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| Icon  Description automatically generated**A picture containing text, clipart  Description automatically generatedA picture containing text, clipart  Description automatically generated**Icon  Description automatically generated**Duke OESO Guidelines for Safe Use of****Acrylamide*****Complete Lab-Specific Safety Information on page 3*** |
| **Hazards** | **Potential Hazards** | * **Acrylamide** is used for polyacrylamide gel electrophoresis and to aid in DNA precipitation.
* Acrylamide is a [Particularly Hazardous Substance](https://www.safety.duke.edu/chemical-hygiene/particularly-hazardous-substances) because it is a probable human **carcinogen**.
* The OSHA Permissible Exposure Limit (PEL) for acrylamide is **0.3 mg/m3** for an 8-hr workday.
* ACGIH has a Threshold Limit Value (TLV) of **0.03 mg/m3 (0.01 ppm)**.
* 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.
* Acrylamide may cause **sensitization** by contact with skin.
* Animal studies have shown maternal and paternal **reproductive health effects** from exposure to acrylamide.
* Acrylamide **may polymerize explosively if heated over 183°F (84°C)** or when exposed to UV.
* Consult the [**Laboratory Chemical Safety Summary for acrylamide**](https://pubchem.ncbi.nlm.nih.gov/compound/6579#datasheet=LCSS) for additional hazard info.
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| **Hazard Controls** | **Selection & Purchase** | * Use a [**safer alternative**](https://www.safety.duke.edu/laboratory-safety/work-practices-ppe/safer-alternatives) when possible (pre-cast polyacrylamide gels or pre-made solution).
* Purchase the smallest containers at the **lowest concentration** needed for work.
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| **Storage & Transport** | * 03-439, 03-439AAcrylamide must be in **sealed,** **shatter-resistant containers** during transportation. If the container is not shatter-resistant, use a **secondary container**, preferably a polyethylene or other non-reactive bottle carrier.
* **Store** in secondary containment in a well-ventilated area, **away from heat and flame**.
* **Store away from incompatibles** such as metals, oxidizing agents, reducing agents, acids, bases, and peroxides.
* **Store away from metals** and **do not store under the sink**.
* Store **below eye level** but **not on the floor.**
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| **Engineering Controls** | * Chemical Fume Hood Flow Diagram**Eye Shower, Eye Wash, Rinse Eyes, First Aid, Sign**Acrylamide (and suspensions/solutions) **must be handled in a chemical fume hood,** **exhausted** biological safety cabinet with negative pressure ductwork, or other exhausted enclosure.
* Work in a clean hood that is **free of incompatibles** (listed above).
* Safety Shower, Shower, Douche, HelpAerosols may be produced during any open handling of dry powder,and during open or pressurized manipulations of suspensions.It is recommended that labs post this [information sheet on Working Safely with Toxic Powders](https://www.safety.duke.edu/sites/default/files/GuidelinesToxicPowders.docx).
* **Eyewashes** and **safety showers** arerequired in immediate work areas.
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| **Work Practice Controls** | * **When possible, order pre-cast polyacrylamide gels to avoid work with acrylamide powder. Acrylamide can also be ordered already in solution. Avoiding acrylamide powder significantly reduces risks.**
* Use **bench pads** to cover areas that may become contaminated with acrylamide powder or suspensions for easy clean-up.
* **Avoid contact with incompatible materials** including metals, oxidizing agents, reducing agents, acids, bases, and peroxides.
* **Change gloves regularly** (at least every 2 hours) and wash hands at the time of glove change.
* **Keep containers closed** when not actively dispensing acrylamide.
* Keep **away from heat and flame**.
* If weighing dry acrylamide powder, place balance in chemical fume hood OR
1. ***Tare*** *(pre-weigh) an empty container with a lid.*
2. ***Go to chemical fume hood, add powder*** *to the empty container, and* ***close the lid****.*
3. *Go to the balance to weigh the container.*
4. ***Return to chemical fume hood*** *to make solution or manipulate powder.*
* **Wipe down surfaces** where acrylamide is used with a detergent and water solution. To fully decontaminate surfaces, use a 1.6% potassium persulfate solution followed by 1.6% sodium metabisulfite. Let it stand for 30 minutes, then wipe down with plenty of water.
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| **Personal Protective Equipment****(PPE)** | * Wear **closed-toed shoes** and **clothing covering the legs**.
* nitrile gloves**Minimum PPE:**
* Extended cuff nitrile gloves
* Lab coat
* Chemical safety glasses

**Ensure there is no exposed skin between labcoat cuffs and gloves!** * **If gloves are splashed** or come in contact with acrylamide, change gloves as soon as possible.
* **Change gloves regularly** (at least every 2 hours) and

3XE79_AS01?$zmmain$**wash hands at the time of glove change**.* When handling **suspensions/solutions**, **choose a glovethat is protective against the solvent**.
