



Preventing Lead Poisoning in Scrap Metal Recycling

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For Employers and Safety Managers in the Scrap Metal Recycling Business

Introduction

Scrap metal recovery and collection can place workers at risk for lead poisoning. Lead may be present in the coatings on the scrap (paints, hot dips, etc.), or it may be present as pure metal, an alloy, or its oxides (as found in battery plates). This pamphlet will help you start to identify and control lead exposures in your operation.

Fortunately, lead poisoning is completely preventable. This pamphlet provides information on controlling lead exposures in your business. Exposures to lead fumes and dust put workers at risk for lead poisoning. Workers can take lead home on their clothing and shoes. This is dangerous to children ages six and younger, because lead is toxic to the brain and can cause permanent damage.

Scrap recycling workers have very high rates of other workplace illnesses and injuries. See the back page for information on how to get help with solving health and safety problems.

Controlling Lead Exposures

Controlling exposures at the source is the key to preventing lead poisoning. While it may require a significant initial investment, controlling exposure through ventilation and other means can substantially reduce the number of requirements you are responsible for under the Lead Standard.



Disassembled car and truck radiators baled for shipping. Torching radiators to melt solder can cause severe lead poisoning in workers

Torch Cutting

Exposures

The heat generated by a cutting torch is high enough to melt leaded solder and vaporize any lead on the surface of the metal. The small lead particles (fume) in the smoke generated in this process penetrate deeply into the lungs. The small size also allows the body to quickly absorb the lead, creating the potential for severe acute lead poisoning. These particles may also stick to a worker's skin and clothing creating hazards from ingestion and cross contamination. Lead from a worker's hands can contaminate food and/or cigarettes; and lead on clothing may contaminate the worker's car, home, and family.

Controls

Providing local exhaust ventilation may be impractical when cutting large pieces of scrap metal. Although portable exhaust systems equipped with HEPA filtration are available and may be appropriate for some operations, alternative controls must be considered if the process is not easily controlled by exhaust ventilation.

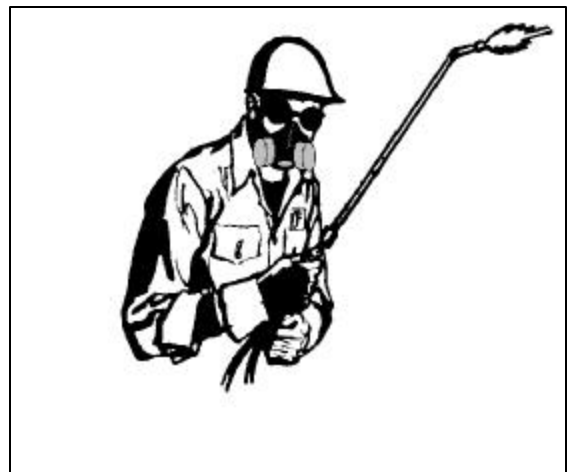
Surface preparation methods can be used to reduce exposures. One method is removing the coating along the path of the cutting torch before actually cutting the metal. Removing surface coatings eliminates them as sources of lead. Abrasive removal (see next page) is preferred over burning. Burning can generate more lead fumes than torch cutting because the entire surface burns, not just the cut line. Although chemical stripping may work, it

may introduce other chemical exposures and create a fire hazard.

Simple changes in work practices may also reduce exposures. For example, increase the distance between the worker and the cutting head of the torch by using an extended cutting torch (sometimes called an "oxy-lance torch").

Positioning the worker such that the wind carries the smoke and fume away from the worker can reduce exposures, but may not be dependable. Care must be taken to ensure that other workers down wind are not exposed to the cutting fumes.

Consider using mechanical cutting devices, rather than torch cutting. Powered saws or shears may be used for many tasks, and do not generate lead fumes. However, be aware that these mechanical devices may introduce other hazards, such as excessive noise and other traumatic injuries.



Please Note: Surface preparation and cutting techniques alone are not likely to completely protect your workers from lead over-exposures. A complete respiratory protection program is an important part of a total exposure control program

Abrasive Removal of Surface Coatings

Exposures

Abrasive removal of surface coatings may also expose workers to high levels of lead and other toxic dusts. While this process is unlikely to create a metal fume, it is capable of generating large amounts of lead dust that may be inhaled.

