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NAS WHITING FIELD
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LETTER AND U S EPA REGION IV COMMENTS TO REMEDIAL INVESTIGATION REPORT SITE 12 TETRAETHYL LEAD DISPOSAL AREA NAS WHITING FIELD FL
7/22/1998
U S EPA REGION IV

UNITED STATES ENVIRONMENTAL PROTECTION A
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

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July 22, 1998

4WD-FFB

Ms. Linda Martin
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
2155 Eagle Drive
North Charleston, South Carolina 29419-9010

SUBJ: RI Report for Site 12

Dear Ms. Martin:

The United States Environmental Protection Agency (EPA) has received and reviewed the Remedial Investigation Report (RI) for Site 12, the Tetraethyl Lead Disposal Area, at NAS Whiting Field, dated April 1998. Enclosed are EPA's comments based on this review.

If you should have any questions or comments, please feel free to contact me at (404) 562-8555.

Sincerely,

Craig A. Benedikt

Craig A. Benedikt
Remedial Project Manager
Federal Facilities Branch

Enclosure

cc: Jim Cason, FDEP

EPA REVIEW COMMENTS
SITE 12, TETRAETHYL LEAD DISPOSAL AREA
REMEDIAL INVESTIGATION REPORT

SPECIFIC COMMENTS

1. **Page 1-1, Section 1.2 Paragraph 5.** The site description is weak in that it provides only minimal description from a historic perspective. Information from the 1985 Initial Assessment Study should be incorporated into the Draft RI Report.

2. **Page 3-2, Section 3.3 Paragraph 7.** The Draft RI Report states, "During the Phase IIB investigation an additional monitoring well, WHF-12-2, was installed south of Site 12 (Figure 3-1)." However, this is not an accurate description of what appears on Figure 3-1. Figure 3-1 clearly shows that monitoring well WHF-12-2 is installed on the approximate site boundary, not south of the site. The text should be modified.

3. **Page 5-10, Section 5.2 Figure 5-2**. Review of Figure 5-2 indicates that one additional deep monitoring well should be installed in a downgradient (SE) direction from Site 12. Well location WHF-12-2 is of no value in assessing possible groundwater contamination in a downgradient direction offsite from Site 12 and is only of marginal value when determining extent of contamination in a cross gradient direction to Site 12. The addition of the third monitoring well would narrow the data gap which presently exists.

4. **Page 5-10, Section 5.2, Figure 5-2**. Review of Figure 5-2 indicates that well location WHF-12-1 is of no value in assessing possible groundwater contamination with respect to Site 12. If the represented location is accurate with respect to groundwater flow, the data obtained is not representative of Site 12 and should be removed from the report.

5. **Page 5-27, Section 5.3, Table 5-7.** The source of the screening values for EPA Region III risk based concentrations (RBCs) is dated May 30, 1996. The screening values should reflect the more recent version which is dated October 22, 1997. All screening values should be checked against the most recent criteria and adjustments made where necessary.

GENERAL RISK REVIEW COMMENTS

6. Because Site 12 consists of mounds of sludge deposited on the soil surface and possibly covered with a thin layer of soil, it is probable that the root zone of trees and other large plants will consist primarily of the subsurface soil. The subsurface soil at this site contains a much greater number of contaminants than the surface soil. Risk to plants from subsurface contaminants was not addressed in the ERA. If risks to plants from subsurface contaminants are not evaluated quantitatively, a qualitative discussion of these risks to plants should be included in the Uncertainty Analysis (Section 7.7).

7. The conclusion that no risks to terrestrial plants exist at Site 12 was not adequately supported by the data presented in the ERA. Risks to plants were assessed using data from lettuce seed germination tests with surface soil from three sampling sites within Site 12. Reduced germination (statistically significant, $p<0.05$) was observed in two of the three samples. There was no statistical correlation between the concentration of contaminants in the soil and the reduction in germination, and the reduced germination was attributed to synergistic effects of multiple contaminants and/or variables unrelated to contamination. However, statistical correlation (or lack of correlation) based on only three samples is of uncertain value. Also, the assay was for germination only; testing for growth and biomass production was not conducted. The canopy is reported to be 10 to 15 feet in height. It was not reported if this area was artificially or naturally revegetated after the sludge was deposited, or if the vegetation has been disturbed since the sludge deposition. The canopy height appears to be low for an area that has not been disturbed in 30 years, which suggests that a growth depression may be occurring. It is recommended that additional investigation be done to more clearly identify the risks to plants at this site. This should include additional documentation of the history of the site (specifically, the approximate age of the tallest trees), assaying the site to determine if sensitive plant species are present, comparison of the growth of specific tree species between Site 12 and an adjacent control area, doing a literature search to determine if there is any documented information on the effect of the identified contaminants on plants, and confirming that seed production at the site appears normal.

