

# KOPPERS INDUSTRIES, INC. VICINITY SOIL SAMPLING REPORT

Alachua County Environmental Protection Department, August 2002

## 1.0 OBJECTIVE

The objective of the study was to obtain preliminary screening data on existing arsenic, chromium and copper concentrations in the surficial soils at the residential properties immediately adjacent to the Koppers Industries, Inc. (KII) located at 200 NW 23<sup>rd</sup> Avenue in Gainesville, Florida in order to evaluate the potential offsite impacts from KII operations.

## 2.0 BACKGROUND

The Cabot / Koppers Superfund Site located in Gainesville, Florida covers 170 acres bridging two properties. Cabot Carbon formerly operated on the eastern portion of the site making naval stores and charcol from pine. KII owns and operates a CCA wood-treating operation on the western portion of the site. Historically, the facility has been used to preserve wood utility poles and timber by using three different chemical solutions: creosote, pentachlorophenol and chromated copper arsenate (CCA). Because of poor waste handling practices in the past the site is contaminated with arsenic, benzene, pentachlorophenol and other chemicals. Additionally, as part of their current operations, KII stores large quantities of CCA treated wood. Research conducted by Stilwell<sup>1</sup>, Solo-Gabrielle, Townsend, et. al.<sup>2</sup> and others has shown that CCA treated wood can leach arsenic to the ground resulting in arsenic concentrations in the soil above background levels.

As shown in Figure No. 1, KII is bordered on the north and west sides by residential properties. Over the past couple of years, the Alachua County Environmental Protection Department (ACEPD) has received complaints from the KII neighbors regarding dust coming from the KII property. In addition to the nuisance aspect of the dust, concerns were raised regarding the possibility of contaminants, specifically arsenic, causing an offsite impact via dust clouds generated from traffic and wind on the unpaved parts of the property.

Table 1.0 provides various soil environmental standards and other data for arsenic. This table is provided for perspective when considering the concentration data in the remainder of this report.

**Table 1. Arsenic Guideline Concentrations**

Standard-setting Organization	Arsenic Concentration	Comment
Florida Department of Environmental Protection (FDEP)	0.8 mg/kg	Residential Default Soil Clean-Up Target Level <sup>3</sup>
FDEP	3.7 mg/kg	Industrial Default Soil Clean-Up Target Level <sup>1</sup>
Not Applicable	0.42 mg/kg Range 0.02 - 7.01 mg/kg	Average background level in Florida soils <sup>4</sup>
Not Applicable	48.9 mg/kg Range 0.5 - 125.0	Average soil concentration found in Alachua County CCA wood playgrounds <sup>5</sup>
Not Applicable	Range 0.04 - 704 mg/kg	Concentration in KII soils <sup>6</sup>
Not Applicable	4.5 mg/kg	KII Soil Cleanup Goal <sup>7</sup>
Not Applicable	0.73 mg/kg Range 0.22 - 10.7 mg/kg	Average concentration in Gainesville Urban Soils <sup>8</sup>

<sup>1</sup> Stilwell, D.E., "Environmental Issues on the Use of CCA-treated Wood," The Connecticut Agricultural Experiment Station, Department of Analytical Chemistry, December 1998.

<sup>2</sup> Solo-Gabrielle, H., Townsend, T., et. al., Alternative Chemicals and Improved Disposal-End Management Practices for CCA-treated Wood, Florida Center for Solid and Hazardous Waste Management, July 2000.

<sup>3</sup> Florida Department of Environmental Regulation, Florida Administrative Code Chapter 62-777, Contaminant Target Clean-Up Levels.

<sup>4</sup> Ma, L.Q., Harris, W., Hornsby, A., 1997. Background Concentrations of Trace Metals in Florida Surface Soils, Report #97-4. Florida Center for Solid and Hazardous Waste Management, Gainesville, FL.

<sup>5</sup> Alachua County CCA Team, 2001. Chromated Copper Arsenate (CCA) Pressure Treated Wood Inventory and Management Practices in Alachua County.

