U-006-305.30

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OHIO EPA COMMENTS ON THE O.U. 4 REMEDIAL INVESTIGATION REPORT

06/17/93

OEPA/DOE
26
COMMENTS
OU4

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G-4378

4523-

George V. Voinovich
Governor

June 17, 1993

Mr. Jack R. Craig
Project Manager
U.S. DOE FEMP
P.O. Box 398705
Cincinnati, Ohio 45239-8705

Dear Mr. Craig:

Attached are Ohio EPA Comments on the O.U. 4 Remedial Investigation Report (also on disk).

If you have any questions please contact Tom Schneider or me.

Sincerely,

Graham E. Mitchell
Environmental Manager

GEM/mlf

cc: Jenifer Kwasniewski, DERR
Tom Schneider, DERR
Mike Proffitt, DDAGW
Jim Saric, U.S. EPA
Dennis Carr, FERMCO
Lisa August, Geotrans
Jean Michaels, PRC
Robert Owen, ODH

(ALLEN(R)
PARTIAL
ACTION RESPONSE
to DOE-1688-93
(6179)

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OHIO EPA COMMENTS
ON THE
OU 4 RI REPORT

1. Commenting Organization: Ohio EPA Commentor:
Section #: 1.2.2.3 Pg #: 1-34 Line #: 1 Code: c
Original Comment #:
Comment: This sentence suggests decant liquids had been removed from Silo 3, whereas the rest of the document states that only dry materials were placed in Silo 3. The sentence needs to clarify when/if decant liquids were removed.

Response:
Action:

2. Commenting Organization: Ohio EPA Commentor:
Section #: 1.5.3.3 Pg #: 1-52 Line #: 8-12 Code: C
Original Comment #:
Comment: One-hundred more gallons of leachate were removed from the decant sump during the second pumping than during the inital pumping. Prior to the initial pumping, the leachate level was 4 feet above the tank within the standpipe. The level at the second pumping was 80 percent of the tank, reportedly. The document fails to discuss the discrepancies in volume and level within the decant tank and the implications thereof. DOE must address the decant sump tank as a potential preferential migration pathway for silo 1 and 2 leachate.

Response:
Action:

3. Commenting Organization: Ohio EPA Commentor:
Section #: 2.2.3 Pg #: 2-11 Line #: 20-31 Code: C
Original Comment #:
Comment: As reported in Appendix B, DOE failed to analyzed for Cs-137, Tc-99, Ru-106, Np-237 and Sr-90 in a number of berm samples. DOE should revise the text to discuss deviations from the sampling requirements defined in this section. DOE should also discuss the potential effects of these missing data.

Response:
Action:

4. Commenting Organization: Ohio EPA Commentor:
Section #: 2.3.2 Pg #: 2-19 Line #: 6-16 Code: C
Original Comment #:
Comment: a) As reported in Appendix B.7, DOE failed to analyze the decant sump liquid or sludge for all the radiological contaminants described in this section. DOE should revise the text to discuss deviations from the sampling requirements defined in this section. DOE should also discuss the potential effects of these missing data.

b) The text should state that inappropriate QA/QC was used during sampling of

the decant sump liquid thus rendering the data unusable for the baseline risk assessment (See Section E.3.5).

c) The section should reference appendix A.7 for results of the decant sump sampling.

Response:
Action:

5. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 2.3.3 Pg #: Line #: Code:
Original Comment #:
Comment: A contour map of uranium concentrations in the 2000-3000 series aquifer which illustrates the horizontal extent of the plume should be included in the RI.

Response:
Action:

6. Commenting Organization: Ohio EPA Commentor:
Section #: 2.3.4 Pg #: 2-21 Line #: 27 Code: e
Original Comment #:
Comment: The sentence should reference Section A.6 rather than A.5.

Response:
Action:

7. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.1.2 Pg #: 2-27 Line #: Code: c
Original Comment #:
Comment: The section should direct the reader to the section within the appendices which provides surface water sampling data.

Response:
Action:

8. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.2.1 Pg #: 2-28 Line #: Code: c
Original Comment #:
Comment: The section should direct the reader to the section within the appendices which provides sediment sampling data.

Response:
Action:

9. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.2.3 Pg #: 2-31 Line #: 12-16 Code: c
Original Comment #:
Comment: The section should direct the reader to section B.6 for RI/FS sediment sampling data.

the decant sump liquid thus rendering the data unusable for the baseline risk assessment (See Section E.3.5).

c) The section should reference appendix A.7 for results of the decant sump sampling.

Response:
Action:

5. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 2.3.3 Pg #: Line #: Code:
Original Comment #:
Comment: A contour map of uranium concentrations in the 2000-3000 series aquifer which illustrates the horizontal extent of the plume should be included in the RI.

Response:
Action:

6. Commenting Organization: Ohio EPA Commentor:
Section #: 2.3.4 Pg #: 2-21 Line #: 27 Code: e
Original Comment #:
Comment: The sentence should reference Section A.6 rather than A.5.

Response:
Action:

7. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.1.2 Pg #: 2-27 Line #: Code: c
Original Comment #:
Comment: The section should direct the reader to the section within the appendices which provides surface water sampling data.

Response:
Action:

8. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.2.1 Pg #: 2-28 Line #: Code: c
Original Comment #:
Comment: The section should direct the reader to the section within the appendices which provides sediment sampling data.

