ENVIRONMENTAL HEALTH & SAFETY
UNIVERSITY of WASHINGTON

LEAD SAFETY IN SHOPS AND LABS

LEAD HAZARDS

Lead may cause significant health effects if not used safely. Lead can affect the nervous system, reproductive system, blood, kidneys and cause digestive problems, memory and concentration problems, and muscle and joint pain.

Inhalation of lead dust or fumes from improper handling of materials, abrasion, soldering or welding.

Ingestion of lead from contaminated hands or surfaces.

LEAD IN SHOPS

Shops*, maker spaces, and some labs may use lead-containing products or materials in work, such as:

- Soldering
- Removing lead-containing paint from small items, especially sanding, grinding and abrasive blasting
- Cutting brass keys
- Oxy-acetylene or arc cutting/welding/brazing where lead is in the metal, or on the metal as paint
- Brazing or removing old solder
- Scrap metal salvage or recycling
- Handling pipe lubricant and lead-containing greases
- Cleaning or repairing lead acid batteries

*Shops include locations where fabrication and repair activities occur, either in academia or facilities/maintenance departments.

LEAD IN LABORATORIES

Common lead-containing chemicals used in UW labs include those listed below and many more; the majority are in solid form such as powders, and granular.

- Lead acetate
- Lead chloride
- Lead iodide
- Lead nitrate
- Lead oxide
- Small quantities of elemental lead

PREVENT LEAD EXPOSURE

The best method of controlling lead exposure is to eliminate its use by using an alternative chemical, material or product, or changing a process so that lead is not needed. If that is not possible, controls must be put in place to minimize potential exposures.

In addition to normal safe work practices used in laboratories (see the Laboratory Safety Manual) and shops, those who use lead-containing chemicals and products need to:

- Always work with lead-containing chemicals and materials in a chemical fume hood or area with **local exhaust ventilation.**

www.phe.gov

Chemical fume hood

- **Register the chemical/product** in the MyChem inventory and submit a safety data sheet (SDS).

- Develop a standard operating procedure (SOP) and/or conduct a job hazard analysis (JHA) for the chemical/product to ensure safe handling, use, storage and disposal as hazardous waste.
- **Train employees** on lead hazards, SDSs, SOPs and JHAs.
- Ensure chemicals and lead products are **labeled** and storage areas have **signs** indicating hazards.
- **Wear personal protective equipment** (PPE), such as safety glasses/goggles, gloves and a lab coat at minimum.

PREVENT "TAKE-HOME" LEAD

Clean work surfaces with damp wipes. Do not contaminate clothes, shoes, and skin that can carry lead into your car and home, and accidentally expose family members. Children are especially susceptible.

- **Manage housekeeping and cleaning** with wet wipes in work areas to avoid contamination of surfaces and other areas. Conduct surface testing for lead contamination as needed.
- **Avoid generating dust** when handling and weighing lead-containing chemicals in powder form.
- Always **wash hands** after working with lead-containing chemicals and materials and before leaving the work area, and before eating or drinking.
- Refer to the Metallic Lead Safety focus sheet for more information on lead oxidation.

WASTE MANAGEMENT

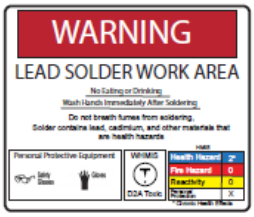
Lead-containing chemical and soldering waste must be treated as hazardous waste and disposed of according to local hazardous waste regulations.

- Discard lead chemical waste and lead solder in a labeled waste container.
- Never put contaminated items into the regular trash.
- For collection and disposal information, contact EH&S Environmental Programs at 206.616.5835 or chmwaste@uw.edu.

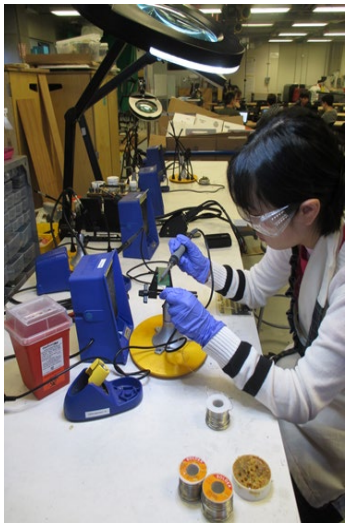
SOLDERING SAFETY

Use lead-free solder or low lead solder instead of normal lead-containing solder if possible.

Soldering with lead solder is not likely to produce lead fumes unless the soldering iron exceeds normal soldering temperatures. However, good ventilation is needed to avoid exposure to flux fumes and any potential metal fumes.



- Work in a **designated soldering area** with good ventilation and local exhaust. Post warning signs in the area.
- Use a fume extractor if ventilation is not sufficient.
- Wear clothing that covers arms and legs or a lab coat, closed toe shoes, disposable gloves and safety glasses or goggles.
- Check equipment to ensure the soldering iron does not exceed standard soldering temperatures.
- Use safe work practices such as washing hands after soldering, keeping the workspace clean, and not eating or drinking in designated soldering area.
- Wear respiratory protection when ventilation or other measures are not adequate.



Designated soldering area with fume extractors at each station

RESOURCE

UW Lead Safety Program Manual

Please contact EH&S at 206.543.7388 for more information about lead safety.