Toxic Metals

Introduction

While many elements that are considered heavy metals have no known benefit for human physiology (e.g., lead, mercury, cadmium), others are essential to human biochemical processes (e.g., zinc, iron, cobalt). When heavy metals are taken up and stored faster than they are broken down or excreted, they can bio-accumulate in body tissues and reach toxic concentrations. The toxicity of heavy metals depends on a number of factors including the dose (acute or chronic), frequency and route of exposure, and the age and health status of exposed individuals. The following is a list of commonly used toxic metals at UConn. This list is not comprehensive.

Common Toxic Metals			
Aluminum	**Boron**	**Iron**	**Selenium**
Antimony	**Cadmium**	**Lead**	**Silver**
Arsenic	**Chromium**	**Manganese**	**Tin**
Barium	**Cobalt**	**Mercury**	**Vanadium**
Beryllium	**Copper**	**Nickel**	**Zinc**

Safe Work Practices

Lab personnel must follow the work practices below when handling, storing, or disposing of toxic metals.

1. Read the safety data sheet (SDS) for each toxic metal or metal compound prior to use.
2. Eliminate, substitute less toxic chemicals, or reduce the quantities of toxic metals being used if possible.
3. Work with toxic metals in a chemical fume hood, glove box, or other types of local exhaust ventilation.
4. Wear personal protective equipment (PPE) as indicated by the safety data sheet or the lab's workplace hazard assessment (WHA) form.
5. Ensure containers are clearly labeled and inspect containers for leaks or damage prior to use.
6. Store toxic metals in tightly sealed containers away from incompatible materials.

7. Store corrosive, toxic metals (e.g., mercury) below eye level.
8. Do not return contaminated or unused material to the original container.
9. Ensure that emergency eyewash/shower stations are readily available.
10. Ensure that all waste containers are compatible with the toxic metals and that the containers are properly labeled and stored.

Resources

Agency for Toxic Substances and Disease Registry – ATSDR Toxic Substances Portal
https://wwwn.cdc.gov/TSP/index.aspx

Environmental Protection Agency – Hazardous Waste Characteristics
https://www.epa.gov/environmental-topics/land-waste-and-cleanup-topics

Occupational Safety & Health Administration – Toxic Metals
https://www.osha.gov/toxic-metals