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NAS WHITING FIELD
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LETTER AND U S NAVY RESPONSE TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS TO BASELINE RISK ASSESSMENT WORK PLAN OPERABLE UNITS 3 (OU3), 4 (OU4), 5 (OU5), 6 (OU6) NAS WHITING FIELD FL
2/8/1996
ABB ENVIRONMENTAL

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February 8, 1996

Jim Cason
Technical Review Section
Division of Waste Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399

SUBJECT: **Response to Comments for the Baseline Risk Assessment Workplan Operable Units 3, 4, 5, and 6, Naval Air Station Whiting Field, Milton, Florida**
Unit Identification Code: N60508
Contract No. N62467-89-D-0317

Dear Jim:

Enclosed please find two copies of the draft Response to Comments for the Baseline Risk Assessment Workplan, Operable Units 3, 4, 5, and 6 Naval Air Station Whiting Field, Milton, Florida. Copies of this document are also being forwarded to representatives on the NAS Whiting Field Document Distribution list.

We would appreciate if you could complete your review of the responses prior to the March 8, 1996 Partnering Meeting so that we could discuss them at that time. If you have any questions, please call me or Gerry Walker at 904-656-1293.

Sincerely yours,

ABB ENVIRONMENTAL SERVICES INC.

Terry Hansen, P.G.
Task Order Manager

cc: File: 7560-- (11.2.1)
Jeff Adams-- SouthDiv

FDEP -Ligia Mora-Applegate

1. **To address volatilization of chemicals from soil, the Technical Background Document for Soil Screening Guidance (EPA 540/R-94/106) should be followed.**

   We agree that volatilization from soil is a possible exposure pathway that in some circumstances may represent a significant risk pathway. The method used to calculate air contaminant concentration in the USEPA Soil Screening Guidance document has several inherent limitations. There are three problems with using this model for older sites.

   a. The model best describes recent spill conditions, in which volatile materials are readily available on the surface. Volatile material exposure to the open air during Florida's summer will evaporate very quickly and should be completely gone by the end of the first summer after being released. Contaminants remaining after the first year are either bound to soil material or have migrated into the soil to a depth at which they are no longer readily available for release into the atmosphere. In either case the proposed model is designed to model atmospheric concentration and does not accurately describe volatilization process at older sites, such as the ones currently being investigation.

   b. The model assumes an infinite source of contaminated material (a violation of the first law of thermal dynamics). In addition to the loss of material, due to volatilization, the risk assessment assumes that the surface contaminant concentration remains constant (available for ingestion and dermal exposure) and the contaminants are also migrating into the groundwater. This duplicity of pathways is overly conservative in older sites.

   c. The USEPA Soil Screening Guidance model is a box model that assumes that the contaminant concentration within the box remains constant. In reality, the contaminant air concentration would be expected to exist as a gradient with higher concentration near the ground and lesser concentrations farther away from the ground. Also, the air currents and air dispersion assumption used in the model are very conservative and may not represent natural atmospheric conditions.

   We recognize that volatilization of contaminants from soil may represent an exposure pathway. The above discussion identifies some of the limitations of the reviewer's suggested model. Any model used to evaluate this pathway will be identified and agreed upon by the author and reviewer prior to the Risk Assessment.

2. **Ground water ingestion should be considered as an exposure pathway for future residents in this risk assessment.**

   The final Risk Assessment Workplan will be amended to include groundwater ingestion as one of the future use scenarios.

3. **The standard EPA assumption for inhalation rate is 20 cubic meters/day.**

   Agree, the proposed inhalation rate of 0.833 cubic meters/hour is equivalent to 20 cubic meters/day (0.833 m^3/hour x 24 hours = 20 m^3/day).

4. **The standard EPA soil ingestion rate for an excavation worker is 480 mg/day.**

   The soil ingestion rate for an excavation worker will be changed to 480 mg/day.

5. **Table A-6 lists a value for a child's body weight that is not reasonable. A value of 15 Kg should be used.**

   The draft Workplan contained a typographical error. The correct child's bodyweight is 15 kg.