Response:
Action:

9. Commenting Organization: Ohio EPA Commentor:
Section #: 2.5.2.3 Pg #: 2-31 Line #: 12-16 Code: c
Original Comment #:
Comment: The section should direct the reader to section B.6 for RI/FS sediment sampling data.

Response:
Action:

10. Commenting Organization: Ohio EPA Commentor:
Section #: 2.6.3 Pg #: 2-38 Line #: 8-14 Code: c
Original Comment #:
Comment: a) The section discusses the fact that sampling was conducted for radiological and chemical contaminants, yet no reference is made to the radiological sampling data within the RI. The text should discuss the radiological sampling data and include it within the appendices for locations relevant to OU4.
b) The section should direct the reader to section B.4 for HSL data.

Response:
Action:

11. Commenting Organization: Ohio EPA Commentor:
Section #: 2.7.3 Pg #: 2-47 Line #: 19-28 Code: c
Original Comment #:
Comment: As reported in appendix B.2 DOE failed to analyze all 16 samples for the radionuclides described in this section. Additionally, TCLP analyses were not conducted for all HSL parameters. DOE should revise the text to discuss deviations from the sampling requirements defined in this section. DOE should also discuss the potential effects of these missing data.

Response:
Action:

12. Commenting Organization: Ohio EPA Commentor:
Section #: 2.9.1 Pg #: 2-53 Line #: 9-10 Code: c
Original Comment #:
Comment: Section C.3 does not include 3 HSL analyses. Data for well 1072I are not provided in the appendix. Either correct this section or add missing data into Section C.3

Response:
Action:

13. Commenting Organization: Ohio EPA Commentor:
Section #: 2.9.2 Pg #: 2-53 Line #: 28-31 Code: c
Original Comment #:
Comment: As reported in appendix C.1 DOE failed to analyze any of the six groundwater samples for full radiological parameters as described in this section. DOE should revise the text to discuss deviations from the sampling requirements defined in this section. DOE should also discuss the potential effects of these missing data.

Response:
Action:

14. Commenting Organization: Ohio EPA Commentor:
Section #: 2.11 Pg #: 2-57 Line #: 10-12 Code: c
Original Comment #:
Comment: The previous sections of the document and comments above suggest a number of sampling events failed to analyze samples for the proper contaminants. These would seem to be significant deviations that impacted the amount and quality of data achieved. DOE should discuss these nonconformities and their impact on determining the nature and extent of contamination associated with OU4.

Response:
Action:

15. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 3.5.4 Pg #: 3-61 Line #: 22 Code:
Original Comment #:
Comment: This statement understates the potential impact that fractures in the lower till may have upon ground water flow.

Response:
Action:

16. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 3.5.4 Pg #: 3-61 Line #: 25 Code:
Original Comment #:
Comment: Does the information gathered in recent investigations support this claim?

Response:
Action:

17. Commenting Organization: Ohio EPA Commentor:
Section #: 3.5.4.2 Pg #: 3-62 Line #: Code: c
Original Comment #:
Comment: Figure 3-26 uses ground water elevation data from dates separated by two months. Unless ground water elevation data is available and analyzed to show that temporal variability does not occur in this area, it does not seem prudent to use such data to develop groundwater flow maps.

Response:
Action:

18. Commenting Organization: Ohio EPA Commentor:
Section #: 3.5.12 Pg #: 3-63 Line #: 6 Code: c
Original Comment #:
Comment: The statement that, "no seeps have been noted recently" should be deleted. Seeps have been noted and the text should discuss the fact that an investigation of these seeps is currently being conducted.

Response:

Action:

19. Commenting Organization: Ohio EPA Commentor:
Section #: 3.7.2 Pg #: 3-76 Line #: 14-19 Code: c
Original Comment #:
Comment: It is unclear whether Figure 3-36 presents wetlands delineation from February 1993 or a previous delineation. The text and figure should be clarified. The most recent wetland delineation should be included in the RI. In addition, February seems to be an inappropriate time to conduct a wetlands delineation. What justification did DOE have for conducting it in February?

Response:
Action:

20. Commenting Organization: Ohio EPA Commentor:
Section #: 3.7.3.1 Pg #: 3-78 Line #: 12-18 Code: c
Original Comment #:
Comment: It should be noted that the initial study of Indiana bats on the FEMP were inconclusive due to low capture success and echolocation detector data suggesting the presence of bats from the same genus. The data suggest additional studies should be conducted to determine the bats use of FEMP property. Such information will become more important during remedy selection and design phases of all operable units.

Response:
Action:

21. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-1 Pg #: 4-4 Line #: Code: e
Original Comment #:
Comment: Neither DOE 1993(a) nor 1993(b) are included in the References section. The documents need to be added to this section.

Response:
Action:

22. Commenting Organization: Ohio EPA Commentor:
Section #: 4.0 Pg #: 4-7 Line #: 2-4 Code: c
Original Comment #:
Comment: Postponement of the determination of background conditions until the OU5 RI is not acceptable. Prolonging this determination could result in the under or over estimation of risk for all other operable units. Such a result could lead to an unprotective remedy and the need to change the remedy for any given OU. The potential costs of such a delay in background determination most certainly outweigh any potential benefits DOE believes may be gained.

Response:
Action:

23. Commenting Organization: Ohio EPA Commentor:

Section #: 4.1.1.2 Pg #: 4-17 Line #: 24-25 Code: c
Original Comment #:
Comment: The meaning of the sentence stating, "...7 mg/kg, significantly higher than any other constituent" is unclear considering the following sentence reports a mean concentration of 29 mg/kg of TBP which is obviously higher. Please review and revise the paragraph.

