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Assessment of Hexavalent Chromium Data at Paramount Schools

February 22, 2017

Objective and Background

As part of the ongoing investigation to identify and address sources of hexavalent chromium (Cr6) in the City of Paramount, the SCAQMD with assistance from the California Air Resources Board (CARB) is conducting air sampling for Cr6 at schools in Paramount. The objective of this sampling effort is to assess whether elevated levels of Cr6 (found in some industrial areas) may also be found at the local schools.

Approach

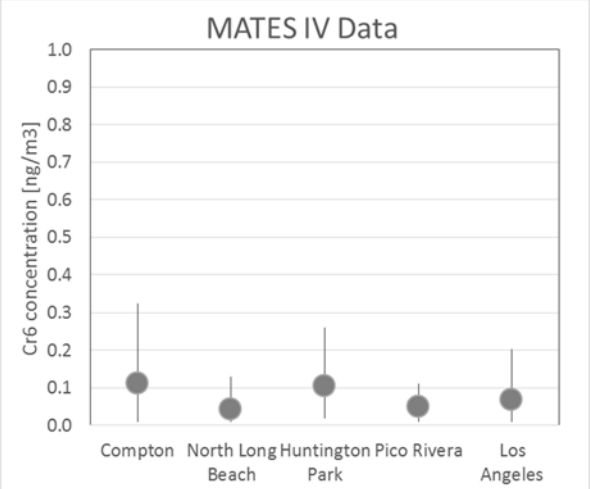
To determine the levels of Cr6 at the local schools, a sampling program was established to monitor Cr6 concentrations. Sampling began on 12/23/2016 at 6 Paramount area schools. Sampling will continue until at least seven valid sampling results have been collected at a school site before the monitor is removed from the school. In addition, the overall sampling results from that school will be compared to "background" or typical Cr6 levels found elsewhere in the South Coast Air Basin ("Basin"). If the levels at a school are relatively consistent with levels at MATES IV monitoring sites near Paramount, then no further investigation at that location is needed. SCAQMD staff are working toward conducting Cr6 sampling at as many Paramount schools as possible.

SCAQMD staff will continue to assess all sampling results with follow-up investigations of potential nearby sources if high levels are detected. Additionally, if the SCAQMD investigation in the Paramount area identifies a facility of concern, the SCAQMD will assess the need for monitors at nearby schools in the community. This could include schools that previously had monitors, as well as schools where sampling has not yet occurred.

The investigation into potential sources of Cr6, as well as the activities implemented to reduce Cr6 emissions from identified sources continues in parallel to the school-based monitoring. Therefore, levels of Cr6 at the schools may be further reduced as the investigation and compliance activities proceed.

Methodology

Sampling for Cr6 at the school sites is conducted over a 24-hour period every third day (1-in-3 day sampling schedule), consistent with other air toxics monitoring efforts. At each Paramount school site, a minimum of seven valid results are used in the assessment. With this sampling schedule, seven data points represent a reasonably balanced assessment of the levels at that location during this time period.



For MATES IV data, the graph displays the average and the range from the 5th to the 95th percentile of daily average data from the entire study period (7/2012-6/2013).

The Cr6 levels detected at each school are compared to the Cr6 levels from SCAQMD's Multiple Air Toxics Exposure Study IV (MATES IV) <http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv>. The MATES IV study provides a regional estimate of the range of "background" or typical levels of air toxic pollution in 2012-2013 from ten locations throughout the region. The purpose of these comparisons is to indicate whether the levels measured at the Paramount schools are relatively consistent with air toxics monitoring data across the region. If the levels at a school are relatively consistent with levels at MATES IV monitoring sites near Paramount, then no further investigation at that location is needed. Because it is long-term exposure to Cr6 that is associated with increased cancer risk, the key comparison is for the average levels of Cr6, although the range of measured levels is also part of the assessment.

The following five monitoring sites from the MATES IV study were located generally in the central LA and south LA areas, and provide a good basis for comparison: Compton, North Long Beach, Huntington Park, Downtown Los Angeles and Pico Rivera.

Assessment

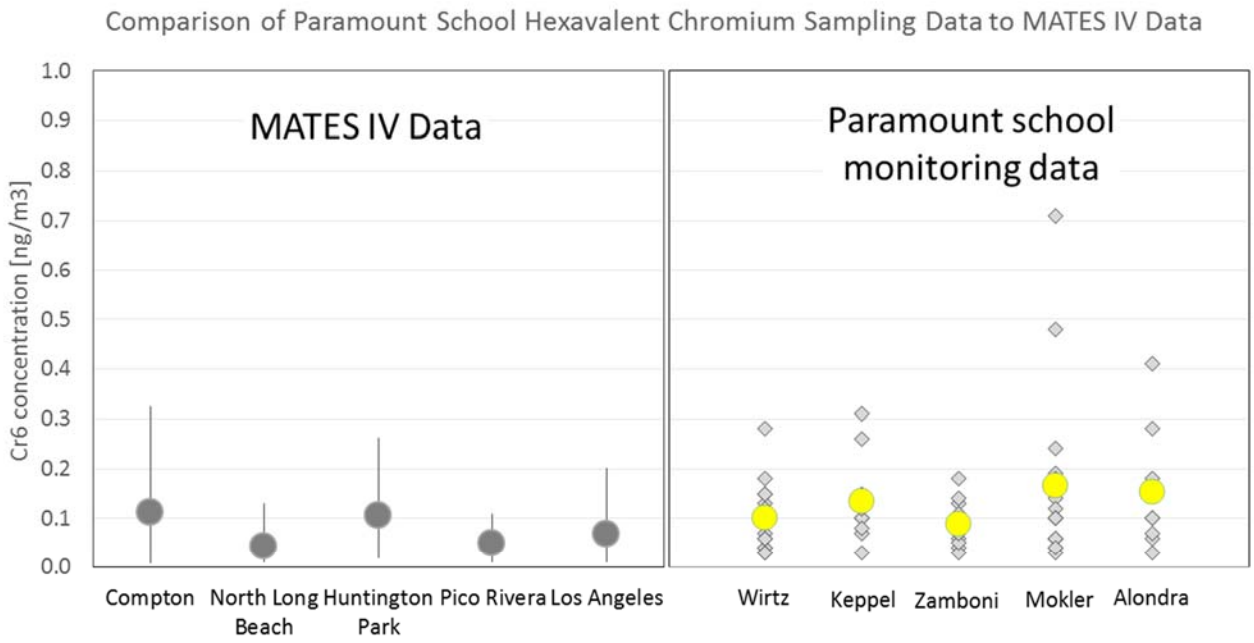
As of this report, monitoring data through February 15, 2017 are available, and the following Paramount school sites have seven or more valid results:

- Alondra Middle School: Based on valid results from the Alondra Middle School site collected between 12/23/16 through 2/15/17 (8 valid results), the average Cr6 level measured at this site was 0.15 ng/m3. The results ranged between 0.03 to 0.28 ng/m3, with the exception of one sample collected on 2/15/17, which had a level of 0.41 ng/m3. While the average level and all but one of the samples at this location are similar to Cr6 levels found elsewhere in the Basin in the MATES IV study, the one result from 2/15/17 is higher than the range of the 5th to 95th percentile data from the MATES IV

study. However, there were a handful of samples from the MATES IV study that had concentrations higher than this one result. Importantly, it is the average level that provides the best estimate of long-term exposure, which is what affects long-term health risks.

- Mark Keppel Elementary School: Based on valid results from the Mark Keppel Elementary School site collected between 12/23/16 through 2/15/17 (10 valid results), the average Cr6 level measured at this site was 0.13 ng/m3, with a range of 0.03 to 0.31 ng/m3, which is similar to Cr6 levels found elsewhere in the Basin in the MATES IV study.
- Mokler Elementary School: For this site, two monitors were co-located at this school for quality assurance purposes. For the purpose of this data assessment, only data from the primary monitor (labeled "Mokler 1") is used; the primary monitor had more complete data, and the results across the two monitors at this location were generally similar. Based on valid results from this site collected between 12/23/16 through 2/15/17 (17 valid results), the average Cr6 level measured at this site was 0.16 ng/m3. The results ranged between 0.03 to 0.24 ng/m3, with the exception of the samples collected on 2/9/17 and 2/15/17, which had levels of 0.71 ng/m3 and 0.48 ng/m3. While the average level and all but two of the samples at this location are similar to Cr6 levels found elsewhere in the Basin in the MATES IV study, these two results from 2/9/17 and 2/15/17 are higher than the range of the 5^{th} to 95^{th} percentile data from the MATES IV study. However, there were a handful of samples from the MATES IV study that had concentrations higher than these two results. Importantly, it is the average level that provides the best estimate of long-term exposure, which is what affects long-term health risks.
- Wirtz Elementary School: Based on valid results from the Wirtz Elementary School site collected between 12/23/16 through 2/15/17 (16 valid results), the average Cr6 level measured at this site was 0.10 ng/m3, with a range of 0.03 to 0.28 ng/m3, which is similar to Cr6 levels found elsewhere in the Basin in the MATES IV study.
- Zamboni Middle School: Based on valid results from the Zamboni Middle School site collected between 12/23/16 through 2/15/17 (10 valid results), the average Cr6 level measured at this site was 0.09 ng/m3, with a range of 0.03 to 0.18 ng/m3, which is similar to Cr6 levels found elsewhere in the Basin in the MATES IV study.

The range and average of the sampling results for these sites are shown in the graph below.



For MATES IV data, the graph displays the average (gray circles) and the range (lines) from the 5th to the 95th percentile of daily average data from the entire study period (7/2012-6/2013). For the Paramount school sites, the graph displays the average (yellow circles) and each of the valid results (gray diamonds). Only those schools that have at least 7 valid results are included in this graph. This graph reflects the monitoring data collected at Paramount schools from Dec. 23, 2016 through Feb. 15, 2017.

Because Cr6 is one of several air toxic pollutants, it is important to put these results into the larger context of the cancer risks associated with all air toxics in the region. Based on the MATES IV study, the average cancer risk in the Basin from all ambient air toxics combined (including Cr6) is approximately 900 chances in a million. While Cr6 may be a significant contributor to air toxics cancer risk in areas very close to Cr6 emitting sources, there are other important contributors to the overall risk. For example, diesel particulate matter contributes to about two-thirds of the overall air toxics cancer risk in the region.

Next Steps

SCAQMD staff are continuing to investigate and address sources of Cr6 in Paramount.

This report will be updated as additional data are available for assessment.