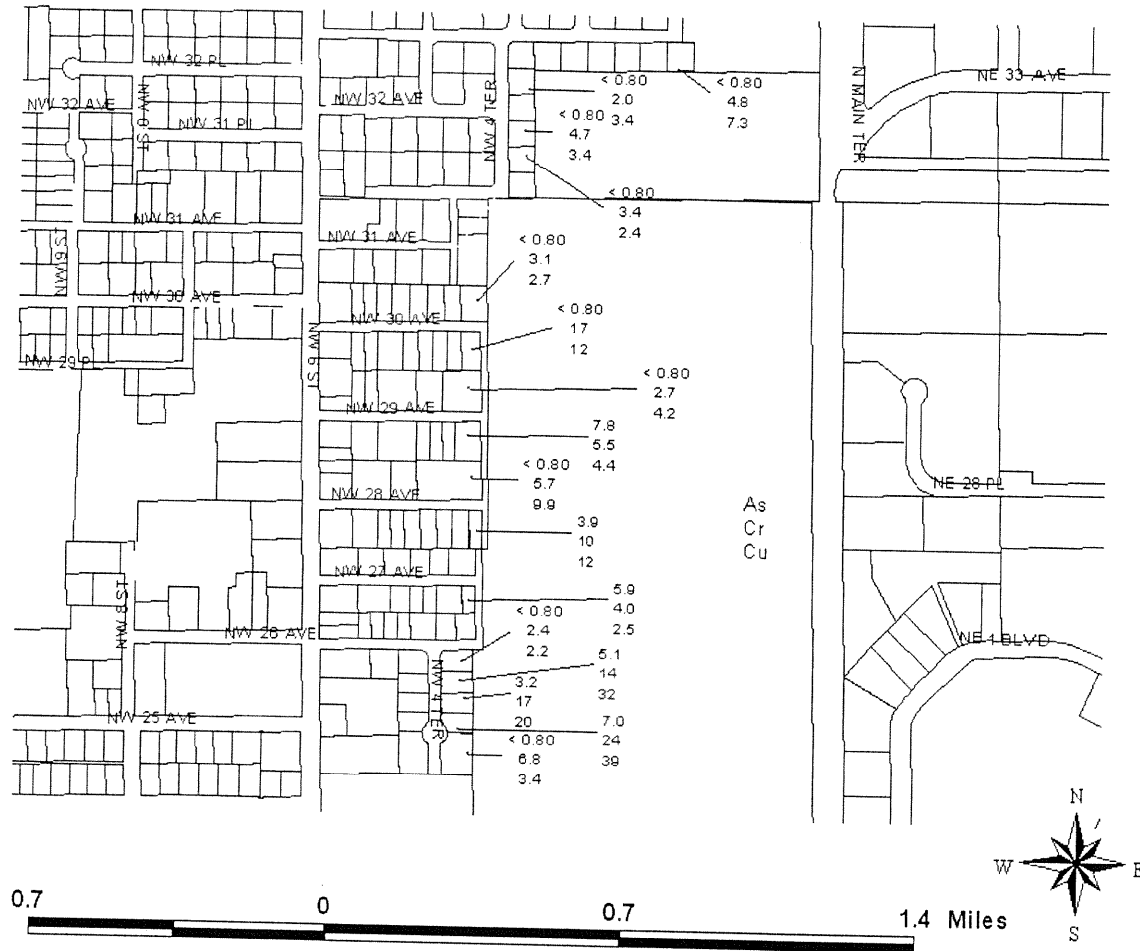
<sup>6</sup> TRC, 1999. Revised Supplemental Feasibility Study. Cabot Carbon / Koppers Superfund Site Gainesville, Florida.

<sup>7</sup> EPA, 2001. Superfund Proposed Plan Fact Sheet. Cabot Carbon / Koppers Site. Record of Decision Amendment.

### 3.0 SAMPLING PROTOCOL

The sampling plan was designed to collect a single soil sample from each of the residential properties immediately adjacent to KII. Between April 23<sup>rd</sup> - 26<sup>th</sup> ACEPD staff visited all the residential properties bordering the KII in order to obtain permission to collect soil samples. As shown Figure No. 1, ACEPD staff obtained permission and collected samples from 16 out of the 29 possible properties.

