**Standard Operating Procedure**

**Water Reactive Chemicals**

 

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| **Chemical name, CAS:** | **Water Reactive Chemicals**  |
| **PI:** |  | **Date:** |  |
| **Building:** |  | **Lab #:** |  |

1. **Material Use:**

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| Water reactive chemicals are liquids or solids that may react violently with water or moisture in the air. Water reactive chemicals are used in chemistry research labs as catalysts or reagents.Water Reactive Chemicals Include:* Alkali Metals (Lithium, Sodium, Potassium, Rubidium, Cesium)
* Alkaline Earth Metals (Magnesium, Calcium, Strontium, Barium)
* Metal Hydrides (Lithium Aluminum Hydride, Calcium Hydride, Potassium Hydride)
* Many Pyrophoric Chemicals (e.g. organometallics) are also water reactive (see Pyrophoric Materials SOP)
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1. **Potential Hazards:**

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| Water reactive chemicals may react violently with aqueous solutions or atmospheric moisture to produce flammable or toxic gases and heat. **Do not underestimate the hazards of water reactive chemicals**. Before working with water reactives, **you must get thorough training from an experienced supervisor.** |

1. **Engineering Controls:**

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| * All manipulations of water reactive chemicals must be done in an **inert-atmosphere glove box**, or laboratory hood.
* All reactions using water reactive chemicals must be performed under an inert atmosphere in a laboratory hood, glove box, or appropriate engineering control.
* An appropriate fire extinguisher (Class ABC or Class D) must be available in the laboratory.
* An eyewash and safety shower must be readily available near the work area.
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1. **Work Practice Controls:**

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| * **Substitute water reactive chemicals for less hazardous reagents** whenever possible.
* Additional training is required for use of water reactives. Talk with supervisor and EHS before use.
* **Never work alone with water reactive chemicals.**
* **Keep an appropriate spill kid readily available.** Sand, metal-x, or lime often work well for smothering water reactives.
* Do not store unnecessary flammable chemicals near the water reactive chemical work area.
* **You must be trained by an experienced lab supervisor before working with water reactives.**
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1. **Personal protective equipment (PPE):**

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| Lab Coat*Flame Resistant* | Splash Goggles | Face Shield | Gloves | Long Pants/Closed-toe Shoes |

1. **Storage:**

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| * Store water reactive chemicals according to SDS, and away from any flammable materials or aqueous solutions.
* Storage in an inert-gas atmosphere (glove box or desiccator) may be a suitable storage area.
* Always ensure that sufficient protective solvent, oil, kerosene, or inert gas remains in the container during storage.
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1. **Waste Disposal:**

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| * Water reactive chemicals may be quenched before disposal, but must be stored to prevent reactions with incompatibles.
* **Clearly label waste.** Do not dump hazardous waste down the drain, or dispose of in the regular trash.
* Do not leave any container with water reactive chemical residue open to the atmosphere.
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1. **What to do if exposed:**

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| **If inhaled**Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. **In case of skin contact**Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. **In case of eye contact**Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.  |

1. **Spill Procedure:**

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| **All Spills:**  Immediately evacuate lab. Call 911 if there is any risk of fire or explosion. If there is no risk of fire or explosion, call 303-273-3316 and notify EHS personnel for assistance. If possible to do safely, smother any spill with powdered lime, sand or other extinguishing agent. |

1. **Training and medical monitoring of personnel:**

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| * **Hazardous Waste Generator Training,** **Laboratory Safety Training, and HF Training** with EHS.
* **Lab Specific Training** provided by supervisor that covers: safety expectations, PPE use and storage, SOPs, and emergency response.
* **Water Reactive Chemical Specific Training** provided by experienced supervisor.
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**I have read and understand this SOP. I agree to fully adhere to its requirements.**

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| **Last** | **First** | **CWID** | **Signature** | **Date** |
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