Response:
Action:

24. Commenting Organization: Ohio EPA Commentor:
Section #: 4.1.2 Pg #: 4-27 Line #: 16-18 Code: c
Original Comment #:
Comment: As stated in a previous OEPA comment, the initial pumping of the decant tank yielded 8000 gallons yet the second pumping yielded 8,100 gallons. The removal action required the second pumping at 80% of the tanks capacity. The document fails to discuss this discrepancy in liquid levels and volumes pumped or the implications thereof. DOE should discuss this within the text and incorporate data from the second pumping if available at the time of revision of the RI.

Response:
Action:

25. Commenting Organization: Ohio EPA Commentor:
Section #: 4.1.2.1 Pg #: 4-31 Line #: 27 Code: c
Original Comment #:
Comment: It is unclear what theory the sample results from nearby areas support. A positive hit in a downgradient well certainly doesn't support a laboratory contaminant theory. Due to the large proportion of Tc-99 and Sr-90 data which were rejected and the number of samples which were not analyzed for these radionuclides within the OU4 sampling, it is unclear how DOE believes they can conclude the results are laboratory contaminants. Sr-90 and Tc-99 are contaminants of concern for OU4 and their presence in the decant sump tank suggests either they are present within the K-65 silos or some additional migration pathway exists within the decant sump system.

Response:
Action:

26. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-16 Pg #: 4-34 Line #: Code: c
Original Comment #:
Comment: The range for 4-Methyl-2-petanone is reported as 0.002-0.003 and the standard deviation as 0.007. The standard deviation is thus 7 times the range of results. The table, supporting statistics and any subsequent uses of these data should be reviewed and corrected where necessary (see chloroform also).

Response:
Action:

27. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.1.1 Pg #: 4-47 Line #: 18 Code: c
Original Comment #:
Comment: Appendix B.5 provides the CIS surface soil sampling data. The data include no qualifiers. Have these data been validated?

Response:
Action:

28. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-22 Pg #: 4-49 Line #: Code: c
Original Comment #:
Comment: The table is missing data for several locations (e.g., SL-46-326, SS-46-196). The table should be revised to include all data points on Figure 4-6.

Response:
Action:

29. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.1.1 Pg #: 4-51 Line #: 12-14 Code: c
Original Comment #:
Comment: Data from the Waste Pit Runoff RA sampling do not support the conclusion that surface soil is consistent with waste sources outside OU4. The Ra-226 concentration of 88 pCi/g suggests at least some areas of surface soil contamination are associated with OU4 activities.

Response:
Action:

30. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.1.1 Pg #: 4-51 Line #: 24 Code: c
Original Comment #:
Comment: Page 2-78, line 11 states that nine samples are included in the OU4 Study Area. DOE should review the data and text and clarify this discrepancy.

Response:
Action:

31. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-24 Pg #: 4-54 Line #: Code: c
Original Comment #:
Comment: The table should include data from location RC-162 identified on Figure 2-7. It is unclear if these data have been validated or are validatable. The text or table should be modified to state whether data have been validated.

Response:
Action:

32. Commenting Organization: Ohio EPA Commentor:

Section #: Figure 4-8 Pg #: 4-56 Line #: Code: c
Original Comment #:
Comment: The figure as presented is not very useful or readable. Actual concentrations would be more useful. Additionally, the locations on this figure do not correspond to locations provided on Figure 2-7. Figures 4-8 and 2-7 should be compared to actual sampling locations and revised to be comparable.

Response:
Action:

33. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-25 Pg #: 4-57 Line #: Code: c
Original Comment #:
Comment: The table should be revised in accordance with Appendix B.4 (e.g., WPA15 Hg is "R", no "J" qualifiers for Cd, Be, etc.). Additionally, footnote "c" the B qualifier does not stand for "Analyte found in associated blank" for inorganic constituents. This table should be reviewed and revised accordingly.

Response:
Action:

34. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.2.1 Pg #: 4-70 Line #: 19-21 Code: c
Original Comment #:
Comment: The failure of a TCLP test can not simply be discounted by three other samples. The sample failed TCLP for three metals thus determining that the material sampled is a hazardous waste. DOE may not overlook this data point. DOE must take into account RCRA as an ARAR when addressing the berm soils. Additionally, these data suggest the berms may be a source of groundwater contamination which should be addressed in the RI.

Response:
Action:

35. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-29 Pg #: 4-72 Line #: Code: c
Original Comment #:
Comment: The table and summary statistics should be reviewed for accuracy and revised (See Di-n-octylphthalate Mean > Range; Toluene SD > Range). Additionally, any use of these statistics within the risk assessment should be reviewed and corrected as appropriate.

Response:
Action:

Section #: 4.2.2.2 Pg #: 4-75 Line #: 6-28 Code: c
Original Comment #:
Comment: DOE can not simply discount the impacts of the TCLP results from the

berm soils. The extent of inorganic contamination of berm soil is not negligible in comparison to radiological contamination with regard to the implications of the TCLP data. DOE should revise the summary to recognize the impacts of the TCLP data.

Response:
Action:

37. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.3.2 Pg #: 4-92 Line #: 21-23 Code: c
Original Comment #:
Comment: It is unclear to which location the paragraph is referencing. DOE should review the paragraph and revise it to be more clear to the reader.

