**Objective:** To communicate requirements for working safely with toxic metals.

**Toxic Metals in the Workplace**

Toxic metals, also known as heavy metals, are individual metals or compounds that can cause negative health effects when people are exposed to them in large amounts. They can accumulate in the human body or in the environment, which can lead to adverse impacts from exposure.



Examples of toxic metals include arsenic, beryllium, cadmium, hexavalent chromium, lead, and mercury.

**Requirements for Working with Toxic Metals**

Employees who work with toxic metals should have appropriate training on their hazards, including hazard communication training. **Note**: *This training short is not a substitute for hazard communication training.*

You are expected to follow the requirements of your workplace hazard communication procedures and any other applicable safety procedures based on the scope of work. Only work with toxic metals when using proper hazard controls and wearing personal protective equipment (PPE).

*Mercury, sometimes referred to as “quicksilver,” may still be found in older medical products, such as thermometers and blood  
pressure devices.*

The U.S. Occupational Safety and Health Administration (OSHA) regulates the use of toxic metals to reduce hazardous exposures. Check your state/local regulations in addition to any federal regulatory requirements for working with toxic metals. Employees should have the opportunity to review any applicable OSHA standards related to the metals they use. Technical data on exposure limits can be found in 29 CFR 1910 Subpart Z, which has tables that list exposure limits.

The U.S. Environmental Protection Agency (EPA) regulates toxic metals using multiple regulations to reduce hazardous environmental contamination of our air and water. Check your state/local regulations in addition to any federal regulatory requirements for working with toxic metals.

**Health Hazards**

Working with metals can create potentially harmful dust, vapors, and fumes. Although inhalation is the most common way for toxic metals to enter the body, it’s also possible to ingest metallic substances while smoking, eating, or drinking if the proper precautions aren’t taken. Use the metal’s safety data sheet (SDS) to help find important information about exposure control, first aid, and other pertinent safety details.

Inhaling metals can cause metal fume fever, a flu-like condition with coughing, shortness of breath, fatigue, fever, chills, profuse sweating, and chest pains.

Certain metals, like hexavalent chromium, are known carcinogens, meaning that they are known to cause cancer. Additionally, some metals, like lead, are teratogens, meaning they can negatively affect reproductive health in both men and women and potentially cause birth defects.

**Permissible Exposure Limits**

OSHA establishes permissible exposure levels (PELs) for certain chemicals and metals in the workplace to help reduce potential exposures to hazardous concentrations,

* PELs tell you about the amount of a chemical to which you can be exposed over an 8-hour workday without experiencing adverse health effects.
* If air monitoring determines that these exposure levels are high enough to meet the action level of the PEL or greater, then your workplace will implement controls to reduce exposure levels.
  + Additionally, chemicals may have a short-term exposure limit (STEL), which is the concentration that an employee can be repeatedly exposed to over short periods without developing adverse health effects — this may also be referred to as the excursion limit.
* If controls cannot reduce exposure levels (or if the product SDS requires it), then appropriate respirators must be used to protect the user from harmful solvent concentrations.

**Hierarchy of Controls**

Depending on the level of toxic metals exposure and the duration, your workplace may be required to use a combination of hazard controls to reduce exposures. Using the hierarchy of controls can help minimize exposure to hazardous levels of toxic metals. Consider these steps:

1. **Eliminate** the use of toxic metals where possible. *Can you change an operation so that you don’t need the product?*
2. **Substitute** them for less hazardous alternatives. *Can you use a less hazardous product?*
3. **Engineer** them out of a process. Enclose the workspace, provide ventilation, etc. *What can you do to minimize or eliminate employee contact?*
4. **Use administrative controls** such as training, work rotations, and standard operating procedures to minimize exposure. *How can you change the work to minimize exposure? What information will be helpful to the worker?*
5. **Wear PPE** to protect yourself from remaining hazards. Respiratory protection may be required to meet exposure requirements. *What other PPE is necessary to protect the worker?*



**PPE Considerations**

Your PPE needs may vary depending on the type of toxic metal you are using. Always check the SDS for specific exposure controls.

* Check the glove manufacturer’s chart to choose gloves with the appropriate chemical resistance.
* Contact with solvents will degrade PPE over time. Inspect PPE before use and replace it as needed.
* Follow all requirements for use as set forth in OSHA’s Respiratory Protection Standard if you’re required to wear a respirator.
* Choose appropriate eye, face, and body protection based on the solvent and type of work you’ll be performing. Consider particle dispersal, vapor exposure, and other hazards that may expose your skin, eyes, or extremities.

*Ensure your PPE is fitted properly to protect yourself from exposure.*

**Personal Hygiene**

Having appropriate hygiene facilities and using personal hygiene best practices can help reduce employee toxic metals exposure. Employees shall have access to change rooms, bathrooms, showers, and lunchrooms free from contamination.

**Safe Handling Tips**

If you have any questions about working with or near toxic metals, review your organization’s operating procedures and contact your supervisor.

* Develop a housekeeping plan and use preventative maintenance to minimize risks of metal exposures.
* Label areas with hazardous concentrations of toxic metals appropriately with signs denoting the potential toxic   
  metal hazards.
* Properly characterize and dispose of toxic metals waste and toxic metals-contaminated items as required by waste disposal regulations.
* Be aware of fume buildup, especially in confined spaces or areas with low ventilation.

*Remember: Report any safety concerns to your supervisor immediately*

This form documents that the training specified above was presented to the listed participants. By signing below, each participant acknowledges receiving this training.

Organization: Date:

Trainer: Trainer’s Signature:

**Class Participants:**

Name: Signature:

Name: Signature:

Name: Signature:

Name: Signature:

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