Figure No. 1. Soil Sampling Locations



Samples were collected between April 23 and July 3, 2002. All samples were collected following the current Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Laboratory Operations and Sample Collection and included clean sampling techniques for sample collection and preservation, Quality Assurance / Quality Control (QA/QC) procedures and chain of custody protocols. ACEPD staff conducted a brief interview with the property owner/resident to obtain background information on their property, specifically previous locations of any CCA treated structures. The following exclusion criteria were applied to exclude certain sampling locations. Samples were not collected from:

1. An area within 1 m of a paved surface (concrete pavement or tarmac);
2. An area within 3 m of a CCA-treated wood pole, fence, deck or any other structure – if not sure assume all exterior wood structures are CCA-treated wood;
3. An area currently or formerly under a CCA-treated wood structure.

<sup>8</sup> Chirenje, T., Ma, L.Q., Hornsby, A.G., 2001. Protocol Development for Assessing Arsenic Background Concentrations in Florida Urban Soils. Environmental Forensics 2.

At least one soil sample was collected from each property. All samples were surficial (0-5 cm) single grab samples. All samples were collected from areas with little or no vegetation. QA/QC samples were collected in accordance to the current Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Laboratory Operations. A total of 4 field duplicates and 4 equipment blanks were collected and analyzed. All applicable information, including sample location, pictures taken and all relevant information collected from the background interview will be recorded in the field logbook.

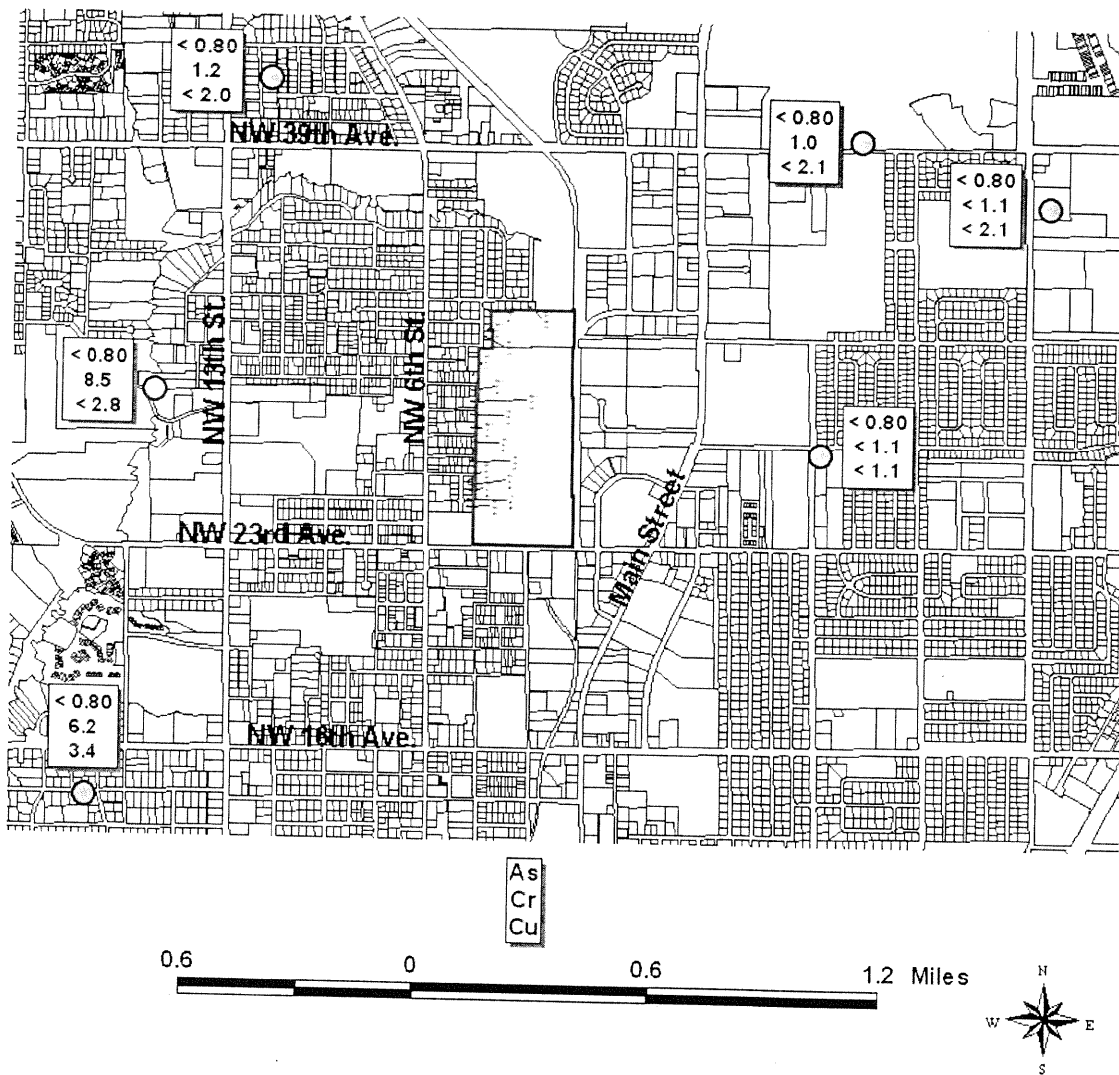
In addition to the residential samples, a total of 6 background samples were collected (Figure No. 2). Background sample locations were based on an exclusion criteria based on the one developed by Chirenje, Ma and Hornsby (2001). Background samples were not collected from:

