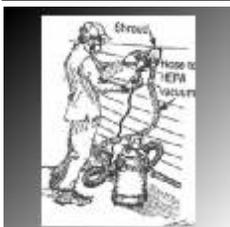


Ergonomics For Lead Abatement



Musculoskeletal Risks in the Lead Abatement Industry

Lead abatement work performed by Laborers includes cleaning steel structures and residential lead abatement. Lead abatement on steel structures can include bridge renovation and renovation or demolition of the steel structure of a building. Laborers primarily work in building renovation/demolition.

BUILDING RENOVATION/ DEMOLITION

The primary aim of lead abatement in building renovation/demolition is to remove lead paint from structural steel. This is accomplished by several methods, each with ergonomic hazards. Paint is removed:

- Chemically, with paste.
- Mechanically, with power tools.
- With a combination of heat guns and hand scraping.
- By abrasive blasting and water jet. This type of cleaning is commonly used in lead abatement on bridges but not in buildings.

CHEMICAL METHODS:

Chemicals are commonly used in the first stages of building

demolition. A strip of chemical paste is painted on an I-beam. After a set time (5 minutes to several hours) the paste is removed, along with the lead paint. The I-beam can then be cut safely using hydraulic shears or with a torch. Chemical paste comes in heavy 5-gallon buckets. The application of the paste commonly requires working overhead, in hard-to-reach areas, and on ladders or man lifts. Tips to make this easier include:

- Use a sprayer to apply the paste.
- Use a ladder long enough to get close to the work.
- Transfer the paste to a smaller 1-gallon bucket.
- Use telescopic tools to gain distance or for overhead work.

Newly developed methods can make the work easier. For example, electrode cleaning blankets wrap around the beam and are then removed and disposed of along with the lead-based paint.

MECHANICAL METHODS:

Power tools—such as rotary peeners and sander polishers—are used to clean larger areas of beams. The tools are heavy (up to 18 pounds, for example) and workers

get tired quickly from holding them up against the beams. The combination of holding tools up and the pressure needed to remove the paint makes it hard on the body. The tools also produce a lot of vibration that makes holding them difficult. They are also noisy. The sander polisher will often have a second handle to allow it to work as a two-handed tool. The handle can be attached on either the left or right side of the tool to allow for either left- or right-handed use. The trigger is small, and only allows one finger use. It is lockable, though, so you do not have to hold it down the entire time you are using it. Tips are:

- Use a smaller, lighter tool when possible.
- Develop a larger trigger for the tool.
- Use job rotation to reduce the amount of time working with these tools.
- Use a sling to hold the tool and support its weight.
- Develop a jig that attaches it to the I-beam and holds the tool in place.
- Use needle guns to remove smaller areas of paint from I-beams. These guns are better at getting into corners. They

are smaller and lighter but produce a lot of vibration and noise.

HEATGUNS/HANDSCRAPING:

Heat guns are used to heat small areas of paint, making them easier to scrape by hand. This is useful for removing paint from wood doorframes where power tools cannot be used because they could destroy the wood. The nozzles get extremely hot and require insulation because workers are tempted to hold the nozzle when they get tired. Using heat guns is a relatively slow process. It creates problems with static load from holding it for long periods of time. The use of heat guns reduces the force or pressure needed because the paint essentially pops off the surface. It might be improved by:

- Development of an adjustable stand to hold the heat gun.

Hand scraping requires using force against the surface to get the paint off. Improved tool design includes:

- Have a longer and more comfortable handle, which is the right size and shape for your hand.
- Angle the tool to allow you to keep your wrist straight.
- Use a two-handed tool that allows for more pressure and better results with less strain.
- Get as close to the work as possible with ladders or man lifts.
- Keep the blade clean and sharp.
- Use pull scrapers instead of those that push against the surface.

RESIDENTIAL ABATEMENT

Residential lead abatement requires:

- Removal of entire components that will be disposed of and replaced, such as windows frames and doors.
- Hand scraping of loose paint, cleaning the surface with TSP (trisodium phosphate), HEPA vacuuming, and painting the surface.
- Building enclosures over lead painted surfaces.

REMOVAL OF ENTIRE COMPONENTS:

Doors and windows that are being disposed of are removed, wrapped in plastic, and removed. The primary hazards are the weight and size of these materials. Normally this work has to be done by at least two people. Carts or dollies should be used for transporting components. Other suggestions for improvements include:

- Use of a hanging scaffold as a material transport for taking windows and doors to the ground from outside the building.
- Develop plastic envelopes that are the right size for doors and windows, which will make wrapping them in plastic much easier.

HAND SCRAPING:

Hand scraping is improved by the use of better scrapers and getting closer to the work. Cleaning off the surface with TSP is normally done with rags and brushes. Long-handled

tools and extensions for the HEPA vacuum may make it easier to reach hard-to-access areas.