Alachua County
Environmental Protection Department

Chris Bird, *Director*

February 24, 2009

Mr. Scott Miller
Remedial Project Manager
USEPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: ACEPD Comments on Adventus ISBS Pilot Study Report, Field Performance Assessment Cabot-Koppers Superfund Site, Gainesville, Florida, dated January 30, 2009

Dear Scott:

The Alachua County Environmental Protection Department (ACEPD) has reviewed the Adventus ISBS Pilot Study Report, Field Performance Assessment Cabot-Koppers Superfund Site, Gainesville, Florida, dated January 30, 2009 and has the following comments.

1. The procedure for generating leachate from the treated soil cores was different than the column procedure used to generate the leachate in the pre=treatment cores. Since the leaching procedure was not the same between the two cores, an experimental bias may have been introduced in the post treatment soil core data. Explanation is needed as to how data from significantly different experimental procedures can generate comparable data.

2. The high variability of the total PAH data within the 2 ft sections of the pre-treatment cores such as observed in TIP-4 (10-12') in Table 7 where the PAH concentration varies from 13.2 mg/Kg to 5,427 mg/Kg within one two foot section, raises questions about the ability to accurately determine the reduction in PAHs from a separate post treatment core TVB-1-A taken from a different depth and from a non-identical location. In other words, we may not know for sure what the "before" concentration was for the treated core if there appears to be such a wide variability in the concentration of COIs contaminants within a few feet of depth. Therefore drawing reliable conclusions about the reduction of COIs between the pre-treated and post-treated samples may not be possible.

3. Experimental details about the exact weight of soil used and volume of leachate generated in the post treatment soil leaching tests are not available in the report. It appears that 200 grams of soil were used in the pre-treatment column leaching tests and about 2 liters of leachate were collected. Without similar information on the weight of post treatment soil samples and the volume of final leachate, and knowing that these parameters were controlled, it is not possible to evaluate the validity of the COIs concentrations and the leachate reduction data in the post treatment samples. This data and the lab data were not provided in the report.

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4. It would be expected that if a column leaching test is performed and the pre-leached soil and post leached soil and leachate are analyzed for total PAHs, that there should be an approximate mass balance of PAH mass. It is assumed here that analyzing the "leached soil" would have included analysis of pore volume water in the leached soil. However, in Table 8 of the report that presents leaching test results from the pre-treatment core TIP4 –C (10-12'), there does not appear to be a close mass balance for the PAHs (see calculation below). This lack of a reasonably close mass balance appears to impact other samples in Table 8 (See table below). This may indicate problems in the experimental or lab data. ACEPD has reviewed the data in Table 7 for all DIP and TIP area soil cores and finds the greatest discrepancy in mass balance and the widest variability in mass balance occurs in the TIP Area sample data.

   Wt of Soil x Conc. of Soil = Wt. of Leached Soil x Conc. of Leached soil + Leachate Conc. x Leachate Volume

   (0.2Kg)x(5428mg/Kg) = (0.2Kg)x(979mg/Kg) + (1.878mg/L)(2L)
   1085.6 mg = 195.8mg + 3.576mg (no mass balance)

	Concentrations			Mass Balance			
Core ID	**Initial Soil (mg/Kg)**	**Leached Soil (mg/Kg)**	**Leachate(ug/L)**	**Initial Soil (mg)***	**Leached Soil (mg)***	**Leachate (mg)****	**% Rec*****
TIP-4 (10-12') C	5428	979	1879	1086	196	2.2	18
DB-1 (15-17')(B,C)	12371	11798	12697	2474	2360	4.9	96
NISBS-2 (13-15')(A,B)	3949	1441	20477	790	288	1.6	37

   * Assume initial and leached soil weight is 0.200 Kg

   ** Assume final leachate volume is 2 Liters

   *** % Rec is the % of mass in the leached soil and leachate of the initial mass

5. It is unclear from the report why more post treatment samples from the DIP area were not submitted for laboratory analysis. Having more data in this area would have provided a better representation of field conditions in this area especially as the data from the DVB-2A and DB-1 pair show only a slight reduction in COI concentration post treatment.

6. Based on the review of the boring logs for the verification borings, it appears that DNAPL free product still remains in the areas after treatment with excess reagent (DVB-2 in the DIP area). This observation suggests that the ISBS technique may not be effective for reduction of total COIs.

7. Based on the microscopic data from the core crust analysis presented in the report it appears that the ISBS treatment does have some potential to be useful in reducing the porosity of the soils tested at least for lesser contaminated soils such as those from the TIP area. However, since DIP area data were not presented in the report, it is not possible to evaluate whether the ISBS treatment would have similar results in soils from more contaminated areas such as the DIP area. Perhaps more information can be provided here.

8. The slow rate of leachate collection observed from the treated soil samples in the column tests, could be interpreted to indicate the ISBS treatment can significantly reduce permeability in the soils. However, the report states that a greater amount of silty and clayey soils were observed in the post treatment samples than in the pre-treatment samples, which were described as

predominantly sandy soil. Could an alternate explanation of the reduced apparent permeability be attributable to the greater clay content of the post treatment cores? Also could the difference in soil clay content between the pre-treatment and post-treatment cores have affected the starting amount of COIs contained in the post treatment cores and therefore make them not comparable as similarly contaminated samples? The impact of the difference should be explained.

Based on our questions above, ACEPD has concerns about the reliability of some of the data in this report and the conclusions about the ISBS effectiveness to reduce DNAPL concentrations. However, the report does show more reliably based on the microscopy work that there is potential to reduce porosity and perhaps reduce leaching. Perhaps answers to our questions can provide more confidence in the technique. Currently, ACEPD is not fully convinced that the ISBS technique can be relied upon solely as an effective treatment for reducing concentrations of DNAPL constituents and reducing leaching potential in the surficial aquifer.

ACEPD appreciates the opportunity to provide comment on this critical pilot program. If you have any questions, please contact me

Sincerely,

John J. Mousa

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Pollution Prevention Manager

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