6. **Leachability-based values should be considered as RGOs if there is ground water contamination.**

   If groundwater is contaminated, the leachability-based values will also be included in surface soil and subsurface soil RGO tables as a separate column.

FDEP - Steve Roberts

1. **Pg.4-6. One of the bases for eliminating a chemical from further consideration as a HHCPC is a frequency of detection of less than 5%. Care should be taken that localized areas with high contaminant concentrations ("hot spots") are not ignored in the baseline risk assessment just because the overall frequency of detection of the contaminant(s) involved is low. I would suggest placing an additional condition for elimination based on low frequency of detection - that the maximum concentration not exceed three times background.**

   RAGS included a procedure for elimination of a chemical as an HHCPC if the chemical was detected in less than 5 percent of the samples. To also place the restriction that the maximum

concentration not exceed three times the background value would be excessive. The procedure was designed to enable a risk assessor to eliminate from further evaluation outliers and anomalous data that do not represent real site conditions. The 5 percent rule also includes professional judgment before any chemical is removed from the HHCPC list. Some of the considerations a professional may use in deciding whether to eliminate a data point are: the chemical is not found in any other media at the site, the chemical was not known or suspected to have been disposed of (or its breakdown product) at the site, and the sample locations do not contain other HHCPC chemicals (an indication that the location is a "hot spot").

2. **Pg.4-7. As indicated here, "Mechanisms for migration [of contaminants] into air include volatilization (primarily volatile organics compounds [VOCs]) and wind erosion of contaminated soil (all types of contaminants)." Methods for estimating contaminants air concentrations arising from wind erosion are provided in Appendix A-2, but there is no description anywhere in the document as to how volatilization will be assessed. If volatile chemicals are found in surficial soils, I (would recommend using the methodology described in the USEPA Soil Screening Guidance document.**

We agree that volatilization from soil is a possible exposure pathway that in some circumstances may represent a significant risk pathway. The method used to calculate air contaminant concentration in the USEPA Soil Screening Guidance document has several inherent limitations. There are three problems with using this model for older sites.

a. The model best describes recent spill conditions in which volatile materials are readily available on the surface. Volatile material exposed to the open air during Florida's summer will evaporate very quickly and should be completely gone by the end of the first summer after being released. Contaminants remaining after the first year are either bound to soil material or have migrated into the soil to a depth at which they are no longer readily available for release into the atmosphere. In either case, the proposed model is designed to model atmospheric concentration and does not accurately describe the volatilization process at older sites, such as the ones currently being investigation.

b. The model assumes an infinite source of contaminated material (a violation of the first law of thermal dynamics). In addition to the loss of material, due to volatilization, the risk assessment assumes that the surface contaminant concentration remains constant (available for ingestion and dermal exposure) and the contaminants are also migrating into the groundwater. This duplicity of pathways is overly conservative in older sites.

c. The USEPA Soil Screening Guidance model is a box model that assumes that the contaminant concentration within the box remains constant. In reality, the contaminant air concentration would be expected to exist as a gradient with higher concentration near the ground and lesser concentrations farther away from the ground. Also, the air currents and air dispersion

assumption used in the model are very conservative and may not represent natural atmospheric conditions.

We recognize that volatilization of contaminants from soil may represent an exposure pathway. The above discussion identifies some of the limitations of the reviewer's suggested model. Any model used to evaluate the pathway will be identified and agreed upon by both the author and the reviewer prior to the Risk Assessment.

3. **Pg. 4-10. According to this table, groundwater ingestion will not be considered as a possible exposure pathway for future residents. Unless there are compelling reasons why the groundwater beneath the site cannot be used as a drinking water source, this pathway should be included in the baseline risk assessment.**

The Baseline Risk Assessment will be amended to include groundwater ingestion as part of the future-use scenario.

