.6 Pg #: B-9 Line #: 1-3 Code: C
Original Comment #:
Comment: It is unlikely that below grade concrete is at baseline values. Substantial soil and perched groundwater contamination exists within the production area. Spills and releases of contaminants have resulted in significant migration of contaminants through the soil column. It is likely these contaminants

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also migrated into the below-grade concrete. Assuming these materials are not contaminated will result in a significant underestimation of the source term. DOE should revise the calculations to include an assumption of contamination within the below-grade concrete.

Response:
Action:

56.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.2.3.8 Pg #: B-9 Line #: 16-18 Code: C
Original Comment #:

Comment: The use of Plant 4 data is important but the statement that a "moderate quantity of dust" was found does not provide any useful information. More detail concerning the Plant 4 results and how they were used should be included. The document states that more dust was found on the inside than the outside so DOE concluded that they would assume dust only on the inside surface of the duct. The basis for such a conclusion is unclear since the Plant 4 data suggested that dust occurred on both surfaces. These assumptions should be revisited and the source term calculations revised as appropriate.

Response:
Action:

57.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.2.3.12 Pg #: B-10 Line #: 14-17 Code: C
Original Comment #:

Comment: DOE has failed to justify the assumption that below-grade piping will be clean. Based upon data from the soils and perched water within the production area it would seem appropriate to assume the piping is contaminated. Unless DOE has data to support the assumption that the below-grade piping is clean then the source term calculations should be revised based upon contaminated below-grade piping.

Response:
Action:

58.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.5.1.5.1 Pg #: B-22 Line #: 22 Code: C
Original Comment #:

Comment: The source term for masonry would appear to be a typo. If not, significant revision to the document is required.

Response:
Action:

59.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: B.6.1.8 Pg #: B-29 Line #: 34-35 Code: C
Original Comment #:

Comment: A substantial discrepancy occurs between this section and section B.2.3.1. Percent CRUD

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including thickness of vadose zone (L1 and L2), hydraulic conductivity (K1 and K2) and retardation factor (R1 and R2). The rate of infiltration, 6 inches per year, seems reasonable.

Response:

Action:

- 67.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4.3.1.1 Pg. #: G-19 Line #: 5 Code: G
 Original Comment #
 Comment: In the OU5 RI, the time of travel calculations are presented for the screening results (Table F.3.5-4, OU5 RI). Similar results for OU3 should be included in Table G-3 for ten COC's which did not pass.

Response:

Action:

- 68.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4 Pg. #: Table G-4 Line #: Code: E
 Original Comment #
 Comment: Appears to be a typo on total uranium OU5 WAC. The value of 1.03×10^3 should be 1.33×10^3 .

Response:

Action:

- 69.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.43.1.2 Pg. #: G-19 Line #: 18 Code: G
 Original Comment #
 Comment: Table G-4 references OU5 WAC values from Table F.5-8 in the OU5 FS (Draft Final 3/22/95), but there was not a value reported for tetrachloroethene.

- 70.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4.2 Pg. #: Line #: Code: G
 Original Comment #
 Comment: The development of WAC for OU5 assumed the disposal cell dimensions are 1000 ft x 1000 ft. For OU3, the disposal cell has redesigned to 400 ft x 2,700 ft. Please explain how modeling results from OU5 are applicable to the development of WAC's for OU3.

Response:

Action:

- 71.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4.3.1.2 Pg. #: G-20 Line #: 29-31 Code:

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Original Comment #

Comment: Typo: The K_d for Technetium 99 is listed as 0.62, but in Table G-5 is reported as 0.60.
 Response:
 Action:

72.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4.3.1.2 Pg. #: G-20 Line #: 20-33 Code:

Original Comment #

Comment: The text discusses the change in the value of K_d assumed for technetium 99 as compared to OU5 RI, but does not discuss the change to the value of total uranium. This has changed from 15 (Table F.3.4-4, OU5 RI) to 3. Please explain.

