



Alachua County Environmental Protection Department

Chris Bird, Director

July 14, 2011

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

Re: ACEPD Comments on the Tetra Tech "*Former Process Area In-Situ Geochemical Stabilization Remediation Demonstration Project Workplan for the Hawthorn Group Deposits, Former Koppers Inc., Site, Gainesville, Florida*"

Dear Scott:

The Alachua County Environmental Protection Department (ACEPD) has reviewed the "*Former Process Area In-Situ Geochemical Stabilization Remediation Demonstration Project Workplan for the Hawthorn Group Deposits, Former Koppers Inc., Site, Gainesville, Florida*," dated May 24, 2011. ACEPD has the following comments and is generally concerned about the overall ability of the proposed treatment to oxidize, contain and isolate dense non-aqueous phase liquid (DNAPL), to adequately reduce DNAPL migration and dissolution and to accurately measure the effectiveness of the treatment in the Upper Hawthorn Group (UHG).

1. Page 3, paragraph 1- The primary objective to stabilize the DNAPL and use measured DNAPL thickness, as an indication of success may not be a valid test of success. The proposed additional wells once constructed may not contain DNAPL and therefore, may not provide additional information on the presence of DNAPL or the effectiveness of the *in-situ* geochemical stabilization (ISGS) permanganate-based reagent used for treatment, containment/stabilization and solute flux reduction in the UHG in the former Process Area. Conducting numerous test borings and installation of additional wells, while useful and necessary in site characterization, may change pressures in the UHG and reduce DNAPL thickness in the existing wells before the injection test has begun.
2. Page 3, paragraph 2 - The longer-term secondary objective to reduce dissolved-phase concentrations in groundwater downgradient of the treatment area will take considerable time, perhaps years due to the lower hydraulic horizontal conductivity of the UHG materials. It is doubtful this can be adequately assessed prior to implementing other portions of the remedy at the site. The longer-term secondary objective to reduce dissolved-phase concentrations in groundwater downgradient of the treatment area is inadequate due to the lack of wells, both upgradient and downgradient. The overall direction of groundwater flow in the UHG may not accurately predict movement of injectate due to variations in lithology and discontinuity of small lenses of differing materials. The monitoring plan described on page 12, paragraph 2 and in pages 26 and 27 must include wells both upgradient and downgradient of the former Process Area. Only two monitor wells are proposed to be constructed in the UHG downgradient of the former Process Area; this is inadequate.

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3. Pages 2 and 3, Section 1.2 – Nowhere in the objectives or elsewhere in the plan is there any mention of reducing the vertical migration or potential migration of DNAPL or contaminated groundwater into the Lower Hawthorn Group (LHG). To date there are no monitor wells constructed into the LHG in the former Process Area, so at this time the presence of contamination in this zone has not been defined. Based on the presence of contamination in the LHG at the former North Lagoon and Drip Track areas, it is very likely that DNAPL and/or groundwater contamination is present in the LHG at the former Process Area. This is substantiated by product recovery at the former North Lagoon where DNAPL thickness and recovery in the UHG is less than that currently seen at the former Process Area (page 7, paragraph 3), but where extensive LHG groundwater contamination exists. Monitor wells are needed in the LHG in and downgradient of the former Process Area prior to injection of ISGS solution. Several rounds of groundwater samples are needed from each of these new wells to verify LHG groundwater quality in and in proximity to the former Process Area. A minimum of three LHG wells must be installed, sampled (for site contaminants of concern as well as ISGS indicator constituents), and integrated into the monitoring plan (for the permit) that is described in pages 26 and 27. This is especially important given the purported groundwater divide present in the LHG (page 5, paragraph 5).
4. Page 5, paragraph 6 - The statement that the Hawthorn Group (HG) deposits are not locally used for potable water due to low permeability is inaccurate. In parts of Gainesville wells open to the HG deposits are used for potable supply; additionally Glen Springs, a free-flowing artesian spring, flows out of the intermediate aquifer Hawthorn Group deposits into Hogtown Creek approximately one mile west of the site.
5. Page 7, paragraph 2 – The statement that the locations for wells HG-15S and HG-11S installed in the former Process Area “were selected based on their ability to collect free-phase DNAPL” is incorrect. These wells were installed to assess groundwater quality in the former process area and were found to collect DNAPL when they were installed and subsequently have been used for product recovery. This statement should be corrected.
6. Page 11, paragraph 4 -Using DNAPL thickness reduction as a measure of mobility reduction will not adequately address ISGS success. DNAPL may not be found in the newly installed wells and hydrologic changes unrelated to DNAPL mobility may affect movement of the DNAPL to the existing and newly installed wells. After installation of the pilot large diameter DNAPL recovery well at the former North Lagoon, DNAPL thickness and recovery from the adjacent monitor well diminished. A measurement of mass-flux, although mentioned in the plan, was not described in detail and should be addressed to allow adequate evaluation of the success of the ISGS. The use of DNAPL thickness in wells as the primary measure treatment success is inadequate.
7. Page 11, paragraph 4 - The use of 4-inch casings and 8-inch boreholes for the three additional DNAPL measurement wells should be re-evaluated. Construction of these new DNAPL wells should mirror construction of wells HG-15S and HG-11S. The smaller diameter wells and sand pack of these existing wells effectively allow DNAPL into the well without it being displaced by filling a larger sand pack and well, potentially diminishing DNAPL thickness. The failure of the large diameter UHG pilot recovery well in the former North Lagoon to collect product is an example of this phenomenon.
8. Page 12, paragraph 4 – The monitoring plan (for the permit) must include all existing wells and new wells in and adjacent to the former Process Area. This should include Floridan aquifer wells as well as surficial and intermediate aquifer (Hawthorn Group) wells. The presence of wells and poor grout

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seals can present pathways for migration of RemOx injectate. It should be noted that during the surficial aquifer ISGS test at the former North Lagoon RemOx injected into the surficial aquifer appeared (as observable purple color) in the UHG pilot recovery well.

9. Page 14, paragraph 2 and page 15, paragraph 3 – ACEPD does not support the use of hydrofracturing or liquifaction as this may allow the RemOx injectate, DNAPL, and contaminated groundwater to move further into the subsurface and/or channel along well boreholes.
10. Because of the potential for existing or former wells to transmit RemOx injectate deeper into the subsurface care should be taken not to inject in proximity to former wells, including the former water supply well located in the former Process Area, existing monitoring wells and newly installed monitoring wells.
11. Given that the temporary injection point (TIP) tests were not very successful in the surficial aquifer and the fact that the UHG has a lower horizontal hydraulic conductivity this method of injection, which has gravity feed of RemOx, is not likely to be successful.
12. Please provide verification that the permit issued for RemOx injection on 3/28/2008 is still valid for the injection demonstration project planed in the former Process Area.
13. Due to the potential for manganese to be released over time from the soils associated with treated DNAPL, manganese should be added to list of analytes for all future groundwater monitoring in all aquifers.

ACEPD appreciates the opportunity to provide comments on the *Former Process Area In-Situ Geochemical Stabilization Remediation Demonstration Project Workplan*. We are all interested in making sure this project occurs in a manner, which provides appropriate pollution prevention especially with regards to downward migration of reagents and contaminants. If you have any questions, please contact me or Robin Hallbourg at 352-264-6800.

Sincerely,



John J. Mousa, Ph.D.

Pollution Prevention Manager

cc: Rick Hutton, GRU
Kelsey Helton, FDEP
Robin Hallbourg
John Herbert, Geohydro