



# UNIVERSITY OF FLORIDA

## Center for Environmental & Human Toxicology

November 15, 1996

Ligia Mora-Applegate  
Bureau of Waste Cleanup  
Florida Department of Environmental Protection  
Room 471A, Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32399

P.O. Box 110885  
Gainesville, Florida 32611-0885  
Tel.: (352)392-4700, ext. 5500  
Fax: (352) 392-4707

Dear Ms. Mora-Applegate:

I have reviewed the Draft Remedial *Investigation Report, OU2 Naval Air Station Pensacola, Florida*, prepared by EnSafe/Allen & Hoshall (E/A&H) and dated July 26, 1996. The **risk** assessment in this document **was** performed in a manner generally consistent **with** USEPA guidelines **and** FDEP accepted practices. Some potential problems with the **risk** assessment **were** identified in my review, however, as outlined in the comments below.

1. E/A&H defines surface **soil** samples for use in health-based **risk** comparisons **as** samples **from** 0 to 1 foot bls (see pg. 10-5). **FDEP** typically regards soils **from** 0 to 2 feet **as** surficial soils when evaluating potential **risks** from **direct** soil contact.

2. E/A&H correctly cite EPA Region IV guidance **as** indicating that **the arithmetic mean** of groundwater concentrations **in the most concentrated area of a plume** can be **used as the EPC**. The approach taken by E/A&H is not entirely consistent **with** this guidance, however. E/A&H **used** the greater of the 95% **UCL** or **the arithmetic mean** of the detected concentrations (see pg. 10-15). **The arithmetic mean** of all of the **detected** concentrations is not the **same thing as the arithmetic mean** of concentrations within the most concentrated area of the plume. Including marginally contaminated samples in the averaging process has the potential to inappropriately lower the EPC.

3. Inhalation exposure to chemicals in surface soils **was** not quantitated. Although, **as** the report states (pg. 10-42), the omission of this exposure route is not **likely to** result in a serious underestimation of **total** exposure, it would have been a relatively straightforward matter to include inhalation **exposure** estimates for the **sake** of completeness.

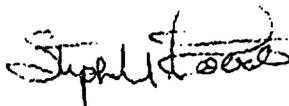
4. In **some** cases, a factor **was** included in the calculation of **exposures** from soil to account for fraction from contaminated source. In **Table H-10**, for example, a fraction ingested from contaminated source of **0.4** was used for benzo(a)pyrene equivalents, with a footnote indicating that **this** is intended to reflect the **estimated fraction** of the site impacted by these chemicals. I could find no description in the appendices or in the **text** of Volume I **as** to how **this** estimate **was** derived. Table H-43 lists a fraction from contaminated source of 0.1 for Aroclor **1254**, and pg. 10-60 explains that **this** value **was** derived **based** on the frequency of detection for Aroclor **1254**. Given **the** inherently biased nature of sampling for most sites, frequency of detection may have little resemblance **to** the fraction of exposure **area** that is contaminated. **Some** further explanation **as** to **why** **this** **assumed** relationship is valid for Aroclor **1254** **at** **this** site is warranted. **As** a general comment, the use of FL/FC to adjust the EPC for **soils** is valid **only** when the **areas** of contamination are well characterized. **Localized** areas of **high** contamination ("hot spots") must be carefully

evaluated, and should not disappear from *the* analysis through the use of FI/FC approaches or through extensive averaging with values from unaffected areas.

5. There are numerous inconsistencies in the data presentation. For example, DDT was listed in Appendix E as having a maximum detected concentration of 2,800 µg/kg, but in Table H-4 the maximum detected concentration is listed as 340µg/kg. Similarly, much of the data in Appendix E does not correspond to its presentation in Appendix H (see aluminum, beryllium, cadmium, chromium, copper, and others for Site 11, for example). Also, some chemicals present in concentrations that exceeded their PRGs were omitted from the list of COPCs (e.g., beryllium in soils and antimony in groundwater at Site 11).

I hope that these comments are useful. Please do not hesitate to contact me should you have any questions regarding them.

Sincerely,



Stephen M. Roberts, Ph.D.