Standard Operating Procedure

Uranyl Compounds

**This SOP template is not complete until: 1) Lab specific information is entered into the box below.**

**2) Lab specific protocol is added to the protocol section.   
3) SOP has been signed/dated by the PI and lab personnel**

Print a copy and insert into your *Lab-Specific Chemical Hygiene Plan*.

Section 1 – Lab-Specific Information

| **Building/Room(s) covered by this SOP:** | Click here to enter text. |
| --- | --- |
| **Department:** | Click here to enter a date. |
| **Principal Investigator Name:** | Click here to enter text. |
| **Principal Investigator Signature:** | Click here to enter text. |

Section 2 – Hazards

Uranyl compounds (such as uranyl acetate and uranyl nitrate) are commonly used as a contrast agent for staining tissue for imaging via electron microscopy. These compounds are toxic, corrosive, and radioactive. The amount of uranium in these compounds is considered naturally occurring radioactive material (NORM) and does not create a radiation hazard while working with the uranyl compounds. All solids and solutions should be labeled as radioactive. Collect all liquid and solid wasteas radioactive waste and disposed of properly.

Hazards can vary between uranyl compounds. Consult the chemical’s Safety Data Sheet (SDS) for most accurate hazards.

**Section 3 – Engineering Controls and Personal Protective Equipment (PPE)**

**Engineering Controls:** Use uranyl compounds in a properly functioning chemical fume hood. The chemical fume hood must be approved and certified by REM and have a face velocity between 80 – 125 feet per minute.

**Hygiene Measures:** Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product.

**Hand Protection:** Chemical-resistant gloves must be worn, nitrile gloves are recommended for low volume applications. Wearing two pairs of nitrile gloves is recommended. **NOTE:** Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with the specific chemical being used.

Gloves must be worn. Use proper glove removal technique to avoid any skin contact. Nitrile gloves layered underneath butyl rubber gauntlet-style gloves are recommended.

For Odor: Contaminated gloves (even just a few drops) must be disposed of as hazardous waste (due to odor).

**Eye Protection:** ANSI approved properly fitting safety glasses or chemical splash goggles are required. A face shield may also be appropriate depending on the specific application.

**Skin and Body Protection:** Laboratory coats must be worn and be appropriately sized for the individual and buttoned to their full length. Personnel must also wear full length pants, or equivalent, and close-toed shoes. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle must not be exposed.

**Respiratory Protection:** If chemical is being used outside of a chemical fume hood, respiratory protection may be required. If this activity is necessary, contact REM (4-6371) so a respiratory protection analysis can be performed.

Section 4 – Special Handling and Storage Requirements

* Do not over purchase; only purchase what can be safely stored in the laboratory.
* Avoid all direct contact with uranyl compounds; always handle in a properly functioning chemical fume hood and wear appropriate PPE at all times.
* Keep containers tightly closed and store in a cool, dry, and well-ventilated area that is protected from sunlight.
* A designated storage area should be established such as chemical storage cabinet and everyone in the lab should be made aware of its storage location. Everyone handling uranyl compounds must have appropriate training before use begins.
* A designated chemical fume hood should be established for work with uranyl compounds. Ensure that the hood sash is positioned at the proper operating height as indicated by the operating sash label.
* Before work begins, line the work activity area (i.e., fume hood deck) with disposable absorbent pads to ease cleaning or capture material in the event of a spill. Make sure the work area is free from unnecessary equipment and/or chemical containers, beakers, flasks, etc. The work area should be smooth, non-porous, and easily decontaminated.
* Routinely decontaminate the container, equipment, and surfaces using techniques to minimize airborne substances. Decontamination should be accomplished by wet-wiping surfaces with soap and water. The absorbent materials used in the process must be collected and containerized as radioactive waste.
* A current copy of the safety data sheet must be made available to all personnel working in the laboratory at all times. This SDS must be reviewed by all personnel working with the compound before work begins. Special consideration should be given to the toxicological information included in the SDS (Section 11).

Section 5 – Spill and Accident Procedures

Immediately evacuate area and ensure others are aware of the spill. If there is an imminent threat of a fire, pull the nearest fire alarm station to evacuate the building and **dial 911**. If personnel have become exposed and need medical assistance, **dial 911**. If the spill is minor and does not pose a threat to personnel, contact REM at 49-40121 during normal business hours (Monday – Friday, 7 AM – 4 PM) for spill cleanup assistance (dial 911 if spill occurs after hours and assistance is needed).

Section 6 – Waste Disposal Procedures

Store waste in closed containers that are properly labeled, and in a designated area away from incompatible chemicals. Avoid collecting waste containing uranyl compounds with other chemical waste whenever possible. Uranyl compounds must be picked up as radioactive waste. Complete a Radioactive Waste Pickup Request Form to arrange for disposal by REM. REM will provide the required radioactive waste labels that are required.

Section 7 – Protocol **(Add lab specific Protocol here)**

Click here to enter text.

**NOTE:** Any deviation from this SOP requires approval from Principal Investigator.

Section 8 – Documentation of Training **(signature of all users is required)**

Prior to conducting any work with CHEMICAL, the Principal Investigator must ensure that all laboratory personnel receive training on the content of this SOP.

**I have read and understand the content of this SOP:**

| **Name** | **Signature** | **Date** |
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