

October 8, 2019

Department of General Services
Office of Safety and Health, Facilities Division
2000 14th Street NW, 5th Floor
Washington, DC 20009

Subject: Summary of Sampling Efforts and Results for Lead in Poured-In-Place Playgrounds
Truesdell Educational Campus
800 Ingraham Street NW
Washington, DC 20011

On June 24, 2019, a Soil and Land Use Technology, Inc. (SaLUT) Industrial Hygienist (IH) conducted lead testing on the poured-in-place (PIP) playground surface at Truesdell Educational Campus, a property maintained by the Department of General Services (DGS), located at 800 Ingraham Street NW, Washington, DC 20011. The results of this sampling indicated elevated levels of lead in several bulk sample rinsate. Because of this, additional evaluations were conducted to try to 1) determine the source of the elevated lead levels in the samples, 2) determine the effectiveness of vacuuming, and 3) determine the effectiveness of pressure washing using two different detergents. This report provides a summary of the details of the different sampling efforts and evaluations including the timeline of the sampling efforts, vacuuming, and two different pressure washings.

Site Description

Truesdell Education Campus has a total of three playgrounds (PG). We numbered the PGs A, B, and C. All PGs totaled about 2305 ft² of PIP recycled rubber surfaces. PG A was the northern most PG with about 765 ft² of PIP surfaces. PG B is just south of PG A, in the middle of A and C and was about 1210 ft² in size. PG C is the southernmost with approximately 330 ft² PIP surfaces.

PG A was nearest the main school building and seemed to have elevated levels of wear and tear as related to PGs B and C. There seemed to be paint chips from the soffit of the school building littering the ground on the north side, next to PG A. PGs B and C seemed to have less wear and tear than PG A.

Activity Timeline

Activity	Activity Date	Pb in Rinsate > 400 ppm	Pb in Bulk > 400 ppm	Pb in Wipe > 10.0 µg/ft ²	XRF > 400.0 ppm
Initial Site Evaluation and Sampling	6/24/2019	X			
Vacuumed	7/5/2019				
Secondary/Post Vacuum Evaluation	8/9/2019	X			X
Exterior Lead Paint Stabilization Completion	8/21/2019				
Post Stabilization Evaluation	8/22/2019	X			
1st Power Washing w/TSP	8/23/2019				
1st Power Washing w/TSP Evaluation	8/26/2019	X			
2nd Power Washing w/Alconox	9/21/2019				
Post Power Wash Evaluation	9/21/2019	X			

Initial Evaluation and Testing Methodology (June 24, 2019)

The methodology for the onsite and laboratory testing is detailed in the *Poured-in-Place Playground Surfacing Testing Protocol*, dated June 27, 2019. In general, the following was conducted:

- Site reconnaissance
- Sampling layout and photograph documentation
- Lead screening with X-Ray Fluorescence (XRF) (12)
- Collection of dust wipe samples (12)
- Collection of bulk samples (12)
- Field notes and sample documentation
- Laboratory Analysis of bulk samples using Flame Atomic Absorption (Flame AA) on rinsate (wash) and cleaned bulk rubber material
- Quality Control (QC) and Quality Assurance (QA)
- Data entry, initial analysis, and reporting

Secondary Evaluation and Testing Methodology (August 9, 2019)

Upon receipt and review of the sampling results of the initial evaluation and testing it was found that several of the bulk sample rinsate analyses indicated elevated levels of lead greater than 400 ppm. 400 ppm is equivalent to 0.04% lead and is only used during these sampling and evaluation efforts to indicate a potential source of lead in the vicinity of the playground(s). 400 ppm would typically be above background levels as identified by previous lead in soil investigations back in 1997.

The secondary evaluation was conducted on August 9, 2019 and focused on those locations

where sampling analyses, documentation and photos indicated were the areas of high lead levels. The secondary evaluation primarily consists of a thorough visual evaluation, three wipe samples of the areas previously indicating elevated lead, and additional XRF monitoring. There were thirty-eight (38) XRF readings taken during the secondary evaluation in an effort to better identify and isolate any areas on the PGs that may have lead content above 400 ppm.

