Standard Operating Procedure

Lithium Metal

**This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant 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 a date. |
| **Principal Investigator Signature:** | Click here to enter text. |

**Section 2 – Hazards**

Lithium is an alkali metal and is classified as water-reactive or ‘dangerous when wet’.It is highly flammable and reactive with water producing flammable gases that can ignite if exposed to water. It may be harmful if ingested, inhaled, or absorbed through the skin. It can cause skin and eye burns with irreversible damage. Extreme caution is advised. Keep away from heat and sources of ignition. Gaseous by-products are extremely destructive to the tissue of the mucous membranes and upper respiratory tract, potentially leading to pulmonary edema.



**Section 3 – Personal Protective Equipment (PPE)**

**Engineering Controls:** Use of lithium metal should be conducted in a properly functioning glove box, whenever possible, or 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.

**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:** Flame resistant 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 lithium metal is being used outside of a chemical fume hood, respiratory protection may be required. If this activity is necessary, contact REM (49-46371) so a respiratory protection analysis can be performed.

**Section 4 – Special Handling and Storage Requirements**

* Precautions for safe handling: water reactive, use extreme care when handling.
* Only handle under inert gas; use a glove box if possible. Do not expose to water.
* Avoid contact with skin and eyes and inhalation.
* A “dry-run” of the experiment should be performed using low-hazard materials such as water or an organic solvent.
* Never work with lithium alone.
* Conduct the procedure only after a supervisor has observed the user performing the proper technique unassisted.
* All glassware used for lithium should be oven-dried and free of moisture.
* Keep away from sources of ignition.
* Keep containers tightly closed. Store in a cool, dry and well-ventilated area away from incompatible substances.
* The amount of water reactive materials stored should be kept at a minimum.
* Any expired or unnecessary water reactive materials should be properly disposed of as hazardous waste.
* All water reactive materials should be clearly labeled with the original manufacturer’s label, which should have the chemical name, hazard labels, and pictograms. The label should not be defaced in any way.
* All water reactive material should be placed into secondary containment as a precautionary measure.
* Suitable storage locations include inert gas-filled desiccators or glove boxes, flammable storage cabinets that do not contain aqueous or other incompatible chemicals, or intrinsically safe refrigerators or freezers that also do not contain aqueous or other incompatible chemicals.
* If water reactive materials are received in a specially designed shipping, storage, or dispensing container (such as the Aldrich Sure-Seal packaging system), ensure that the integrity of that container is maintained. Ensure that sufficient protective solvent, oil, kerosene, or inert gas remains in the container while reactive are stored.

**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 hazardous waste in closed containers that are properly labeled, and in a designated area (flammable cabinet is recommended). No toxic materials are permitted to be poured down the drain. Complete a Chemical Waste Pickup Request Form to arrange for disposal by REM; detailed instructions are provided at the following link: <http://www.purdue.edu/ehps/rem/hmm/chemwaste.htm>.

**Section 7 – Protocol/Procedure (Additional lab protocol may be added 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 lithium metal, 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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