ECKERD COLLEGE

Safe Operating Procedure

(8/06)

Guidelines for the Safe Use of Acrylamide

(For assistance, please contact Fawn Crotty x8447)

Storage

- Keep containers tightly closed to prevent acrylamide from subliming and entering the atmosphere.
- Store in a cool place.
- Prevent contact with oxidizing materials, reducing agents, acids, bases, metals, and other contaminants.

Measuring Acrylamide Powders

Researchers are strongly encouraged to purchase pre-made aqueous stock solutions. However, the following procedures are recommended if it is necessary to use acrylamide in powder form. These procedures may seem tedious and time-consuming, but they will help prevent workers from exposing themselves and colleagues by reducing the potential for contaminating the air, balance, and surrounding workbench.

- Use a spatula inside a hood to measure an amount of acrylamide into a pre-weighed vessel, which is subsequently covered or sealed.
- The closed container can then be moved safely from the hood to the balance to be weighed. If more or less material is needed, return the container to the hood and adjust the amount of material. Keep the weighing vessel covered while moving it back and forth.
- Wear gloves, a lab coat and goggles during measuring, weighing, and mixing operations. Ensure that the entire hand and arm area is covered. Do not allow a break in protective coverage at the wrist if coat and gloves do not overlap.

Pouring gels

- After the gel is poured, allow residual acrylamide to polymerize in the flask.
- Polymerized gel can be loosened from the flask with a spatula then disposed of the collection receptacle.
- Areas where gels are poured should be protected with lab bench cover. Bench cover should be disposed of in the trash periodically. Place contaminated bench covers in sealed bags prior to disposal in the trash.
- Since there is never 100% polymerization, gels should be considered slightly hazardous as they are contaminated with acrylamide monomer.

Post-electrophoresis

- Wear appropriate PPE (gloves, eye protection, lab coats) when dismantling electrophoresis apparatus.
- Gels that are stained with coomassie blue, then destained in a solution containing only 10% methanol, may be placed in a collection receptacle to dry. When the receptacle is full, the container should be tagged for biosafety disposal.
- It is permissible to use the same receptacle for acrylamide and agarose gels, however, if gels are silver stained, they must be collected separately for facilities disposal.

Spill response

- *Small dry spill*: Scrape material into a clean, dry container and cover. Do not create an airborne dust. Clean spill area thoroughly with soap and water.
- *Small liquid spill*: Absorb liquid using Spill-X-S (brown bottle) from Spill Kit and place into containers for later disposal via facilities. Clean spill area thoroughly with soap and water.
- *Large spills*: Notify others in the room of the spill. Evacuate the room and contact (Fawn Crotty x8447 or Safety x8260 after normal working hours). Post room with a warning notifying others of the spill to prevent unnecessary entry.

Acrylamide is a common research laboratory chemical used as a cross linking agent for electrophoresis separation procedures. The common use of this chemical may cause lab personnel to overlook its hazardous nature. Acrylamide is extremely toxic by all routes of exposure. Therefore, laboratory workers must take precautions to prevent inhalation, accidental ingestion, and skin contact, even in small quantities.

Exposure to acrylamide can produce acute and chronic effects. Acute exposure of the skin to aqueous acrylamide can cause redness and peeling. Acute exposure of the eyes and mucus membranes to aqueous solutions of acrylamide can cause irritation. Chronic exposure to low doses of acrylamide can 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. Repeated exposure to slightly higher amounts may induce multi-site cancers and reproductive effects, including abortion, reduced fertility, and mutagenicity.

Acrylamide is commercially available in pre-mixed aqueous solutions or in powder form. In the powder form, Acrylamide is odorless and white in color. In its powder form, the monomer is extremely dangerous because the dust can easily become airborne and enter the respiratory system. In this regard, pre-mixed aqueous solutions are much safer during handling operations. **Therefore, Researchers are strongly encouraged to purchase pre-made stock solutions.** Toxicity and exposure potential also decreases dramatically after Acrylamide has polymerized. However, since there is never 100% polymerization, there will always be a toxicity concern from the remaining monomer contamination.