1. An area within 1 m of a paved surface (concrete pavement or tarmac);
2. An area within 3 m of a CCA-treated wood pole, fence, deck or any other structure – if not sure assume all exterior wood structures are CCA-treated wood;
3. An area currently or formerly under a CCA-treated wood structure;
4. An area within 100 m of the perimeter of a gas station and obvious pathways for runoff;
5. An area within 200 m of the outer limits of the boundaries of an identified former cattle dip site and obvious pathway for runoff;
6. An area within 100 m of the boundaries of an identified “contaminated area”;
7. An area within 500 m of the boundaries of an identified hazardous waste dumping or processing;
8. An area within 100 m of the boundaries of an identified waste treatment site;
9. An area within 100 m of an industrial area (operationally defined as an area where manufacturing or processing activities are taking place);
10. An area within 20 m of a major road as defined by the Florida Geographical Data Library;
11. An area that is a part of a runoff flow depression;
12. An area within 100 m of a golf course;
13. An area within 100 m of a power substation;
14. An area within 100 m of a current or former railroad corridor.

All background samples were surficial (0-5 cm) single grab samples. All samples were collected from areas with little or no vegetation. Samples were collected using the current Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Laboratory Operations and Sample Collection. All applicable information was recorded in the field logbook.

All soil and water equipment blanks samples were analyzed by Severen Trent Laboratories, Inc., Tallahassee, Florida using EPA method 6010 for Arsenic, Chromium and Copper.

Figure No. 2. Background Sampling Locations



#### 4.0 FINDINGS AND CONCLUSIONS

Table 2 presents a summary of the sampling and analysis results. Key findings include the following:

- All background samples had no detectable arsenic concentrations above method detection limits. Background samples also had very low or non-detectable levels of chromium and copper.
- Ten out of sixteen samples showed no detectable arsenic concentrations above method detection limits.
- Six out of sixteen samples showed detectable levels of arsenic ranging from 3.2 to 7.8 mg/Kg. These values were above the background sample concentrations and also above the FDEP Default Residential and Industrial Soil Clean-up Target Levels for Contaminated Sites.
- Samples with detectable levels of arsenic above background levels were all from properties near the central west to southwest boundary of the KII property.
- Chromium and copper were detected above background levels in the most of the samples collected, but the levels were all below FDEP Default Residential and Industrial Soil Clean-up Target Levels for Contaminated Sites.

Based on the arsenic testing results, there does not appear to be a broad area-wide impact from KII operations. However the arsenic data from the samples collected from some of the properties near the central west and southwest boundary of the KII property does suggest a potential arsenic impact in these areas. With the limited amount of data collected in this study it is not

possible to be definitive about the source of these potential impacts. The detected arsenic levels could be the result of contamination from past or current industrial operations or known contaminated soil sources at the KII site or from other sources. Due to the fact that arsenic was detected above the default FDEP cleanup target level and above background sample concentrations in several of the samples and because of the grouping of the properties with detectable levels of arsenic, additional testing is recommended to further confirm and investigate potential impacts.

