

**GRU Comments to Hawthorn Group Sampling Results Cabot Carbon/Koppers Superfund Site Gainesville, Florida
submitted by Cabot Corporation
December 4, 2009:**

GRU and its DNAPL Team offers the following comments to the Hawthorn Group Sampling Results Cabot Carbon/Koppers Superfund Site Gainesville, Florida submitted by Cabot Corporation dated December 4, 2009:

1. The sampling results from HG29S/D indicate contamination in the UHG and LHG from the Cabot site, and point to the need for further delineation of Cabot-related contamination. Cabot's argument that the data from these wells is due to cross-contamination is not supported by the data.
2. We concur all of the comments made by Beazer East, Inc. per Geotrans January 11, 2010 letter to EPA.
3. Characterization efforts at the Cabot and Koppers portions of the site should be more coordinated in order to obtain the best possible delineation and characterization of contamination on the Cabot site, both from Cabot and from Koppers former operations.
4. Cabot should map the contamination both in the Surficial and the HG on the Cabot site (regardless of suspected source). Also, maps of surficial and HG sampling wells on the Cabot site should include Beazer-installed wells in addition to Cabot-installed wells. These maps should also plot pH as an indicator of Cabot contamination.
5. We feel that the evidence presented by Cabot supporting the hypothesis that contamination in HG-29S/D is due to cross-contamination is not convincing:
 - a. Although there is always a potential for cross-contamination of aquifer units (Section 2.3, pg. 5), the precautions taken by Beazer and Cabot greatly reduce this possibility. Indeed, there are no data from the Koppers site or the Cabot site to demonstrate significant cross-contamination between the surficial and HG at any location. The probability of cross-contamination between the surficial and UHG is extremely remote due to the low head gradient.
 - b. Gradient and Weston point to the low pH in the Surficial Aquifer and the low pH in HG-29S in the Upper Hawthorn as evidence suggesting cross-contamination. However, no such indication of low pH in the Upper Hawthorn from leakage along borings has ever been observed on the Koppers site. Furthermore, because "the surficial aquifer system is composed predominantly of chemically inert quartz sand" in inland areas like Gainesville (Upchurch and

Randazzo, 1997, p.235), low pH values are predictable in shallow groundwaters. The pH levels observed in the surficial aquifer at the Cabot site downgradient of the Cabot lagoons are significantly lower than those on the Koppers site. The aqueous discharge of "pyroligneous acid" from Cabot likely contributed to these low pH values in the surficial and HG at Cabot. A more plausible explanation for low pH in the Upper Hawthorn at HG-29S is that the high concentration of acidic compounds from the Cabot lagoons and very low pH in the Surficial Aquifer that resulted at the location, has consumed the neutralizing capacity of the Hawthorn Group sediments at that location. As pointed out by Geotrans, the spatial distribution of pH values in both the surficial and HG wells at the Cabot site seems to be indicative of the plume of Cabot-related contaminants.

- c. The suggestion that the purple-colored water observed in HG-29S could be related to the chemical oxidation pilot test on the Koppers site located more than 1,300 feet distant and side-gradient is highly speculative and does not merit inclusion in the report (Section 2.3, pg. 6). The assumption that permanganate could travel the distance presumed in the Hawthorne Group without being fully reduced by the abundant creosote residuals beneath the Koppers site in the time since the pilot test is absurd.
 - d. The January 2005 Cabot presentation to EPA indicated that the pine processing operations created both an LNAPL and a DNAPL ("tar"). These were discharged to the lagoons as hot NAPLs straight out of the Retort (800degF). The resulting elevated temperatures in the lagoons may have resulted in reduced viscosity and increased mobility of these substances allowing them to easily penetrate into the Surficial Aquifer.
6. At least three additional S/D HG well cluster(s) should be installed immediately downgradient of the Cabot lagoons. The surficial and HG well locations proposed by GeoTrans (Figure 1) seem reasonable as a starting point. Note that Fig 4-18 in our R&R report showed 10,000+ ppb of phenols in ITW-10 [now destroyed] in the early 1990s. The well was adjacent to the Cabot ponds. The fate of these contaminants should be investigated because natural attenuation is unlikely, i.e., where is that contamination now?
 7. ITF-3, ITW-15 and ITW-16 should also be redeveloped and sampled as part of the surficial aquifer sampling plan, i.e. all of the IT wells should be sampled, with the possible exception of ITW-13 and 14 since they are in the NE Lagoon site. All of the IT wells should be cleaned out and redeveloped before sampling. See the attached excerpt (Table 13) from the ACOE 5 year review report for the Cabot/Koppers site.

