

APPENDIX III

SEPTA

PUBLIC AND OPERATIONAL SAFETY DIVISION

SYSTEM SAFETY DEPARTMENT

MANAGEMENT OF LEAD PAINT ON SEPTA

CONSTRUCTION PROJECTS

DOCUMENT #3001



SEPTA
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
PHILADELPHIA PENNSYLVANIA

PUBLIC AND OPERATIONAL SAFETY DIVISION
SYSTEM SAFETY DEPARTMENT

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PREPARED BY—SYSTEM SAFETY
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INTRODUCTION

The age of SEPTA's infrastructure provides an environment prone to the presence of lead painted surfaces and associated lead dust. Determining the presence of lead paint at the planning/design stage of a project is critical for a project to properly handle the lead paint in a timely and cost effective manner. The mere presence of lead paint should not be considered a major problem for any project. The presence of lead paint simply requires the use of additional protective measures during the course of the project to ensure that workers and the public are not exposed and that the generation of any lead waste is properly handled. This document is intended to serve as a guide for all project personnel to help them understand the protocols for handling lead paint on any project.

HEALTH HAZARDS OF LEAD

Lead is a heavy, gray soft metal. Lead was utilized in many products for many beneficial reasons. The following are some of the benefits that lead provided when added to a product:

- Prevents Corrosion – It will not crack easily with wear, weather or temperature change
- Kills Molds and Mildew
- It is easy to shape
- It is strong -
- It can block radiation - Lead aprons used during x-rays.
- Blocks sound
- Helps Paint Dry – Lead was added to paint to quicken the drying process.

Unfortunately, lead is a dangerous poison. Lead dust particles can be very small. Lead is most dangerous when it is in the form of a dust or fume. Lead dust or fumes are easy to breathe when it's in the air. Lead dust is easy to ingest if it is on anything you put in your mouth – like food, cigarettes or fingers. Lead dust settles on surfaces and when your hands touch these surfaces you expose yourself to hand to mouth ingestion. Prolonged or excessive exposure to lead can cause health problems. Sources of lead contamination can be found in the following environments:

- Industrial Releases – Lead is used to make batteries, ceramics, bullets and plastics. Plant releases of air borne lead causes pollution in the air, soil and water.
- Food - Food grown in soil that contains lead can contain lead
- Water - Natural wells or water that runs through lead pipes or lead soldered pipes can contain lead.

- Lead Paint - The most common exposure at SEPTA is through old lead paint surfaces.

When lead paint gets old or damaged it creates lead dust or chips. When lead paint turns to lead dust it is easy to breathe. It is this potential generation of dust that warrants proper steps whenever this paint is disturbed during a renovation project. It is also the reason why certain handling methods are more favorable than others. Individuals can significantly reduce their risk of the health effects of lead by using good general hygiene practices and utilizing proven engineering and/or administrative controls in their work practices.

REGULATORY BACKGROUND

The U. S. Government banned the use of lead-based paint in houses, hospitals, schools, parks, playgrounds, and public buildings in 1978. Lead-based paint is still used on cars, boats, road markings, industrial steel and steel furniture.

In 1992 the U. S. Congress Passed the Residential Lead-Based Paint Hazard Reduction Act, also known as Title X. Title X requires federal agencies to establish rules about working with lead. The three primary agencies that developed rules for working with lead are:

1. Department of Housing and Urban Development (HUD)
2. Environmental Protection Agency (EPA)
3. Occupational Safety and Health Administration (OSHA)

HUD

Lead paint **abatement** is regulated by HUD for target housing. The HUD Standard does not apply to SEPTA. The HUD standards do provide in depth criteria for various techniques for eliminating the exposure to lead-based paints. These include component removal, encapsulation and full lead paint abatement. While the HUD regulations do not apply to SEPTA, there may be an occasion where encapsulation or full lead paint removal is practical on a SEPTA project and the HUD criteria provide a good source for defining proper removal procedures.

