

Lead Paint Removal on Bridges
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For years, lead-based paint was the preferred coating used on bridges to help protect steel and lengthen the structure's lifespan. It dries fast, and stands up well to wear and weather. But lead-based paint has a down side. It is toxic to both humans and the environment. Lead-based paint is no longer allowed in residential paints, but is still being used for industrial applications. The Indiana Department of Transportation (INDOT) revised its standard specifications in the mid 70's to discontinue to use of lead-based paint on bridges. Since that time, through regular painting and demolition contracts, INDOT has steadily been eliminating lead-based paints on bridges. Currently, out of over 5500 bridges on the state highway system, less than 400 still are coated with lead-based paint. Each year INDOT removes lead-based paint from bridges. INDOT also removes lead-based coated bridges through demolition contracts. In 10 to 15 years all lead-based coated bridges will have been eliminated from the state highway system.

The road to removal of lead-based coatings on our structures has, however, not been smooth. The development of proper standards and specifications is ever evolving. Changes in techniques, regulations, and requirements result in revised specifications. The latest were adopted last fall. New requirements in the Standard Specifications include the following:

- Preparation of **Quality Control/Quality Assurance Procedure** by the contractor including environmental and safety requirements
- Painting contractors must be certified by the **Steel Structures Painting Council (SSPC) – QP-2** for cleaning and painting **lead-based coatings**.

The **Quality Control/Quality Assurance Procedure** should be prepared and submitted for approval at least 15 workdays prior to the start of work. No work should be allowed to begin until written notice from the project engineer that the Quality Control/Quality Assurance Procedure has been accepted. It must then be followed.

What are the environmental pitfalls that a county might encounter when dealing with leaded paint removal from bridges? The main problem areas are:

- **containment**
- **health and safety equipment**
- **marking and storage**
- **sampling and testing**
- **disposal**

CONTAINMENT

The purpose of the containment system is to prevent debris generated during surface preparation from entering the environment. There are two basic types of containment systems:

- lead-based bridges – requires SSPC Guide 6 class 2A containment system
 - **Class 2A** – provides a **high level of emissions control**. For abrasive blast cleaning the following is normally required:
 - impenetrable walls with rigid or flexible framing
 - fully sealed joints
 - partially sealed entryways
 - forced air flow and exhaust air filtration (dust-collector).
- zinc primed bridges – requires SSPC class 3A containment system.

Class 3A – provides a **moderate level of emissions controls**. For abrasive blast cleaning the following is normally required:

- air penetrable walls with rigid or flexible framing
- partially sealed joints and entryways
- exhaust air filtration.

COMMON CONTAINMENT PROBLEMS

- **Improper sealing of the containment** - Joints and seams not fully joined with the seams overlapping. Sealing includes overlapping of seams when using flexible materials and use of stitching, taping, caulking, or other appropriate sealing methods
- There should be **no sign of tears or openings** in the containment system.
- **Forced air flow and air filtration (dust collectors)** must be used –forced exhaust air flow into dust collectors or bag houses that are properly sized to allow at least 2 to 3 air changes/minute
- **Improper clean up** – INDOT Standard Specifications require at the least daily clean up and storage of all blast debris.
- Allow **NO CONTAMINATION OF THE SURROUNDING ENVIRONMENT** – no fugitive emissions – if the bridge is over water a boom or flotation device should be used as a back-up containment device

HEALTH/SAFETY EQUIPMENT

follow approved Quality Control/Quality Assurance Procedure

- Provide and require use of **decontamination trailer** –have two separate rooms with a clean and dirty door
- Use proper **Personal Protective Equipment (PPE)** in regulated area– respiratory protection, PPE – air monitoring
- Proper **fall protection**
- Control of the regulated area – **traffic control and warning signs**
- **No eating/drinking/smoking in regulated area**
- Proper **worker training** with supporting documentation

WASTE MATERIAL STORAGE

Proper waste material storage/marketing is required. Failure to properly store the residue is a violation and can result in a larger volume of material being classified as hazardous. If you illegally store hazardous or special waste on the ground, you no longer have just the waste as hazardous, but also any soil that has been contaminated.

