



Acrylamide

Principal Investigator (PI) Approval is Required Prior to Performing this Procedure

Description

This standard operating procedure outlines the handling and use of acrylamide. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, personal protective equipment, and disposal techniques when handling acrylamide.

Acrylamide is a reactive monomer used as a reagent in polymers or co-polymers. Polyacrylamide polymers are used in adhesives; sizing agents; soil conditioning agents; flocculants; waste treatments; chemical grouting and production of N-methylolacrylamide. Acrylamide must be used in a well-ventilated area.

Potential Hazards

- Acrylamide is considered a Particularly Hazardous Substance (PHS) because it is a probable human carcinogen.
- Possible routes of exposure include inhalation, skin contact, eye contact, and ingestion. Acrylamide is highly toxic by inhalation and skin contact. It can easily penetrate intact skin.
- Acrylamide is known to affect the nervous system with early signs of exposure including numbness, tingling, and tenderness to touch. Symptoms can be delayed several days to weeks and if exposure continues (even in small quantities) other symptoms may arise including excessive sweating, blue-reddish skin, peeling of skin, and weakness in limbs.
- Animal studies have shown some maternal and paternal reproductive health effects from exposure to acrylamide.
- Acrylamide may cause sensitization by inhalation or contact with skin.
- Acrylamide may polymerize explosively if heated to 183°F (84°C).
- Consult the SDS and [Laboratory Chemical Safety Summary: Acrylamide](#).

Occupational Exposure Limits (OELs):

- MIOSHA: **0.03 mg/m³, 8-hour PEL**
- ACGIH: **0.03 mg/m³, 8-hour TLV**
- NIOSH: **0.03 mg/m³, 10-hour REL**

Engineering Controls

If aerosols may be produced (e.g., weighing powder), acrylamide and any suspensions of acrylamide must be handled in a chemical fume hood, exhausted biological safety cabinet with negative pressure ductwork, or other exhausted enclosure. Aerosols may be produced during any open handling of dry powder and during open or pressurized manipulations of suspensions. It is recommended that labs post a sign explaining the aerosols procedures.

Work Practice Controls

- Set up a designated area for storage and work with acrylamide.
- When possible, order pre-cast polyacrylamide gels to avoid work with acrylamide powder. Acrylamide can also be ordered already in solution.
- Avoid contact with incompatibles including metals, oxidizing agents, reducing agents, acids, bases, and peroxides.
- Use bench pads to cover areas that may become contaminated with acrylamide powder or suspensions for easy clean-up.
- Wipe down the surfaces where acrylamide is used periodically with a detergent and water solution. To decontaminate surfaces, use a 1.6% potassium persulfate solution followed by 1.6% sodium metabisulfite. Let stand for 30 minutes, and then wash/wipe with plenty of water.
- If weighing dry acrylamide powder and the balance cannot be located in a fume hood or BSC, tare a container then add the material to the container in a hood and seal the container before returning to the balance to weigh the powder.
- Change gloves regularly (at least every two hours) and wash hands at the time of the glove change.
- Keep containers closed as much as possible.

Protective Equipment

- Standard nitrile laboratory gloves and a fully buttoned lab coat with sleeves extending to the wrists must be worn when handling acrylamide. When handling suspensions or solutions, choose a glove that is protective against the solvent. If gloves are splashed or come in contact with acrylamide, change them as soon as possible.
- If splashes may occur, wear goggles. Otherwise, wear standard laboratory safety glasses.
- In cases where the arms or torso may be exposed to liquid suspensions or dry particles, wear Tyvek sleeves and/or gowns (or other air-tight non-woven textile).

Transportation and Storage

- Acrylamide must be in sealed shatter-resistant containers during transportation. If the container is not shatter-resistant, use a secondary container.
- Store away from heat and flame.
- Store acrylamide away from any incompatible materials including metals, oxidizing agents, reducing agents, acids, bases, and peroxides.

Waste Disposal

Because most spent, unused and expired chemicals/materials are considered hazardous wastes, they must be properly disposed of. ***Do not dispose of chemical wastes by dumping them down a sink, flushing in a toilet or discarding in regular trash containers.*** Contact EHS at (313) 593-0921 for waste containers, labels, manifests, waste collection and for any questions regarding proper waste disposal. Also, refer to EHS's [Hazardous Waste Webpage](#) for more information.

Exposures/Unintended contact



If the employee is in need of emergency medical attention, call 911 immediately.



For an actual chemical exposure/injury:

- Remove contaminated clothing. Flush exposed eyes or skin with water for at least 15 minutes. Seek medical attention (see below).
- For situations with risk of inhalation exposure (including spills of powder outside of a chemical fume hood), remove all persons from the contaminated area.
- If an ambulance is needed, call Public Safety at (313)593-5333 or 911 from a campus phone to request assistance.

Report all work related accidents, injuries, illnesses or exposures to WorkConnections within 24 hours by completing and submitting the [Illness and Injury Report Form](#). Follow the directions on the WorkConnections website [Forms Instructions](#) to obtain proper medical treatment and follow-up.

Complete the [EHS Laboratory Incident and Near-Miss Report](#) form.

TREATMENT FACILITIES:

Midwest Medical Center -- *Campus Employees (including student employees)*

Mon-Fri 7:30 am - 4:30 pm

9301 Middlebelt Road

Romulus, MI 48174

Phone: 734-941-1000

After hours - go to:

Midwest Medical Center

Open 24/7

4700 Schaefer

Dearborn, MI 48126

Phone: 313-581-2600

Henry Ford Medical Center-Fairlane -- *University students (non-life threatening conditions)*

19401 Hubbard Drive

Dearborn, MI 48126

Phone: 313-928-8278

Click [here](#) for more information.

Spill Procedure

- When a spill occurs, ***personal safety should always come first.***
- Alert and clear everyone in the immediate area where the spill occurred.
- Spills of dry acrylamide powder outside of a chemical fume hood or other enclosure should be referred to EHS at (313) 593-0921.

- Spills of liquid suspensions should be absorbed with sand or other non-combustible absorbent material and placed in containers for disposal. Decontaminate the area with 1.6% potassium persulfate, followed by 1.6% sodium metabisulfite. Rope off the area and let stand for 30 minutes, and then wash/wipe area with plenty of water.
- For spills of dry powders in a chemical fume hood or other enclosure, wipe up the powder using a cloth dampened with water, or wet the powder with water and then wipe with a dry cloth. Minimize the fume hood or enclosure opening during this process. Decontaminate the area with the solutions mentioned in the previous bullet. Contaminated PPE and clean-up materials must be placed in a sealed container for pick-up by EHS.

Additional Spill Links:

- [Chemical Spill Control Information](#)

Report all emergencies, suspicious activity, injuries, spills, and fires to Public Safety by calling at (313) 593-5333 or 911 from a campus phone. Register with the University of Michigan-Dearborn [Emergency Alert System](#).

Training of Personnel

All personnel are required to complete the **Comprehensive Laboratory Safety** session (BLS009 or equivalent) via [MyLINC](#). Furthermore, all personnel shall read and fully adhere to this SOP when handling acrylamide.

Certification

I have read and understand the above SOP. I agree to contact my Supervisor or Lab manager if I plan to modify this procedure.

Name	Signature	UM ID #	Date

Principal Investigator _____

Revision Date _____