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OEPA COMMENTS REVISED O.U. 2 ISA

02-11-91

OEPA/DOE-FMPC
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LETTER

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[redacted]

1796

February 11, 1991

Re: OEPA COMMENTS
REVISED O.U.2 ISA

Mr. Jack Craig
U.S. DOE FMPC
P.O. Box 398705
Cincinnati, Ohio 45239

Dear Mr. Craig:

Attached are Ohio EPA's comments on the Revised ISA for O.U.2. One of the important issues in this document is that of risk. It is our position that DOE's approach is still not consistent with the NCP. I hope that another meeting can be held involving DOE, USEPA, and Ohio EPA to resolve this issue. A convenient time may be soon after DOE issues the Technical Position Papers on risk issues.

If you have any questions please contact me.

Sincerely,

Graham E. Mitchell
DOE Coordinator

GEM/acp

Enclosure

cc: Tom Winston , OEPA
Kathy Davidson, OEPA
Jack Van Kley, Ohio AG
Catherine McCord, U.S. EPA
Robert Owen, ODH
Lisa August, GeoTrans
Ed Schuessler, PRC

E-1765

ATTACHMENT
OHIO EPA COMMENTS ON REVISED O.U. 2 I.S.A. REPORT

Comments on DOE Responses to Ohio EPA Comments

1. USEPA Comment 1: In the fifth paragraph of DOE's response to USEPA's comment, the DOE statement that "Where ARARs or TBCs are not available, preliminary remediation goals will be developed based on a 1 x 10^{-6} risk level" is inconsistent with the NCP. Further, this statement is contradictory with the third paragraph of page 2 of DOE's Response to Comments where DOE recognizes that "where ARARs do not exist for a constituent, risk-based cleanup goals will be developed." TBCs do not determine when the 10^{-6} risk level is to be used. The NCP states: "The 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." (emphasis added) TBCs have nothing to do with determining when the use of a 10^{-6} cancer risk is appropriate.

2. OEPA Comment 1: DOE's response is unacceptable. As noted in Comment #1 above, DOE's statement that "If such guidance isnot (sic) available, preliminary remediation goals will be risk based using the 10^{-6} point of departure" is contradictory with an earlier statement (and inconsistent with the NCP) that "where ARARs do not exist for a constituent, risk-based cleanup goals will be developed." Delaying the proper development and use of risk-based criteria until the FS report or until the proposed plan is issued, as DOE suggests, is too late. Preliminary remediation goals must be developed conservatively and in a manner which is fully consistent with the NCP. Refinement of these goals at later stages in the RI/FS process to allow for higher (or lower) levels of risk may be necessary for various reasons, including technical impracticability. However, this decision-making process must be clearly documented along with defensible supporting rationale in the FS. To date, DOE has failed to do this.

3. OEPA Comment 18: DOE's response is unacceptable. Basing preliminary remediation goals in the ISA Report on ARARs, other criteria, advisories, or guidance also requires the use of risk-based levels where ARARs do not exist. Ohio EPA strongly believes that, consistent with the NCP and absent ARARs, risk-based levels must be used to calculate preliminary remediation goals. (Risk-based levels do constitute TBCs.)

As has been pointed out by Ohio EPA on several occasions previously, DOE's own guidelines give values for carcinogenic risks that are outside the 10^{-4} to 10^{-6} risk range and do not consider the 10^{-6} risk level as the point of departure for determining site-wide remediation goals where ARARs do not exist or are not sufficiently protective. Delaying the proper development and use of risk-based criteria until the FS report or until the proposed plan is issued, as DOE suggests, is too late.

4. OEPA Comment 19: Before Ohio EPA agrees to the use of DOE's 100-year current land-use scenario in the risk assessment for the FMPC, DOE will have to provide sufficient documentation as to the appropriateness of this type of current/future land-use along with assurance that access can be strictly controlled by DOE for 100 years.

5. OEPA Comment 22: DOE's response is unacceptable. Since the new RCRA regulations do not constitute ARARs, it is inappropriate to use the 10^{-4} risk level DOE claims is suggested by these proposed regulations as an acceptable level of site-wide risk. It is important to note that in its section-by-section analysis issued with the proposed RCRA Subpart S Rule, USEPA states that for carcinogens, "EPA believes that action levels corresponding to a $1x10^{-6}$ risk level...generally are appropriate." USEPA also states that "Using a value from the high end of this range [i.e., 10^{-6}] ensures that the hazardous constituents screened out...are those for which corrective measures are unlikely to be necessary" and further recognizes that "...$1x10^{-4}$ risk levels of constituents may not be protective at all sites...."