- The **presence of any lead** in the blast debris requires that site storage requirements for hazardous waste be followed.
- The material must be stored in a way that will **not** allow it to **be released** into the environment.
- The storage site must be secure – **weather proof and tamper proof**
- All containers must be in **sound condition** – they must not leak
- Prominent **warning signs** should be displayed around the perimeters.
- The waste must be stored in containers capable of being **securely closed** such as roll-offs or drums, but not in tarps. The tops must be kept on the containers so that rain cannot enter or any waste blow out.

- Drums cannot be stored more than two high or two wide.
- Each container must be **properly labeled** identifying the contents and dates of initiation of accumulation. The labels must be clearly visible. Until the laboratory results are received, the containers must be marked “LEAD PAINT WASTE DEBRIS” or “ZINC PAINT WASTE DEBRIS” as appropriate. Labeling of containers as hazardous waste is not required until the lab analysis determines that it is hazardous. Immediately upon notice, the material must be properly marked with a HAZARDOUS WASTE designation, include the Environmental Protection Agency (EPA) ID #, as well as other required U.S. Department of Transportation information.
- **Storage time** - a large quantity generator (LQG) – 2200 lbs./mo.(and virtually all lead bridges that generate hazardous waste are LQG’s) is allowed to accumulate hazardous waste for **no more than 90 days**. A 30-day extension can be obtained from the Indiana Department of Environmental Management (IDEM) if problems occur. Accumulation time starts when the debris is first placed in the container. Therefore, it is important to date on the label of the container when the waste was first placed in it.
- **WASTE MATERIAL SHOULD NEVER BE COMBINED WITH OTHER BRIDGE WASTE.** Sample and store each bridge’s waste separately. It may be found that one source of debris is hazardous while the other is not. Combining wastes may result in a larger quantity of hazardous waste

SAMPLING/TESTING OF WASTE MATERIAL SAMPLING

The results of the lab tests are only as good as the samples submitted. It is essential to properly field sample the waste. The sampling plan should be included in the Quality Control/Quality Assurance Procedure and followed. Sampling the site rather than the containers is preferred.

- **Random sampling** can either be done in space or time
 - in **space**, an imaginary grid is drawn of the bridge deck and samples are collected from 4 randomly selected squares on the imaginary grid.
 - in **time**, the samples are taken from the same location but at different times. This method is more appropriate for cases when debris is continuously cleaned up. Samples are taken randomly in time as the waste drums or roll offs are filled.
- Samples should be **taken as soon as debris is generated**.

TESTING

- EPA requires at least **4 randomly obtained samples** be taken and analyzed.
- Analysis of **only 1 sample is sufficient to classify waste as hazardous**.
- The **4 samples are needed to classify the waste as non-hazardous**
- The **Toxicity Characteristic Leaching Procedure (TCLP)** is used to determine whether waste is hazardous or special
- **Consult the landfill** you intend to send the waste to do determine what further testing, if any, they need.
- **Testing should be done during sandblasting**, when 75% of the job is done.
- **lead levels > 5 parts per million (ppm), then waste is hazardous.**
- If analysis shows the waste is not hazardous, then it is **special waste**

DISPOSAL

- When waste tests hazardous or special, **notification and certification** of disposal are required (certification is not required if special waste is disposed of at a hazardous waste facility).
- If waste tests **hazardous, obtain EPA ID# from IDEM** – cannot transport /dispose of waste without this.
- Generator (County) must sign **manifest** and it must accompany each load of hazardous waste from cradle to grave.
- Copy of manifest must be **retained for 3 years** by generator
- All waste containers must be labeled with **EPA Hazardous Waste Label**
- and **DOT shipping labels**
- No hazardous waste disposal facilities located in Indiana
- **Leave no waste on site**

It is owner's (County's) responsibility for complying with all regulations