Response:
 Action:

73.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.I.6.4 Pg. #: G.I-22 Line #: 2-28 Code:

Original Comment #

Comment: The process of technetium diffusion into cores is modeled using the analytical solution for one-dimensional diffusion. The variables include time, diffusion coefficient, source concentration and distance from surface. In fitting the lab measurements, it would appear that the source concentration was fitted. The fitted source concentration values should be reported and compared with experimental measurements.

Response:
 Action:

74.) Commenting Organization: OEPA Commentor: GeoTrans, Inc.
 Section #: G.4.3.1.1 Pg. #: G.-18 Line #: 29-31 Code:

Original Comment #

Comment: The travel velocity calculations are not provided in detail here, but can be inferred from the screening results. The following observations are offered.

For tetrachloroethene, the "30 times half-life" is 135 years, thus contaminants must have been predicted to have reached the water table within this time period. Focusing on the slowest residence region, namely the gray clay, the K_d is 1.8. Assuming a porosity and bulk density, the retardation is estimated to be approximately 12. To travel through 20 feet of clay, the water velocity should be on the order of 0.6 ft/year. This is the same order of magnitude, but less than the OU5 velocities on Table F.3.5-3.

For nitrobenzene, the sorption is approximately 3 times less and the half-life is about 3 time less. The results are consistent with tetrachloroethene.

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The tables should be expanded to include either the time of travel or the travel velocity.

Response:
 Action:

Proposed Plan

- 75.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Proposed Plan Pg #: 3 Line #: Table Code: e
 Original Comment #:
 Comment: The public is familiar with volumes expressed in the units of "cubic yards" from their experiences with OU5. The use of "cubic feet" will very likely cause at least some confusion. In lieu of changing all the units in this document and the RI/FS, please provide a conversion that expresses the volumes in cubic yards.
 Response:
 Action:
- 76.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: PP Pg #: 8 Line #: Code: C
 Original Comment #:
 Comment: The table incorrectly presents a total of 1,710,000 cubic feet for inaccessible metals when the two categories sum to 1,714,900 cubic feet. Please revise the table.
 Response:
 Action:
- 77.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: PP Pg #: 8 Line #: Code: C
 Original Comment #:
 Comment: The text states that a "safe level of technetium-99 within the on-property disposal facility is 105 grams" yet the RI/FS suggests this is the quantity for OU3 materials within the cell. As stated in previous comments DOE must address this inconsistency.
 Response:
 Action:
- 78.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: PP Pg #: 15 Line #: Code: C
 Original Comment #:
 Comment: The Preferred Remedial Alternative language states that material will be evaluated "to determine the least-cost disposition option" yet the text fails to discuss what factors will be evaluated in determining cost. Will lost resources costs, reuse costs, etc. be used in such a calculation? Such detail

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should be provided for the public or at a minimum the formula for such calculations should be referenced.

Response:

Action:

79.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: PP Pg #: 19 Line #: Code: C
 Original Comment #:
 Comment: The figure should be updated to be consistent with current disposal cell design direction.
 Response:
 Action:

80.) Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Appendix C Pg #: Line #: Code: C
 Original Comment #:
 Comment: Please include these ARAR discrepancies within the revised OU3 text:

- 1.) 40 CFR 61.150-61.155-Asbestos waste disposal
- 2.) ORC 3734.02(i)-Air emissions from HW facilities
- 3.) ORC 3734.02.7(a,b)-Prohibits commingling of LLW with solid waste(**offsite disposal only**)
- 4.) ORC 3734.03-prohibits open dumping or burning
- 5.) ORC 6111.04-prohibits pollution of waters of the state
- 6.) ORC 6111.07a,c-prohibits failure to comply with water pollution control requirements
- 7.) OAC 3745-56-51(A thru F) hazardous waste piles
- 8.) OAC 3745-56-54 a,b-hw piles
- 9.) OAC 3745-56-56 a,b-hw piles
- 10.) OAC 3745-56-57 a,b,c-hw piles
- 11.) OAC 3745-56-58 a,b,c-hw piles
- 12.) OAC 3745-56-59 a-hw piles
- 13.) OAC 3745-27-05-prohibits open burning and open dumping
- 14.) 40 CFR Part 257.3-3-prohibits water pollution from a solid waste facility

Response:

Action: