# Summary of
# Current Lead Testing Results of
# DCPS PIP Playgrounds

Prepared for:

**Department of General Services**
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# 1. Background

On June 21, 2019, Soil and Land Use Technology, Inc. (SaLUT) Certified Industrial Hygienists (CIH) initiated lead testing of playgrounds having Poured-In-Place (PIP) surfaces located at approximately 79 DC schools. These playgrounds are maintained by the Department of General Services (DGS). Most of these schools had multiple, separate PIP playgrounds on their properties. To date, SaLUT has received the first round of sampling and analyses laboratory results of lead in bulk samples, lead in surface wipes, and lead in bulk rinsate. Additionally, comprehensive X-Ray Fluorescence (XRF) analysis data of each of these schools' PIP playgrounds has been collected and reviewed. Approximately 48 samples and/or monitoring results have been collected for each school, and including multiple confirmation evaluations, over 5,000 lead sampling and analyses on DCPS school PIP playgrounds have been conducted to date.

Based on a review of the above-mentioned results, additional secondary evaluations were initiated to provide further confirmation of initial results. The confirmation evaluations included source identification efforts, interim risk assessments, and confirmation of data.

# 2. Executive Summary

Current data has identified multiple sources of lead present on some PIP playgrounds. In general, almost all of the various rubber components evaluated have indicated trace amounts of lead up to 50 ppm or 0.005%. However, other sources of lead present on the PIP playground surfacing were identified. The principle sources of elevated lead found on PIP playgrounds were identified as the following:

1. Leaded paint chips drifting onto the PIP playground from nearby buildings having unstable lead paint (about 12 schools),
2. Nearby soils having various average area background levels of lead (35 – 470 ppm) migrating onto the PIP playgrounds through foot traffic, rain storms, and/or wind,
3. Lead content within the top layer EPDM (Ethylene Propylene Diene Monomer) rubber and polyurethane binder of approximately five (5) PIP playgrounds at three (3) schools (visually identified as material with pinkish color when weathered by sun and vivid orange in shaded playgrounds and/or virgin material exposed through cutting),
4. Lead contaminated soils most likely caused by recent, local construction activities (1 school).

Shortly after preliminary evaluations, the CIH recommended closing multiple playgrounds,

## 2.1. Playground Identification and Quantity with PIP Playgrounds

Originally, SaLUT was provided with a list of eighty-nine (89) District of Columbia Public Schools (DCPS) within their playground inventory. Of those, seventy-seven (77) were found to have PIP playgrounds in place. Upon completion of initial evaluations of those 77 schools, Salut conducted a confirmation quality review of DCPS school's directory 2019 – 20 published documentation and found a total of one hundred and seventeen (117) schools of which eighty-seven (87) were confirmed to have one or more PIP playgrounds. Discrepancies in the number of schools including the number of PIP playgrounds were due to a number of factors. Some of those factors include active construction and/or demolition occurring during the time of this project, multiple swing schools, and multiple

schools located at the same location address. At the time of this report, it is believed that the accurate count of DCPS schools with PIP playgrounds is 87.

## 2.2. Disposition of Sampling Efforts

SaLUT has completed the first round of PIP playground sampling on all 87 schools. At the time of this report, laboratory results were received, reviewed and evaluated on 79, the results of which are incorporated within this report. Additionally, of those 79 schools, confirmation evaluations and/or testing were conducted on PIP playgrounds of those indicating elevated levels of lead (as determined by the CIH) from the initial sampling and monitoring efforts.

Currently, the CIH is waiting for receipt of the initial sampling laboratory results to be received and reviewed. If needed, secondary evaluations will be conducted at the remaining eight (8) schools. This process will be continued as data is received from the laboratory. Laboratory data will be tabulated and compared to field data, site photos, site CAD drawings, and field notes. Select SaLUT teams have been and will continue to be dispatched, under the supervision of the SaLUT CIH to conduct additional, inspections, specific testing, and evaluations as needed.

