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| **Chemical Name: Acrylamide****STANDARD OPERATING PROCEDURES****Type of SOP:** [ ] **Hazardous Class** [x] **Hazardous Chemical** [ ] **Process** According to the Safety Data Sheet (SDS) for Acrylamide, special precautions must be taken when working with this chemical. This Standard Operating Procedure (SOP) briefly describes the use of equipment and supplies maintained in the lab/facility, procedures that must be followed, and the responsibilities of personnel when working in these labs/facilities. PI or the designee should **amend this SOP by entering text in the highlighted yellow area to include specifics for your lab. Users shall** not conduct experiments, even pilot studies, which are not described in this approved SOP. It is essential that all personnel follow the appropriate procedures outlined in this SOP. **Please provide the SDS associated with this chemical to all lab personnel working with it.** |
| **PI Information** |
| Name: |  |
| Dept.: |  |
| PS ID: |  |
| Date: |  |
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| **1. PI Responsibilities (Please click the Check Box on every shaded section header.)**  |
|[ ]  The PI is responsible for training students/employees using the chemical. The training should include a discussion of the known and potential hazards and an explanation of the relevant policies, techniques and procedures including the proper use of personal protective equipment and containment equipment. |
|[ ]  Students/employees should be trained initially and then annually thereafter. Their knowledge, competence and practices should be evaluated and documented.  |
|[ ]  Implement a safety program and include this information in the chemical hygiene plan. |
|[ ]  Limit access to authorized users. |
|[ ]  Minimize the possibility of direct skin or eye contact with the drug or inadvertent ingestion/inhalation. |
|[ ]  Transportation of the chemical within the facility should be performed using a sealed non-breakable container with secondary containment. |
|[ ]  Develop Standard Operating Procedures (SOP) for delivery and storage of the chemical. The SOP should have a contingency plan for broken or leaking bottles. |
|[ ]  Properly label containers and any secondary containers of the chemical. |
|[ ]  Provide SDS via email to ehs@uh.edu upon request. |

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| **2. Chemicals/Hazards** |
| * Chemical Name: Acrylamide
* CAS Number: 79-06-1
* Form (physical state): solid, white, odorless

**Indicate why this is a PHS (there may be more than one category):**

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|[x]  High Acute Toxicity |[x]  Carcinogen |[ ]   Reproductive toxin |
| [ ]   | Air Reactive/Pyrophoric material |[ ]  Water reactive |[ ]   Explosive/unstable |
|[ ]  Other (specify) |[ ]   |  |  |

 Click here to enter text.**Indicate other hazards:**

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|[ ]  Flammable |[ ]  Corrosive |[ ]  Oxidizer |
| [ ]  | Reactive |[ ]  Temperature sensitive |[x]  Sensitizer  |
|[ ]  Other (specify) |  |  |  |  |

 * Acrylamide is considered a Particularly Hazardous Substance 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).
* The OSHA Permissible Exposure Limit for acrylamide is 0.3 mg/m3. The American Conference of Governmental Industrial Hygienists (ACGIH) has a Threshold Limit Value of 0.03 mg/m3.
* Special Circumstances of Use in your lab: XXX
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|  **3. Engineering Controls** |
| * Any work with Acrylamide must be done in a properly functioning chemical fume hood.
* Any eyewash station is strongly recommended in immediate work area.

Please list the locations of the eye wash, safety shower and fume hood below.

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| Type | Location (Building and Room Numbers) |
| Fume Hood(s) |  |
| Safety Shower (s) |  |
| Eyewash Station(s) |  |

