



Hexavalent Chromium Monitoring in Barrio Logan Update #1

Sampling Results and Preliminary Analysis For the Sampling Period of February 23 – March 7, 2002

The San Diego Air Pollution Control District (SDAPCD) and California Air Resources Board (ARB) are continuing to conduct intensive monitoring for hexavalent chromium at selected sites in Barrio Logan near Master Plating and Carlson & Beauloye Machine Shop. The information contained in this fact sheet summarizes the results obtained during the period of February 23 – March 7, 2002 for the ambient (outside) monitoring, the testing of air pollution control equipment at one of the chrome platers, and selected indoor monitoring of the air at both the plating facilities.

SAMPLING RESULTS

Summary of Ambient Air Monitoring Results (24-Hour Samplers)

Sampling Location	February 23 - March 7, 2002		
	No. of samples	Hexavalent Chromium (ng/m ³) ¹	
		Average ²	Highest
Location 1 (between plating facilities)	13	0.65	1.90
Location 2 (vacant lot)	13	0.16	0.70
Location 2c (duplicate at vacant lot)	13	0.15	0.50
Location 3 (across the street)	13	0.14	0.50
Location 4 (across the street)	10	0.11	0.20
Location 5 (alley)	12	0.12	0.30
Location 6 (Mercado Apt parking lot)	13	0.10	0.10
Average of all samples ²		0.21	
Average cancer risk ³ for all locations		31	

¹ Nanograms per cubic meter

² In calculating the average concentrations, it is standard practice to assume that any sample detected below the level of detection (LOD) is half that value. Therefore, in this case, all samples below LOD are assumed to be 0.1 ng/m³.

³ Chances per million. Estimated cancer risk represents the chances of developing cancer assuming a person is continuously exposed to the average concentrations for a 70-year lifetime.

Shown in the table above are the average concentrations and the highest single measured concentration for the six 24-hour sampler locations for

February 23 – March 7, 2002. A total of 87 (24-hour) samples were analyzed for the latest sampling period. Of those, 67 samples (77%) had values below the level of detection (LOD) and 20 samples (23%) had readings above the LOD. The average concentration for the 87 samples was 0.21 nanograms per cubic meter (ng/m³), with averages at each location ranging from 0.10 ng/m³ (below LOD) to 0.65 ng/m³. These measurements were considerably lower than those seen in December and similar to the measurements in the two-week period measured earlier in February.

Estimated Potential Cancer Risk from Measured Ambient Concentrations

The estimated chance of developing cancer from a lifetime exposure to the average concentration of all the 24-hour samples in the February 23 - March 7 sampling period would be 31 cases in a million, with the average for the individual sampling locations ranging from 15 cases in a million to 98 cases in a million. The risk during this sampling period is similar to the estimated risk from the earlier sampling period in February.

The estimated chances of developing cancer are based on the assumption that a person is continuously exposed to the monitored levels of hexavalent chromium for a lifetime (24 hours a day for 70 years). In calculating the average concentrations from which the risk estimates are derived, it is standard practice to assume that any sample detected below the LOD is half that value. It is important to remember that estimated cancer risks are usually based on annual average concentrations and that the estimates presented here are based on very limited data that may be higher or lower than the true annual average.

Source Test Results of Carlson & Beuloye Machine Shop Inc.

On February 19 and 20, 2002, the ARB staff conducted the second week of source testing of the air pollution control equipment on the inlet and outlet stacks of one of the chrome plating tanks at Carlson & Beuloye. The results of the source test showed that all samples were below detectable levels.

Indoor Air Sampling Results at Master Plating and Carlson & Beuloye

During the time of February 23 – March 7, 2002, indoor air was monitored at both chrome platers. All samples had readings above the LOD. A summary of the indoor testing results is shown below.