## 2.3. Schools with PIP Playgrounds with Lead Concentrations by Matrix Below Action Levels

The following table lists sixty (60) schools with detected lead below the Washington DC Inter-Agency Work Group's Action Levels and Responses values. Those values are listed in the Matrices columns within the table below. Refer to Section Action Levels and Responses within this report for more information. These playgrounds require a secondary review:

**Table 1: Schools with PIP Playgrounds with Lead below the Action Levels**

| | | Matrices | | |
|---|---|---|---|---|
| **School** | **Playground Surface Material** | **Pb in Rinsate > 400 ppm** | **Pb in Bulk > 400 ppm** | **XRF > 400.0 ppm** |
| Amidon-Bowen Elementary School* | PIP | NA | NA | NA |
| Anacostia High School* | PIP | NA | NA | NA |
| Ballou High School | PIP | NA | NA | NA |
| Barnard Elementary School* | PIP | NA | NA | NA |
| Beers Elementary School | PIP | NA | NA | NA |
| Brent Elementary School | PIP | NA | NA | NA |
| Brightwood Education Campus | PIP | NA | NA | NA |
| Browne Education Campus | PIP | NA | NA | NA |
| Bruce-Monroe Elementary School @ Park View | PIP | NA | NA | NA |
| Bunker Hill Elementary School | PIP | NA | NA | NA |
| Burrville Elementary School | PIP | NA | NA | NA |
| C.W. Harris Elementary School* | PIP | NA | NA | NA |
| Cleveland Elementary School* | PIP | NA | NA | NA |
| Columbia Heights Education Campus* | PIP | NA | NA | NA |

| | | Matrices | | |
|---|---|---|---|---|
| **School** | **Playground Surface Material** | **Pb in Rinsate > 400 ppm** | **Pb in Bulk > 400 ppm** | **XRF > 400.0 ppm** |
| Garfield Elementary School | PIP | NA | NA | NA |
| Garrison Elementary School | PIP | NA | NA | NA |
| H.D. Woodson High School | PIP | NA | NA | NA |
| Hearst Elementary School* | PIP | NA | NA | NA |
| Hendley Elementary School | PIP | NA | NA | NA |
| Houston Elementary School* | PIP | NA | NA | NA |
| Hyde-Addison Elementary School* | PIP | NA | NA | NA |
| J.O. Wilson Elementary School | PIP | NA | NA | NA |
| Ketcham Elementary School* | PIP | NA | NA | NA |
| Key Elementary School* | PIP | NA | NA | NA |
| King Elementary School | PIP | NA | NA | NA |
| Lafayette Elementary School | PIP | NA | NA | NA |
| Langley Elementary School | PIP | NA | NA | NA |
| Leckie Education Campus* | PIP | NA | NA | NA |
| Ludlow-Taylor Elementary School | PIP | NA | NA | NA |
| Malcolm X Elementary School* | PIP | NA | NA | NA |
| Marie Reed Elementary School | PIP and EWF | NA | NA | NA |
| Miner Elementary School* | PIP | NA | NA | NA |
| Moten Elementary School | PIP | NA | NA | NA |
| Murch Elementary School | PIP | NA | NA | NA |
| Noyes Elementary School | PIP | NA | NA | NA |
| Orr (Boone) Elementary School* | PIP | NA | NA | NA |
| Oyster-Adams Bilingual School (Oyster Campus) | PIP and Syn Turf | NA | NA | NA |
| Patterson Elementary School | PIP | NA | NA | NA |
| Payne Elementary School* | PIP | NA | NA | NA |
| Peabody Elementary School | PIP | NA | NA | NA |
| Plummer Elementary School* | PIP | NA | NA | NA |
| Powell Elementary School | PIP | NA | NA | NA |
| Randle Highlands Elementary School | PIP | NA | NA | NA |
| Raymond Education Campus | PIP | NA | NA | NA |
| Savoy Elementary School | PIP | NA | NA | NA |
| School Without Walls @ Francis-Stevens | PIP | NA | NA | NA |
| School-Within-School @ Goding* | PIP | NA | NA | NA |
| Seaton Elementary School | PIP & Rubber Tile | NA | NA | NA |

