



MEMORANDUM

Date: October 7, 2003

To: Rick Garrity

Through: Hooshang Boostani

Copies to: Dr. Douglas Holt, Director, Hillsborough County Department of Health
Deborah Getzoff, FDEP SWD
Michael Cook, FDEP

From: Hal Koechlein, P.G.

Subject: **Soil Sampling near Coronet Industries, September 25, 2003**

Objective

On September 25, 2003, the Air and Waste Division of EPC completed the collection of surface soil samples to compare the metal concentrations in the upper inch of soil with the underlying soil previously collected from a depth of 1 to 3 inches. An additional analyte, fluoride was added to the previously analyzed metals including Lead, Arsenic, Cadmium, Cobalt, Beryllium, Boron, Antimony, Nickel, Manganese, Selenium, and Chromium. Samples collected at 5 of the previous locations and a new location requested by a resident were all within the potential zone of impact determined by a screening air dispersion model

The new location was collected in the front yard of a residence beyond the creek flood plain and tree canopy. The top inch of soil (organic layer of fresh decaying plant residue) was not removed but collected and analyzed. This sample primarily consisted of a dry, organic rich silt. The underlying sample collected from a depth of approximately 1 to 3 inches, consisted of moist to dry, silty sand to sandy silt consistent with the Myakka-Basinger-Holopaw poorly drained soil type. This sample was equivalent to those collected on August 25, 2003.

The Surface Soil Samples were collected per DEP-SOP-FS 3000. All samples were collected with plastic spoons individually sealed and transferred into sealed plastic sample bags provided by the Hillsborough County EPC Laboratory. Each sample location was assigned a location number on the sample bag and map. Dates and time of sampling were recorded. The samples were secured in a locked drawer when not under control of Alain Watson (Air Division) and Hal Koechlein (Waste Division). Split samples collected for Fluoride were analyzed by ELAB Inc.

Laboratory Analytical Results.

The Laboratory Analytical Results of the above samples are shown in the attached Table 1. The results were compared to the Chapter 62-777 F.A.C. Table II Soil Cleanup Target Levels. These concentrations are provided for Direct Exposure in Residential Areas and are generally much lower than that of Industrial Areas.

All metals analyzed remain well below direct exposure levels for residential areas. These guidance levels are established to protect human health under normal outdoor activities in residential areas. The concentrations reported also remain well below the leachability standards with little to no potential for leaching of metals from the soil to groundwater.

Table 2 shows the comparison of the differential in metal concentrations in the upper inch and the underlying soils at the 6 locations. Of the 66 analyses, 25 in the upper inch were greater than the underlying samples. Only 4 of these 25 samples appear somewhat elevated above the mean Background Concentrations of Trace Metals in Florida Surface Soils (Ma, Lena Q. et. al., 1997). This occurred for chromium at the Alsobrook, Coronet & Cason locations; lead and manganese at the 2119 S. Wiggins location. All were well below the highest concentration reported for background soils. There appeared to be no correlation between these results and the variation in texture or moisture content of the soils.

Results of the underlying soils were comparable to those previously sampled. Lead, sampled at Clemons and Coronet & Cason Rd. locations, showed a decrease and increase, respectively. Cadmium decreased at Clemons Rd. Chromium at the PC Golf Club entrance and Cadmium at the Alsobrook location increased. Most of the increases and decreases appear within the expected variations observed naturally in soils.

Fluoride results ranged from approximately 0.8 mg/kg to 6.0 mg/kg. These values are well below the direct exposure residential standard of 500 mg/kg that is based on acute toxicity. Fluoride concentrations showed relatively little variation between the upper and underlying soils. At the Clemons & Coronet and Coronet & Cason locations, concentrations appeared slightly elevated and may be the result of air deposition or other sources.

Conclusions and Recommendations

1. The soil concentrations are essentially similar and remain well below the guidance concentrations utilized in State programs and are within standards considered safe for residential activities.
2. These data reflect values remain below the leachability criteria and are thus not expected to result in groundwater or surface water contamination.
3. The data results indicate no expected deposition from an air emissions source such as Coronet, at the new residential site along Futch Rd.
4. There appears to be no significant difference in metals detected in the upper inch and underlying soils supporting the validity of the previous sample results. Both depths appear to be representative of metal concentrations in the soil.
5. More comprehensive air deposition modeling will factor in locally specific meteorology, account for all sources of air pollution and provide a more realistic estimate of pollutant deposition. Depending on the results, additional soil sampling may be warranted.