   The NCP is the controlling regulatory framework under which the RI/FS is being conducted. As previously stated, the NCP requires the use of a 10^{-6} risk level as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective (on a site-wide basis) because of the presence of multiple contaminants at a site or multiple pathways of exposure.

6. OEPA Comment 27: DOE's response is unacceptable. It makes little sense to use USEPA's Health Effects Assessment Summary Tables for radionuclide potency when calculating risks for the baseline risk assessment yet maintain that cleanup levels for these same compounds should be based on dose-based criteria. Absent ARARs, HEAST must be used to develop risk-based cleanup levels.

7. OEPA Comment 28: The background level for technetium (Tc-99) has been assumed by DOE to be zero since it is a fission product and not naturally occurring (DOE response to OEPA

comment on OU-5 ISA report) thus it could not have been detected in levels below background. DOE needs to provide the levels at which Tc-99 was detected and to include it in the ISA as a contaminant of concern. DOE also should include this radionuclide in the baseline risk assessment (RA), since any detected level would be in excess of background and, consistent with USEPA's Risk Assessment Guidance for Superfund (RAGS, p. 5-20), must be included in the baseline risk assessment.

In addition, essential nutrients should be included in the RA dependent upon their concentrations in relation to background. The RAGS document provides justification for this position on page 5-23 stating: "In general, only essential nutrients present at low concentrations (i.e., only slightly elevated above background) should be eliminated to help ensure that chemicals present at potentially toxic concentrations are evaluated in the quantitative risk assessment." Whether these nutrients are to be included in the risk assessment should be based on concentrations in relation to background. DOE must provide concentration levels and justification, based on background levels, for excluding these "nutrients" in the risk assessment.

8. Response to EPA comments #31 and #71: Section 3.0 does not include a section entitled "Water Treatment" as described in the DOE response.

9. OEPA Comment 37: Due to a typographical error in OEPA's original comment, DOE appears to have misunderstood the comment as it pertained to the use of proposed MCLs. For any and all carcinogenic compounds that have a proposed MCL (i.e., a final MCL has yet to be promulgated), DOE must use the appropriate cancer slope factors to derive a 10^{-6} cancer risk level as the remedial action objective. With respect to the use of non-zero MCLGs, non-zero MCLGs are indeed TBCs. (TBCs, by definition, are non-promulgated.) Justification for the use of non-zero MCLGs as remedial action objectives can be found in 40 CFR 300.430 (e)(2)(B) which states: "Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, <u>shall be attained</u> by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release...." (emphasis added) Table 2-4 (2-5 in the revised document) must incorporate the above comments. Additional comments pertaining to Table 2-5 in the revised report can be found in Comment #28 below.

10. OEPA Comment 39: Contrary to what is stated in DOE's response to Ohio EPA's original comment, those federal standards listed in Table 2-6 (Table 2-4 in the revised ISA report) are not

more restrictive than Ohio's standards. For example, Ohio's surface water quality standards for the following compounds are stricter than those federal standards that are listed in the table (Ohio standard in parentheses in ug/l): Acenapthene (67), cadmium (0.6), chloroform (79), naphthalene (44), pentachlorophenol (11.7), phenol (370), tetrachloroethene (73), trichloroethene (75), and nickel (115). These compounds, at a minimum, must be listed in Table 2-4.

11. Response to OEPA comment #45: The text has not been revised to include a discussion of TCLP testing of sanitary landfill waste.

12. Response to OEPA comment #46: The revised ISA does not include the same Table 2-7. Technologies are now presented on page 2-21, but subsurface flow control is not listed.

13. Response to OEPA comment #47: It is not clear what section of the revised text differentiates between characteristic and listed hazardous wastes as Section 2.4.1.2 does not relate to the lime sludge ponds.

14. OEPA Comment 60: The reason OEPA had originally noted that 49 CFR 173 be listed as an action-specific ARAR was because off-site transport of site wastes was a possibility. The revised ISA report for OU-2 considers off-site transportation and disposal of wastes (e.g., Alternatives 4 and 6). Therefore, transportation requirements must be listed in Appendix B as action-specific ARARs.