| School | Playground Surface Material | Matrices | | |
|---|---|---|---|---|
| | | Pb in Rinsate > 400 ppm | Pb in Bulk > 400 ppm | XRF > 400.0 ppm |
| Simon Elementary School* | PIP | NA | NA | NA |
| Stoddert Elementary School | PIP | NA | NA | NA |
| Takoma Education Campus | PIP | NA | NA | NA |
| Tubman Elementary School* | PIP | NA | NA | NA |
| Tyler Elementary School* | PIP | NA | NA | NA |
| Van Ness Elementary School | PIP | NA | NA | NA |
| Walker-Jones Education Campus* | PIP | NA | NA | NA |
| Washington Metropolitan High School | PIP | NA | NA | NA |
| Watkins Elementary School | PIP | NA | NA | NA |
| West Education Campus | PIP | NA | NA | NA |
| Wheatley Education Campus | PIP | NA | NA | NA |
| Whittier Education Campus | PIP and Syn Turf | NA | NA | NA |

*Schools with none or only trace amounts of lead detected in all matrices.

## 2.4. Schools with PIP Playgrounds with Lead Above the Action Levels

Seventeen (17) schools had PIP playgrounds that were identified as exceeding the Action Levels. Evaluations are continuing on the following schools:

| School Name | Surface Material | Pb in Rinsate > 400 ppm | Pb in Bulk > 400 ppm | Pb in Wipe Detect | XRF > 400.0 ppm |
|---|---|---|---|---|---|
| Aiton Elementary School | PIP | X | | X | |
| Bancroft Elementary School | PIP | X | | | |
| Cardozo Education Campus | PIP | X | | X | X |
| Dorothy I. Height Elementary School | PIP | X | | | |
| Eaton Elementary School | PIP | X | | | |
| H.D. Cooke Elementary School | PIP | X | | | |
| Janney Elementary School | PIP | X | | X | X |
| Langdon Educational Campus | PIP | X | | | |
| Nalle Elementary School | PIP | X | | | |
| Oyster-Adams Bilingual School (Adams Campus) | PIP | X | | | |
| River Terrace Education Campus | PIP | X | | | X |
| Roosevelt High School | PIP | | | | X |
| Shepherd Elementary School | PIP | X | | | |
| Thomas Elementary School | PIP | | | X | |

| School Name | Surface Material | Pb in Rinsate > 400 ppm | Pb in Bulk > 400 ppm | Pb in Wipe Detect | XRF > 400.0 ppm |
|---|---|---|---|---|---|
| Thomson Elementary School | PIP | | | X | X |
| Truesdell Education Campus | PIP | X | | | |
| Turner Elementary School | PIP | X | X | X | X |

## 2.5. Playground Recommended Closures/Remediation

Based upon results of the initial sampling with confirmation evaluations, the CIH recommended that multiple PIP playgrounds be temporarily closed and/or remediated. The early decision to close/remediate these playgrounds was based upon the initial detection of various levels of lead on wipe samples. Lead identified by detection in wipe samples represent the highest risk of children's lead exposure.

**Table 2: Initial Closure/Remedial Recommendations due to Lead Detected in Wipes**

| School Name | Rinsed Dust >400 ppm Pb | Bulk >400 ppm Pb | Wipe >10 µg/ft² Pb | XRF >400 ppm Pb | Playgrounds* |
|---|---|---|---|---|---|
| Aiton ES (365) | X | | X | | PG A – next to school |
| Cardozo (023) | X | | X | X | Only |
| Janney ES (116) | X | | X | X | Pre-school PG |
| Thomas ES (185) | | | X | | PG B – Pre-school PG Fenced, nearest school |
| Thomson ES (186) | | | X | X | 4th floor |
| Turner ES (189) | X | X | X | X | All |

