Laboratory-Specific Standard Operating Procedures

TITLE: SOP for the safe use of chloroform

Date: 3/26/2015 Review Date: Revised:

Principle Investigator:

Authors (Names):

Department, Building, Room(s):

Contact Phone Number:

This SOP must be kept on file for all laboratory employee training and review.

Section 1: (Check One)
There are three methods that can be used to write SOPs. They are: by process (distillation, synthesis, chromatography, etc.); by individual hazardous chemical (benzene, phenol, arsenic, etc.); and by hazardous chemical class (flammable, corrosive, oxidizer, etc.).

_____ Process ___X__ Chemical _____ Hazard Chemical Class

Section 2: Describe Process, Hazardous Chemical or Hazard Class
Provide a general description of what activities are covered under this SOP.

- Chloroform (CAS# 67-66-3) is a volatile organic solvent used in a wide variety of biomedical research processes. Applications include use as a solvent, lipid extraction and characterization, tissue work, biochemical processes, chromotography and other analytical uses.
- Chloroform is a clear, colorless flammable volatile liquid with a mildly sweet odor. Its formula is trichloromethane or $CHCl_3$. Other names include METHYL TRICHLORIDE, FORMYL TRICHLORIDE, METHANE TRICHLORIDE, METHENYL TRICHLORIDE, TRICHLOROFORM.
- Its odor threshold is 200ppm, though it causes olfactory fatigue, and its distinct heavy, sweet and ethereal smell becomes unnoticeable. It becomes immediately dangerous to life/health at 500 ppm.

Section 3: Potential Hazards
Describe the potential hazards for each process, hazardous chemical or hazard class. Include physical and health hazards.

- Chloroform may be irritating to eyes, mucous membranes, and skin. May cause drowsiness or dizziness with acute overexposure and may damage the liver or kidneys with chronic exposure.
- Incompatibilities/ Materials to Avoid: bases, reactive metals (potassium, sodium), metallic fines or powders, oxidizing materials, halogens, acetone, aluminum, disilane, magnesium
- Chloroform may be Carcinogenic or MUTAGENIC: This material has tested positive in one or more in vitro mutagenicity studies. However, the majority genotoxicity data have demonstrated a pattern of negative results.
- May cause harm to human fetuses.

Section 4: Personal Protective Equipment
Identify the required PPE. If a respirator is required, contact EH&S before using.

- Lab coats, closed-toed shoes, nitrile gloves, and chemical safety goggles are needed. Chloroform can penetrate most types of gloves – use 2 pairs of gloves if working with large quantities.

Section 5: Engineering Controls
Describe engineering controls that will be used to prevent or reduce employee exposure to hazardous chemicals.

- Chemical fume hoods are the ideal engineering control for preventing exposure to chloroform vapors.

Section 6: Special Handling and Storage Requirements
List storage requirements for hazardous chemicals involved with the SOP, including specific area, and policies regarding access to chemicals. Special procedures such as dating peroxide formers are appropriate here. Is a special "designated area" required?

- Keep protected from heat, light, and moisture. Store in a cabinet.
- Chloroform should only be handled in a chemical fume hood.

Section 7: Spill and Accident Procedures
Indicate how spills or accidental release will be handled. List the location of appropriate emergency equipment. Any special requirements for protection of personal from exposure should be identified here.

- For Accidents:

An emergency shower and eyewash station is located in the laboratory. If chloroform contacts the eyes, immediately flush the eyes with copious amounts of cold water for at least 15 minutes. For skin contact, immediately wash the affected area with soap and copious amounts of cold water.

For inhalation exposure, relocate victim from exposure area to fresh air. Seek medical treatment. If ingested, the affected person should immediately inform their supervisor of the exposure and seek medical advice.

- For Spills:

Chemical spill kit is located in the laboratory. For all spills, large or small, refer to the EHS 200.002, Chemical Spill Response Procedures. (See attachment for spill response procedures) For large spills, place absorbent material on the spill, evacuate, and contact University Police (568-8999) or EH&S (952-1337).

Section 8: Decontamination Procedures

Specify decontamination procedures to be used for equipment, glassware, and clothing: including equipment such as hoods, lab benches, and controlled (special "designated area") areas within the lab.

- Decontamination can be performed with 70% ethanol or soap and water. Chloroform contaminated with biological materials or in solution with other chemicals may warrant a different decontamination approach.

- Other Decontamination Procedures:

Section 9: Waste disposal Procedures

Waste must be disposed in accordance with LSUHSC EHS 200.04, Chemical Waste Management Procedures.

- For disposal of used, unused and expired chloroform, seal in brown glass bottle. Label the bottle with the name "chloroform", date, researcher's name, building, room number, and the words "hazardous waste". Leave at least a 2 inch air-gap at the top of the container. Keep out of waterways and sewers.
- To schedule a waste pick-up by EH&S, use the bob.lsuhsc.edu service request system.