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| **4. Personal Protective Equipment (PPE)** |
| * Lab coat, safety glasses and nitrile gloves are required. Leave lab coats in the lab when your work is complete to prevent the spread of this or other chemicals outside of the lab.
* Respiratory protection may be needed if aerosol hazard is present and work is conducted outside of a fume hood. If any procedure may pose an external hazard it should be eliminated or strictly isolated. If a potential exposure hazard cannot be eliminated, please contact the EHS Respiratory Protection Program administrator to discuss respiratory protection or to enroll in the program. Program enrollment includes medical evaluation, training, and fit testing for an appropriate respirator. For information see EHS Respiratory Protection Program or email ehs@uh.edu.
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|  **5. Work Practice Controls (Preparation and Handling)** |
| **Preparation*** Consider alternate methods and use a safer alternative if possible. When possible, order pre-cast polyacrylamide gels to avoid work with acrylamide powder. Acrylamide can also be ordered already in solution.
* Purchase the smallest containers at the lowest concentration practical.
* If other specific written procedures are required for work with acrylamide, step-by-step procedures must be listed in *Section 10. Lab-specific Protocol/Procedure* in this SOP.
* This SOP must be approved in advance by the Principal Investigator.
* Provide hazardous chemical and specific SOP training by PI or designee to personnel working with acrylamide and any other personnel authorized or required to be in the laboratory or shared space during work with acrylamide.
* Enter acrylamide into chemical inventory. Make sure the safety data sheet (SDS) in the process.
* Ensure all containers of acrylamide are appropriately labeled according to UH Guidelines.
* Confirm fume hood, emergency eyewash and/or shower are located within acrylamide working area and have a current certification date.
* Ensure all staff are trained to use acrylamide safely and to manage emergencies.

**Handling** * Acrylamide will be stored in designated areas only. Store and/or label acrylamide so it will only be handled by those trained to use it. Fill section 13 to designate the work area for Acrylamide.
* Use bench pads to cover areas that may become contaminated with acrylamide powder or suspensions for easy clean-up.
* Keep containers close as much as possible.
* If weighing dry powders, place balance in hood or
* tare (pre-weigh) an empty container with a lid
* go to hood, add powder to container, close lid
* go to balance to weigh.
* return to hood to make solution or manipulate powder.
* 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, then wash/wipe with plenty of water.
* Change gloves regularly (at least every two hours) and wash hands at the time of the glove change.
* All decontamination materials must be disposed of as hazardous waste.
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|  **6. Work Practice Controls (Storage and Transport)** |
| **STORAGE*** Liquid: Store in the dark and the cold, preferably in a plastic container.
* Solid: Store at the designated area.*[room #]*.
* Secondary containment is advised for transport.
* Store away from metals, oxidizing agents, reducing agents, acids, bases, and peroxides.
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| **7. Spill and Accident Procedures****[Specific cleaning and waste disposal procedures must be determined.]** |
| Chemical spills must be cleaned up as soon as possible by properly protected and trained personnel. All other persons should leave the area. Spill response procedures must be developed based on the chemical and potential spill or release conditions. Clean up spills using contents of the laboratory spill kit. Do not attempt to clean up any spill if not trained or comfortable. If the spill is large or more concentrated or people have been exposed, evacuate the area, and call 911 on campus phone or 713-743-3333 for help. If a person is exposed follow EXPOSURE PROCEDURES in section 8 below.**SPILL CLEANUP PROCEDURES**1. Close hood sash, cordon off area.
2. Spills of dry acrylamide powder outside of a chemical fume hood or other enclosure should be referred to the EHS spill response team by calling EHS (during business hours (M-F/8-5) 713-743-5858, outside business hours call 911 on campus phone or 713-743-3333). Tell them that an acrylamide spill has occurred, and you need advice or assistance. Notify supervisor.
3. 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, then wash/wipe area with plenty of water.
4. 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. Place any clean-up materials into a bag and seal, then submit as waste collection request (see waste disposal section above) through EHS Environmental Programs.
5. Personnel who handle the acrylamide waste must wear a fully buttoned lab coat with sleeves extended to wrists, face shield and safety goggles, nitrile gloves, long pants (or other clothing covering the entire leg), closed toed shoes.
6. As soon as possible report the spill by notifying EHS (during business hours (M-F/8-5) 713-743-5858, outside business hours 911 on campus phone or 713-743-3333); tell them that a spill has occurred, and that you need help managing the spill. Notify supervisor.
7. Be prepared to provide the following information:
* Name and phone number of a knowledgeable person that can be contacted
* Name of chemical spilled, concentration and amount spilled, liquid or solid type spill
* Number of injured, if any (refer below to EXPOSURE PROCEDURES)
* Location of spill
1. Any spill incident requires the involved person or supervisor to complete and submit the Injury Forms within 24 hours (8 hours if serious injury or hospitalization) of the incident to Risk Management.
2. For questions on spill cleanup, contact EHS at 713-743-5858.