OSHA

It is SEPTA's responsibility to inform the contractors of the presence of lead. Once the lead is identified and the Contractor is made aware of the presence of lead-based paint then the OSHA regulations apply. The applicable OSHA regulation for lead exposure in construction is 29CFR 1926.62. Contractors working on SEPTA projects containing lead-based paint are required and regulated by OSHA to provide protection to their employees when there is a potential for exposure to lead. This protection, depending on the exposure, may include training, air monitoring, respiratory protection, protective clothing, wash facilities and medical monitoring. The OSHA regulation is where the Action Level ($30\mu\text{g}/\text{cm}^3$) and Permissible Exposure Level (PEL = $50\mu\text{g}/\text{m}^3$) of lead concentrations are specified. OSHA also requires that all lead debris be cleaned from the site. Before the contractor starts to disturb any identified lead paint, they should submit a lead work plan for review and approval. This work plan should include but is not limited to the following:

- The contractors means and methods for handling the lead,
- The methods for protecting the worker (i.e. engineering controls verse personal protective equipment like respirators)
- How will the contractor ensure the workers are not exposed to lead dust above the action levels and permissible exposure levels set by OSHA?
- How will the contractor dispose of any lead waste
- How will the contractor protect the environment and general public?

SEPTA employees are not regulated by OSHA. However, whenever SEPTA employees are performing similar work on lead paint, SEPTA will also utilize the OSHA regulations. This includes medical monitoring, utilization of engineering controls, proper selection of respiratory protection and PPE.

EPA

USEPA 40 CFR Part 261-Resource Conservation and Recovery Act (RCRA) states lead containing construction debris may meet federal requirements for categorization as hazardous waste. RCRA regulates all solid waste products. Generators must determine whether their waste is either listed as or characteristic of hazardous waste.

While the demolition is not an abatement, all waste associated with **lead paint removal** must be measured for toxicity using the Toxic Characteristic Leaching Procedure and disposed of accordingly.

The EPA RCRA regulations focus on the concept of cradle to grave. The generator (SEPTA) of a hazardous waste (such as lead dust/chips) will never fully be released of liability even after the waste is turned over to another entity. That is why it is important for SEPTA to ensure the wastes are properly handled in accordance with the regulations and when at all possible destroyed and/or recycled.

PaDEP

Construction & Demolition (C & D) debris containing lead paint is not federally regulated except to the extent that solid waste landfills must follow a few basic standards outlined in the Federal Register 40CFR Part 257. States therefore have the primary role in defining and regulating the management of C&D debris.

Pennsylvania has established under Title 25, Article VIII of the Pa environmental regulations for municipal waste, that building construction and demolition debris is considered a residual waste, not a hazardous waste. Chapter 271.1 defines construction and demolition waste to be: “Solid waste resulting from the construction or demolition of buildings and other structures, including, but not limited to, wood, plaster, metals, asphaltic substances, bricks, block and unsegregated concrete...” This allows painted wood and metal structures to be disposed of without special preparation. Approved construction and demolition waste landfills are acceptable disposal facilities for this waste.

Based on these regulations and confirmed in conversations with the PaDEP, lead paint is not required to be removed from a structure prior to its demolition.

Furthermore:

- All building components including wood, metal, masonry, doors, etc. that contain lead paint and are scheduled to be disposed of as part of the scope of the project do not have to be analyzed for TCLP and may be disposed of as C&D debris.
- Any material that is going to be recycled must have all lead paint removed. This is typically handled by the recycling center. For Example Structural Steel with Lead Paint can be removed from the site and sent to a recycling center as scrap metal. Many scrap plants will properly remove and dispose of the lead paint. It is important to make sure the scraper is aware of the presence of lead paint and can properly handle the lead.