8. The analytical list for all of the wells (Section 3, pg. 7) should be expanded to include SVOCs and VOCs. This list should include not only Phenol but all Methylated Phenols and Total Phenol. This will allow better evaluation of groundwater quality and comparison of the Surficial well data to the HG well data.
9. The analytical list for the HG wells (Section 4.4.2 pg. 13) should be clarified to assure that Phenols includes all Methylated Phenols and Total Phenol.
10. The Work Plan should specify which FDEP SOPs will be used to collect groundwater samples (Section 4.4.2, pg. 13).
11. Upper HG and Lower HG wells should be constructed with well screens positioned at the base of the sandy silt units of the HG, not mid-way within them (Section 4.3.1 and 4.3.2, pgs. 10 and 11 respectively).
12. Although there would not appear to be critical concern regarding the toxicity of camphor, borneol or other terpene and terpenoids at concentrations of several thousand ppb (Section 2.2.2, pg. 4), these compounds do emit strong odors and it is likely that these compounds would cause taste & odor problems in drinking water supplies at low ppb concentrations. As a consequence, these compounds are important to be monitored and mapped at the Cabot site not only as indicators of contamination originating from Cabot, but also due to their potential impact on the Floridan Aquifer. Analysis of terpenes and terpenoids should be included in all future monitoring and investigations of the Cabot site.

Table 13
Recommendations and Follow-Up Actions, cont'd

Issue	Recommendations/ Follow-up Actions	Party Responsible
<p>The widespread contamination in the Hawthorn Group discovered at Koppers is not fully delineated, including the downgradient and westerly areas of the site. The potential for contamination in the Hawthorn Group exists at the Cabot site. The source areas at the Koppers site are of particular concern since they have not been remediated and likely continue to release contamination into the groundwater.</p>	<p>Further characterization of the Hawthorn Group sediments is necessary for remedial design and action. The extent of contamination in the Hawthorn Group at the entire site should be better delineated. Investigations at Koppers confirms the presence of contamination in the Hawthorn. At Cabot, due to historic practices and data obtained from past investigations, the possibility of contamination in the Hawthorn exists; therefore more groundwater data is needed.</p>	<p>Beazer and Cabot</p>
<p>Contamination at source areas has not been fully delineated, and remedial measures in these areas have not been implemented. Soil contamination in the source areas at the Koppers site has not been remediated and the former Cabot Lagoons may still be acting as a source.</p>	<p>Interim remedial measures at the source areas should be evaluated and implemented, if feasible, to prevent further contamination.</p>	<p>Beazer and Cabot</p>
<p>Many of the monitoring wells installed at the Cabot Carbon/Koppers site have not been monitored routinely over the years. An insufficient amount of data exists, as a result.</p>	<p>All of the surficial wells installed in the 1984 to 1995 investigations should be cleaned out and redeveloped. Re-surveying of the wells should be performed as necessary. Regular monitoring of all the wells and sample analysis for all site COCs should be performed.</p>	<p>Beazer and Cabot</p>

Reference:

Upchurch, Sam B. and Anthony F. Randazzo, 1997. Environmental Geology of Florida, in The Geology of Florida. University Press of Florida.