Summary of Indoor Sampling Results*

	Master Plating	Carlson & Beuloye
Number of Samples	9	2
Lowest Concentration	2.4 ng/m ³	42.0 ng/m ³
Highest Concentration	904.0 ng/m ³	43.0 ng/m ³
Average Concentration	393.4 ng/m ³	42.5 ng/m ³

*On March 8, 2002, an indoor sample of 87.0 ng/m³ was recorded at Master Plating.

The indoor air measured at Master Plating reflects the concentration of hexavalent chromium being released into the community through the building's exhaust fan. The indoor air measured at Carlson & Beauloye must first pass through the facility's emission control equipment before it is released into the community. Testing of the air exiting Carlson & Beauloye's emission control equipment found no detectable levels of hexavalent chromium.

Additional Sampling for Other Metals

Sometimes activities associated with certain types of chrome plating may also emit additional metal emissions. For example, when decorative, or "bright," chrome plating occurs, the object being chrome plated must first be nickel plated. Master Plating performs this type of decorative plating. Therefore, nickel emissions could be an indicator of the type of chrome plating responsible for the hexavalent chromium emissions.

Air samples were also collected at three locations and analyzed for seven metals, including nickel, iron, magnesium, copper, zinc, and lead. Two of these locations were outdoors and one was indoors at Master Plating. In general, the indoor concentrations of all metals were higher than outdoor levels. Staff is still reviewing these data and will have results soon. Nickel is substantially less toxic than hexavalent chromium, and we are currently looking at nickel as an indicator of activity and not for its health impacts.

Soil Samples

Thirty-three soil samples were collected at 21 locations on March 5 and 6 in the vicinity of the two chrome plating facilities and around the Barrio Logan area. Results of the soil samples are not expected for another one to two weeks.

PRELIMINARY FINDINGS

- As in the previous two weeks of monitoring, Location 1 (between the two chrome plating facilities) remained the location with the highest outdoor concentrations and where hexavalent chromium was most frequently detected, but concentrations decreased at Location 5 (the alley behind the facilities). In addition, the highest concentrations continued to be usually measured toward the end of the week, when Master Plating is usually doing chrome plating.
- For this sampling period, the meteorology remained similar to the previous sampling period where the dispersion of pollutants was limited, suggesting that the hexavalent chromium levels observed were predominantly influenced by sources close to the air monitoring locations.
- The source test data collected at both the inlet and outlet of the final piece of control equipment at Carlson & Beauloye were all below detectable levels. This data suggests that the intermediate control equipment (fume suppressant, polyballs, and mesh pad filters) used by Carlson & Beauloye are reducing the hexavalent

chromium emissions to levels below detection. As in the previous source test, these results verify that Carlson & Beauloye's control equipment is very effective and was in compliance with air pollution control laws during the time of the testing. However, further analysis of the emissions data from Carlson & Beauloye is continuing to determine if there could be an impact on the ambient hexavalent chromium levels detected in Barrio Logan.

- Staff is performing an analysis to see if there is a correlation between nickel emissions to levels of hexavalent chromium. If such a correlation exists, this pattern would support our earlier finding that Master Plating is a contributor to the elevated ambient levels of hexavalent chromium. Carlson & Beauloye has no known sources of nickel.
- None of the other metals measured were at levels that present a significant health risk. The health risks from the other metals are much lower than for hexavalent chromium. For example, nickel is about 500 times less potent than hexavalent chromium when it comes to potential cancer risk for similar exposures.
- No additional sources of hexavalent chromium have been identified in Barrio Logan during this sampling period.
- The elevated levels of hexavalent chromium measured February 23 – March 7 continued with a pattern similar to those seen in the previous two-week sampling period. The basic preliminary findings remain unchanged.

NEXT STEPS

The SDAPCD and ARB will continue to monitor ambient air quality levels and facility operations, and to further investigate for other potential sources of elevated hexavalent chromium ambient levels. Beginning March 11, the ambient air quality monitoring has focused on the two locations where hexavalent chromium has most frequently been detected and where highest concentrations have been measured (in the alley and between the two chrome plating facilities).

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