

# **Health Consultation**

## **Assessment of Metals at the C & F Plating Site Albany, Albany County, New York**

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Prepared by:  
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## **Background and Statement of Issue**

The C & F Plating Site is located at 406 North Pearl Street in the City of Albany, New York. The area was operated as a chrome plating facility from the 1920s to 1985 [1]. Since 1985 the facility has been used for storage of miscellaneous equipment. In late January of 2004, the U.S. Environmental Protection Agency (EPA) removed numerous containers of liquid and solid wastes from the site [1,2]. The Agency for Toxic Substances and Disease Registry (ATSDR) was asked to review data from the “post removal” sampling activities and to assess the potential for human health hazards associated with exposure to the metal contaminants remaining at the facility. Currently, the questions regarding human health hazards are related to trespassers on the site and the potential hazards for personnel who may conduct subsequent clean-up activities.

On April 2, 2004, EPA received validated analytical data of environmental samples taken from the building (chips from the concrete floor and dust/debris) and soil around the building [2,3]. ATSDR discussed the current conditions at the site in a conference call on June 1, 2004. Participating in the conference call were Jonathan Blonk, ATSDR Regional Representative; Leah Escobar, ATSDR Regional Representative; Carl Pellegrino, EPA On-Scene Coordinator, Region 2; Dan Geraghty, Regional Toxics Coordinator, New York State Department of Health; Keith Gergs, New York State Department of Environmental Conservation (NYSDEC); and numerous scientists from ATSDR who are based in Atlanta, Georgia.

**Specifically, EPA and NYSDEC asked if the metals found in soil and dust at the site pose a public health hazard to (1) trespassers using the site or to (2) persons who may be involved in future clean-up activities at the site.**

## **Discussion**

EPA and NYSDEC provided the post-removal sampling data to ATSDR on June 1, 2004. On the basis of the limited data available, ATSDR constructed several exposure scenarios to evaluate the potential for exposures to site-associated metals. The data were derived from 12 samples; one soil sample, three concrete chip samples (two are duplicates), and eight dust/debris samples (two are duplicates). The hazardous metals at the site that exceeded initial screening values were cadmium, chromium, and lead. A summary of those data is presented in Table 1. It should be noted that most of the lead and cadmium values and two of the chromium values were “J qualified” by the analysis laboratory (“J” indicates an “estimated” value) and that data for nickel, a metal frequently found at plating facilities, was described as “unreliable.”

The site-related exposures to cadmium, chromium, and lead were evaluated using exposure scenarios that employed the highest contaminant levels reported and what were judged to be “maximal” exposure parameters. These maximal values were chosen with the intention of creating a “worst case” exposure scenario. The general exposure parameters were discussed with EPA in the June 1 conference call and are descriptive of persons known to access the site.

Following are the specific exposure parameters employed.

*Soil Ingestion Parameters*

The contaminant concentration used is the highest concentration found in soil or dust at the site.

- 200 milligrams (mg) of soil/dust consumed through incidental ingestion per day
- 8-hour exposure
- 70-kilogram (kg) person

*Dust Inhalation Parameters*

Dust concentration is 3 milligrams per cubic meter (mg/m<sup>3</sup>)

The contaminant concentration used is the highest concentration found in soil or dust at the site.

- 8-hour exposure
- inhalation rate of 20 m<sup>3</sup> per day
- 70 kg person

The chromium concentrations were considered to be 100% chromium VI.

The worst case exposure dose estimates were then compared to available comparison values to evaluate the likelihood that adverse health effects could be associated with the metals found at the site. Most of the available comparison values were constructed by organizations that evaluate workplace exposures. Table 2 presents the comparisons for the inhalation exposure estimates, and Table 3 presents the information for the ingestion exposure estimates.

All of the estimated worst case doses or concentrations are below or close to the available comparison values. For chromium and cadmium, the exposure estimates that are near or below the comparison values (values that are used to evaluate occupational exposures) indicate that adverse health effects are not likely to be associated with site-related exposures to those contaminants.

The available information leads to a similar conclusion for the assessment of inhalation of lead at the site. However, because there is no direct information for comparison of the lead exposure estimates for ingestion, that conclusion should be qualified with related information. Six of the eight lead samples were above 400 parts per million (ppm), and four of the eight samples approach or exceed 1,000 ppm, the preliminary remediation goal for soil lead levels from EPA Region 9. However, given the “worst case” nature of the estimates constructed for this health consultation (see additional points listed below), lead levels at the site are not likely to be associated with adverse health when considering realistic exposure scenarios.