**More lab-specific information regarding emergency to train users:** Click here to enter text. |

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|  **8. Exposure Procedures in Case of Emergency** |
| 1. **Provide First Aid Immediately**
* For **inhalation** exposure, move out of contaminated area. Call 911 on campus phone or 713-743-3333.
* For **eye or skin** exposure, call 911 on campus phone or 713-743-3333. Use the safety eyewash for at least 15 minutes or until medical treatment is given.
1. **Get Help**
* Call 911 on campus phone or 713-743-3333 or go to nearest Emergency Department to seek medical attention. Give details of exposure:
	+ Chemical name and concentration
	+ Amount of exposure
	+ Route of exposure (skin, eyes, respiratory)
	+ Time since exposure
* Bring the SDS and SOP of acrylamide to the Emergency Department.
* Notify your supervisor as soon as possible for assistance.
* Secure area before leaving. Lock doors and indicate spill if needed.
1. **Report Incident to Environmental Health and Safety**
* Notify EHS immediately after providing first aid and/or getting help.
	+ During business hours (M-F/8-5) call 713-743-5858.
	+ After hours call 911 on campus phone or 713-743-3333 to be routed to EHS staff on call.
* For all incidents and near misses, the involved person or supervisor should report to EHS at 713-743-5858.
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|  **9. Waste Disposal** |
|  **WASTE COLLECTION AND DISPOSAL**1. Acrylamide waste
* Acrylamide waste must be treated as hazardous and collected by EHS and properly disposed of.
* Label with EHS Unwanted Material Waste label that states Acrylamide waste and the primary hazards (mutagen, toxic), PI name. Unwanted Material Waste labels are available for on [EHS’s website](https://www.uh.edu/ehls/labs/labels/).
1. **Other Acrylamide waste**

 Grossly contaminated gloves, absorbent pads, and all spill cleanup materials are hazardous waste.* Accumulate waste in a plastic bag.
* Label with EHS Unwanted Material Waste label as above.
1. **Disposal**

For chemical waste pickup: Complete Online [waste pickup request form](https://www.uh.edu/ehls/train/waste/index). 1. **Contacts**

 For questions regarding chemical and hazardous chemical collection* visit the EHS [Chemical Waste](https://www.uh.edu/ehls/waste/) website or,
* email ehs@uh.edu or,
* call 713-743-5858
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|  **10. Lab-specific Protocol/Procedure**  |
|  This SOP must be customized for each lab using acrylamide. Use this section to describe or attach what is being done with Acrylamide, including specific laboratory procedures and quantities used.  |

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| Particularly HazardousSubstance involved? | X YES: | Blocks #11 to #13 are Mandatory |
|  NO: | Blocks #11 to #13 are Optional. |
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| **11. Approval Required** |
| All staff working with Acrylamide must be trained on this SOP prior to starting work. They must also be trained on the acrylamide SDS, and it must be readily available in the laboratory. All training must be documented and maintained by the PI or their designee. |
| **12. Decontamination** |
| All surfaces and non-disposable equipment will be decontaminated by copious amounts of soap and water. |
| **13. Designated Area** |
| * All work with Acrylamide must be done in a designated laboratory, workspace, and fume hood. This work will be conducted in *[room #]*.
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| PI’s Name: | PISD: |
| Department:  | Date: |
| Signature: |  |

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| **[Laboratory Name]****Documentation of Training\*****Standard Operating Procedure for Acrylamide**  |
| *“I have read and understand this SOP. By signing below, I agree to fully adhere to its requirements.”* |
| Last | First | PSID | Email | Signature | Date |
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\* This document, including the signature page with signatures by all involved personnel shall be maintained by the Principal Investigator or Designee, and be submitted to EHS either electronically via the ehs@uh.edu or hard copy upon request.

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|  **Template Revision History** |
| Version | Date Approved | Author | Revision Notes: |
| 1.0 | 04/09/2019 | EHLS Chemical Safety  | New Template. |
| 1.1 | 06/10/2020 | EHS Chemical Safety | Name & logo change, and review. |
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