8. The risks to herbivorous birds are not addressed in the ERA. A representative herbivorous bird species should be included as a receptor in the ERA.

9. In Tables 6-1, 6-2, and 6-3 it is stated that the values in the Mean of Detected Concentrations column are the arithmetic mean of all samples in which the analyte was detected. An asterisk in this column notes that the value is the average of a sample and its duplicate. However, it is not stated that when averaging a sample and its duplicate and the duplicate value is non-detect (data qualifier of "U" or "UJ"), half of the non-detect value is averaged with the sample value. This averaging method needs to be stated in the footnotes.

10. Several tables in Appendix E state chronic and sub-chronic RfD values for thallium. However, it is not specified which species of thallium is being evaluated. A footnote should be added in each of these tables stating which species of thallium was used in the HHRA.

SPECIFIC RISK ASSESSMENT COMMENTS

11. **Section 6.2, Paragraph 4, Page 6-2**. This section discusses the background screening concentrations used in the selection of COPCs. The data referenced is presented in the GIR (ABB-ES, 1998) developed for Whiting Field. To verify that screening was done appropriately, these data, including a figure showing background sampling locations, should be included in an appendix in this document. Inclusion of the referenced tables and figure from the GIR, specifically, Tables 3-8, 3-9, 3-10, 3-11, 3-15, 3-17, 3-18, 3-12, and 3-21 through 3-24, and Figure 3-10 would be sufficient.

12. **Section 6.2, Page 6-3**. The text in paragraph two discusses that industrial soil RBCs were used to screen for COPCs in subsurface soil. Although only non-residential receptors are evaluated using subsurface soil data, subsurface soils should still be screened using residential RBCs, as per regional guidance. Because industrial RBCs do not include risks from dermal exposure in the RBC calculation, they are not considered by EPA Region IV sufficiently protective to use for COPC identification at the screening stage. Subsurface soil data should be re-screened using the residential RBCs and risks from exposure to this medium should be re-evaluated.

13. **Section 6.2, Paragraph 6, Page 6-3**. The first sentence of this paragraph which begins with "If the analyte meets any of the above criteria, is not a member of the same chemical class as other HHCPCs in the medium . . . " is unclear, and appears to imply that chemicals may be eliminated as COPCs if they are the only chemical of their "class." This statement requires clarification. The meaning of the term "chemical class" is not easily deduced from this sentence. Revisions to this sentence are needed to ensure that chemicals are not being eliminated as COPCs for reasons not typically accepted by EPA Region IV.

14. **Table 6-2, p. 6-7**. Table 6-2 shows the selection of human health chemicals of potential concern for subsurface soil. The value presented for diethylphthalate in the Range of Detected Concentrations column is stated as being 570 μg/kg. When the half of the duplicate (370 μg/kg / 2) is averaged with the sample value (830 μg/kg) the result is 508 μg/kg. This calculation should be reviewed and corrected as appropriate.

15. **Table 6-8, p. 6-18**.This table summarizes the risks associated with future land use. It is stated that the excess lifetime cancer risk to a child resident from the inhalation of particles is 4×10^{-9}. However, Table E-17 in Appendix E states that the risks to a child resident from the inhalation of particulates is 3×10^{-9}. This discrepancy should be addressed.

16. **Figure 6-1**. This figure presents the conceptual site model for this risk assessment. The groundwater ingestion pathway was also evaluated for the future residential receptor. However, this pathway has not been marked as complete in Figure 6-1. Figure 6-1 should be corrected to note that this pathway is evaluated as a complete pathway in this risk assessment.

17. **Table 6-8**. This table summarizes the risks for future receptors. Risks from exposure to both surface soil and groundwater COPCs were evaluated for the future residential adult and child receptors. However, these risks have not been summed. As specified by the NCP, cumulative risks from exposure to all relevant media should be calculated for each receptor. Therefore, to complete this risk evaluation, risks from exposure to surface soil and groundwater should be summed for the adult and child future resident, and presented in this risk assessment.

18. **Section 7.1, Page 7-3, Line 13**. The text states that concentrations of contaminants in groundwater at Site 12 are low enough that they are not a concern for discharges to surface water. The phrase "low enough" is too general and must be defined. The text must include either a brief discussion of the contaminant concentrations in groundwater and the reason these are believed to not impact surface water or a reference to any discussion provided elsewhere in this document.

19. **Section 7.4.2, Pages 7-9 through 7-18**. No herbivorous bird species was included as a receptor in the Site 12 model. It is probable that herbivorous avian species are found at Site 12 and that the calculated risks to these species are different than those to the Eastern Meadowlark, which consumes approximately 20% of its diet as plant materials. An herbivorous bird species should be included as a receptor in the ERA.