* **Risk of splash / large amounts** (in addition to the above, wear):
* Butyl gloves (such as [these](https://www.uline.com/BL_358/Chemical-Resistant-Butyl-Rubber-Gloves) from Uline), or double nitrile
* Chemical splash goggles and face shield
* Tyvek sleeves and/or a chemically resistant gown
 | lab coat28400131-24 |
| **Other** | **Medical Emergencies** | * See [Emergency Response Guide](https://www.safety.duke.edu/sites/default/files/EmergencyResponse.pdf) and/or lab-specific chemical hygiene plan.
* **For eye/skin exposure**, flush with water for at least 15 min, then seek medical attention.
* If there is **respiratory irritation** with exposure, remove all persons from contaminated area and contact the OESO spill team by calling **911** from a campus phone or **Duke Police at** **919-684-2444** from any phone to request assistance.
* Contact Employee Occupational Health and Wellness (EOHW) at **919-684-8115** to report an exposure and obtain medical advice.
* For medical advice without exposure, call **919-684-3136**.
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| **Spills** | * **Spills of dry acrylamide powder** outside of a chemical fume hood should be referred to the OESO spill response team (call **911** from a campus phone, or **919-684-2444** from any phone).
* **Spills of dry acrylamide powder** inside of a chemical fume hood should be wiped up 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 Work Practice Controls section. Place any clean-up materials into a bag and seal, then submit as hazardous chemical waste (see waste section below) through OESO Environmental Programs (call **919-684-2794** with questions).
* **Spills of liquid forms of acrylamide** should be absorbed with spill pads or other non-combustible absorbent material and placed in containers for disposal.
* **Once spill is cleaned,** decontaminate the area as instructed above in Work Practice Controls.
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| **Waste** | * Unwanted acrylamide (and suspensions) must be disposed of following your laboratory-specific chemical hygiene plan, Duke University’s [Chemical Waste Policy](https://www.safety.duke.edu/sites/default/files/Q-Chemwastemgt.pdf) and the [Laboratory Chemical Waste Management Practices](https://www.safety.duke.edu/sites/default/files/Lab-Waste-Management-Practice.pdf).
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| **Training** | * Sign the signature page in the lab-specific chemical hygiene plan to indicate review.
* All personnel should also read and fully adhere to the lab-specific SOP for Toxic Powders.
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| **Questions** | * Contact OESO Lab Safety at 919-684-8822 or labsafety@duke.edu
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| Icon  Description automatically generated  | A picture containing text, clipart  Description automatically generated**A picture containing text, clipart  Description automatically generatedIcon  Description automatically generatedLab-Specific Safety Information for** **ACRYLAMIDE*****Supplements the Guidelines for Safe Use of Acrylamide*** |  |
| **Lab** | **PI Name** | Click or tap here to enter PI Name |
| **Location** | Enter building(s) and room(s) where lab is located |
| **Lab-Specific Hazard Controls** | **Purchase****Details** | **When possible, order pre-cast polyacrylamide gels (or acrylamide solution) to avoid working with acrylamide powder. Avoiding work with acrylamide powder significantly reduces risks.** |
| Maximum container size | Enter maximum container size purchased | Maximum container size |
| Maximum concentration | Enter maximum concentration purchased | **Order pre-cast polyacrylamide gels or acrylamide solution to avoid working with powder when possible.** |
| Container type | Enter the container material |  |
| Specific product information | Enter supplier name/product number or purity/grade to purchase |
| **Storage**  | Specific location | Enter rooms and areas designated for storage |
| **Use Information** | Designated work area (specific room(s) and area(s)) | Enter rooms and areas designated for use | **Handle powders and solutions in a chemical fume hood!** |
| Maximum quantity  | Enter maximum quantity to be used at a time |
| PPE Storage Location | Enter location where specific PPE is stored (e.g. extended cuff nitrile gloves, labcoat, chemical safety glasses and/or goggles, chemically resistant sleeves or apron, butyl gloves, etc.) |
| Decontamination method | **Specify decontamination method:**[ ]  Wipe down surfaces with a detergent and water solution.[ ]  Wipe down surfaces with 1.6% potassium persulfate solution, followed by 1.6% sodium metabisulfite solution. Let stand for 30 minutes, then wipe down with plenty of water. |
| Location of supplies for decontamination (or spill clean-up) | Enter location of decontamination materials mentioned above, as well as any necessary spill supplies (e.g., cloth or paper towels, spill pads or absorbent material, etc.)**Dispose of used decon and/or clean-up materials as chemical waste.** |
| **Waste Information** | Details about waste (location, type of container) | Enter location of waste container, type of container used |  |
| **Details of Process** |  Enter steps used in lab process(es) or experiment(s) |