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Developed By: University Department of Safety and Health

Standard Operating Procedures For Handling, Storage and Disposal of Sodium Sulfide

Purpose

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

Overview

Sodium Sulfide is extremely corrosive and toxic. Decomposition of sodium sulfide or from its reaction with acids will produce hydrogen sulfide. The inhalation symptoms include painful conjunctivitis, headache, nausea, dizziness, coughing and, in extreme cases, pulmonary edema and possible death. Ingestion of sodium sulfide, a strong base, can cause severe burns on the mucous membrane. Hydrolysis by gastric fluids releases toxic hydrogen sulfide. Contact with skin can produce serious caustic burns with painful inflammation and possible destruction of tissue. Contact with eyes may cause inflammation, tearing and pain. Severe contact can cause destruction of tissue.

Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

Standard Operating Procedures

Handling

1. All manipulations with sodium sulfide 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. 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. 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 heavy duty nitrile.

3. Be sure to inspect all PPE prior to and after use.
4. Designate an area in the laboratory chemical fume hood for only sodium sulfide manipulations. This area must be labeled with the appropriate hazard communication labels (i.e. extremely corrosive and toxic material). 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 sodium sulfide 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 sodium sulfide spilled must be immediately reported as a major spill event.

Storage

1. The sodium sulfide must be stored in a tightly closed secondary containment containers in the chemical fume hood.
2. Do not store this material with incompatible materials. Anhydrous material ignites spontaneously in air. Darkens on exposure to air or light. Decomposes under the influence of moisture, water and acids to form hydrogen sulfide. Reacts with acids forming hydrogen sulfide. Violent reaction with carbon, N,N-dichloromethylamine, and o-nitroaniline. Once moist the material can self ignite upon drying in air. Reacts with water to form a strong base. Violent reaction with acids, aluminum powder, oxidizers, and diazonium salts. Aqueous solutions are incompatible with organic anhydrides, acrylates, alcohols, aldehydes, alkylene, oxides, substituted allyls, m-chlorobenzenediazonium salts, cresols, caprolactam, solution, epichlorohydrin, ethylene dichloride, isocyanates, ketones, glycols, nitrates, phenols, and vinyl acetate. Attacks light metals like aluminum and steel.
3. Storage area 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 sodium sulfide 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.