20. **Table 7-6, Page 7-20**. Footnote one states that the bioaccumulation factors (BAFs) for plant material are based on the assumption that plants are 80% water. This assumption applies to berries and leafy vegetables, but does not apply to grains, which have a moisture content of only 10%. Since the diet of the cotton mouse may consist primarily of grains, the risks to the cotton mouse may be underestimated. This source of uncertainty should be discussed in the Uncertainty Analysis (Section 7.7).

21. **Section 7.7, Page 7-25, Paragraph 4**. The text states that risks to adult amphibians and reptiles species were not estimated because bioaccumulation and toxicity data are lacking. Since quantitative exposure data are not available, a brief qualitative discussion of the anticipated risks to these groups should be included in the Uncertainty Analysis in addition to the current statement that quantitative risks were not estimated.

22. **Table E-8**. Table E-8 shows the dermal dose-response data for noncarcinogenic effects. The chronic oral RfD for thallium is stated as being "80.e-05." It is believed that the decimal is in the wrong place for this value. The value should be changed to "8.0e-05."

SPECIFIC COMMENTS REQUIRING ONLY ACTION TO CORRECT THE DOCUMENT

23. **Table of Contents**. The Table of Contents does not list an Appendix G. However, tables identified as Appendix G are included in the document. Appendix G should be added to the Table of Contents.

24. **Executive Summary, Page iii, Paragraph 8, and Section 9.1, Page 9-1, Paragraph 4**. It is never stated in these paragraphs that the medium under discussion is surface soil. The text should be modified so that it is clear that the topic is contaminants in surface soil.

25. **Section 6.2, Paragraph 6, Page 6-3**. Sentence three of this paragraph states that RBCs, regulatory guidance values and ARARs are presented in Appendix C. This information is actually presented in Appendix E. This text reference should be corrected.

26. **Section 6.5.2, Page 6-20, and Section 6.6, Bullet 2, Page 6-26**. These sections refer to material relating to the risk assessment as being presented in Appendix F or Appendix C. All materials referenced are actually presented in Appendix E. The text references should be corrected to correspond with the Appendices included in this risk assessment.

27. **Figure 7-1, Page 7-4**. The bullets that appear in various receptor/exposure route boxes are not defined in either the Figure or the text. A definition should be added to the Figure.

28. **Table 7-2, Page 7-10**. For aluminum, the average of detected concentrations is reported to be 11,605 ug/kg. In Table 5-7, this value is reported to be 11,600 ug/kg. The values reported in Tables 5-7 and 7-2 should be in agreement.

29. **Table 7-7, Page 7-22**. Each body weight change value should be identified as a positive or a negative change from Time 0.

30. **Section 7.6.1, Page 7-23, Paragraph 4**. The text states that Tables F-4 through F-7 of Appendix F present the HQ and HI calculations for surface soil. There is no reference to higher numbered Tables in Appendix F. However, Appendix F also includes Tables F-10, F-11, and F-12, which are HQ and HI values calculated using the Central Tendency concentrations. (Tables F-4 through F-7 are HQ and HI values calculated using the Reasonable Maximum Exposure concentrations.) In addition, no Tables F-8 or F-9 were included in Appendix F. The text in Section 7 and the Tables included Appendix F should be modified to be in agreement.

31. **Section 7.6.2, Page 7-24, Paragraph 1**. The text states that Table F-1 in Appendix F contains linear regressions analyses of the results of the surface soil bioassays. The linear regression analyses are presented in tables identified as Appendix G-1. The text should be corrected.

32. **Appendix F, Tables F-2, F-5 and F-10**. "NA" is not defined in these tables. A definition should be included in the footnotes.

33. **Table E-1**. This table provides the screening concentrations for surface soil and shows which values were selected as screening values. It is stated that the risk based screening concentration (RBC) for mercury is 2.3 mg/kg. According to the RBC table, this value corresponds with the RBC for mercuric chloride, not elemental mercury. It should be stated in the table that this value represents the RBC for mercuric chloride.

The acronym NSC is shown in the RBC column for total petroleum hydrocarbons (TPH). However, this acronym is not defined in the footnotes of Table E-1. This acronym should be defined in the footnotes.

34. **Table E-10**. The equation for the dose absorbed per event (DA_{event}) is stated as:

$$DA_{event} = AF \times ABS_d \times CF$$

This equation is missing the variable for contaminant concentration in soil (CS). The equation should read:

$$DA_{event} = CS \times AF \times ABS_d \times CF$$

The equation for DA_{event} should be appropriately changed.

35. **Table E-12.** The equation for dermal intake is stated as:

$$INTAKE_{dermal} = (AT \times 365 \text{ days/year}) \times SA_{soil/adj}$$

This equation is incomplete. It should read:

$$INTAKE_{dermal} = (DA_{event} \times EF / AT \times 365 \text{ days/year}) \times SA_{soil/adj}$$

The equation for dermal intake should be appropriately changed.