Controls

Many newer abrasive devices are equipped with dust removal systems. These systems typically use a hood or shroud enclosing the abrasive operation. The shroud is connected to a vacuum equipped with a HEPA filtration system and prevents dust from escaping during grinding. This system collects the dust as it is being generated.

Battery Breaking

Exposures

Battery breaking or recycling poses special problems with lead exposures. Not only do batteries contain lead plates, they also contain extremely corrosive hydrochloric acid that is contaminated with lead. The lead “plates” are grids with the spaces filled with lead oxide. This lead oxide breaks up and forms very small particles that can easily be inhaled.

Controls

Exposures during battery breaking may be controlled using a hood or local exhaust. Some batteries, because of their large size, may not easily fit into a hood. In these cases, personal protective equipment such as respirators, gloves, protective

coveralls and work boots are necessary to reduce exposure.

Facility Maintenance

Exposures

An often-overlooked source of exposure is routine maintenance of equipment and the facility. Lead dust can collect on or in equipment, and when disturbed can create an exposure hazard. Potential sources of exposure are dry sweeping floors, emptying trash bins, and maintaining air-cleaning devices.

Controls

Whenever there is a potential for lead dust accumulation, floors and other work surfaces should never be dry swept or cleaned with compressed air. Use a HEPA vacuum and then wet-wash the surface with warm water and detergent. After the area has dried, the surface should be vacuumed once more. Frequently wipe surfaces such as lunch tables with a clean wet cloth.

For more information about the health effects of lead and your responsibilities under the “Lead Standard”, read “Working with lead: How to protect workers’ health”. Available by calling 1-888-66-SHARP and requesting Report 60-1-2000 or from the Internet at: www.lni.wa.gov/sharp/lead_protect.pdf.

Other sources of information

SHARP Publication “Working with lead: How to protect workers' health” describes lead’s health effects, blood lead testing, exposure controls, and summarizes Washington State’s Lead Standard (WAC 296-62-07521).

If you have any questions about lead regulations, you can call your local L&I office and ask to speak to an Industrial Hygiene Consultant. Their telephone number is listed in the “Government Pages” of your local telephone directory. These consultants provide a confidential, no-fee service. Safety & Health consultants can provide an on-site assessment of your facility, including air-testing capabilities. You can also find more information by visiting L&I’s web site: www.lni.wa.gov.

Industrial ventilation questions can be addressed to L&I’s consultants or to the Policy & Technical Services Program, Department of Labor & Industries, (360) 902-5478.

The University of Washington provides on-site consultation services through:

University of Washington,
Field Research & Consultation Group,
4225 Roosevelt Way,
Seattle, WA 98105.
(206) 543-9711

Relevant Yellow Page headings include:

- Industrial Hygiene Consultants
- Safety Equipment and Clothing (respirators, coveralls, etc.)

What is SHARP?

SHARP stands for Safety & Health Assessment & Research for Prevention. SHARP is a multidisciplinary research program within the Washington State Department of Labor and Industries, whose mission is to conduct research, monitoring, and demonstration projects that promote healthy work environments and the prevention of workplace injuries and illnesses.

SHARP was created by the Washington State Legislature in 1990. SHARP has addressed a diverse range of occupational health & safety concerns in response to requests from employers, labor, health care professionals, and agency staff. SHARP’s research specialists offer expertise in computer systems, economics, epidemiology, ergonomics, industrial hygiene, occupational medicine, nursing, safety engineering, and toxicology.

SHARP maintains the Occupational Lead Exposure Registry and can provide further information to interested employers on work-related lead poisoning and methods of prevention.

You can contact us at:

SHARP
PO Box 44330
Olympia WA 98504-4330
Tel. (888)-66-SHARP (toll-free)
Fax (360)-902-5672

**Check out SHARP on the
World Wide Web:**

www.lni.wa.gov/sharp

SHARP's web site provides more information about the SHARP program, describes SHARP's research interests, lists our publications (many are available on-line), introduces the SHARP team, and provides links to other sites of occupational and environmental interest.