

Industrial Hygiene Case Study: Lead-Based Paint Remediation at Fort George Meade, Maryland

Objective:

Design and implement a lead-based paint abatement strategy for the replacement of 2000 windows and doors in occupied apartments and townhouses at Fort George Meade, Maryland, ensuring the safety of residents and compliance with environmental health regulations.

Scope of Service:

KES was contracted to provide industrial hygiene services for the replacement of 2000 windows and doors coated with lead-based paint in residential units at Fort George Meade, a military installation. The project required comprehensive planning, execution, and ongoing monitoring to ensure that lead exposure to residents, workers, and the surrounding environment was effectively controlled during the renovation process. KES's role was to design and implement a lead abatement strategy that adhered to local, state, and federal regulations, while safeguarding the health and safety of all individuals involved.

Key Services Provided:

1. Project Design and Planning:

- KES collaborated with the project management team to design an effective lead-based paint abatement plan that accounted for the replacement of windows and doors in occupied apartments and townhouses.
- The abatement plan included detailed procedures for safely removing and disposing of lead-painted materials, as well as protective measures for residents and workers.

2. Risk Assessment and Hazard Identification:

- Conducted a thorough site assessment to identify the extent of lead contamination and assess potential exposure risks to workers, residents, and the environment.
- Established specific protocols for preventing lead dust and debris from migrating into living spaces during the window and door replacement process.

3. Development of Safety Protocols:

- Developed detailed worksite safety protocols, including the use of personal protective equipment (PPE) such as respirators, gloves, and coveralls for workers.

- Ensured that containment strategies, such as sealing off work areas with plastic sheeting and employing HEPA-filtered air filtration, were implemented to minimize lead dust exposure.
- Created a dust control and cleaning plan, ensuring that all surfaces were thoroughly decontaminated once the work was completed.

4. Ongoing Monitoring and Air Sampling:

- KES conducted continuous air monitoring for lead dust levels during the window and door replacement work to ensure that the airborne lead concentrations did not exceed permissible limits.
- Regular sampling of dust, soil, and surface areas in and around the work areas helped track lead contamination and ensure compliance with EPA and OSHA standards.

5. Training and Communication:

- Provided training for workers on lead safety and proper handling techniques to minimize the risk of lead exposure.
- Ensured that all workers understood the importance of using PPE, following safety protocols, and adhering to lead-safe work practices.
- Communicated with residents to inform them of the work schedule, potential risks, and the safety measures in place to protect their health during the renovation process.

6. Waste Management and Disposal:

- KES developed a waste management plan that ensured all lead-painted materials, debris, and contaminated protective equipment were safely collected, contained, and disposed of in accordance with EPA regulations.
- Coordinated with licensed hazardous waste disposal facilities to ensure the safe transport and disposal of lead-containing waste.

Project Activities and Response Efforts:

1. Pre-Construction Lead Risk Assessment:

- Before work began, KES conducted a comprehensive risk assessment to identify the scope of lead-based paint contamination in the windows and doors of the apartments and townhouses.
- Surface dust wipe samples and air quality tests were used to evaluate baseline lead levels in the work areas.

2. Worksite Preparation and Containment:

- Work areas were carefully sealed off with plastic sheeting to prevent lead dust from contaminating surrounding areas.
 - Negative pressure ventilation systems with HEPA filters were employed to ensure that any airborne lead dust was contained within the worksite.
- 3. Real-Time Air Sampling:**
- KES performed real-time air sampling using high-volume pumps and lead-specific filters to continuously monitor the concentration of lead dust in the air. Sampling results were reviewed in real-time, allowing for immediate corrective actions if lead concentrations exceeded safe levels.
 - Lead dust levels were compared to OSHA's permissible exposure limits (PELs) and the EPA's recommended guidelines for residential environments.
- 4. Post-Construction Cleaning and Clearance Sampling:**
- After the window and door replacement was completed, KES conducted thorough cleaning of all work areas, including vacuuming and wiping down surfaces with wet cloths to minimize the spread of lead dust.
 - Clearance sampling was then conducted to ensure that lead dust levels in the apartment and townhouse interiors were below acceptable thresholds before residents were allowed to return to their homes.
- 5. Ongoing Resident Communication and Safety Measures:**
- KES maintained open communication with residents throughout the project, ensuring they were aware of safety measures and the schedule for work in their units.
 - Temporary relocations were arranged when necessary to minimize resident exposure to lead dust during peak work periods.
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Program Results and Impact:

The successful completion of the lead-based paint abatement project at Fort George Meade resulted in the following key outcomes:

- 1. Minimized Lead Exposure Risks:**
 - Through the use of containment measures, PPE, and air monitoring, the risk of lead exposure to workers, residents, and the surrounding environment was significantly reduced.
 - Airborne lead concentrations were consistently kept well below OSHA's action levels, ensuring the health and safety of both workers and residents.
- 2. Compliance with Regulations:**

- The project complied fully with all federal, state, and local environmental health regulations, including EPA's Renovation, Repair, and Painting (RRP) Rule and OSHA's lead standards.
- Lead contamination levels in the work areas were regularly monitored, and the necessary actions were taken to ensure compliance with allowable lead exposure limits.

3. Resident Health and Safety:

- By employing effective containment strategies and conducting clearance sampling, KES ensured that the living spaces were free of lead dust, allowing residents to return to their apartments safely after the renovation.
- Residents were well-informed throughout the project, reducing concerns and promoting a sense of safety and trust in the abatement process.

4. Effective Waste Management:

- KES successfully managed the disposal of lead-containing waste, ensuring that all materials were handled and disposed of in compliance with EPA guidelines, minimizing environmental contamination.

5. Positive Project Outcomes:

- The project was completed on time and within budget while maintaining a high level of safety and regulatory compliance.
- The use of industry-best practices in lead safety and environmental monitoring helped ensure the well-being of both workers and residents, contributing to the overall success of the project.

Conclusion:

KES's involvement in the lead-based paint abatement project at Fort George Meade was a critical element in ensuring the safe and efficient replacement of 2000 windows and doors in occupied residential units. The comprehensive industrial hygiene program designed and implemented by KES effectively minimized lead exposure risks, complied with all regulatory requirements, and prioritized the health and safety of both the workers and the residents. Through diligent monitoring, proper safety protocols, and effective communication, KES helped ensure the success of the renovation, making Fort George Meade a safer place for residents to live.