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SOIL AND LAND USE TECHNOLOGY, INC.

TESTIMONY ON LEAD IN RECREATIONAL SPACES

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INTRODUCTION: MARK B. APPLEGATE, CIH, CSP

SENIOR CERTIFIED INDUSTRIAL HYGIENIST | SAFETY EXPERT | REGULATORY STRATEGIST

Mark B. Applegate is one of the District of Columbia's leading Certified Industrial Hygienists (CIH) and Certified Safety Professionals (CSP), with over three decades of advanced, field-driven expertise in protecting worker and public health across municipal, government, military, and private sector environments. A chemist by education and a **recognized Subject Matter Expert (SME) in industrial hygiene,** safety compliance, and pathogen mitigation, Mr. Applegate brings unmatched depth in exposure assessment, environmental hazard control, and regulatory policy implementation.

Serving in senior roles within the DC area, Mr. Applegate has provided expert industrial hygiene and safety support to numerous District agencies, including the **Department of General Services (DGS**), Metropolitan Police Department (MPD), Fire and Emergency Medical Services (FEMS), DC Public Schools (DCPS), and the Department of Parks and Recreation (DPR). He developed and implemented health and safety protocols tailored to District operations, helping ensure compliance with OSHA, MOSH, and VOSH standards, while also advancing best practices in Indoor Air Quality (IAQ), ventilation, and pathogen risk mitigation.

As the District's COVID-19 and pathogen SME, he created comprehensive health and safety plans, site-specific SOPs, and evaluation protocols for protective equipment and sanitizing systems. He also led one of the District's most significant environmental health investigations into lead contamination at over 300 playgrounds. His work resulted in a 2,700-page technical report, multiple public presentations, and testimony at District hearings—demonstrating scientific rigor, public transparency, and risk communication skill in addressing a critical public health issue.

Lead (Pb)

A heavy metal that is toxic to humans

Sources

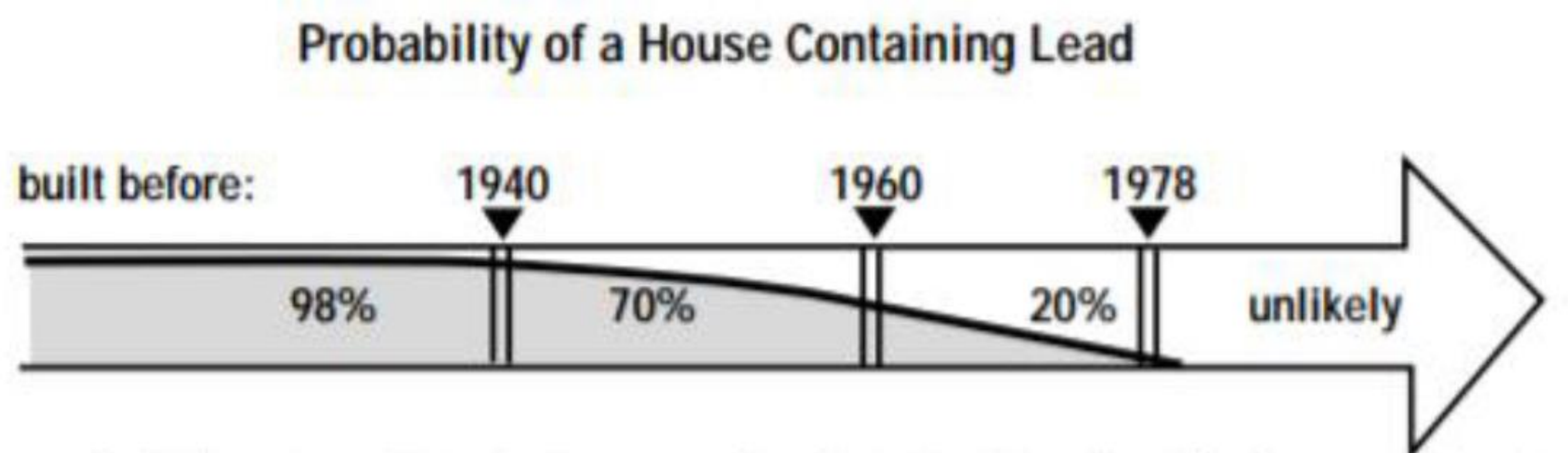
- Paint (Pre-1978)
- Industrial Activity
- Renovation / Construction Activities
- Historic Leaded Gasoline
- Legacy Water Infrastructure
- Naturally Occurring

Health effects of exposure

- Affects Almost every Organ and System
- Targets the nervous system
- Impairs children mental development
- May cause cancer
- Increase pregnancy Risk

Primary Routes of Exposure

- Ingestion
- Inhalation



2019 DGS Playground Lead Testing Methodologies

Objective:
Assess lead levels in synthetic "Poured-in-Place" (PIP) playground surfaces across D.C.