* Specific playground(s) where lead in wipe detected
ES – Elementary School
PG - Playground

## 2.6. Playgrounds Remediated

Currently, all playgrounds identified as having lead content within the top layer EPDM have been identified. The lead containing EPDM top layer sections have been excised at two schools (Turner and Cardozo) and are open. Thomson has had a sealing layer of artificial turf placed over the lead containing EPDM and is also open. Aiton has had the playground nearest the school building surfacing replaced and is open. Confirmation of the new Aiton PIP playground is forthcoming. The Janney courtyard playground has a building lead paint stabilization plan provided by SaLUT to remediate chipped lead paint from falling into the pre-school playground. Once the post-stabilization clean-up has been completed, SaLUT will conduct confirmation testing. At the time of the initial and confirmation sampling, Thomas had active construction activities in close proximity to the playground listed above. Currently, that construction has been completed and it is understood that the area has been cleaned up. Confirmation testing of the Thomas playgrounds, post-construction clean-up is forthcoming.

## 2.7. Playgrounds Pressure Washed

It is SALUT's understanding that the fourteen (14) schools had their PIP playgrounds pressure washed by a third party contractor using Tri-Sodium Phosphate (TSP) detergent. The scope of work for pressure washing of pour-in-place playground surfaces at 14 schools to be cleaned prior to start of school was as follows:

> 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 Tri-Sodium Phosphate 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.

**Table 3: Schools with PIP Playgrounds Pressure Washed**

| Building Name | Address | Ward |
|---|---|---|
| ADAMS MIDDLE SCHOOL | 2020 19TH STREET NW | 1 |
| BANCROFT ES | 1755 NEWTON STREET NW | 1 |
| H.D. COOKE ELEMENTARY SCHOOL | 2525 17TH STREET NW | 1 |
| Eaton ES @ UDC | 3373 Van Ness, NW | 3 |
| JANNEY ELEMENTARY SCHOOL | 4130 ALBEMARLE STREET NW | 3 |
| DOROTHY HEIGHT ES | 1300 ALLISON STREET NW | 4 |
| ROOSEVELT HIGH SCHOOL | 4301 13TH STREET NW | 4 |
| SHEPHERD ELEMENTARY SCHOOL | 7800 14TH STREET NW | 4 |
| TRUESDELL EDUCATIONAL CAMPUS | 800 INGRAHAM STREET NW | 4 |
| LANGDON EDUCATIONAL CAMPUS | 1900 EVARTS STREET NE | 5 |
| NALLE ELEMENTARY SCHOOL | 219 50TH STREET SE | 7 |
| RIVER TERRACE SPECIAL EDUCATION SCHOOL | 420 34TH STREET NE | 7 |
| THOMAS ELEMENTARY SCHOOL | 650 ANACOSTIA AVENUE NE | 7 |
| TURNER ELEMENTARY SCHOOL | 3264 STANTON ROAD SE | 8 |

## 2.8. Schools with all Playgrounds with only Trace Amounts of Lead Detected (< 5 ppm or 0.005% Pb)

Evaluation of the PIP playgrounds identified that twenty-two (22) schools did not indicate detected lead levels within any matrix above trace amounts (< 50 ppm or 0.005% Pb). These schools are included within Table 1 above and delineated in the following table:

**Table 4: Schools with only Trace Amounts of Lead Detected (< 5 ppm or 0.005% Pb)**

| DGS School # | School |
|---|---|
| 366 | Amidon-Bowen Elementary School |
| 367 | Anacostia High School |
| 371 | Barnard Elementary School |
| 218 | C.W. Harris Elementary School |
| 26 | Cleveland Elementary School |
| 27 | Columbia Heights Education Campus |
| 107 | Hearst Elementary School |
| 112 | Houston Elementary School |
| 113 | Hyde-Addison Elementary School |
| 121 | Ketcham Elementary School |
| 122 | Key Elementary School |
| 129 | Leckie Education Campus |
| 490 | Malcolm X Elementary School |
| 137 | Miner Elementary School |
| 151 | Orr (Boone) Elementary School |
| 158 | Payne Elementary School |
| 160 | Plummer Elementary School |
| 162 | School-Within-School @ Goding |
| 175 | Simon Elementary School |
| 188 | Tubman Elementary School |
| 190 | Tyler Elementary School |
| 201 | Walker-Jones Education Campus |