**Table 2. Soil Sampling Results**

PARCEL #	ARSENIC (mg/kg)	CHROMIUM (mg/kg)	COPPER (mg/kg)
FDEP Residential SCTL	0.8	210	110
FDEP Commercial SCTL	3.7	420	76000
08253-010-007	<0.8	6.8	3.4
08253-010-007 (Duplicate)	<0.8	6.8	4.2
08253-010-010	3.2	14.0	17.0
08253-010-010 (Duplicate)	4.6	17.0	20.0
08253-010-012	<0.8	2.4	2.2
08387-000-000	<0.8	4.8	7.3
08394-000-000	<0.8	2.0	3.4
08396-000-000	<0.8	4.7	3.4
08396-000-000 (Duplicate)	<0.8	5.0	3.7
08397-000-000	<0.8	3.4	2.4
08432-000-000	3.9	10.0	12.0
08444-000-000	<0.8	5.7	9.9
08444-001-000 (Duplicate)	7.8	5.5	4.4
08460-000-000	<0.8	2.7	4.2
08460-000-000 (Duplicate)	<0.8	3.6	5.7
08462-000-000	<0.8	17.0	12.0
08469-000-000	<0.8	3.1	2.7
08476-000-000	5.9	4.0	2.5
08253-010-009	7.0	24.0	39.0
08253-0101-011	5.1	14.0	32.0
Background #1	<0.8	1.0	<2.1
Background #2	<0.8	<1.1	<1.1
Background #3	<0.8	1.2	<2.0
Background #4	<0.8	<1.1	<2.1
Background #5	<0.8	8.5	<2.8
Background #6	<0.8	6.2	3.4





ALACHUA COUNTY HEALTH DEPARTMENT – GAINESVILLE  
Administration (352) 334-7900 SC 605-7900

August 9, 2002

J. Chris Bird  
Director  
Alachua County Environmental Protection Department  
201 SE 2<sup>nd</sup> Ave., Suite 201  
Gainesville, Fl. 32601

RECEIVED  
AUG 19 2002  
ENVIRONMENTAL  
PROTECTION DEPT

Re: Koppers; April 2002 Residential Soil Samples

Dear Mr. Bird,

Per your request, this Department reviewed the soil sample data obtained by the ACEPD on April 23 thru 26, 2002, from selected residential properties adjacent to the Koppers industrial site at 200 NW 23<sup>rd</sup> Ave., Gainesville, FL. Specifically, you requested a Health Department perspective regarding potential human health effects of arsenic in soil at concentrations of 3.2 to 7.8 milligrams per kilogram (mg/kg). The following position is based upon available toxicological data in conjunction with counsel from the Florida Department of Health, Environmental Epidemiology staff.

The levels of arsenic found in soil on residential properties adjacent to the Koppers industrial site are not a significant public health hazard. Although these levels may be elevated due to dust from the Koppers site, they are consistent with background levels of naturally occurring Florida soils. Although arsenic is a known human carcinogen, lifetime exposure to these levels would result in no apparent increased cancer risk. The United States Environmental Protection Agency, Region IV (southeastern U.S.) uses 20 mg/kg as a cleanup goal for arsenic in residential soils. Stabilization of soil with sod is an effective barrier that further reduces an already low exposure risk. We have data regarding the specific site conditions of the yards (bare soil vs. grass stabilized) where the grab samples were obtained.

While the Florida Department of Environmental Protection utilizes an arsenic soil target clean-up goal of 0.8 mg/kg it should be emphasized that this level is only a goal, based upon an extremely conservative human health protection factor. Specifically, the 0.8 ppm soil target clean-up goal is based upon the following theoretical exposure: a person living in an area for six years as a child, twenty-four years as an adult, for 350 days a year, assuming that this person incidentally ingested 200 milligrams of arsenic laden soil per day as a child, and 100 milligrams per day as an adult, resulting in a total exposure with a cumulative risk based upon on a lifetime of seventy years. We have no data to support that any of the population living in this area approaches this level of risk.

If this Department can be of further assistance, please contact me at your convenience at (352) 334-7901.

Respectfully,

T.R. Belcuore, M.S.M.

Director

Alachua County Health Department

