NORTHERN ARIZONA UNIVERSITY

Cyanogen Bromide

1. Process

a. Handling of cyanogen bromide for laboratory work. This may include organic synthesis, protein fragmentation, as well as other applications.

2. Describe process, hazardous chemical, or hazard class

a. Highly toxic by inhalation.
b. Highly toxic by ingestion.
c. Highly toxic by skin absorption.
d. Corrosive.

3. Personal Protective Equipment

a. **Eyes:** Wear chemical splash goggles.

b. **Skin:** Wear Natural Rubber, Neoprene, Butyl, PVC or Viton gloves. Any of these glove types are suitable for handling cyanogen bromide. Be sure that you take into account that the gloves are resistant to whatever solvent you are dissolving the cyanogen bromide in. Double-gloving is recommended. Inspect gloves frequently for tears and other breakdown.

c. **Clothing:** Wear long pants, shirt and closed toed shoes and a lab coat while handling. Try to minimize exposed skin. Please tuck lab coat sleeves into gloves to minimize risk of skin exposure.

d. **Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use. A full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls is recommended. If the respirator is the sole means of protection, use a full-face supplied air respirator recommended.

4. Engineering Controls

Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction. Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace. If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:

(a): particle dust respirators, if necessary, combined with an absorption cartridge;
(b): filter respirators with absorption cartridge or canister of the right type;
(c): fresh-air hoods or masks

Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

5. Special Handling Procedures and Storage Requirements

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale. Acids should not be used around cyanogen bromide unless absolutely necessary and then only after careful planning. Hydrogen cyanide (HCN) formation is the greatest potential hazard in using cyanogen bromide solutions because some HCN gas will be released. Use only with adequate ventilation or respiratory protection.

Storage: Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture, inside a dessicator is recommended. Poison room locked. Keep away from acids. It is recommended that if you store cyanogen bromide in a cold location that you should allow the bottle to reach room temperature before opening. Opening a bottle while still cold may result in condensation which will allow the chemical to react with water and thereby release HCN gas.

6. Spill and Accident Procedures

7.

Chemical Spill Dial 523-3000

Spill – Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors utilizing a self-contained breathing apparatus. Eliminate sources of ignition if the chemical is flammable. If possible, confine the spill to a small area using a spill kit or absorbent material. Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Decontaminate trace cyanide in the spill area with a strong sodium or calcium hypochlorite solution and flush waste to a holding area for removal. Provide ventilation. Prevent spreading of vapors through sewers, ventilation systems and confined areas. Evacuate unnecessary personnel. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.)

Chemical Spill on Body or Clothes – DO NOT JUST ADD WATER DIRECTLY TO THE CHEMICAL, IT WILL RELEASE HYDROGEN CYANIDE GAS.
If spilled on bare skin, immediately brush off any residual material in hood with a gloved hand and then wash for 15 minutes. If the spill is on clothing, remove clothing and bag it to prevent further contamination. Rinse body thoroughly in emergency shower for at least 15 minutes.

Chemical Splash Into Eyes – Immediately rinse eyeball and inner surface of eyelid with water for 15 minutes by forcibly holding the eye open.

Any Physical Exposure to Cyanogen Bromide: Dial 523-3000
Medical Transport to FMC. Let the Emergency Room know ahead of time that a cyanogen bromide (cyanide) victim is coming to the ER.

8. Waste Disposal Procedures

Cyanogen bromide and all cyanogen bromide waste shall be disposed of into waste containers specifically designated for cyanogen bromide. Examples of cyanogen bromide waste material include gloves, pipette tips, paper towels that have been contaminated with cyanogen bromide.

Once the waste container is full, dispose of according to the NAU EH&S hazardous waste guidelines.

9. Safety Data Sheet Location

Hardcopy or electronic copy must be available.

a. Safety Data Sheets can be found via the link on ORC's web site: http://www.research.nau.edu/compliance/orc/