



Laboratory Specific Standard Operating Procedures

TITLE: SOP for the safe use of Acrylamide

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

Chemical

Hazard Chemical Class

Section 2: Describe Process, Hazardous Chemical or Hazard Class

This SOP presents guidelines and procedures for the safe use of Acrylamide (CAS # 79-06-1) in a laboratory or clinic environment and any operation capable of generating Acrylamide dust or aerosols. In addition to use of this SOP, persons working with Acrylamide should be thoroughly familiar with general guidelines for high hazard chemicals identified in the [High Hazard Chemical Policy \(EHS 200.09\)](#) and all other applicable LSUHSC chemical safety policies. All current applicable MSDSs should be available and reviewed prior to use.

Section 3: Potential Hazards

Physical Hazards

- Combustible Solid (may also be dissolved in flammable liquids).
- Incompatibilities and reactivity: sensitive to air, acids, oxidizing agents, iron and iron salts, copper, brass and free radical initiators.
- Acrylamide may polymerize violently on strong heating or exposure to strong base. May react violently with strong oxidizers.

Health Hazards

- Acrylamide monomer is highly toxic by inhalation and via skin contact (can penetrate unbroken skin easily). The polymer is not generally considered toxic.
- Exposure to aqueous acrylamide solutions can cause eye and skin irritation upon contact
- Repeated exposure to the skin may cause contact dermatitis which is characterized by redness, swelling and blistering.
- Inhalation exposure to dust may cause upper respiratory tract irritation
- Chronic exposure may result in neurotoxic effects including unsteadiness, muscle weakness, and numbness in the feet (leading to paralysis of the legs), numbness in the hands, slurred speech, vertigo and fatigue.
- Acrylamide is a potential occupational carcinogen

Section 4: Personal Protective Equipment

- Proper Laboratory Attire (Pants or dresses/shorts below the knees, sleeved shirt, close-toe shoes) - any open skin cuts, wounds, sores must be covered
- Lab Coat
- Eye/ Face Protection
 - Eye protection should be selected on potential for splash and exposure.
 - Minimum: safety glasses with side shields when only low splash hazard exists (i.e., working inside of fume hood with properly positioned sash or when working with low volumes of solution).
 - Goggles or face shields must be worn during operations with high splash hazard exists (i.e., transferring larger quantities), either through exposure to vapors, mists or splashes of solution.
 - Ordinary (street) prescription glasses do not provide adequate protection.
- Hand Protection
 - Use disposable nitrile or butyl rubber gloves during all tasks
 - Laboratory personnel should thoroughly wash hands with soap and water before and immediately upon removal of gloves.
- Respiratory Protection - If significant inhalation exposures are anticipated/suspected (i.e., use of powder material outside of certified laboratory hood), contact EH&S (568-6585) for consultation.

Section 5: Engineering Controls

- Perform all work in a properly operating and certified laboratory fume hood or weighing hood.
- Work at least 6" inside of hood and set sash at lowest possible position
- As acrylamide powder presents the highest level of hazard, laboratory personnel are strongly encouraged to purchase aqueous stock solutions or pre-made gels.

Section 6: Special Handling and Storage Requirements

- Powder easily becomes airborne and may result in personal exposure and area contamination. Use care to avoid dispersing dust. Mixing or dispensing should be done within a chemical fume hood.
- Store in cool, dry, well ventilated area and away from strong oxidizing agents and bases.

- It is highly recommended that all chemicals be stored below eye level so cracking or leaking containers are immediately visible and there is less potential for chemicals falling onto lab workers when pulling from shelves.
- Areas where gels are poured should be protected with a lab bench cover. Bench covers should be disposed of appropriately (see section 9) upon contamination from spilling or after usage.
- Access and use should be limited to appropriately trained and authorized lab personnel
- Only approved explosion-proof refrigerators should be used for cold storage
- Keep away from heat, flames, sparks, sources of ignition (including empty containers that will retain product residue)
- Transport in closed containers, in the smallest amounts necessary, and use aids such as carts, chemical transport carriers, etc.
- Keep containers tightly closed during storage.
- Wash hands thoroughly after use.

Section 7: Spill and Accident Procedures

- The availability, location, and contents of chemical spill clean-up kits must be confirmed prior to handling or beginning any work with acrylamide.
- Immediately notify all lab personnel of spills (with the details of the spill and actions being taken) and regulate access, as necessary, to the area.
- Laboratory personnel should be prepared to respond to spills in accordance with the guidance provided in LSUHSC [Chemical Spill Response Procedure \(EHS 200.02\)](#).
- Spill volumes less than approximately 25ml/25g can be cleaned by lab personnel with assistance from EH&S.
 - Small liquid spill (un-polymerized) - Absorb with absorbent material pads and place into containers for disposal. Treat site with 1.6% potassium persulfate, then with 1.6 % sodium metabisulfite. Let stand for 30 minutes, and then wash with plenty of water.
 - Small dry spill (un-polymerized) - Scrape material into clean, dry containers and cover. Minimize airborne dust generation. May choose to lightly wet spill area. Treat site with 1.6% potassium persulfate, then with 1.6 % sodium metabisulfite. Let stand for 30 minutes, and then wash with plenty of water.
- Spill volumes greater than approximately 25ml/25g shall be cleaned-by EH&S (personnel should immediately evacuate the area and contact LSUHSC Police for these sized spills).
- Do not attempt to clean spills if you feel unsure of ability to complete safely.
- Personnel cleaning the spill shall, at minimum, wear the same PPE required for handling/use
- In the event of skin contact, immediately remove contaminated clothing and wash affected areas with soap and copious amounts of water.
- In case of contact with eyes, immediately flush eyes with copious amounts of water for at least 15 minutes and subsequently obtain medical attention.
- If inhalation produces excessive health symptoms, immediately relocate to fresh air and subsequently obtain medical attention.
- In the event of ingestion, obtain immediate medical attention. Do not induce vomiting unless directed to do so by medical personnel.
- Report all spills, regardless of size, to laboratory PI, who will report to LSUHSC EH&S.

Section 8: Decontamination Procedures

- Where the eyes or body of any person may be exposed, a safety shower/eye wash must be available for immediate use. Personnel must be aware of location of nearest Safety Shower/ Eye Wash and verify that a current certification of performance tag is present.
- Personnel shall rinse exposed areas of skin and/or eyes with copious amounts of water for at least 15 minutes.
- All equipment, materials and work surfaces that have/ potentially have become contaminated shall be cleaned in accordance with those identified for small spill in Section 7.

Section 9: Waste Disposal Procedures

Acrylamide waste is considered hazardous and must be disposed of in accordance with [LSUHSC Chemical Waste Management Procedures \(EHS 200.04\)](#).

Section 10: Laboratory Specific Protocol(s):

Attach laboratory protocol for specific handling and operational practices.