4. **Table A-1 and elsewhere. The combined assumptions of exposure time and inhalation rate for the resident and site worker lead to overall inhalation rate assumptions less than the standard USEPA recommendation of 20 m^3/day. These should be adjusted to be consistent with USEPA recommendations (cited as reference [2] in this table, viz. USEPA 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Parameters.")**

The proposed inhalation rate of 0.833 m^3 /hour is equivalent to 20 m^3/day (0.833 m^3/hour x 24 hours = 20 m^3/day).

5. **Table A-4. The soil ingestion rate assumption for an excavation worker is probably too low. The value selected, 118 mg/day, is essentially the same as that for the site worker and adult future resident, although the excavation worker would presumably have more extensive contact with soil. The USEPA guidance document cited as reference [3] for this table suggests a value of 480 mg/day, which is probably more appropriate for this scenario. Also, if the exposure duration for the excavation worker is 30 days, then the averaging time for non-cancer health effects should be 30 days - not one year as specified. Use of the arbitrary longer averaging time of one year artificially lowers the average daily dose leading to an underestimation of risk.**

The Risk Assessment will be modified to include these recommendations.

6. **Table A-6. The value listed for body weight of a child (age 1-6) - 153 kg - is presumably a typographical error.**

   The typographical error will be corrected. The correct bodyweight for a child is 15 kg.

7. **Table A-10. This table lists the exposure assumptions for groundwater for an adult resident. Where are the exposure assumptions for a child resident?**

   The risk to an adult from ingestion of groundwater is calculated as part of the Risk Assessment. USEPA's guidance (USEPA Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Parameters, 1991) does not include a child-groundwater scenario. For consistency reasons, we would prefer to continue using the USEPA guidance methodology.

8. **For the human health risk assessment, the document does not make clear how exposure point concentrations will be derived.**

   Section 4.5 will be amended to include a discussion on calculating the exposure point concentration. In summary, the exposure point concentration is the lower of either the maximum detected concentration or the 95 percent upper confidence level (UCL). A 95 percent UCL will not be calculated unless there are at least 10 samples available for use in the calculation.

9. **The document discusses the use of acceptable soil concentrations based on leaching to groundwater as a screening tool to identify HHCPCs, but does not address their use in establishing RGOs. This should be added to pg 4-18.**

   RGOs are a risk management tool. The remedial goal objectives express the risk associated with a specific chemical under a particular set of assumptions. For sites having groundwater contamination, soil and subsurface soil RGO tables will include both the risk-based concentration and the leaching-based concentration. The leaching-based concentration shall be derived from the Florida Soil Cleanup Goal, dated September 29, 1995 (or latest version).

10. **The approach for the baseline ecological risk assessment varies somewhat from site to site within and among the OUs. This is based on the Ecological Risk Problem Formulation which is described in Appendix B. Based on preliminary results, decisions have been made where to focus efforts in evaluating potential ecological impacts. While I agree with this approach in principle, discussion of the rationale and supporting information is extremely brief. It will be very important to present this information more fully in the baseline ecological risk**

assessment, so that the validity of the approach taken in assessing environmental impacts can be defended.

To expedite the remediation process, which could be delayed in order to rewrite the Workplan, we propose to incorporate these suggestions into the Baseline Risk Assessment. The Baseline Risk Assessment will be a stand-alone document. Each section will be written so that the public can understand how and why each action was undertaken, and the document will explain the significance of the findings.

FDEP Jane Fugler

1. **Chemicals determined as ECPCs for one media, should be considered as ECPCs for all media concerned within a site.**

   The inclusion of an ECPC found in one media into another media's ECPC list is not consistent with USEPA guidance or the procedures used to conduct Human Health CPC selection. We believe this recommended procedure is overly conservative and does not represent actual exposure conditions. Because of the ramification of this recommendation we would like to discuss this issue further before adapting it as policy.

2. **The proposed sediment toxicity test organisms are acceptable; however, none were listed for the surface water toxicity tests. Cyprinella leedsi (acute) and Ceriodaphnia dubia (chronic) are recommended for the surface water toxicity test. The toxicity test for lettuce seed elongation should be conducted for the chronic surface soil test.**

   Since the initiation of this Risk Assessment Workplan, Operable Unit 7 has been given the site designation of Site 39 and elevated to one of the top five risk-ranked sites at the facility. Based on this development, the sediment samples proposed for Operable Unit 4 have been eliminated, and all surface water and sediment samples from the clear Creek floodplain will be collected in association with the Clear Creek Floodplain investigation (Site 39).