Testing Methods:

- **X-Ray Fluorescence (XRF):**
  Conducted on-site for immediate lead detection.
- **Dust Wipe Sampling:**
  Surface samples collected to detect lead dust contamination.
- **Bulk Rubber Sampling:**
  Playground surface material collected for lab analysis.
- **Rinsate Method:**
  Bulk rubber samples rinsed with deionized water to extract surface dust; rinsate analyzed to measure lead content.
- **Laboratory Analysis**
- **Quality Assurance/Quality Control:**
  Protocols followed to ensure data accuracy and reliability

Evaluation of Lead Associated with DC Poured-In-Place and Recycled Rubber Playgrounds – 2019 Study

- This study confirmed that **lead is not a general component of rubber used in PIP** rubber playgrounds and as such, does not cause hazardous levels of exposure to lead.
- Of the 262 PIP playgrounds tested, 91% had no lead within the PIP above the action level of 400 parts per million (ppm) (or 0.04%).
- Occasionally, lead is used as a pigment to color a portion of PIP rubber playgrounds. Lead-based additives (such as certain pigments) can create a lead-based paint hazard. This was discovered in several of PIP playgrounds tested in this evaluation. 4 of those 5 PIP sections were removed and replaced with lead-free PIP. The last remaining section was covered by a new artificial grass rug.
- Per the DC's Lead Prevention and Elimination Act, any location that does not contain lead-based paint hazards (< 400 ppm lead) can be considered lead-free properties.

FEDERAL AND DISTRICT REGULATIONS	THRESHOLD
Soil	>400 ppm
Concrete Surface	>800 ppm

PARAMETER	TESTING METHOD	REFERENCED THRESHOLD
Lead-Based Paint	XRF/ Laboratory Analysis	0.7 mg/cm^2 or 0.5 % Weighted
Synthetic Surfacing (PIP)	XRF Analysis	>400 ppm
Synthetic Surfacing (Bulk)(Rinse)	Laboratory Analysis	>400 ppm
Artificial Turf (Bulk)	Laboratory Analysis	>300 ppm
Clearance (Wipe)	Laboratory Analysis	>10 $\mu g/ft^2$

mg/cm^2 : milligrams per square centimeter
$\mu g/ft^2$: microgram per square foot
XRF: x-ray fluorescence

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Action Items from Report:

1. Prompt Closure
2. Community Engagement
3. Engineering Controls
4. Removal and placement
5. Resurfacing / Sealing / encapsulation
6. Specialized cleaning
7. Clearance valid testing prior to use
8. Community Engagement
9. Source Control- abatement

Program Highlights

Provided Recommendations for maintenance and product selection on Capital projects

The program revealed specific actions items that were corrected and set recurring standard operating procedures that will continue to safeguard users of District Recreational Spaces

Lead Safety in D.C. Recreational Playgrounds
(D.C. Act 22-623 & Related Amendments)

Childhood Lead Exposure Prevention Amendment Act of 2017

Citation: D.C. Act 22-623, codified at D.C. Law 22-21 – https://code.dccouncil.gov/us/dc/council/laws/22-21

Goal:

- Prevent lead exposure in public playgrounds, especially among children.

Playground Surface Testing:

- Applies to **synthetic playground surfaces**.
- Must be tested every **3 years** using **ASTM-recommended methods**.
- If lead levels exceed thresholds, the playground must be **closed within 24 hours**.
- Remediation is required before reopening.

Public Transparency:

- Notify the public of closures and remediation efforts.
- Host **community meetings** to explain findings and response actions
  - DGS conducts these meetings once a month

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Lead

Current Remediation Techniques:

- Removal and Replacement
- Resurfacing / Sealing / encapsulation
- Lead-Based Paint Remediation
- Use limitations and restrictions
- Specialized cleaning
  - Vacuuming with a HEPA filter, debris cleanup, power washing with detergent

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Conclusions and Recommendations

Primary Sources of Lead

- Deteriorated paint from on-site and off-site sources
- Soil and Dust

Engineering Controls

- Continue to test and remediate lead-based paint
- Maintenance

Administrative Controls

- Communication
- Testing
- Education
- Incorporate at design

Maintenance

Perform regular maintenance of synthetic surfaces to include routine washing and repair

Routine Monitoring

Test surfaces to proactively identify when thresholds are exceeded