AMS

The City of Philadelphia Department of Public Health, Air Management Services regulates air emissions activities in the City of Philadelphia. As a result, Contractor's and SEPTA are required under the AMS regulations to prevent the release of dangerous air emissions. As part of their permitting responsibilities, Contractor's should submit their demolition and lead work plans to AMS to ensure they comply with the City regulations.

DETERMINING THE PRESENCE OF LEAD

It is important to evaluate for the presence of lead during the planning/design phase of a project. The designer's scope of work should include this investigative service. Under emergency or special circumstances SEPTA's System Safety Department (hereinafter referred to as System Safety) can sample for lead however, their annual budget for this service can not support every SEPTA project. Sampling is usually conducted via bulk samples sent to a laboratory or through the use of an XRF instrument that can instantly determine the presence of lead in a surface. System Safety is available to provide guidance or assistance on the sampling protocols for each project.

If the lead paint is not identified at the time of design, the contract documents will not warn the contractor of the presence of lead. Lead paint that is identified during the construction phase will obviously result in change orders, increases in contract costs and delays to the project schedule. Many projects will involve lead paint and other projects will not. The design phase of the project is the optimum time to make this distinction.

HANDLING MATERIAL IDENTIFIED TO CONTAIN LEAD

If lead-based paint is identified, the next step is to determine how it will need to be handled. This will vary by the specific work that is required under the general scope of the project. There are

typically three handling protocols that will be required on SEPTA projects (Component Removal, Surface Preparation, Total Removal). The handling protocol used must respond to the construction/demolition activity being performed.

COMPONENT REMOVAL

The project scope may require the demolition and removal of various existing components. These components such as doors, windows, wood soffits, block walls may also be covered with lead-based paint. Under this circumstance the component can be removed and disposed of as construction demolition debris. The lead-based coating **does not** have to be removed prior to the removal of the component. The contractor's demolition methods do however have to be conducted in a manner that controls dust and prohibits the coating from becoming air borne. If the contractor's methods can control the generation of dust the component can simply be removed and disposed of as C & D Waste in a C & D landfill

If the component can be recycled (i.e. structural steel), the recycling company needs to be aware of the lead-based paint and will be responsible to handle the coating as required for their recycling process.

SURFACE PREPARATION

It Is OK To Do Nothing

Many of the surfaces coated with lead based paint may be required to remain as part of the scope of the overall project. The magnitude of surface preparation is a result of final intentions for the substrate. In some cases the scope of the project may not require a lead painted surface to be altered in any way. In such cases it is acceptable to leave the surface as is. The presence of lead paint by itself does not automatically necessitate the need to remove the paint.

If The Surface Needs to Be Prepared For a New Coating

In some cases the project may require the existing lead-based painted substrate to be repainted (i.e. doors, windows or wood siding). In this case all the lead paint **Does not** have to be removed. It is acceptable to remove loose paint and prepare the surface in accordance with the surface preparation requirements of the new paint. The surface preparation should be a factor of the requirements of the new coating and not contingent on the fact that the old surface contains lead. When surface preparation requires the removal of all loose and flaking paint, the contractor will need to take precautions to prohibit the generation of airborne lead dust.

If lead paint is to be removed on site the recommended method is wet scraping whenever feasible. Burning, machine sanding, grinding, and dry scraping generate unacceptable levels of airborne lead and require maximum worker protection and containment. Chemical stripping is another acceptable method of removal and surface preparation. If this method is utilized the contractor must submit MSDS for any chemicals used on SEPTA property. It should also be noted that the use of chemical strippers may not always be compatible with the new paint coating.

Another acceptable method is the use of needle guns with a shroud attached to a HEPA vacuum. This method works well on metal and concrete if the substrate can support the impact of the tool.

SEPTA currently utilizes this method when repainting the old metal trolley wire support poles. When done correctly, historical air sample results confirm this method does not generate any unsafe air borne emissions. This is also the method of choice when lead needs to be removed from isolated areas to allow for utility penetrations or to weld a new piece of steel to the original structure.