One of the XRF readings of the PG surface during the secondary evaluation indicated a lead level above 400 ppm. All three (3) wipes samples were below the lead detection limit of 10 $\mu\text{g}/\text{ft}^2$. However, several paint chips found nearby the playground were tested using the XRF and had elevated levels of lead greater than 400 ppm. Peeling paint was identified on the soffits of the school near the areas where paint chips were found on and near the PG as well as the elevated XRF readings and lead in rinsate samples greater than 400 ppm.

Truesdell was reported to schedule a full exterior lead evaluation and remediation which was completed on August 21, 2019.

Post Lead Stabilization and Clean-up Evaluation and Sampling (August 22, 2019)

Following the lead stabilization and clean-up, the same locations of the previous elevated lead levels were again sampled. Four bulk and bulk rinsate samples were taken and analyzed. Of those four sample locations, three had rinsate 400 ppm or above.

1st Post Playground Power Washing Evaluation and Sampling (August 26, 2019)

The first power washing using Tri-Sodium Phosphate (TSP) was conducted on August 23, 2019 by the third-party Broughton Construction Company. They used the following procedure to conduct the pressure washing:

Vendor is to utilize hot water pressure washer with supplied water tank to pressure wash all poured-in-place (PIP) playground surfaces at each of the properties below. To perform, mix TSP in the supply tanks in accordance with manufactures recommendations. Using hot water, pressure wash the surface in a grid-like pattern in a manner to push rinse water away from cleaned surfaces. Effort should be taken to scrub areas of with excessive staining. Note, water pressure (PSI) and distance of the discharge point should be monitored so that degradation of the surfacing does not take place.

The evaluation and sampling included a thorough visual evaluation, bulk/rinsate samples, and XRF readings. Results of this sampling still indicated lead in rinsate greater than 400 ppm.

2nd Post Playground Power Washing Evaluation and Sampling (September 21, 2019)

Due to the continued elevated levels of lead in the rinsate from sampling of the 1st power washing, a second power washing was conducted. The 2nd power washing was conducted using Alconox as the detergent instead of TSP. The following procedures were used and focused on the areas where the elevated lead in rinsate samples were taken.

Utilize hot water pressure washer with supplied water tank to pressure wash all PIP playground surfaces at the Truesdell playgrounds focusing on playground A nearest the school building. As a detergent, Alconox was mixed into the supply tanks in accordance with manufactures recommendations. Using hot water, the surfaces were pressure washed in a grid-like pattern in a manner to push rinse water away from cleaned surfaces. Efforts were made to scrub areas of the playground that had tested with elevated lead content in the rinsate.

The evaluation and sampling included a thorough visual evaluation, bulk/rinsate samples, and XRF readings. Results of this sampling still indicated that the rinsate in similar locations of previous testing continued to have lead levels greater than 400 ppm.

Findings and Conclusions

The bulk rubber samples indicated low levels of lead within the rubber surfacing material all below 400 ppm. However; samples at three to four locations in the proximity of the school building of playground A had bulk rinsate (wash) samples indicating elevated levels of lead above 400 ppm. Results of almost all XRF readings indicated screening levels of below 400 ppm with the exception of a couple readings at the edge of the playground A with the building. Surface wipe samples did not detected lead greater than the laboratory detection limit of 10.0 µg/ft².

It seems that the lead detected in the rinsate most highly likely originated from the lead in paint that had peeled from the painted surfaces of the building and fell near or onto the playground A. Over time, these leaded paint chips were pulverized to very fine powder and bonded with the rubber material of the playground. This lead is most likely “white lead” or lead (II) carbonate (PbCO₃). White lead is commonly used in painting wooden surfaces. It is very insoluble in water, making the paint highly water-resistant. It seems like the white lead powder is bonded with the EPDM making washing somewhat difficult at this time, however, based on wipe test the lead is not present at the top surface of the playground. Further research will be conducted to determine any additional sources and the most effective method of cleaning lead from PIP playgrounds.

Sincerely,



Senior Certified Industrial Hygienist
Soil and Land Use Technology Inc. (SaLUT)