   The current Risk Assessment Workplan includes the collection of two surface water samples (one from Site 9 and one from Site 16) for chemical analyses. These samples are from ephemeral pools within the site boundary that have no surface water outlet. The samples will be collected only if water is present during the field investigation period. Because these pools have a transient existence, they are not expected to represent established aquatic ecosystems. The purpose of these two surface water samples is to evaluate the risk to terrestrial organisms via ingestion.

B. **The 120 hour lettuce seed germination test is the only test recommended by USEPA to evaluate the toxicity of surface soil to plants. The reviewer has proposed to replace the seed germination test with a lettuce seed elongation test. The test is performed in a slurry media, which would not accurately measure surface soil conditions at the site.**

We propose to change the Workplan to include 20 seed germination tests collected from five hazardous waste sites and background locations. Because of the limited number of proposed samples at each site, the lettuce seed germination test is more representative as it is a standardized test and the results are comparable to other results obtained at sites across the nation.

3. **Table 5-1 (page 5-5) does not list soil toxicity tests for Sites 1, 13, 14, 15, 16, 21E and 21F, and does not list Site 2, 9 or 12 at all. Also, based on the site descriptions, surface water and sediment toxicity tests should be conducted for the Site 21C ditch. No explanation was provided for these omissions. These tests should be conducted at these sites, unless there is relevant information demonstrating the futility in these.**

Based on FDEP and USEPA's comments, the sampling program will be modified. The attached Table 1 is our recommendation of the number of samples to be collected at each site. These changes shall be presented and discussed during the future partnering meetings.

4. **I recommend for the plant tissue analyses that the samples be collected from different plant parts (i.e., root, leaf, bark) and at different stages of growth.**

The Workplan proposes the collection of two samples for lettuce seed germination and earthworm tests. With the information obtained from these tests and the bioaccumation factors (BAFs), that can be estimated from literature values, we feel that this should be sufficient to estimate ecological risk at the site. The BAF values represent a variety of species and are usually adequately protective for screening purposes. If after reviewing the chemical analysis results (a total of 13 surface soil samples will be collected for chemical analysis), a site specific BAF value is needed, then five samples of the green leafy part of plants will be collected and analyzed.

5. **When aquatic toxicity numbers are not available, they may be calculated for screening purposes. FDEP recommends the following procedure when determining aquatic toxicity values from the AQUIRE database:**

- review data with codes 1, 2, or 5;

- use only LC_{50} data;

Table 1
Proposed Number of Soil Samples for the Baseline Risk Assessment

Operable Units 3, 4, 5, and 6
NAS Whiting Field
Milton, Florida

Site Designation	Number of Surface Soil Samples for Chemical Analyses[1]	Number of Soil Samples for Toxicity Samples[1]
1	5	0
2	5	0
9	5	0
10	5	3
11	5[2]	4
12	6	3
13	5	0
14	3	0
15	25	0
16	17	6
17	0	0
18	0	0
31 A	5	0
31 B	3	0
31 C	10	2
31 D	1	0
31 E	2	0
31 F	3	0
Drainage Ditches	6	0
Background	5	2
Total	117	20

[1] The number of samples does not include quality control samples (i.e., duplicates).
[2] Eight additional samples will be collected for lead analysis only.

- eliminate data from salmonid fish and other species not indigenous to Florida;

- select the test and organism showing the greatest sensitivity to the toxicant; and

- apply a factor of 5% to the LC_{50} value to generate a recommended criteria (62-302.200 (4)(a), F.A.C.

The following hierarchy will be used to identify aquatic toxicity values:

1. Regulatory guidance concentrations

2. Lowest observable effects concentration (LOEC)

3. If neither of these are available, then the above guidance will be followed to create a toxicity value.