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R-009-207.8

REVISED SOUTH PLUME EE/CA COMMENTS

09/94/90

OEPA/DOE-FSO
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LETTER
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State of Ohio Environmental Protection Agency
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[redacted]

Carlos
2142

Richard F. Celeste
Governor

September 4, 1990

Re: **REVISED SOUTH PLUME EE/CA COMMENTS**

Mr. Bobby Davis
U.S. DOE - FMPC
P.O. Box 398705
Cincinnati, Ohio 45239

Dear Mr. Davis:

This letter will serve as Ohio EPA concept approval for the alternate water supply portion of the South Plume EE/CA. Ohio EPA feels that it is environmentally important that the Albright and Wilson wells be taken out of service as soon as possible. These wells are drawing uranium contaminated water down deeper in the aquifer which will make remediation more difficult. Approval of any additional portions of the EE/CA will be coordinated with U.S. EPA.

In addition you will find part of Ohio EPA'S comments to the revised South Plume EE/CA attached. Ohio EPA'S central office staff has not yet received a copy of the revised EE/CA and so has not had the opportunity to review it. It is likely that they will provide additional comments. This is especially true for the risk assessment portions of the document. It would be advisable for Ohio EPA, U.S. EPA and DOE risk assessment staff to meet in person or via conference call later this month to discuss how DOE is conducting risk assessments for uranium and other substances using Superfund guidance. It is important that all the parties understand the approach before risk assessments progress further on the other operable units and removal actions.

I will coordinate with you this week to set up the risk assessment meeting or conference call. If you have any questions please contact me.

Sincerely,

Graham E. Mitchell
DOE Coordinator

GEM/mlf

cc: Tom Winston
Maury Walsh
Jack Van Kley, Ohio AG
Bob Owen, ODH

Encl.

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ATTACHMENT
OHIO EPA COMMENTS ON THE REVISED AUGUST 1990 EE/CA
AND ACCOMPANYING RESPONSIVENESS SUMMARY

COMMENTS ON THE REVISED EE/CA

1. Page ES-5, third paragraph: USEPA's Risk Assessment Guidance for Superfund requires the use of 70 years for exposure duration. The use by DOE of a 50-year exposure duration is not consistent with this guidance.

2. Page ES-11, Table ES-1, Maximum Exposure (for the four surface water pathways): The values presented for the maximum exposure are somewhat misleading in that those for Alternatives 1 through 3 are rounded up from 0.67 mrem to 0.7 mrem while the value for Alternative 4 is rounded down to 0.7 mrem from values of 0.71, 0.75, 0.75, 0.79, 0.79 mrem over the five years of the action (Table C3-2). The average of these values is in excess of 0.75 and if a single rounded value is to be chosen to represent the exposure presented by Alternative 4 over the five years, this value should be 0.8 mrem.

3. Page ES-11, Table ES-1, Maximum Exposure (Drinking water pathway only): Rounding discrepancies, similar to those noted in Comment #2, are presented in this part of Table ES-1. Actual values of 0.34 mrem are rounded to 0.3 mrem for Alternatives 1 through 3 while a value of 0.38 mrem is rounded to 0.3 mrem for Alternative 4. These rounded values are misleading to the reader who doesn't scrutinize Appendix C. The preferred solution to the rounding problems would be to either list the actual values, two places past the decimal in Table ES-1 or round figures according to convention. These types of discrepancies bring the reader to question the integrity of other values presented in the document.

4. Page ES-13, Table ES-1, Aquatic Ecology: Although from an acute toxicity standpoint, Alternative 4 may have a marginal positive impact on the Great Miami River, in actuality the above background river water concentration of uranium will increase an additional 10%. This increase in uranium concentration in the river water will only increase any possible chronic affects on the aquatic community. The possibility for increased chronic effects from this alternative should be acknowledged in the text.

5. Page ES-16, Reduction in Mobility, Toxicity, or Volume; Alternative 4: The result of this alternative will be to actually increase mobility of the contaminants by placing them into a more mobile environment (surface water) without truly capturing and treating the contaminants. Toxicity of the contaminants in the Great Miami River is actually increased since the above background river water concentration of uranium will be up to 10% higher with Alternative 4 (1.8-2.0 pCi/l) than will result from any of the other three alternatives (1.7 pCi/l). Volume will also be increased as less contaminated groundwater is drawn into the wells along with the plume and then discharged into the Great Miami River. As the contaminants are continually diluted, the total volume of water in which the contaminant resides increases.

6. Page 2-22, Section 2.2.6: The correct name for the A & W facility is Albright & Wilson Americas, Inc., not Albright & Wilson Chemical Company as stated in the text.

7. Page 2-26, third paragraph: The sentence starting "Uranium concentrations have been detected..." needs to be reworded. The sentence is confusing at present. Also, in the next sentence, the word "fare" should be changed to "far."