## 3. Sample Plan Methodology

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, multiple Standard Operating Procedures (SOPs) were developed and incorporated into the following procedures that were developed within a project specific sampling plan:

- Site reconnaissance
- Sampling layout and photograph documentation
- Lead screening with X-Ray Fluorescence (XRF)
- Collection of dust wipe samples
- Collection of bulk samples
- Field notes and sample documentation
- Laboratory Analysis of bulk samples using Flame Atomic Absorption (Flame AA) on rinsate (wash) and cleaned bulk rubber material
- XRF of the collected dust-wipes

- Quality Control (QC) and Quality Assurance (QA)
- Data entry, initial analysis, and reporting

## 3.1. Sampling Methodology and Reasoning

- Bulk sampling was used to determine actual Pb in the rubber. General bulk sampling can include the rubber and any dusts/dirt adhering to the sample. To determine Pb in the bulk rubber only, the samples were washed multiple times in deionized water in an attempt to isolate the external lead sources from any lead within the rubber materials themselves.
- Rinsate is the water containing the dusts cleaned from the surface of the bulk rubber pieces. Analysis of Pb in these rinsate samples can indicate two things:
    - Pb in local dusts
    - Pb that could enter a child's mouth if they put rubber chunks into their mouths
- XRF is used as a screening tool to further assist with identifying locations with detectable levels of Pb. XRF is also a back-up screening for those playgrounds where it is difficult to collect bulk rubber without damaging the surfaces.
- Wipe sampling is used to determine the levels of Pb at the surface of the playground that could be transferred to children's hands, shoes, clothing, etc. Pb identified in wipes have the highest hazard potential for exposure to Pb.

# 4. Discussion

The following discussion is for each testing category.

## 4.1. Lead in Bulk

The lead in bulk testing results for the schools' PIP playgrounds indicated for the most part, low levels of lead within the rubber surfacing material. However, several sections of PIP were identified in some school PIP playgrounds that indicated higher levels of lead than normal and different from other sections of PIP in the same playground and/or facility. These sections will typically be identified and confirmed. Additionally, those same identified elevated lead sections seem to consistently indicate elevated lead in wipes. Lead in bulk rubber (without detected lead in wipe) represents the lower of the risks of lead in a PIP playground.

## 4.2. Lead in the Rinsate

Lead in the rinsate or wash samples can be an indication of a significant source of lead in the area that may be contaminating the PIP playground. These levels can be compared to typical neighborhood / Ward lead in soil samples. Information obtained from past DC lead in soil by Ward sampling has shown typical average lead in soil levels can range from 35 to 450 ppm. However, lead in rinsate/soil from the PIP playgrounds that are higher than these levels typically indicate a nearby source of lead such as lead in paint that may be flaking onto the playground. Lead in rinsate sampling and analysis is an effective tool for identifying these types of issues and initiating remediation and/or stabilization efforts. Lead in dust is the second highest risk for lead in playgrounds for children. However, wipe testing has shown that lead in dust seems to settle deeper than the immediate surface of the PIP. This would make it difficult for lead to be transferred from the PIP to the hands. However,

eating PIP chunks in PGs with elevated lead in rinsate/dusts could represent a limited risk of lead exposure due to the very small quantity of this dust on the bulk chunks.

