Laboratory-Specific Standard Operating Procedures

TITLE: SOP for the safe use of Phenylmethylsulfonyl Fluoride (PMSF)

Date: 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.

Phenylmethylsulfonyl Fluoride (PMSF) (CAS#: 329-98-6) is a solid with a melting point of 92 degree Celsius. In biochemistry, PMSF is a serine protease inhibitor commonly used in preparation of cell lysates. It is rapidly degraded in water and stock solutions are usually made up in anhydrous ethanol, isopropanol, corn oil, or DMSO.

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

- Inhalation: Inhalation of dust will produce irritation to gastrointestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death.
- Ingestion: Toxic if swallowed.

- Skin Contact: Corrosive to skin. May cause skin irritation, inflammation, and/or blistering. The amount of tissue damage depends on length of contact.
- Eye Contact: Corrosive to eyes. May cause irritation, damage or blindness. The amount of tissue damage depends on length of contact.
- Lethal dose (LD-50, mouse) is about 200 mg/kg.

WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive.

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

- Wear gloves, chemical splash goggles, and flame resistant lab coats. Face shield is also recommended.
- Respirators are required in the event of a chemical spill clean-up process or when Permissible Exposure Limit (PEL) has exceeded or when there is a possibility that PEL will be exceeded.

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

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

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?

- Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
- Provide appropriate exhaust ventilation at places where dust is formed.
- Keep container tightly closed in a dry and well-ventilated place away from heat.
- Empty containers pose a fire risk; evaporate the residue under a fume hood.
- Never add water to this product.

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:
    - Chemical Spill on Body or Clothes – Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. Notify supervisor and EH&S.
    - Chemical Splash Into Eyes – Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for 15 minutes by forcibly holding the eye open. Seek medical attention.
    - For skin treatment- Decontaminate skin with copious amounts of water and mild detergent. If handling large quantities, have a 5% aqueous sodium carbonate solution available for skin flushing and decontamination.

- For Spills:
  Chemical spill kit is located in cabinet under the sink. 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 and accidents, place absorbent material on the spill, evacuate, and contact University Police (568-8999) or EH&S (952-1337).
    - Small (<1 L) – Use appropriate personal protective equipment and clean-up material for chemical spilled. Double bag spill waste in clear plastic bags, label and take to the next chemical waste pick-up.
    - Large (>1 L) – Dial University Police (568-8999) or EH&S (952-1337) for assistance.

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.

PMSF is unstable in aqueous and basic (alkaline) aqueous solutions. A 5% solution of sodium carbonate can be made to decontaminate surfaces and containers.

Section 9: Waste disposal Procedures

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

- **Label Waste**
  - Affix a hazardous waste tag on all waste containers as soon as the first drop of waste is added to the container. Label with "HAZARDOUS WASTE – PMSF" and the date that collection began.
- **Store Waste**
  - Store hazardous waste in closed containers, in secondary containment and in a designated location
  - Double-bag dry waste using transparent bags
  - Waste must be under the control of the person generating & disposing of it
- **Waste Disposal**
  - Dispose of regularly generated chemical waste within 90 days
  - Dispose of container as hazardous waste
  - Use secondary containment(two double zippered bag)
  - To schedule a waste pick-up by EH&S, use the bob.lsuhsc.edu service request system.