Response:
Action:

38. Commenting Organization: Ohio EPA Commentor:
Section #: 4.2.3.2 Pg #: 4-92 Line #: 24-30 Code: c
Original Comment #:
Comment: DOE should revise the summary to recognize the impacts of the berm soils TCLP data.

Response:
Action:

39. Commenting Organization: Ohio EPA Commentor:
Section #: Figure 4-19 Pg #: 4-94 Line #: Code: c
Original Comment #:
Comment: The figure appears to inconsistently (highest conc. for 1616, 1033, lowest for 1615, 1617, 1034) contain data from a number of sources. DOE should footnote the figure to provide a justification for each data point selected. Additionally, no data to support the concentration of 28 ug/l in well 1032 could be found. Appendix C.3 reports total uranium concentrations of 230 and 276 for well 1032.

Response:
Action:

39. Commenting Organization: Ohio EPA Commentor:
Section #: Table 4-41 Pg #: 4-104 Line #: Code: c
Original Comment #:
Comment: Footnote "c", the B qualifier does not mean "analyte found in associated blank" when used for inorganic data. Review data qualifiers provided with data in the appendices and correct the footnote.

Response:
Action:

40. Commenting Organization: Ohio EPA Commentor:

Section #: 4.3.2.2 Pg #: 4-113 Line #: 28-31 Code: c
Original Comment #:
Comment: DOE should provide the data concerning Tc-99 concentrations in MW 2108 if referencing it to support an argument. Additionally, Tc-99 was detected in the decant sump tank liquid, which may be acting as a source of groundwater contamination.

Response:
Action:

41. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 4.3.2.2 Pg #: 4-116 Line #: 1-2 Code:
Original Comment #:
Comment: Ground water table contours should be included in the RI which illustrate the change in gradient.

Response:
Action:

42. Commenting Organization: Ohio EPA Commentor:
Section #: 4.3.3 Pg #: 4-117 Line #: 11-14 Code: c
Original Comment #:
Comment: The last sentence seems to suggest that OU4 is the source of contamination in the 2000 and 3000 series wells. Whereas the last sentence in Section 4.3.2.2 suggests it is not the source. It seems data are insufficient to make a determination either way. The text of both sections should be revised to clarify whether OU4 can be ruled out as a source of this contamination.

Response:
Action:

43. Commenting Organization: Ohio EPA Commentor:
Section #: 4.6.1 Pg #: 4-132 Line #: 8-9 Code: c
Original Comment #:
Comment: Tc-99 and Sr-90 were not analyzed for during the sampling of the K-65 silos, thus their presence may not be completely ruled out. The detections of Tc-99 and Sr-90 in the decant sump could possibly be from some material within the silos. The sentence should be revised to state it is not likely Tc-99 and Sr-90 are present in the K-65 silos.

Response:
Action:

44. Commenting Organization: Ohio EPA Commentor:
Section #: 4.6.2 Pg #: 4-134 Line #: 13-24 Code: c
Original Comment #:
Comment: This summary paragraph should discuss the fact that a berm soil sample failed TCLP analyses and the potential implications of these data.

Response:
Action:

45. Commenting Organization: Ohio EPA Commentor:
Section #: 5.0 Pg #: 5-1 Line #: Code: c
Original Comment #:
Comment: It is unclear from review of this section, how or if the berm soil TCLP data were used in Fate and Transport modelling. The TCLP data would suggest the berm soils may provide a more significant source of some inorganic contamination to the aquifer than the K-65 silos (i.e., Average TCLP for berm soils fails for some inorganics whereas the K-65 material didn't for the same inorganics). DOE should evaluate the berm soils as a potential source of groundwater contamination. DOE may want to examine historical records concerning were berm soils originated. There were at least two separate efforts to berm the silos.

Response:
Action:

46. Commenting Organization: Ohio EPA Commentor:
Section #: 5.0 Pg #: 5-2 Line #: 5-7 Code: c
Original Comment #:
Comment: The text should either describe the difference between the resident farmer and the typical resident farmer or rename the typical farmer as the central tendency evaluation of the resident farmer. The text as written can result in some confusion to the reader.

Response:
Action:

47. Commenting Organization: Ohio EPA Commentor:
Section #: 5.0 Pg #: 5-2 Line #: 28-29 Code: c
Original Comment #:
Comment: The tables do not include UTL values as stated in this sentence. The tables or the text should be corrected to correspond.

Response:
Action:

48. Commenting Organization: Ohio EPA Commentor:
Section #: 5.2.3 Pg #: 5-9 Line #: 6-8 Code: e
Original Comment #:
Comment: DDT is not degraded to dichloroethene and dichloroethane. Correct the text to reference dichlorodiphenyldichloroethene and dichlorodiphenyldichloroethane.

Response:
Action:

49. Commenting Organization: Ohio EPA Commentor:

Section #: 5.3.3.2 Pg #: 5-14 Line #: Code: c
Original Comment #:
Comment: DOE must discuss in this section the reasoning for not considering the liquid within the decant sump tank as a leachate sample for the K-65 silos in fate and transport modelling. Additionally, the liquid within the decant sump tank could be considered as leachate B given the fact that the tank resides within the saturated zone. DOE fails to address the decant sump tank as preferential migration pathway for leachate into the ground water.

Response:
Action:

50. Commenting Organization: Ohio EPA Commentor:
Section #: 5.3.3.2 Pg #: 5-14 Line #: Code: c
Original Comment #:
Comment: The section fails to discuss the berm soils as a source of contamination and the use of TCLP data for fate and transport modelling. The berm soils as a source of contamination should be addressed.

