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Developed By: University Department of Safety and Health

Standard Operating Procedures For Handling, Storage and Disposal of Lead Compounds

Purpose

The purpose of this document is to establish specific standard operating procedures for handling, storage, and disposal of Lead Compounds. The requirements established in this SOP are in conjunction with the University's Chemical Hygiene Plan.

Overview

The acute toxicity of lead and its compounds is moderate to low.

The toxic effects of lead compounds give rise to symptoms including agitation, insomnia, dizziness, tremors, and delirium, which can progress to mania, coma and death. These symptoms are accompanied by nausea, vomiting, loss of appetite, severe cramping, muscular aches and weakness, diarrhea, and abdominal pain. Lead can accumulate in the soft tissues and bones, with the highest accumulation in the liver and kidneys, and elimination is slow.

Lead and its compounds have shown developmental and reproductive toxicity in both male and female animals and humans. They are considered a probably/possible human carcinogen based on sufficient animal evidence and inadequate human evidence.

For lead compounds, high temperatures are likely to produce toxic metal fumes, vapors or dust. Lead compounds in the form of finely divided powders may be carried by air currents. Lead and lead compounds, like any heavy metal, should not be disposed of by sewer. People using lead and lead compounds are required by OSHA to have special training.

Standard Operating Procedures

Handling

1. All manipulations (sample preparations, heat treating, sintering, etc.) with lead compounds that can generate dust, vapors, metal fumes or aerosols must be conducted in a properly working chemical fume hood, glove box, local exhaust system or other suitable containment device that exhausts directly outside to reduce possible inhalation exposures. If work activities cannot be conducted under local exhaust ventilation then the PI must contact the Department of Environmental Health and Safety for consideration of respiratory protection.
2. Furnaces used for lead compound heating/sintering must be connected to a local exhaust system that is exhausted directly outside.
3. Proper personal protection equipment (PPE) must be worn at all times to prevent eye and skin contact. The minimum requirement for PPE is safety glasses with side shields, disposable coveralls, and protective gloves.
4. Be sure to inspect all PPE prior to and after use.
5. Designate an area in the laboratory for only lead compound manipulations. This area must be labeled with the appropriate hazard communication labels (i.e. Toxic in use area). All equipment and PPE must remain in this designated area. Never remove contaminated equipment or PPE from designated area.
6. Keep good housekeeping procedures. All disposable materials contaminated with lead compounds must be disposed as hazardous waste.
7. The laboratory must be equipped with a working eyewash station and safety shower.
8. Always practice good laboratory hygiene. Wash hands, face, neck and forearms frequently. Wash hands before eating and do not eat, drink, or smoke in the laboratory.
9. Surface contamination must be checked using lead test kits. Contact the Department of Environmental Health and Safety for assistance.
10. Any amount of a lead compound spilled must be immediately reported as a major spill event.

Storage

1. The lead compounds must be stored in a tightly closed secondary containment container.
2. Do not store this material with incompatible materials. Avoid contact with strong acids, bases, halides, oxidizers, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen and reducing agents.
3. Storage cabinets containing this material must be labeled with the appropriate hazard communication label (i.e. toxic or poison).
4. The secondary containment container must be labeled according to University guidelines (i.e. full chemical name; hazard warning words – toxic; carcinogen; responsible party).
5. Due to the hazardous nature of the material only minimal quantities of material should be purchased and stored.

Disposal

1. All waste must be collected in a sealable compatible container and disposed as hazardous waste as per University Hazardous Waste Guidelines.
2. All residual materials and rinse water from empty containers of this material must be collected and disposed as hazardous waste.
3. The rinse water from decontamination of all non-disposable equipment must be collected and disposed as hazardous waste.
4. All disposable materials contaminated with this material must be disposed as hazardous waste.
5. **Drain disposal of any of these materials is strictly forbidden.**

6. A chemical pick-up request form must be completed and submitted when the hazardous waste needs to be removed.