15. Response to OEPA comment #66 and #81: References to the RI report have not been eliminated from the revised ISA.

16. OEPA Comment 69: See Comment #6 above.

17. Response to OEPA comment #82: Soil washing is not discussed in section 3.0.

18. Response to OEPA comment #85: Tables 3-1 through 3-3 have not been changed to read "runon/runoff."

19. OEPA Comments 89 and 91: Since no monitoring or maintenance will be required by DOE-FMPC for off-site disposal, it should score a "5" for all alternatives which employ off-site disposal. Ohio EPA's position on this scoring is supported by DOE in the Final Initial Screening of Alternatives Report for OU-1 which states: "This alternative will require no perpetual maintenance or monitoring because the waste will not be stored on property. This alternative rates a 5 in this category." DOE needs to ensure some consistency in its documents.

20. Response to OEPA comment #91: Long-term management, monitoring and maintenance at existing off-site disposal facilities should not be factors in the screening process. These are provided for in the cost associated with off-site disposal.

21. Response to OEPA comment #100 and #103: The DOE response does not address the OEPA comment.

22. Response to OEPA comment #112: The DOE response contradicts the rationale regarding short-term public health protection presented in the ISA. For example, Section 5.1.2.1 indicates that in Alternative 1 the risk to workers will be minimal because the wastes will not be removed. Therefore, a high rating of 4 was assigned. In addition, Section 5.3.5.1 states that worker exposures are higher for removal than for non-removal alternatives. Because the determination of short-term public health effectiveness is based on onsite workers as well as the public in the vicinity of the site, the rationale present in the response to OEPA comment #112 is not consistent with the effectiveness evaluations presented in the ISA.

23. Response to OEPA comment #115: It seems that the definition of Agency Approvals has changed in comparison to previously submitted ISA documents. For example, Section 5.1.2 of the September 1990 Draft ISA for OU-3 states that Agency Approvals rely on the ability to comply with substantial requirements of permits consistent with 121(e) of CERCLA and specific provisions of interagency agreements. Alternative screening in Chapter 5 of the OU-4 ISA. August 1990, indicates that ratings for agency approvals were low when no remediation or mitigation was provided for in the alternative. Ratings were also low if the alternative would prove to be difficult in gaining "agency approval." Given this background, the criteria should be addressing whether an agency will approve of the no action alternative. Permitting and licensing approval previously have been considered a factor in administrative feasibility.

24. OEPA Comment 129: The revision made by DOE is not quite accurate. On page B-6 for Water Well Installation, the text should read as follows: "Installation <u>and abandonment</u> of new wells and borings...."

25. OEPA Comment 132: For the record, OAC 3745-27-07 <u>does</u> constitute a location-specific state of Ohio ARAR, even though portions may pertain to permitting. In any event, DOE will need to comply with the substantive portions of the regulation. Hence, it is unclear why DOE disagrees with OEPA's original comment and states in its response that no action is required. The regulation was in fact added to the ARARs table as OEPA stated that it should be.

Comments on the Revised Initial Screening of Alternatives

1. Tables ES-1, ES-2, and ES-3: The technology type "Physical Waste Treatment" was not chosen in any of the alternatives for any of the three waste units although from examining later chapters, it appears that Alternatives 4 and 5 include some form of physical treatment. These tables should be corrected to indicate which alternatives will involve some form of physical waste treatment.

2. Table ES-1, ES-2, ES-3, Off-site Disposal Alternatives: DOE should provide justification as to why the Access Restriction technology type will be employed for off-site disposal alternatives (Alternatives 4 & 6) for the Sanitary Landfill but will not be employed for the off-site disposal alternatives for the Lime Sludge Ponds (Alt. 4) and the Fly Ash/Southfield Areas (Alts. 4 & 6).

3. Section 1.5.3.2, Page 1-19, First Paragraph: The last sentence states that the lime sludge within the ponds and the perched groundwater beneath the ponds were most likely contaminated by uranium emanating from beneath the production area through the continuous sand lens. Given that the north pond contains 1-7 feet of standing water, a groundwater mound may exist in the vicinity of the Lime Sludge Ponds. If a groundwater mound exists, flow through the sand lens from the production area would then diverge around the groundwater mound. Detailed hydrogeologic data is not included in the Task 12 Report to refute this condition. Therefore, uranium emanating from the production area may not be the source of contaminants in the lime sludge ponds and the perched groundwater beneath the ponds.