Response:
Action:

51. Commenting Organization: Ohio EPA Commentor:
Section #: Table 5-2 Pg #: 5-23 Line #: Code: e
Original Comment #:
Comment: The footnotes "b" and "c" appear to be mixed up within this table. The footnotes should be corrected.

Response:
Action:

52. Commenting Organization: Ohio EPA Commentor: M. Proffitt
Section #: 5.4.3 Pg #: 5-29 Line #: Code:
Original Comment #:
Comment: How will the results of the ground water modeling be affected by the current ground water model update efforts? The predictions presented in this section could be changed significantly, depending upon the characterization of colloidal transport and attenuation at the site.

It is the opinion of Ohio EPA that the ground water model results cannot be used until the model update project is completed and approved.

Response:
Action:

53. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: 5.4.3 Page: 5-31 Line: 34-36 Comment Code: C
Comment No.
Comment: There appears to be a discrepancy in the volume flux calculations. It is difficult to verify the calculations as the area is not reported. Using

the lower reported value of hydraulic conductivity the back-calculated area is 1.25×10^6 ft^2. The area for the lower conductivity is 6.27×10^5 ft^2. These differ by a factor of two. Furthermore, if one assumes the cross-sectional area for flow is 2000 feet wide, the height is calculated to be an unrealistic 625 feet.

Response:
Action:

54. Commenting Organization: Ohio EPA Commentor:
Section #: Figure 5-6 Pg #: 5-32 Line #: Code: c
Original Comment #:
Comment: It is interesting to note that this is the second OU RI report that DOE has submitted predicting relatively minor impacts on the Great Miami Aquifer from sources within the OU, yet significant ground water contamination exists beneath and beyond the facility. Hopefully, DOE is not heading down a path that will result in the OU5 RI pointing out sources of ground water contamination that were discounted in previous RI reports and respective RODs.

Response:
Action:

55. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: 5.4.4.3 Page: 5-35 Line: 30 Comment Code: C
Comment No.
Comment: The statement that "uranium loading concentrations from Silos 1 & 2 are only one order of magnitude higher than those for Silos 3" does not appear to be consistent "maximum loading concentration" presented in Tables 5-5 and 5-6. The ratio appears to be two orders of magnitude greater for Silos 1 & 2.

Response:
Action:

56. Commenting Organization: Ohio EPA Commentor:
Section #: 6.4 Pg #: 6-5 Line #: 16-18 Code: e
Original Comment #:
Comment: Neither EPA 1992b nor EPA 1992c are included in the Reference section. The Reference section should be revised.

Response:
Action:

57. Commenting Organization: Ohio EPA Commentor:
Section #: Table 6-1 Pg #: 6-6 Line #: Code: c
Original Comment #:
Comment: Numerous errors occur within this table. Risks don't equal the addition of constituents within Appendix D.5 from table therein (e.g., OPRF = 9.7×10^{-7} Table D.5-10 = 1.0×10^{-6}, etc.). Total risks don't equal sum of rad risk and chem risk from within Table 6-1 (e.g., OPUSW 10^{-8} + 10^{-7} = 10^{-3}?, etc.). Sums aren't as reported in Appendix D.5 (e.g., TC HI = 0.48 Table D.5-1 HI =

0.12, etc.). Source of some values are not identifiable within Appendix D.5 (e.g., TC Rad risk $2.4x10^{-1}$, chem risk $4.1x10^{-4}$, HI 32.2, etc). The number of basic errors within this table raises concerns about all calculations in the risk assessment. DOE should review the calculations used in this table and in the risk assessment and correct as appropriate.

Response:
Action:

58. Commenting Organization: Ohio EPA Commentor:
Section #: 6.5.1 thru 6.5.5 Pg #: 6-7 to 6-8 Line #: Code: c
Original Comment #:
Comment: These sections should be revised in accordance with Table 6-1 and any corrections to Appendix D.5.

Response:
Action:

59. Commenting Organization: Ohio EPA Commentor:
Section #: 6.6.3 Pg #: 6-9 to 6-11 Line #: Code: c
Original Comment #:
Comment: DOE should incorporate the corrections discussed within this section into the revision of the RI and Baseline Risk Assessment.

Response:
Action:

59. Commenting Organization: Ohio EPA Commentor:
Section #: 7.2.2 Pg #: 7-4 Line #: 31-32 Code: c
Original Comment #:
Comment: Previous discussions within this document suggested infiltration was the source of Tc-99 and Sr-90. These data were subjected to validation and were not rejected or qualified during validation. DOE can not simply discount data, which does not easily fit into their vision of the OU, as laboratory problems. DOE should revise the text.

Response:
Action:

60. Commenting Organization: Ohio EPA Commentor:
Section #: 7.3.2 Pg #: 7-7 Line #: 15-32 Code: c
Original Comment #:
Comment: The section fails to discuss TCLP data from the berm soils. DOE should incorporate a discussion of these data into the section.

Response:
Action:

61. Commenting Organization: Ohio EPA Commentor:
Section #: 7.4.3 Pg #: 7-12 Line #: Code: c

Original Comment #:
Comment: The section should be revised upon review/correction of the Appendix D.5 and Table 6-1.

Response:
Action:

62. Commenting Organization: Ohio EPA Commentor:
Section #: Table 7-1 Pg #: 7-13 Line #: Code: e
Original Comment #:
Comment: Revise per comment on Table 6-1.