It should be remembered that the exposure estimates in this document were constructed with the intention of estimating “worst case” exposures. Use of more realistic exposure parameters, as noted below, would reduce the site-related exposure estimates used in this health consultation.

Exposures at the site are likely to be acute and short-term and/or intermittent.  
It is unlikely that all of the chromium in the dust at the site is chromium VI.  
Actual airborne dust at the site is likely to be considerably less than 3 mg/m<sup>3</sup>.  
Using average contaminant concentrations will reduce the exposure estimates.

### **Child Health Considerations**

Children did not have access to the site and have not been observed at the site. Therefore children were not considered in the exposure scenarios developed for the site evaluations.

### **Limitations**

The purpose of a Strike Health Consultation is to address the exposure scenarios proposed by the agency requesting the Health Consultation. Since the Strike Team did not visit the site, the conclusions are based on the background information, the environmental sampling data, and the exposure scenario provided by the requesting agency. In this case, the results from 12 samples were provided and exposure scenarios were drawn from that data. Different exposure scenarios are likely to require other sampling data.

### **Conclusions**

1. Based on the data provided, inhalation exposures to contaminant metals at the site are no apparent health hazard.
2. Based on the data provided, incidental ingestion exposures to contaminant metals at the site are no apparent health hazard.

### **Recommendations**

No recommendations are needed.

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## References

1. EPA. September 17, 2003. Memo from J. Bechtel to B. Sprague, Chief, Response and Prevention Branch. Subject: Request for CERCLA Removal Action at the C & F Plating Site, Albany, Albany County, New York.
2. Letter from Weston Solutions, Inc., to Carl Pellegrino, On-Scene Coordinator, EPA Region 2, April 21, 2004. Subject: C & F Plating Site—Sample location map with validated analytical data.
3. EPA. February 24, 2004. DRAFT Pollution Report No 3: from Carl Pellegrino. Subject: C & F Plating.

**Table 1. Summary Data for Cadmium, Chromium, and Lead Found in Post-Removal Sampling at the C&F Plating Site.\***

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Contaminant	Concrete Chips			Soil	Floor Dust		
	Mean	High	Low		Mean	High	Low
Cadmium	796	1,180	565	1,030	1,265	3,250	333
Chromium	514	709	233	562	834	2,670	43.7
Lead	363	422	330	376	1,386	5,900	168

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\* All data are in parts per million

**Table 2. Comparisons for Inhalation Assessments: “Worst Case Exposure Concentrations” Versus Available Comparison Values.**

Contaminant	Worst Possible Exposure Concentration mg/m <sup>3*</sup>	Comparison Values mg/m <sup>3</sup>	Notes
cadmium	0.00975	0.01	ACGIH TLV <sup>†</sup>
		0.005	NIOSH REL <sup>‡</sup>
		0.005	OSHA PEL <sup>§</sup>
chromium	0.0080	0.1	EPA RfC <sup>¶</sup>
		0.01	ACGIH TLV
		0.5	NIOSH REL
		1.0	OSHA PEL
lead	0.017	0.05	ACGIH TLV
		0.1	NIOSH REL
		0.05	OSHA PEL

\* mg/m<sup>3</sup> = milligrams per cubic meter

† American Conference of Governmental Industrial Hygienists threshold limit value

‡ National Institute for Occupational Safety and Health recommended exposure level

§ Occupational Safety and Health Administration permissible exposure level

¶ EPA’s reference concentration



**Table 3. Comparisons for Ingestion Assessments: “Worst Case Exposure Doses” Versus Available Comparison Values.**

Contaminant	Worst Possible Exposure Dose mg/kg/day *	Comparison Values mg/kg/day	Notes
cadmium	0.00306	0.001	EPA RfD <sup>†</sup> (food)
chromium VI	0.0025	0.003 <sup>‡</sup>	EPA RfD
lead	0.0056		NA <sup>§</sup>

\* mg/kg/d = milligrams per kilogram per day

<sup>†</sup> EPA reference dose

<sup>‡</sup> comparison value specific for chromium VI

<sup>§</sup> NA = none available