### 4.3. XRF Screening

XRF screening is successful at quickly, effectively and in a non-destructive manner, identifying specific areas containing lead. These readings can locate lead in areas within all levels of the PIP including potentially on the surface, just under the surface, within the pigments, recycled rubber pieces, bonding agents, or EPDM (M-class) rubber. XRF use techniques are able to isolate specific areas with elevated lead levels as caused by dusts and dirt or within the PIP layers in most cases. XRF readings have been found to highly correlate with elevated lead in wipe samples. XRF screening reads a combination of lead on the surface, in the PIP components, dusts, and sub-surface. XRF screening is used to compliment the other sampling and testing methods considering the multitude of different type, size and configurations of the playgrounds.

### 4.4. Lead in Wipe Samples

To date, lead in wipes have been detected in only six (6) of the first evaluated seventy-nine (79) school's playgrounds. The amount of wipe samples received to date that do not detect lead seem to indicate the settling of lead dusts and dirt to low areas including away from availability at the surfaces. Wipe testing is done to attempt to collect any lead at the surfaces that may be easily transferable to a child's hands, shoes, clothes, etc. For that reason, any lead detected in wipes represents the highest risk to children and students over those risks posed by lead in rinsate/dust and lead in PIP.

The difference between wipe samples and lead in rinsate are that the wipe sample represents surface dust that may be collected by children's hands, clothes, etc. where lead in rubber bulk wash water (rinsate) represent what lead may be readily swallowed if a child puts the bulk into their mouths and/or what may be deposited on their hands if they are handled. The lead in washed bulk samples (clean rubber) indicates what lead is contained within the rubber itself and which may be available if these rubber pieces were digested.

Both the lead in bulk rinsate (wash water) and on the surfaces of the PIP playgrounds are in a matrix that potentially can be easily removed through regular maintenance and cleaning. Remediation methods will be recommended by the CIH after full review of the results and additional investigations.

## 5. Standardized Procedures

There were currently no standardized procedures, certifications, action or response level specifically dealing with lead hazards in PIP playgrounds. However, some organizations have created safety certification programs such as the International Play Equipment Manufacturers Association (IPEMA) and the National Program for Playground Safety (NPPS). In the interest of public safety, these groups either make recommendations or provide product certification programs for public play equipment and surfacing materials. These programs typically provide methods to validate a playground product(s) to one or more related ASTM standards. ASTM standards are the principle methodology incorporated as benchmarks for validating playground equipment and materials. ASTM International, formerly known as American Society for Testing and Materials, is an international standards organization that develops and publishes voluntary consensus technical standards for a

wide range of materials, products, systems, and services. However, there are no ASTM standards related to lead and/or mercury in PIP playground matting. While the Consumer Product Safety Commission (CPSC) has recommendations regarding lead paint on public playground equipment, they are silent on lead content of playground PIP surfaces and matting.

Due to the lack of published controls, regulations and procedures, the CIH developed a comprehensive PIP playground lead sampling plan to effectively evaluate what levels of lead are in PIP playground matting and potential avenues of children's exposures to lead. However, finding lead and developing risk assessments are two very different things. To that end, a Washington DC Inter-Agency Working Group chaired by DGS, was assembled to provide guidance. This Inter-Agency Working Group, with the assistance of the CIH, developed Action Thresholds and Responses, Playground Closure Procedures, and Playground Re-Opening Procedures.

## 5.1. Action Thresholds and Responses

To determine if a playground will be cleared (and therefore not closed), surrogate benchmarks were developed and approved by the inter-agency working group for labeling a playground's PIP surfacing as "cleared." The committee developed the surrogate benchmarks as a guide for the making of rational and effectual decisions under the circumstances presented here. To facilitate the overall decision-making process, thresholds established by federal and international entities for related topics were used in combination with professional judgment predicated on several site-specific factors in order to arrive at recommendations that will provide proper protection from exposure to lead hazards for playground users. As a precautionary measure, all District PIP Playgrounds have been vacuumed of loose surfacing material regardless of testing results.