ENVIRONMENTAL PROTECTION COMMISSION

TABLE 1. Coronet Industries Special Study Results

September 25, 2003

	29	63	8	38	***	***	130	5	***	5	***	***
Leachability Based on Groundwater	29	63	8	38	***	***	130	5	***	5	***	***
Direct Exposure-Industrial (mg/kg)	3.7	800	1300	420	920	22000	28000	240	110000	10000	160000	500
Direct Exposure-Residential (mg/kg)	0.8	120	75	210	400	1600	110	26	4700	390	7000	120000
Florida Background (mg/kg)**	1.34	0.67	0.07	15.9	11.2	48.8	13	0.28	NR	0.25	NR	NR
	Arsenic	Beryllium	Cadmium	Chromium	Lead	Manganese	Nickel	Antimony	Cobalt	Selenium	Boron	Fluoride
MDL	0.3581	0.0120	0.0141	0.1459	0.1160	0.0319	0.7667	2.0629	0.0410	0.1616	2.5*	0.5000
Lab ID / Sample Location												
5000	<0.3581	0.1280	0.1250	3.6700	5.4600	24.5000	2.2300	<2.0629	<0.0410	<0.1616	<2.5	1.9
801 Alsobrook 2.1												
5001	<0.3581	0.1420	0.0181	3.0700	3.7000	12.4000	1.6200	<2.0629	<0.0410	<0.1616	<2.5	1.1
801 Alsobrook 2.3												
5002	<0.3581	0.6510	1.5000	24.5000	20.7000	89.3000	3.3000	<2.0629	0.6250	<0.1616	6.9	1.8
P.C. Golf Club 4.1												
5003	<0.3581	0.7670	1.8700	25.0000	16.0000	93.1000	3.0500	<2.0629	0.6160	<0.1616	8.2	2.5
P.C. Golf Club 4.3												
5004	<0.3581	0.4230	1.9700	13.2000	22.1000	38.1000	2.6600	<2.0629	0.5860	<0.1616	3.6	5.0
Clemons Rd. 6.1												
5005	<0.3581	0.5010	2.3500	16.3000	26.5000	44.4000	3.1300	<2.0629	0.6930	<0.1616	2.9	5.1
Clemons Rd. 6.3												
5006	<0.3581	0.4740	1.9500	17.3000	47.4000	35.8000	3.6100	<2.0629	0.4730	<0.1616	2.8	4.3
Coronet & Cason 10.1												
5007	<0.3581	0.4090	1.5300	13.0000	39.8000	28.3000	2.6300	<2.0629	0.3520	<0.1616	3.1	6.0
Coronet & Cason 10.3												
5008	<0.3581	0.1720	0.5250	7.7300	12.6000	66.5000	1.6400	<2.0629	0.1770	<0.1616	3.5	2.4
2119 S. Wiggins Rd. 17.1												
5009	<0.3581	0.1390	0.1790	4.9800	11.1000	28.6000	0.7720	<2.0629	0.0437	<0.1616	<2.5	2.6
2119 S. Wiggins Rd. 17.3												
5010	<0.3581	0.0973	0.0920	4.1800	3.6200	43.5000	<0.7667	<2.0629	<0.0410	<0.1616	<2.5	2.1
3711 Futch Rd. 21.1												
5011	<0.3581	0.0977	0.0727	4.4700	4.2500	22.0000	<0.7667	<2.0629	<0.0410	<0.1616	<2.5	0.8
3711 Futch Rd. 21.3												
* Estimated ** Mean Background for Florida Soils (Lena Q. Ma, 1977) *** Leachability Values may be derived by the SPLP Test to Calculate Site Specific Concentration Target Levels												
**** Direct Exposure Based on Acute Toxicity All values in mg/kg, NR - Not Reported, MDL - Minimum Detection Level												

Comparison of Metal Concentrations in the Upper Inch and Underlying Soils* At Selected Locations											
Coronet Industries Special Study Results											
TABLE 2.											
Samples Collected September 25, 2003											
Concentrations in mg/kg											
Metal	Arsenic	Beryllium	Cadmium	Chromium	Lead	Manganese	Nickel	Antimony	Cobalt	Selenium	Boron
Sample Location											
801 Alsobrook	NC	-0.01	<u>0.11</u>	0.6	1.76	12.1	0.61	NC	NC	NC	NC
(Background)	0%	-7%	<u>88%</u>	16%	32%	49%	27%	0%	0%	0%	0%
PC Golf Club	NC	-0.12	-0.37	-0.5	4.7	-3.8	0.25	NC	0.01	NC	-1.3
(Background)	0%	-16%	-20%	-2%	23%	-4%	8%	0%	2%	0%	-16%
Clemons Rd.	NC	-0.8	-0.38	-3.1	-4.4	-6.3	-0.44	NC	-0.11	NC	0.7
	0%	-16%	-16%	-19%	-17%	-14%	-14%	0%	-16%	0%	19%
Coronet & Cason	NC	0.07	0.42	4.3	7.6	7.5	1.01	NC	0.12	NC	-0.3
	0%	15%	22%	<u>25%</u>	16%	21%	28%	0%	25%	0%	-10%
2119 S. Wiggins	NC	0.03	0.35	2.75	1.5	37.9	0.87	NC	4.05	NC	1
	0%	17%	67%	36%	<u>12%</u>	<u>57%</u>	53%	0%	23%	0%	29%
3711 Futch Rd.	NC	NC	0.02	-0.29	-0.63	21.5	NC	NC	NC	NC	NC
(New Site)	0%	0%	22%	-6%	-15%	49%	0%	0%	0%	0%	0%
* Underlying Soils collected at a depth of approximately 1 to 3 inches											
Underlined Values - Indicate Location Where Increase in the Upper Inch is above approximate published background values											
NC = No change or result below minimum detection level											
Percentage values are calculated by dividing the highest concentration by the differential											