03.01-02/10/94-01069

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

February 10, 1994

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4WD-FFB

Ms. Linda Berry
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1823
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune - OU5
Draft Remedial Investigation

Dear Ms. Berry:

The Environmental Protection Agency (EPA) has completed its review of the "Draft Remedial Investigation, Operable Unit 5, Site 2. The comments from Risk Assessment on the human health aspects are enclosed.

If there are any questions or comments, please call me at (404) 347-3016.

Sincerely,

Gena D. Townsend

Gena D. Townsend
Senior Project Manager

Enclosure

cc: Mr. Neal Paul, MCB Camp Lejeune
Mr. Patrick Watters, NCDEHNR

Comments

1. Page ES-2, second bullet - "Pesticide contamination was...less than 100 µg/kg...throughout the remainder of Site 2."
   Does this value of 100 refer to total pesticides or to one particular compound? Please clarify. It should be noted that risk values cannot be determined with total pesticide data.

2. Page ES-3, last paragraph - "The benchmark risk-based concentration is a value (7100 µg/kg) that equates to a 1 x 10^{-6} cleanup action level."
   On what chemical(s) is this soil/sediment concentration based? Also, "1 x 10^{-6}" is a risk level, rather than a "cleanup action level".

3. Page 2-14 (Sections 2.5.1, 2.5.2.1) - Line 2 of this page refers to "surface (ground surface to one-foot)"; in the next section, toward the bottom of the page, "Surface (0 to 6 inches bgs)" is mentioned. This discrepancy should be addressed. EPA Region IV generally considers any soil samples taken in the 0 to 12 inch interval as surface for direct exposure risk assessment purposes; however the contamination may be expected to remain in the first few inches bgs unless fill has been placed over the surface since the contamination occurred.

4. Page 4-6, top of page - EPA does not agree with the statement that "as a general approximation, inorganic parameters detected below these levels [drinking water standards] are assumed to be naturally occurring elements." The elements are naturally occurring, but this statement incorrectly implies that any concentration below the drinking water standard is naturally occurring. This statement should be deleted. It should be noted that "naturally occurring" levels are determined by sample concentrations from background locations.

5. Page 6-4 - There is an error in the discussion of the AWQC. The second value of the AWQC for protection of human health is based on ingestion of aquatic organisms alone (rather than on ingestion of water alone).

6. Pages 6-5, 6-20, 6-21 (text); Tables 6-4, 6-7, 6-10, 6-13, 6-14; all other uses and references to the risk-based concentration values -
   Risk-based concentration values (RBCs) based a hazard

quotient of 0.1 (not 1.0) should be used in selection of Chemicals of Potential Concern (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, U.S. EPA Region III, January 1993). The Region III October 1993 Update (based on HQ of 1.0) referred to in this report does not update the Region III January 1993 Table (based on HQ of 0.1). It should be noted that Region III's RBC Table has not been approved Agency-wide for risk-based screening; however Region IV approves its use for the chemicals detected at this particular operable unit. Using RBCs based on HQ of 1.0 may not be adequately protective because of multiple toxicants and exposure routes. Table 6-14 has some groundwater concentrations which will result in retention of additional chemicals as COPCs when compared with the HQ-0.1-RBCs. It appears that selection of COPCs for other exposure media are not affected by the use of HQ-0.1-RBCs.

7. Page 6-7, paragraph 3 - The reasons given for elimination of toluene are not acceptable; however it could be eliminated based on comparison with its risk-based screening concentration (RBC). Xylenes could also be eliminated based on comparison with its RBC. Correct this text accordingly.

8. Page 6-24; Tables 6-18, 6-20 - EPA Region IV policy for comparison with background (or control) concentrations for selection of COPCs is that two times the average background (not two times the maximum background) concentration be compared to the maximum site concentration.

9. Pages 6-25, 6-26; Table 6-21 - Eliminating chemicals detected in sediment from the COPC list "because they are not believed to be present due to site related activities" is not acceptable. Comparison with RBCs (as in Table 6-19) is an acceptable criterion for the COPC determination.

10. Page 6-34, last paragraph; Table 6-25; Appendix O - For the dermal absorption factor, EPA Region IV recommends default values of 0.01 (1.0%) and 0.001 (0.1%) for organic and inorganic compounds, respectively (see attachment). The percent values are listed in Table 6-25 (without a percent notation); the risk calculation spreadsheets in Appendixes O.2.2, O.2.10 appear to have used the incorrect value, resulting in dermal risks and HQs that are **100-fold too high**. Please check all calculations involving risks from dermal exposure and amend all affected tables in Section 6 of the report.

11. Pages 6-35, 6-36 - The CDI equation for Inhalation of Particulates has omitted the chemical-soil concentration term. Units shown for the 1/PEF term on page 6-35 (mg/m^3) do not agree with units shown on the following page (kg/m^3).

The latter units are correct.

12. Page 6-40 - The "C" term in the equation for inhalation of volatile organics while showering should be defined as "Contaminant concentration in air (mg/m^3)".

13. Page 6-41 - The exposure time for the shower scenario should be 0.25 hour (not minutes) per day.

14. Page 6-42 - Ingestion of surface water while performing maintenance activities in ditches at Site 2. Since this activity does not actually involve swimming (water in the ditch is intermittent and shallow), I would recommend use of less conservative "default" assumptions for the ingestion rate (IR) and exposure time (ET) terms. I believe that a IR of 0.01 liters per hour and a ET of 1 hour per event would be more reasonable assumptions. I also recommend that this lower IR value be assumed for the future resident.

15. Page 6-64, last sentence of second paragraph - Uncertainty associated with the Toxicity Assessment. The language here misrepresents EPA's position on toxicity from dermal exposure. Please edit to read: "Adjusting oral toxicity values for the dermal contact exposure route may not accurately describe the potential risk of a chemical, since the same systemic toxic effects may not occur from the oral and dermal exposure routes."

16. Table 6-1 - A "range" of positive detections is shown for DDT, but the frequency column lists only one detection. Address this discrepancy.

17. Table 6-30, Toxicity Factors; Appendixes O.2.3, O.2.6 - Units should be shown at the top of each column (Table 6-30). All the values within each column should be in the same units- Values for inhalation slope factor are not all in the same units. This results in miscalculation of risks from inhalation exposures in Appendix O.2.3 because the exposure is in units of mg/kg-day, but the cancer slope values used are in units of $(\mu g/m^3)^{-1}$ for some chemicals. Also, RfCs must be converted into inhalation reference doses since the calculated exposure is in units of mg/kg-day (Appendix O.2.6).
Toxicity values which should be corrected or added:
2-Methylnaphthalene- use naphthalene as a surrogate (RfD = 4E-2 mg/kg-d);
Phenanthrene- use pyrene as a surrogate (RfD = 3E-2 mg/kg-d);
Chlordane- inhalation unit risk currently on IRIS, which converts to an inhalation slope factor equal to the oral slope factor [1.3 $(mg/kg-d)^{-1}$];
Arsenic- what is the source of the "child" slope factor for

oral exposure? The WOE for arsenic says A_I, but the "A" WOE is for the oral route as well.
Barium- source for RfC value is HEAST (March 1993);
Lead- WOE is B2 (IRIS, 1993);
Manganese- RfC = 5E-5mg/m^3 (IRIS, 1993).

18. Appendix O.2.1, Ingestion of Soil - On the spreadsheet for ingestion of soil by the residential child at the lawn/mixing pad area, there appear to be errors in the calculated risk values shown for DDE and DDT. Please check and amend all affected tables in Section 6 of the report.