The intent of the following is to outline the results of collaboration between the technical experts, DGS, District of Columbia Public Schools (DCPS), Department of Parks and Recreation (DPR), and the Department of Energy and Environment (DOEE). This collaboration has recommended the following action levels and response strategies.

1.) **Clean Bulk Rubber:** Upon identification of lead within clean bulk rubber, if test result is greater than 400 parts per million (ppm) (The EPA's standard for lead in bare soil in play areas is 400 ppm), then the following action will be recommended:
    a. Clean and maintain all loose rubber surfacing material and debris.

2.) **Wipe Samples:** Upon receipt of a detectable lead in dust wipe result (>10 $\mu g/ft^2$) the following action will be recommended:
    a. Playground closure until remediation steps are determined and implemented.
        i. Follow up investigation will be conducted to determine potential sources and risk to community.
            1. If a potential source is identified (such as deteriorating lead-based paint or dirt), a remedial design for stabilization or abatement will be provided.
            2. DGS will utilize licensed contractors to complete the recommendations after required procurement procedures and funding allocation.

3.) **Bulk Rinsate:** Upon receipt of detection of lead in the water used by the laboratory to wash collected bulk rubber (rinsate) greater than 400 ppm the following action will be recommended:

   a. A Certified Industrial Hygienist (CIH) will determine if the playground will be closed and if left open under what conditions.

   b. Follow up investigation will be conducted by a CIH to determine potential sources and risk to community.

      i. If a potential source is identified (such as deteriorating lead-based paint or dirt), a remedial design for stabilization or abatement will be provided.

         1. DGS will utilize licensed contractors to complete the recommendations after required procurement procedures and funding allocation.

         2. A CIH will determine if the remediations, stabilization, and abatement efforts were effective and determine if the playground will be re-opened if closed.

4.) **XRF:** Upon receipt of detection of lead in XRF readings greater than 400 ppm the following action will be recommended:

   a. A CIH will determine if the playground will be closed and if left open under what conditions.

   b. Follow up investigation will be conducted by a CIH to determine potential sources and risk to community.

      i. If a potential source is identified (such as deteriorating lead-based paint or dirt), a remedial design for stabilization or abatement will be provided.

         1. DGS will utilize licensed contractors to complete the recommendations after required procurement procedures and funding allocation.

         2. A CIH will determine if the remediations, stabilization, and abatement efforts were effective and determine if the playground will be re-opened if closed.

## 5.2. Playground Closure Procedures

Based on the *Action Level and Responses* Protocol the following should be performed to close the PIP Playgrounds identified above:

1.) Upon receipt of this report on our recommendation to close a playground until remedial actions are performed, a designated DGS personnel will notify the facility point of contact to make them aware of the intended closure.

   a. DGS will subsequently dispatch a representative or contractor to place closure signage at the location.

### 5.3. Playground Reopening Procedures

1.) Once a playground has been closed, the consultant shall make recommendations for remediation of any lead identified at the playground(s).

2.) A remedial design for stabilization or abatement will be provided.

   a. DGS will utilize licensed contractors to complete the recommendations after required procurement procedures and funding allocation.

   b. A CIH will determine if the remediations, stabilization, and/or abatement efforts were effective and determine if the playground will be re-opened.

## 6. Further Evaluations Ongoing:

The process of evaluating school playgrounds needing further investigation are in progress and under review. It is scheduled that a final, detailed report will be completed by January 2020 to include the Department of Parks and Recreation. This final report will provide specific details regarding PIP playground surfaces dispositions.

## 7. General Findings and Conclusions

This report is a summary of preliminary assumptions developed based upon review of current initial results and completed confirmation evaluations. Further evaluations are continuing and will be presented in the projects final report.

## 8. Recommendations

Once all evaluations, testing and research are completed a final report will be provided. This final report will contain further recommendations for remediation/corrective actions, suggestions for contracting future PIP playground contractors, and effective maintenance schedules and procedures will be provided. This is anticipated to be provided in January 2020.

Sincerely,

Mark B. Applegate


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