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Standard Operating Procedures For Handling, Storage and Disposal of Sodium Arsenate and Arsenic (V) Solution

Purpose

The purpose of this document is to establish specific standard operating procedures for handling, storage, and disposal of Sodium Arsenate (Arsenic Acid) and Arsenic (V) Solution. The requirements established in this SOP are in conjunction with the University's Chemical Hygiene Plan.

Overview

Arsenic is carcinogenic and extremely toxic. The inhalation of dust or fumes irritates the mucous membranes and leads to arsenical poisoning. Arsenic acid can irritate the eyes and skin, and absorption causes poisoning. Ingestion may irritate the stomach severely and affect the heart, liver, and kidneys; nervousness, thirst, vomiting, bloody diarrhea, cyanosis, and collapse may be symptoms. Prolonged inhalation of small concentrations of dust or fumes over a long period will cause poisoning. Repeated or prolonged skin contact may cause bronzing of the skin, edema, dermatitis, and lesions. Do not inhale dust or fumes. Prevent contact with skin and eyes.

Standard Operating Procedures

Handling

1. All manipulations with sodium arsenate and the arsenic (v) solution that can generate dust, vapors, or aerosols must be conducted in a properly working chemical fume hood, glove box or other suitable containment device to reduce possible inhalation exposures.
2. 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, laboratory coat, and protective gloves. The suggested glove for working with this material is nitrile.
3. Be sure to inspect all PPE prior to and after use.

4. Designate an area in the laboratory for only arsenic manipulations. This area must be labeled with the appropriate hazard communication labels (i.e. carcinogen in use area). All equipment and PPE must remain in this designated area. Never remove contaminated equipment or PPE from designated area.
5. Keep good housekeeping procedures. All disposable materials contaminated with arsenic must be disposed as hazardous waste.
6. The laboratory must be equipped with a working eyewash station and safety shower.
7. 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.
8. Any amount of arsenic spilled must be immediately reported as a major spill event.

Storage

1. The arsenic compounds must be stored in a tightly closed secondary containment containers.
2. Do not store this material with incompatible materials. Reacts with strong acids, acid fumes, forming toxic arsenic fumes. Incompatible with alkalis, ammonia, amines, isocyanates, alkylene oxides, oxidizers, epichlorohydrin, vinyl acetate, amides. Reacts slowly with mild steel, galvanized metals, and brass. Incompatible with iron, aluminum, zinc in the presence of water.
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 of arsenic compounds must be collected in a sealable compatible container (i.e. brown glass bottle) 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.