Response:
Action:

63. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.2.-1 Pg #: D-2-2 Line #: Code: c
Original Comment #:
Comment: a) What subsurface soil samples were used from the waste pit runoff sampling? These data were for surface soils down to two feet. DOE should clarify the use of waste pit runoff sampling.

b) Which berm soil samples were excluded from use in the baseline risk assessment? Table D.2-5 does not include higher concentrations of radionuclides detected in the berm soil sampling (See pg. 4-134, line 20).

Response:
Action:

64. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.2-2 Pg #: D-2-12 Line #: Code: e
Original Comment #:
Comment: Beryllium should be footnoted with a "g".

Response:
Action:

65. Commenting Organization: Ohio EPA Commentor:
Section #: Figure D.3-2 Pg #: D-3-3 Line #: Code: c
Original Comment #:
Comment: Footnote (5) states soils were not included as a source term for ground water modelling. The TCLP data from the berm sampling suggests the berm soils should have been used in the ground water modelling. DOE should evaluate the potential impacts of the berm soils on ground water.

Response:
Action:

66. Commenting Organization: Ohio EPA Commentor:
Section #: D.3.1.1. Pg #: D-3-4 Line #: 27-28 Code: c

Original Comment #:
Comment: The completion of the removal action on the decant sump does not render it a minor potential source term. In effect the removal action had no effect on the long term action of this unit as a source. The sump has refilled and continues to have the potential to be a source to ground water. The sump will continue to collect leachate from the silos and potentially allow this leachate to migrate to ground water so long as the silos are in place. DOE should evaluate the decant sump tank as a potential source of Leachate B in modelling of ground water contamination.

Response:
Action:

67. Commenting Organization: Ohio EPA Commentor:
Section #: D.3.1.1.2 Pg #: D-3-6 Line #: 1-4 Code: c
Original Comment #:
Comment: Upon review of the berm soil TCLP data, the berm soils may have a potentially significant impact on the ground water in relation to the silos. DOE should evaluate the potential impact of subsurface soils on ground water.

Response:
Action:

68. Commenting Organization: Ohio EPA Commentor:
Section #: D.3.1.4.1 Pg #: D-3-13 Line #: 13-16 Code: c
Original Comment #:
Comment: The RME on-property farmer scenario does not properly evaluate the current risks of on-property grazing. A more appropriate method of incorporating the current on-property grazing would be in the off-property farmer scenario using on-property grazing under current conditions. DOE should consider a scenario other than the on-property farmer scenario for evaluation of the risks of current grazing practices.

Response:
Action:

69. Commenting Organization: Ohio EPA Commentor:
Section #: D.3.1.4.2 Pg #: D-3-13 Line #: 35-37 Code: c
Original Comment #:
Comment: This scenario could incorporate current on-property grazing conditions if properly revised. DOE should evaluate the potential incorporation of the on-property grazing scenario required in the RAWPA with the off-property farmer scenario.

Response:
Action:

70. Commenting Organization: Ohio EPA Commentor:
Section #: D.4.2. Pg #: D-4-15 Line #: Code: c.
Original Comment #:

Comment: This section fails to provide toxicity profiles for all the contaminants of concern (e.g. cyanide, boron, numerous organic compounds). Toxicity profiles should be added for these contaminants.

Response:
Action:

71. Commenting Organization: Ohio EPA Commentor:
Section #: D.5.3.1.1 Pg #: D-5-5 Line #: Code: c
Original Comment #:
Comment: It is unclear as to why DOE has not added risk across pathways such as air (Table D.5-5), surface water (D.5-3), sediment (D.5-4) and soil (D.5-1). It would seem the only way to evaluate the risk to the trespassing child is to add the values in the four tables listed. DOE should clarify the summation of risks to the trespassing child under the present conditions and under the future failure of Silo 3 scenario.

Response:
Action:

72. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.5-1 Pg #: D-5-6 Line #: Code: c
Original Comment #:
Comment: a) DOE should provide a justification within the text for the contaminants used in and excluded from this table. The contaminants used in Table D.5-1 do not match those listed as contaminants of concern in Table D.2-5. Ra-226, Pb-210, ancenaphthylene, arsenic, benzo(g,h,i)perylene, copper, phenanthrene, and vanadium are shown as contaminants of concern but not listed in this table. Ra-228 is shown as not being a contaminant of concern in Table D.2-5 yet is included here.
b) The total chemical ILCR is shown as 6.8×10^{-5} yet when the ILCRs are added the total ILCR equals 6.5×10^{-5}. DOE should review calculations and clarify the table.

Response:
Action:

73. Commenting Organization: Ohio EPA Commentor:
Section #: D.5.3.1.1 Pg #: D-5-8 Line #: 19-26 Code: c
Original Comment #:
Comment: DOE should clarify which table incorporates the risks due to direct radiation from silos and contaminated soils. Where is the total risk to the trespassing child, including that from direct radiation, presented?

Response:
Action:

74. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.5-2 Pg #: D-5-9 Line #: Code: c
Original Comment #:

Comment: The number of contaminants in the risk calculations decreased from Table D.5-1 to D.5-2. It would seem rational that the trespassing child would still be exposed to the contaminants present in the soil but with the addition of contaminants present in the Silo 3 material. DOE should clarify this in the text.

Response:
Action:

75. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.5-3 and D.5-4 Pg #: Line #: Code: c
Original Comment #:
Comment: See previous comments concerning Tables D.5-1 and D.5-2.