Sandblasting lead paint should be a last resort. Proper containment and decontamination are required for this method. Protocols established under the HUD standards would serve as a benchmark for proper means and methods even though SEPTA's work is not regulated by HUD. Under the sandblasting method System Safety will require third party area air monitoring to ensure the integrity of the engineering controls are not presenting any public exposures. OSHA requires that all surfaces shall be maintained as free as practicable of accumulation of lead. The standard further states that clean up of floors and other surfaces where lead accumulates shall wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of lead becoming airborne. Wet wiping and HEPA Vacuuming are the industry standards for proper clean-up procedures. A visual inspection confirming proper clean-up is sufficient for clearing an area for re-occupancy.

Encapsulation of lead paint is another acceptable method. Encapsulants are brushed or rolled on coatings applied over the lead sealing it and providing a barrier. Many encapsulants are durable and provide an elastic property maintaining a good seal under a variety of temperature changes. There are numerous products that require minimum preparation and offer up to a 20 year warranty. Many of these encapsulants can be tinted to match a specific surface color. Encapsulation has been used successfully on many bridges and structures.

TOTAL LEAD PAINT REMOVAL

Often consultants and architects require that all of the paint is removed down to the substrate. This approach is simply based on the aesthetic value the architect believes is brought to the final finished product by eliminating the uneven surface and scaling appearance generated by the removing only loose paint. This aesthetic requirement adds countless man-hours and additional costs to many projects and is not required by any environmental regulation. Anytime full paint removal is suggested, the project staff needs to conduct a cost comparison to determine if the end result is justified over the added cost and time to the project. If the logistics or preference of the project staff determines that full lead-based paint removal, in whole or in part, is needed then System Safety recommends the following approach.

If the scope of work requires the contractor to remove all paint to bare substrate, the most cost effective and time sensitive methods are abatement like methods as detailed in the HUD Guidelines. The Contractor will more than likely retain the services of a certified abatement contractor. In light of the work involved to fully remove the paint to substrate, System Safety also recommends the utilization of a certified abatement contractor. The Contractor should provide detailed means and methods in their Lead Work Plan to include:

- Containment methods,
- Removal methods,
- Decontamination methods,
- Methods for protecting the worker
- Detailed methods for clean up of the containment area to ensure safe re-occupancy.

While the contractor will be required by OSHA to conduct personal air sampling for their workers, they will also be responsible to protect adjacent workers, the public and the environment. To confirm the contractor's activities do not pose an exposure to other workers or the public, System Safety recommends conducting area samples outside the containment area during the removal activity. These area samples should be compared against the OSHA Action level. This area sampling, while not required by regulations, should be conducted by an independent qualified company hired by the project. These services can be obtained by a task order to the Testing and Environmental Services Consultant (TES) or through a separate purchase order for this service. The independent area sampling should not be conducted by or through the Contractor as this poses a conflict of interest. Cost for this independent sampling needs to be covered by the project budget. System Safety does not have the financial resources to fund area sampling for construction projects.

It is true that this area sampling is not required by any regulation, however, it is a method that enables SEPTA to confirm that the contractor's work is not posing any exposure to the public; and the quantifiable data provides SEPTA the information needed to dispute any claim by the public that they were exposed during the construction activity.

There are several common methods used for total removal. Each method has pros and cons.

The use of a needle gun with a shroud attached to a HEPA vacuum is one method. This method works well on metal and concrete if the substrate can support the impact of the tool.

The incorporation of the HEPA vacuum to collect the dust provides a process that produces minimal exposure to the worker thereby requiring minimal PPE and offers the limited risk to surrounding environment. The needle gun operation does an excellent job but only covers small surface areas. As a result, it is time consuming method when covering larger surface areas.

Chemical Removal is a second method. This method of removal prevents the generation of lead dust and allows for the coverage of larger areas and quicker removal than the needle gun. While there is no dust generated, workers still may need respiratory protection to contend with the fumes generated during the chemical application. The Chemical Removal process may be less effective under colder temperatures. Chemical Removal may also not be as effective on surfaces with multi-layers of paint. Also the residue left over after the surface is cleaned may be incompatible with certain new coatings.