4. Page 1-19, third paragraph: This paragraph fails to reflect the full context provided by USEPA's Risk Assessment Guidance for Superfund, Volume I (1989). The guidance states (pg. 5-23), "In general, only essential nutrients present at low concentrations (i.e., only slightly elevated above background) should be eliminated to help ensure that chemicals present at potentially toxic concentrations are evaluated in the quantitative risk assessment." Therefore, the statements made by DOE in this paragraph are misleading. Whether these nutrients are to be included in the risk assessment should be based on concentrations found in relation to background. DOE must provide these contaminant levels and justification, based on background levels, for their failure to include these in the risk assessment.

5. Page 1-19, Section 1.5.3.3: The first sentence appears to suggest that samples of the active fly ash pile material were analyzed for only 2 metals, barium and chromium. Please

clarify if this is indeed the case since other heavy metals are likely to be present in fly ash other than barium and chromium.

6. Page 1-22, 1.5.3.5, General: This section fails to discuss any sampling of surface water or sediments to determine possible routes of contaminant migration from the Southfield Area. Surface water and sediment sampling were discussed for several of the other waste units in this ISA. Migration pathways for the Southfield area need to be analyzed in order to properly perform the baseline risk assessment.

7. Page 1-22, Section 1.5.3.5, first paragraph: Cesium-137 should be included in the list of chemicals and radionuclides presented in this paragraph, since it is included in Table C-5 of Appendix C as a contaminant detected above background. According to the Risk Assessment Guidance for Superfund, Volume I (1989), the list of chemicals of potential concern should include chemicals detected in at least one sample found at above background concentrations in a given medium.

8. Page 1-23, Section 1.5.4.2, Future Land-Use Conditions - Groundwater: A decrease in the source term from the arithmetic mean plus to standard deviations to only the arithmetic mean does not remedy the uncertainties associated with the model parameters. Because there are model parameter uncertainties, it may be more appropriate to utilize a more conservative source term, rather than a decreased source term.

9. Page 1-23, Section 1.5.4.2, last paragraph: The first sentence of this paragraph conflicts with the description and map of the Inactive Fly Ash Disposal Area presented in section 1.5.2.4. The previous section describes this area as "with little soil or vegetation cover" and Figure 1-5 would suggest by the contour lines that a "gentle slope" does not exist over the whole area. This would also indicate that erosion is a migration pathway for contaminants in the Inactive Fly Ash Disposal Area. Uranium, Radium-226, and Radium-228 were detected in sediment samples adjacent to the Inactive Fly Ash Disposal Area, indicating it "is a possible source of contamination to adjacent sediments." For these reasons, the chemicals and radionuclides from the Inactive Fly Ash Disposal Area should be included with those from the Active Fly Ash Pile for evaluation of transport in surface water under current and future land-use conditions in the baseline risk assessment.

10. Page 1-24, first full paragraph: The statements made concerning the future of the Active Fly Ash Pile are questionable at best. Little vegetative cover exists on the Inactive Fly Ash Disposal Area, which was last used in 1968, calling into question DOE's statement that erosion should

cease with time because of settling and growth of natural vegetation (see preceding Comment #9). It is likely that chemicals will continue to be introduced into the surface water, both now, and under future land-use conditions.

11. Page 24, Section 1.5.4.2, Current Land-Use Conditions - Surface Water: A more conservative approach would include some surface water runoff from the sanitary Landfill, Inactive Fly Ash Disposal Area, Lime Sludge Ponds and the South Field in addition to the active fly ash pile. Section 1.5.3.1, page 1-18 indicates that surface water runoff is present at the sanitary landfill.

12. Page 1-24, last paragraph: DOE should provide further justification for not calculating risk associated with lead in the surface water under current land-use conditions. Lead was detected at 0.036 ppm in surface water adjacent to the Active Fly Ash Pile.

13. Page 1-25, first and third paragraphs: DOE should refrain from using dose-based exposure levels in lieu of risk-based levels associated with exposure pathways at the site for consistency with the NCP. In the third paragraph, DOE needs to elaborate on what is considered relatively low intake concentrations for nonradioactive chemicals as discussed in this paragraph.

14. Page 1-28: It is unclear how the carcinogenic risks presented on this page were calculated. Calculations must be risk-based, not dose-based.

15. Page 2-2, first paragraph: DOE's statement that "where ARARs or TBCs are not available, preliminary remediation goals will be developed based on a 1 x 10^{-6} risk level" is inconsistent with the NCP. TBCs <u>do</u> <u>not</u> determine when the 10^{-6} risk level is to be used. The NCP states: "The 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when <u>ARARs</u> are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." (emphasis added) TBCs have nothing to do with determining when the use of a 10^{-6} cancer risk is appropriate. The ISA report should be corrected accordingly.

16. Page 2-3, Sections 2.2.3 and 2.2.4: The second paragraph in Section 2.2.3 states that when both an MCL and proposed MCL exist for a constituent, "the MCL is used to develop the RAO." The "Final" ISA for OU-1 uses the PMCL to develop the RAO, assuming the proposed MCL will be promulgated soon. This demonstrates inconsistency between DOE documents. Further, and as mentioned by OEPA in previous ISA comment letters, for any and all carcinogenic compounds detected in OU-2

groundwater that do not have final MCLs (i.e., only a proposed MCL exists which would, therefore, not constitute an ARAR, but only a TBC), DOE must consider the remedial action objective (RAO) to be the 10^{-6} cancer risk level. Likewise, for non-carcinogenic compounds having only a proposed MCL, the appropriate RfD must be used to derive an ingestion RAO instead of the proposed MCL. In addition, for those compounds (both carcinogens and noncarcinogens) that have a non-zero MCLG, this MCLG must be considered as an RAO unless there exists a risk-based value that is lower than the MCLG, in which case the lower risk-based number should be considered the RAO.

17. Page 2-4, Table 2-1: Please provide justification for not including PCB's and Cesium-137 as chemicals and radionuclides of potential concern for OU-2 since both were detected in OU-2 media.

18. Page 2-5, Table 2-2: Under the last column "Chemicals in Drinking Water", no MCLGs are listed. This oversight should be corrected.

19. Page 2-6, Table 2-2: State of Ohio surface water quality standards must be included in this table. State standards constitute ARARs and those standards for cadmium and PCBs (0.6 ug/l and 0.001, respectively) are more stringent than those federal criteria listed here. For the column titled "Chemicals in Surface Water," the referenced regulation is 40 CFR 141. This regulation pertains to primary drinking water standards not to chemicals in surface water for aquatic life protection. Therefore, the citation to this regulation should be deleted or a correct citation inserted.

20. Page 2-9, fourth bullet: The NCP does not consider the 10^{-4} to 10^{-6} risk range to necessarily constitute an acceptable level of risk for carcinogens. The NCP also requires the use of a 10^{-6} risk as the point of departure for determining acceptable risks. The text here needs to be revised appropriately to reflect this.

21. Page 2-9, Section 2.2.5, second paragraph: See Comment #5 in the above DOE Response to Ohio EPA Comments section regarding RCRA Subpart S proposed rules.

22. Page 2-9, Section 2.2.5.1: As previously stated, remediation goals should be risk-based utilizing both IRIS and HEAST. It must also be recognized that risk-based criteria also constitute TBCs just as DOE Order 5400.5 does. The last sentence is confusing and should be corrected to read: "It should be noted that direct radiation does not contribute measurably to dose."

23. Page 2-10, Section 2.2.5.3: Ohio EPA maintains that risk-based RAOs should be developed for radionuclides as required by CERCLA and the NCP.

24. Page 2-10, Section 2.2.5.3, second paragraph: Ohio EPA's surface water quality standards must also be mentioned here. Ohio's standards are <u>enforceable</u> goals for protection of the environment.

25. Page 2-11, Table 2-3, Basis for Remedial Objective: The RfD for Acenapthene (0.06 mg/kg/d) was not included in the table even though an "Acceptable Soil Concentration" was derived. In addition, the units for the RfD given for 2-butanone appear to be incorrect. The units should be mg/kg/d.

26. Page 2-12, Table 2-3: Again, the RfDs for lead and mercury should be in mg/kg/d, not mg/kd/d. Footnote "b" should be removed from the table since it is no longer used. It would also be helpful to define "RfD" and "SF". Reference to "CPF" for the compound N-nitrosodiphenylamine should be changed to "SF." With regard to Footnote "a," exposure scenarios used should be based on USEPA's Risk Assessment Guidance for Superfund document, not on the proposed RCRA Subpart S regulations for reasons previously stated. With regard to Footnote "c," the reference "Marcus, 1986" should be included in the references chapter.

27. Page 2-13, Table 2-4: See Comment #12 in the Response to Comments section above.

28. Page 2-14, first paragraph: See Comment #16 of Ohio EPA's comments on the revised ISA.

29. Page 2-14, second paragraph: An acceptable concentration for uranium in groundwater will be based upon the baseline risk assessment and should not be assumed to be 20 pCi/l. As has been noted numerous times by Ohio EPA in comments on ISA reports for other operable units, 20 pCi/l represents a lifetime cancer risk of 2×10^{-4} which is outside the 10^{-4} to 10^{-6} risk range specified in the NCP. It is also two orders of magnitude above the 10^{-6} risk level which the NCP states should be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. Exposure levels must be calculated based upon risk, not dose.

30. Page 2-14, third paragraph: According to the reference chapter, "ASI/IT 1990" is not the draft RI report. Please provide a correct reference.

31. Page 2-15, Table 2-5: DOE needs to correct Table 2-5 so that it shows the Acceptable Water Concentration for all PCBs

combined which is 0.0005 mg/l. In its present form, the table suggests that 0.0005 mg/l is the Acceptable Water Concentration for each Aroclor.

The revised ISA report still fails to recognize those compounds listed in Table 2-5 that have both Reference Doses (RfD) and cancer Slope Factors (SF) which should be used to derive separate non-carcinogenic and carcinogenic groundwater RAOs These compounds include Bis (2-ethylhexyl) phthalate, Chlordane, 1,1-Dichloroethane, Methylene Chloride, and Tetrachloroethene. In lieu of a final MCL for these compounds, a carcinogenic and non-carcinogenic RAO must be calculated for each compound and the table modified accordingly. Also, the RfD of 0.091 $(mg/kg/d)^{-1}$ for 1,1-Dichloroethane is in fact the cancer Slope Factor. The RfD for this chemical is 0.1 mg/kg/d. This error should be corrected and both the RfD and SF included as indicated in previous comments on this and other compounds in the table. For Chloroform, it should be noted in the table that the RAO for this compound is the SF.

32. Page 2-18, Table 2-7: DOE needs to correct this table so that states that the RAO for radium in drinking water is 5 pCi/l for combined Ra-226 and Ra-228. At present, the table erroneously suggests the level for each is 5 pCi/l for a total acceptable Radium concentration of 10 pCi/l. This table should also provide the 10^{-6} risk-based criteria for drinking water for those radionuclides listed. The drinking water concentration corresponding to 4 mrem/yr exposure for Sr-90 was omitted. This value is 38.6 pCi/l.

33. Page 2-19, Section 2.3.4: No "Containment With Treatment" options are included for the Sanitary Landfill, since no in-place treatment options are practical due to the heterogeneity of the material. Therefore, reference to the Sanitary Landfill should be removed from this paragraph.

34. Page 2-20, Section 2.4: The following technologies included in Figures 2-2, 2-3, and 2-4 should be added to the list of technologies on page 2-21: perched groundwater/waste-water treatment, subsurface flow control, in situ waste treatment, waste stabilization, biological treatment. Sludge treatment is included on page 2-21, but is not included in Figures 2-2, 2-3, and 2-4.

35. Figure 2-2, Containment/Treatment - Subsurface Flow Control: To be consistent with the text and to avoid confusion, steel pilings should be changed to sheet pilings.

36. Section 2.4.1: The Removal/Treatment/Disposal remedial technologies: waste stabilization, volume reduction and biological treatment are presented in Figure 2-2, but are not

discussed in the text. These biological treatment process options mitigate organics and were retained. However the perched groundwater/waste-water treatment process options that mitigate organics were screened out.

37. Page 2-42, Ohio ARARs: This list must include the Ohio Water Pollution Control Law (ORC 6111), which provides for the protection of state waters from contamination.

38. Page 2-45, Section 2.4.2: The Removal/Treatment/Disposal remedial technology volume reduction is presented in Figure 2-3, but is not discussed in the text.

39. Figure 2-4: The screening comments given for the in-situ vitrification process option suggests that fires are a concern if this process option would be utilized for the fly ash areas and the South Field area. Given that the great majority of this material is ash and construction rubble (bricks, concrete, etc.), it is not clear why DOE considers fire to be a likely hazard for these areas.

40. Page 2-71, Section 2.4.3.2, ex situ treatment: The first sentence states that biological treatment technologies are included, however, biological treatment methods are not discussed in the text or presented in Figure 2-4.

41. Section 2.4.3.2: The Removal/Treatment/Disposal technology: volume reduction was included in Figure 2-4, but not discussed in the text.

42. Figure 2-5, Removal/Treatment/Disposal, Perched Groundwater/Wastewater Treatment: The ion exchange process option should be included as a chemical remedial technology rather than physicochemical.

43. Figure 2-5, Removal/Treatment/Disposal, Biological Treatment: The permeable treatment process option listed in Figure 2-2 is not included in Figure 2-5.

44. Page 2-84, Chemical Sealants, Implementability: The sentence starting "A multimedia cap..." should be the beginning of a new paragraph as it is intended to be a summary of the process options which were evaluated for the sanitary landfill and not intended to apply to solely to the evaluation of chemical sealants.

45. Page 2-92, Vitrification, Effectiveness: In the last sentence, the word "gages" should be "gases."

46. Figures 3-1, 3-2, 3-3: See Comments #1 and #2 above.

47. Figures 3-1, 3-2, and 3-3: The correlation of the Media and

Remedial Action Objective with the remaining figure is unclear.

48. Page 3-39, Section 3.2.1: Additional information pertaining to the sanitary landfill is described in Section 1.5.2.1 and 1.5.3.1 rather than 1.2.3.1.

49. Section 3.2: The descriptions of the alternatives indicate that the perched groundwater treatment wellpoint system will be operated until contaminant concentrations are below levels of concern or the quantity of collected water becomes negligible. It should be noted, however, that the reduction of contaminant concentrations below levels of concern may not indicate complete remediation of perched groundwater. Because of heterogeneities, desorption and "dead end" pore spaces, contaminant concentrations may gradually increase after the cessation of pumping. Therefore, pulsed pumping may be necessary to adequately reduce contaminant concentrations through time. The negligible collection of water is also not an adequate reason for the termination of the wellpoint system. If the perched system is recharged, the perched groundwater would result in a migration pathway if the capping technology fails.

50. Page 3-42, first paragraph: Since portions of 49 CFR 173 will need to be met for the packaging of radioactive materials for shipment off-site, this regulation constitutes a federal ARAR and must be listed in Appendix B.

51. Page 3-60, fourth paragraph: It is not clear why DOE believes that a permit would be required for on-property treatment of mixed waste. This type of on-site activity would be exempt from a RCRA permit as is stated in the first paragraph on page 3-66. The text should be corrected accordingly.

52. Page 3-61, Section 3.2.2: The alternatives described for the Lime Sludge Ponds should discuss what will happen to the current discharge of lime sludge into the ponds once remediation begins.

53. Section 3.2.2, Page 3-61: The last sentence should reference Sections 1.5.2.2, 1.5.2.3, and 1.5.3.2 rather than Section 1.3.1.2 and 1.3.1.3.

54. Page 3-70, Section 3.2.2.4: This section fails to mention a remediation time frame for Alternative 4. If it is supposed to be the same as Alternative 3, then it should be stated in the text.

55. Pages 3-74 and 3-76, Figures 3-16 and 3-17: The geology underlying the Fly Ash and Southfield Areas should be consistent between the these two figures. In other words,

Figure 3-16 should show the sand lenses that are shown in Figure 3-17 and discussed in Section 3.2.3.2.

56. Section 4.2.2: This section should describe the role and definition of constructability, reliability, maintainability, agency approvals, and special engineering, rather than how they relate to technical feasibility and administrative feasibility. These five implementability criteria are used in Section 5.0, therefore, a clarification is necessary.

57. Section 5.1.3.1: The Reduction In TMV rating should be higher for this alternative than for Alternative 1 due to the reduction of mobility of contaminants to the groundwater.

58. Section 5.1.4.1, page 5-4: The reduction of the short-term environmental effectiveness rating to 2 due to dust, noise, and traffic is inappropriate. In comparison to the No-Action alternative, a rating of 3 would be more reasonable.

59. Section 5.1.4.1, Page 5-5: The rationale given for this alternative resulting in a rating of 3 in the category of long-term effectiveness in protecting human health and the environment is misleading. The correct rationale would state that this alternative provides enhanced protection over that provided by alternative 1, but because the waste is stored on-site, it provides less protection than Alternative 4.

60. Section 5.1.4.1, last sentence: See comment #57.

61. Section 5.1.5.1: See comments #58 and #57.

62. Section 5.1.6.1, and Section 5.1.7.1: See comment #58.

63. Section 5.1.6.2, Last Sentence, Page 5-7: Complexity of the proven technology was not a factor in the ratings of Special Engineering for Alternatives 1-4. For example, Alternative 4 is more complex than Alternatives 0 and 1, but the rating of special engineering was not reduced.

64. Section 5.1.7.2, Last Sentence, Page 5-8: See comment #58.

65. Page 5-8, Section 5.1.7.2: Since no monitoring or maintenance will be required by DOE FMPC personnel for off-site disposal, Alternative 6 as well as all other alternatives which employ off-site disposal should be scored a "5" for maintainability. Ohio EPA's position on this scoring is supported by DOE in the Final Initial Screening of Alternatives report for OU-1 which states: "This alternative will require no perpetual maintenance or monitoring because the waste will not be stored on property. This alternative rates a 5 in this category." DOE needs to work towards a more consistent presentation in its documents.

66. Page 5-8, Section 5.1.7.2, last sentence: This sentence refers to incineration occurring in Alternative 4 when it actually is only employed in Alternatives 5 and 6. The text should be corrected accordingly.

67. Page 5-11, Section 5.2.4.1: This section discusses "off-site shipment of landfill wastes" when it's supposed to detail on-property disposal of lime sludge. The paragraph needs to be corrected.

68. Sections 5.2.4.1 and 5.2.5.1: See comment #58.

69. Sections 5.3.3.1, 5.3.4.1 & 5.3.5.1: See comment #57.

70. Section 5.3.4.1, 5.3.5.1, 5.3.6.1 and 5.3.7.1: See comment #58.

71. Page R-2: USEPA's HEAST document is updated quarterly. It is obvious from this reference listing that DOE has used a HEAST version that is over a year old. This is unacceptable and is in part responsible for some of the deficiencies that Ohio EPA has noted with several of the RAO tables in this as well as other ISA reports.

72. Appendix A, Page A-2, Section A.1.2: A point of clarification is needed here; solid waste cap design must minimally comply with the provisions of OAC 3745-27-08 and 3745-27-11.

73. Appendix B, Water Well Installation: The description given is inaccurate and incomplete. The description of OAC 3745-9 should note that it regulates the installation <u>and abandonment</u> of wells and borings.

74. Appendix B, Page B-9, first sentence: DOE states that "There appears to be no precedent for using MCLGs to develop cleanup criteria for the national CERCLA program." This statement is a poor justification for not considering MCLGs, particularly non-zero MCLGs for the FMPC site and brings into question DOE's desire for a cleanup that is fully protective of public health. In 40 CFR 300.430 (e)(2)(B), it clearly states: "Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, <u>shall be attained</u> by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release...." (emphasis added) This sentence must be removed from the text.

75. Appendix B, Page B-10, Table B-1: Reference to OAC 3745-15-02 as an Ohio chemical-specific ARAR is incorrect. OAC 3745-15-02 is a statement of purpose for the state's air pollution regulations, not a chemical-specific ARAR.

76. Appendix B, Page B-11, Table B-1: DOE states that "...3745-01-4(D) sets criterion applicable to all waters..." This is not the case. In its entirety, OAC 3745-1-04 (note the correct form of the citation) sets those criteria that are applicable to all waters. This inaccurate and incomplete citation should be corrected.

77. Appendix B, Page B-13, Table B-1: Two action-specific state of Ohio ARARs should be listed here. They are OAC 3745-21-05 (Non-degradation policy) and 3745-21-07 (Control of emissions of organic materials from stationary sources). Also, the citation of OAC 3745-9-10(C) should be to OAC 3745-9-10 as the entire section applies to the abandonment of test holes and wells, not just paragraph C.

78. Appendix B, Page B-13, Table B-1: OAC 3745-27 should be referred to as "Solid Waste <u>Disposal</u> Facility Requirements."

79. Appendix C, Table C-3, Quantities and Units: The use of the word "none" for "HSL Inorganics" and "HSL Semi-volatiles" is misleading. DOE needs to specify the difference between "no chemicals detected above background" and "no analysis performed". In order to correct this misrepresentation DOE should eliminate the use of the word "none" from all the tables in Appendix C and rely on more accurately descriptive language and/or footnotes.