Response:
Action:

76. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.5-6 Pg #: D-5-22 Line #: Code: c
Original Comment #:
Comment: a) See previous comments concerning contaminants of concern on Table D.5-1.
b) Addition of the chemical ILCRs presented equal 7.4 x 10^{-5} compared to the 7. x 10^{-5} reported. DOE should justify this discrepancy.

Response:
Action:

77. Commenting Organization: Ohio EPA Commentor:
Section #: Table D.5-10 Pg #: D-5-33 Line #: Code: c
Original Comment #:
Comment: Addition of the chemical ILCRs presented equal 1.0 x 10^{-6} compared to the 9.7 x 10^{-7} reported. DOE should justify this discrepancy.

Response:
Action:

78. Commenting Organization: Ohio EPA Commentor:
Section #: Figure D.7-1 Pg #: D-7-6 Line #: Code: c
Original Comment #:
Comment: Upon review of Figures E-2-10 thru E-2-15 it would seem the off-property resident maximum receptor via ground water should be located off the east; Southeast corner of the property. The figure and any subsequent risk assessment calculations should be revised to place the receptor at the maximum ground water concentration.

Response:
Action:

79. Commenting Organization: Ohio EPA Commentor:

Section #: Table D.II-1 Pg #: D-II-1 Line #: Code: c
Original Comment #:
Comment: DOE should provide justification for not adding risks from inhalation with the risks from soil ingestion and penetrating radiation to achieve a total pathways risk.

Response:
Action:

80. Commenting Organization: Ohio EPA Commentor:
Section #: D.III Pg #: D-III-1 Line #: 26-28 Code: c
Original Comment #:
Comment: If time was available to correct the risk assessment for a contaminant that reduced overall risk, the risk assessment should have also been corrected for contaminants increasing risk. The revised RI should incorporate the revision of the text to correct for all contaminants of concern.

Response:
Action:

81. Commenting Organization: Ohio EPA Commentor:
Section #: E.2.0 Pg #: E-2-1 Line #: Code: c
Original Comment #:
Comment: The discussion in the ground water fate and transport modelling section does not clearly state how perched ground water concentrations were determined for the resident farmer. The section should include a discussion of this modelling effort and a table showing concentrations used.

Response:
Action:

82. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.5.3 Page: E-2-23 Line: 16 Comment Code: C
Comment No.
Comment: There appears to be a discrepancy between the reported net recharge flux from the help model and the seepage velocities in Table E.2-1. For example the Help model is used to calculate a recharge rate for Silos 1 & 2 of 3.99 inches per year in Table E.2-7. This converts to 3.2 x 10^{-7} cm/sec. The corresponding seepage reported in Table E.2-1 (Vadose model) is 1.25 x 10^{-6} cm/sec.

There is dilemma here. The vadose zone model (Table E.2-1) results in a calculated flux nearly equal to zone 1 (till) conductivity. In other words, the till is very close to 100% water saturation, as one would expect. But the Help model produces seepage of about 1/4 as much. This is close to the porosity. Possibly there is some confusion between Darcy and seepage flux definition?

Response:
Action:

83. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E2.5.3 Page: E-2-24 Line: Comment Code: C
Comment No.
Comment: The values chosen for porosity in layers 2 and 3 are significantly larger than reported. In particular, the values are not consistent with the vadose model (Table E.2-2). In general, the impact on the predicted transport using different values of porosity is important. The porosity affects time of arrival and concentration loading concentration and flux predictions.

Response:
Action:

84. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.5.3 Page: E-2-28 Line: Comment Code: C
Comment No.
Comment: The mass loadings from Figure E.2-3 and Table E.2-8 do not appear to be consistent. From Figure E.2-3, at 320 years, the U238 loading to the GMA is 0.01 lb/day. From Table E.2-8, the maximum concentration of U238 is 6.69 x 10 mg/L. Thus the water flux is calculates as 1.5 x 10^5 lb/day = 2395 ft^3/day = 12.5 gpm. Using a recharge of 3.99 inch/yr (Table E.2-7), the area is calculated as 2.62 x 10^6 ft^2 or 1621 by 1621 feet. This area is not realistic for Silos 1 & 2.

Response:
Action:

85. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.5.3 Page: E-2-23 Line: Comment Code: C
Comment No.
Comment: The time of arrival is not clear. For example, at Silos 1 & 2 the reported time of arrival is 140 years (Table E.2-8), but this is not clear from Figure E.2-3. In this figure the loading rate mid-value appears to occur at approximately 240 years. Possibly the time of arrival needs to be better defined. For convective transport (no dispersion or decay) the value is around 240 years. The report suggests that time of arrival is defined at some "breakthrough" flux, i.e. the leading edge on the breakthrough curve. This conceivably might be 140 years, but the determination of what constitutes time of arrival needs to be better defined.

Response:
Action:

86. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.6.1 Page: E-2-20 Line: 34 Comment Code: C
Comment No.
Comment: The version number of the SWIFT code used, Version 2.25, is not consistent with the reference, Version 2.32 (Page E-2-61, line 22).