Hydro blasting is another method that can remove paint off of large surfaces with out generating lead dust or fumes. However, the waste water needs to be captured and properly disposed of. Also many environments may not be forgiving to the presence of water.

Abrasive Blasting (blasting with sand, walnut shells, metal beads etc.) is another method. This method generates the most dust, involves the greatest level of PPE and respiratory protection, requires full containment of the work environment and necessitates a method for decontamination of the workers and work area. Abrasive blasting presents the greatest potential exposure to the public if the containment is not properly erected. This potential exposure is why System Safety warrants independent area sampling. Additionally, abrasive blasting requires significant clean up protocols to ensure the work area is safe for re-occupancy before the containment is disassembled.

There are acceptable industry practices that should be utilized for cleaning up the work area. They typically include a thorough HEPA Vacuum of all surfaces, followed by a wash down of the surface using a Trisodium Phosphate (TSP) and water solution. To ensure the Contractor's clean up allows for safe re-occupancy, a visible inspection of the containment area should be conducted. The containment should not be removed until the visual inspection confirms a clean area. The visual inspection should be conducted by an independent trained individual, but not one hired by the contractor. If the visual inspection can not definitively allow for a safe re-occupancy, an aggressive air sample may be warranted. An aggressive air sample is conducted after the clean up is complete and consists of air samples taken inside the containment area while air is blown throughout the area usually via a leaf blower. For purposes of confirming a clean environment these samples should be below the OSHA action level.

DISPOSING OF THE LEAD WASTE

As stated above, the EPA regulates the disposal of residual and hazardous waste. As a result, SEPTA is required to ensure that the disposal of lead waste generated during construction activity is conducted in accordance with the RCRA regulations. The disposal requirement will vary based on the work method utilized to handle the lead.

COMPONENT REMOVAL

Under component removal, where the lead paint is still affixed to the component, the waste has been classified by the PaDEP as acceptable C & D debris and can be disposed of in a C & D Landfill if recycling is not an option.

SURFACE REMOVAL/ TOTAL REMOVAL

Most surface preparation methods will generate paint chips and/or dust. The contractor is required to properly collect this material and have it analyzed. All waste associated with **lead paint removal** must be measured for toxicity using the Toxic Characteristic Leaching Procedure (TCLP) and disposed of accordingly. If the TCLP analysis indicated Hazardous levels of lead ($\geq 5\text{mg/Kg}$) the Contractor and SEPTA will have to generate the proper disposal documentation forms. The Contractor will generate a Hazardous Material Manifest defining the quantity and type of hazardous waste anticipated to be disposed. In order to complete the manifest, the Contractor will need an EPA Facility ID number and a Generator's signature. Most of SEPTA's maintenance shops already have EPA Facility ID numbers, which System Safety can provide upon request. For unique locations like a bridge or a station, a Temporary ID number will be utilized. System Safety will coordinate with the EPA to obtain this Temporary ID number on behalf of the project. This process usually takes about 3 days. The project staff simply needs to contact System Safety and request this number.

If the TCLP results do not indicate hazardous levels of lead, then the waste can be disposed of as a residual waste. A chain of custody form will still need to be generated and a SEPTA employee on the project staff will still need to sign off as the Generator.

In addition to the paint chips and dust, containment material (i.e. Polyethylene plastic sheeting) and protective clothing (i.e. tyvek suits and gloves) will be required to be packaged with the lead waste for proper disposal.

Where water is utilized to control dust or in a hydro blast procedure, the waste water can not be disposed of in the Municipal system or to ground unless it has been determine that lead levels in the water meet the allowable levels for that type of disposal. If the lead levels in the water do not allow for disposal in the municipal system or ground, the waste water needs to be properly recycled.