8. Page 2-29, Table 2-3, Well 2104: A "b" was used to explain the lack of sample results for Round 5. This is incorrect in that "b" denotes "well installation not completed." Since the well was sampled during Rounds 1 through 4, this appears to be an inappropriate symbol and changes should be made accordingly.

9. Page 2-32, Table 2-5, Well 4015: A "b" was used under the Round 5 column. Again, this is incorrect in that "b" denotes "well installation not completed." Since the well was sampled during Rounds 1 through 4, the well obviously had to have been completed for the fifth sampling round. This error should be corrected.

10. Page 2-41: The entire second paragraph is redundant with most of the first paragraph beginning with "It is not expected...." and ending with "...from other directions." Appropriate corrections to these paragraphs should be made.

11. Page 2-42, second paragraph: As previously stated, USEPA's Risk Assessment Guidance for Superfund requires the use of 70 years for exposure duration. The use by DOE of a 50-year exposure duration is not consistent with this guidance. In addition, although the CEDE of 4 mrem is used to establish MCLs for other radionuclides, MCLs are not merely health or risk-based since other factors such as economic impacts of water treatment are also considered when establishing MCLs.

12. Page 2-48, first paragraph: In this paragraph, it is stated that a 50 year CEDE limit of 4 mrem from an annual intake of radioactive materials in drinking water corresponds to an excess cancer risk of 0.5 to 2 cancers per year per one million people who drink this water at a rate of 730 liters per year. It is unclear how this risk estimate was determined. There also appears to be some inconsistency in the way DOE calculates its carcinogenic risk compared to what is contained in USEPA's Health Effects Assessment Summary Tables (First/Second Quarters FY-1990, OSWER document OS-230, January/April 1990). In the HEAST, to estimate risk-specific concentrations in drinking water, for example, a specified level of risk is divided by the unit risk for drinking water. Hence, the water concentration (in pCi/l) that corresponds to a best estimate of the increased lifetime cancer risk of $1x10^{-6}$ is calculated as follows:

$$\text{pCi/l in water} = \frac{1x10^{-6}}{\text{unit risk in (pCi/l)}^{-1}}$$

For Uranium 235 and 238, the pathway-specific unit risk given in Appendix C for exposure over a 70 year lifetime is $6.6x10^{-6}$ $(pCi/l)^{-1}$. Using this value for the unit risk in the above equation, the concentration of uranium in ground water corresponding to a 10^{-6} excess lifetime cancer risk is 0.15 pCi/l (0.23 ug/l). For uranium 234, the concentration is slightly lower (about 0.21 ug/l). This means that the 30 ug/l concentration used by DOE as an action level in south plume EE/CA corresponds approximately to a lifetime cancer risk of $2x10^{-4}$, which is outside the 10^{-6} to 10^{-4} acceptable risk range specified in the NCP and represents a risk that is at least 2 orders of magnitude higher than that given by DOE on Page 2-48.

13. Page 4-1, Section 4.1, last paragraph: DOE states that the design, construction, and implementation of a treatment facility for treatment of groundwater from the south plume would take approximately three years and would, therefore, not allow for a timely response under the removal action process. This seems contradictory with the Responsiveness Summary (page 100, response to Comment #20) which states that "the estimated time difference between Alternatives 4 and 5 is four months. Alternative 4 (Pump and Discharge) will be operational within 16 months and it is estimated that treatment can begin under Alternative 5 in 20 months." Based upon the Responsiveness Summary, the time difference between these two alternatives is not enough to eliminate Alternative 5 from further consideration.

14. Figure 4-1: This figure needs to be clarified. Based upon this figure, it appears that DOE plans to install an alternate water supply well on Delta Steel property. This appears to be in error and should be clarified. If Albright & Wilson's wells are shut down once the facility is connected to the alternate water supply, what will stop the south plume from being drawn into the Ruetgers-Nease production well?

15. Page 4-10, Figure 4-3: The location of the proposed intercepter wells were left out of this figure.

16. Page 4-12: It is stated on this page that six 2000-series and six 3000-series wells are proposed for monitoring the effectiveness of Alternative 4. Figure 4-3, however, shows only four monitoring well locations. This discrepancy should be corrected.

17. Page 5-3, first paragraph: The reference dose for uranium should be expressed in units of ug/kg/day, not ug/l/kg/day.

18. Page 5-8, third paragraph: The HI value of 6.0 for the maximally exposed off-site adult and 3.1 for the average exposed off-site adult indicate that the daily intakes of uranium are six and three times the acceptable intakes for the maximally exposed and average exposed off-site adult, respectively. Contrary to what is stated in the text, this is well above the acceptable intake level for uranium.

19. Page 5-15, last paragraph: This paragraph discusses the cost and maintenance of "the interceptor wells." The alternative being analyzed does not involve interceptor wells but rather production wells for the alternate water supply. The sentence should be reworded to reflect this.

20. Page 5-16, Section 5.5.1, third paragraph: In addition to decreasing the effluent uranium concentration, Alternative 3 will also result in raising the above background uranium concentration in the Great Miami River by up to 10% above the level based on current discharges. The discharge of larger volumes of water with lower concentrations, which are still above background levels for the river, produces increased river concentrations of uranium. The fact that river concentrations will increase as a result of Alternative 4 should be incorporated into this discussion.

21. Page 5-17, Section 5.5.2, first paragraph: Alternative 4 fails to meet the objective of reducing mobility and volume. In actuality, the alternative works against these objectives by increasing the volume in which the contaminant of concern resides and by increasing the mobility of the contaminant by removing it from a relatively immobile medium and discharging it into a medium with relatively high mobility.

22. Page 5-17, last paragraph: Although acute toxicity may decrease as stated in the paragraph, chronic affects may increase as a result of increased uranium concentrations in the river (see Comment #20).

23. Page 5-18, first paragraph: The EE/CA should discuss what would happen if one or more of the interceptor well pumps fail. Will the remaining wells be able to control plume migration or will they allow portions of the plume to get by and continue to migrate downgradient?

24. Page 5-21, first two paragraphs: A discussion of treatment processes should not be included here since treatment is not incorporated into any of the alternatives presented in this revised EE/CA.

25. Page 6-2, Section 6.3, third paragraph: As previously stated, only Alternative 4 has the negative environmental impact of increasing the uranium contamination of the Great Miami River. This should be included in the evaluation discussed in this paragraph.

26. Page 6-3, first full paragraph: It is Ohio EPA's position that treatment of the south plume, if not conducted as part of this removal action, will be necessary for the final site remedy to fully comply with the treatment provisions of the NCP.

27. Appendix A, page A-6, sixth paragraph: When referring to Collector Wells #1 and #2, the text should cite Figure A-1 so that the reader may more easily locate them.

28. Appendix A, page A-10, third paragraph: A portion of this paragraph questions the accuracy of estimates made from wells having only a few observed concentrations. Statistically, there is little difference in having only a "few" observations versus having a maximum possible number of 6 observations (the number of sampling rounds that are used in this EE/CA). The logic applied in this paragraph appears to be questionable.

29. Appendix A, page A-15, fourth paragraph: This paragraph refers to particle tracking under the no action alternative as shown on Figure A-4. Figure A-4 does not show particle tracking under the no action alternative.

30. Appendix A, Figures A-10 and A-11: It is impossible to associate the interceptor wells with their respective curves in either of these figures. A combination of solid, dashed, or dotted lines should be used so the reader can discern which curve represents each well.

31. Appendix C, page C2-1, fourth paragraph: The word "are" should be removed from the sentence beginning "The model predicts...". This sentence should be qualified by stating, if such is the case, that further sampling is occurring in order to test the assumption of no plume mixing.

32. Appendix C, page C3-6: It is not appropriate to use 1 l/day as an average intake of water for risk assessment purposes. USEPA uses a standard 2 l/day value and does not suggest that this is necessarily a maximum daily intake.

33. Appendix C, page C3-8: Values for the parameters listed on this page were omitted.

34. Appendix C, page C5-1, Carcinogenic Effects: It is inconsistent with USEPA risk assessment methodology to calculate carcinogenic risks in terms of "risks of fatal cancer." USEPA does not separate carcinogenic risks into fatal and non-fatal. DOE's presentation of carcinogenic risk in this manner is very misleading and can give the appearance that carcinogenic risks are smaller than they really are.

35. General Comment: DOE has not addressed the option of pumping from the area of highest uranium contamination and treating this water as part of this removal action. At the same time, water from the leading edge of the south plume could be pumped and discharged as described in the EE/CA. This option should be evaluated.

COMMENTS ON THE RESPONSIVENESS SUMMARY

1. Page 97, DOE response to Ohio EPA Comment #7 on the draft EE/CA: The response to this comment is not only inadequate but makes little sense. It is requested that DOE provide clarification.

2. Page 99, DOE response to Ohio EPA Comment #19: DOE's response to this comment regarding the abandonment of existing contaminated water supplies is inadequate. Regardless of whether DOE has the legal or statutory authority to force affected users to abandon existing contaminated wells, it should note in the EE/CA that it will attempt to gain permission from owners of contaminated wells to properly abandon their wells once an alternate water supply is provided. Also, DOE can, and should, provide pertinent information on contaminated wells to the Hamilton County Health Department and request that those contaminated wells be condemned by the health department. Local health departments have the statutory authority to condemn private wells and require the proper abandonment of said wells.