Response:
Action:

87. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2. Page: E-2-26 Line: 32 Comment Code: C
Comment No.
Comment: It is not clear how the dilution factors are developed and on what basis. For Silos 1 & 2 the dilution factor is 260, for Silo 3 the factor is 483. This is the dilution between water traveling downward through the till and unsaturated GMA and than is somehow diluted upon entering the GMA. (This is not the dilution for lateral flow in the silty-clayey sand lenses - 180 on P. 5-36 and P. E-2-53,54). Is this dilution simply the simulated concentration from the SWIFT model using the source term from ODAST? If so, then why would the dilution factor vary between the two cases? The same SWIFT grid is used for both silo scenarios. It would appear that the predicted level of dilution would point out that the saturated model grid is extremely coarse when attempting to represent source input from the Silos. In other words, the SWIFT model accepts a mass flux from the vadose model and immediately mixes/dilutes this with 260/483 time as much water from the regional flow field. This assumes the process indeed takes place over the entire thickness of the top most model layer thickness (40 ft?). In short, the coarse vertical discretization of the model artificially causes a significant overprediction of the local "dilution". What this means is that the saturated zone model creates excessive vertical mixing and underpredicts the extent of lateral transport.

Response:
Action:

87. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.6.2 Page: E-2-34 Line: 22 Comment Code: C
Comment No.
Comment: The source area in the text (15,625 ft^2) is not consistent with Table E.2-20 where a value of 10,054 ft^2 is reported. The text appears to the correct value.

Response:
Action:

88. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2 Page: Line: Comment Code: M
Comment No.
Comment: The use of the local transport model to predict transport on a local scale is subject to significant uncertainty due to overconfidence in resolution of model details which warrant further evaluation, specifically:

- Assumption of steady-state flow conditions used to represent Paddy's Run recharge.
- Coarse approximation of the 32 in/yr recharge used along Paddy's Run.
- Coarse zonation of hydraulic conductivity distribution, with very limited site-specific field calibration data.

Response:
Action:

88. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2 Page: Line: Comment Code:
Comment No.
Comment: If most of the mass is U238 (approximately 98 percent by mass, p. E-2-34, line 30), then why is sensitivity performed using U234?

Response:
Action:

89. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.8.2 Page: E-2-55 Line: 32 Comment Code: C
Comment No.
Comment: It is not clear why in the sensitivity analysis that a doubling/halving of velocity and thickness would yield breakthrough other than exactly double/half. With no retardation and no decay, there are simply two layers in the model. Zone/Layer 1, the till is has the highest residence time (probably greater than 99%) and Zone/Layer 2 is the unsaturated GMA with very fast travel or short residence time. Thus the 50% (C=50 ml/L) breakthrough for the sensitivity should exactly factors of two greater and less than the base case. This is indicated in the results presented in Figures E.2-23 and E.2-24 Without an explanation, the validity of the model results is in question.

Response:
Action:

90. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.8.2 Page: E-2-59 Line: 24 Comment Code: E
Comment No.
Comment: Change "co-efficient" to "coefficient".

Response:
Action:

91. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.8.2 Page: E-2-59 Line: 14 Comment Code: C.
Comment No.
Comment: The peak concentration for U234 is reported as 2.1375×10^{-5} mg/L, but this does not appear to be consistent with Figure E.2-22 to 24 where a 100 mg/L is presented, nor the maximum loading concentration presented in Table E.2-8 where a 1.049×10^{-3} mg/L is reported. Furthermore, the test cases are also referenced as 100 μg/L on line 28, p. E-2-55. It appears that the sensitivity cases runs used a nominal 100 ppm or ppb source, but the conclusion and discussions are not presented clearly.

Response:
Action:

92. Commenting Organization: Ohio EPA Commentor: GeoTrans
Section: E.2.8.2 Page: E-2-59 Line: 21 Comment Code:
Comment No.
Comment: It is not valid to conclude that the model is insensitive to porosity as sensitivity was performed using non-retarded conditions.

Response:
Action:

93. Commenting Organization: Ohio EPA Commentor:
Section #: E.3.3 Pg #: E-3-2 Line #: Code: c
Original Comment #:
Comment: DOE should evaluate the ability of leachate to migrate via the preferential flow pathway provided by the decant sump tank. The tank resides within the saturated zone thus allowing contaminants to migrate to ground water without contacting the till.

Response:
Action:

94. Commenting Organization: Ohio EPA Commentor:
Section #: E.3.5 Pg #: E-3-6 Line #: 17-25 Code: c
Original Comment #:
Comment: DOE should assess the potential impact upon the risk assessment and ground water modelling of using the decant sump liquid results rather than the TCLP data for the K-65 silos. Additionally, DOE should discuss the prior uses of the tank truck and any contaminants which may have been introduced by it. No reference to the failure to decon the truck is made in the Decant Sump Tank Final Report (3/93). In fact the document describes the QA/QC procedures as being met. A number of samples were collected prior to the removal action from the decant sump itself. What justification did DOE employ to discount these data?

Response:
Action:

95. Commenting Organization: Ohio EPA Commentor:
Section #: Table E.3-1 Pg #: E-3-7 Line #: Code: c
Original Comment #:
Comment: a) The format of the table should be converted to standard scientific notation (e.g., 1.0×10^{-3} vs. 0.1×10^{-2}).
b) The calculation of thallium leachate A of 0.6×10^{2} exceeds all other contaminants but lead. This concentration seems to be disproportionate compared to silo contents. DOE should review the table and all subsequent modelling calculations.

Response:
Action:

96. Commenting Organization: Ohio EPA Commentor:
Section #: E.3.6 Pg #: E-3-13 Line #: 1-5 Code: c
Original Comment #:
Comment: This paragraph references figures throughout but provides no figure numbers. The paragraph should be clarified to detail which figures are being discussed.

Response:
Action: