

## Standard Operating Procedure (SOP)



### Water reactive chemicals

**Effective Date:** 8/23/2013

**Revised Date:** 10/10/2022

#### Introduction

- Water reactive materials are incompatible with water. These chemicals undergo a chemical reaction with water that may release flammable or toxic gas. The heat of reaction is typically great enough to cause spontaneous combustion or explosion.
- Examples of Water reactives include:
  - alkali metals,
  - alkaline earth metals,
  - anhydrides,
  - certain carbides,
  - hydrides,
  - sodium hyposulfite.

#### POTENTIAL HAZARDS

- Water reactives are materials which react violently with water to produce heat and flammable or toxic gas.
- The heat generated by reactions is typically sufficient to ignite the hydrogen gas evolved in the reaction, resulting in a powerful explosion.
- These materials may present other hazards, such as corrosivity, teratogenicity, water reactivity, peroxide formation, or systemic effects. *Review the SDS for the specific chemical prior to use.*
- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

#### Health Hazards

- See SAFETY DATA SHEET for specific health hazards

#### Personal Protective Equipment

##### EYE PROTECTION

- Safety glasses, goggles or face shields shall be worn during operations in which Water reactive chemicals might contact the eyes (e.g., through vapors or splashes of solution).
- Ordinary (street) prescription glasses do not provide adequate protection. Adequate safety glasses must meet the requirements of the Practice for Occupational Education Eye and Face Protection (ANSI Z87.1-1989) and must be equipped with side shields.

##### HAND PROTECTION

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- Use disposable nitrile gloves when working with chemicals. Check chemical compatibility chart for breakthrough time when using
- Laboratory personnel should thoroughly wash hands with soap and water before and immediately upon removal of gloves.

#### LAB COATS, ETC.

- Button lab coats, closed toed shoes, long pants and long sleeved clothing shall be worn when handling Water reactive chemicals. Protective clothing shall be worn to prevent any possibility of skin contact with Water reactive chemicals.

#### WORK PRACTICES

- Specific written procedures, approved in advance by the Principal Investigator (signature required at top of customized SOP), are required. These must include a designated work area (under Additional Lab Rules) and cover all sections of this template.
- Before working with these compounds, read the Safety Data Sheet (SDS) and other reference material carefully.
- Purchase minimal amounts of water-reactive materials.

#### Special Handling Procedures and Storage Requirements

- Do not store with incompatible material.
- Store in a cool, dry place, off the floor.
- Do not store under, over, or around sinks or other sources of water (i.e. safety showers or eyewash stations).
- Isolate in a water tight or water resistant container.
- Store alkali metals under mineral oil to prevent exposure to moisture in the air.

#### Waste Disposal

- Excess Water reactive chemicals and all waste material containing Water reactive chemicals must be placed in a container labeled with the following **“HAZARDOUS WASTE Water reactive chemicals”**, AND INCLUDE THE FULL CHEMICAL NAME.
- Contact EHS at x3427 for hazardous waste removal.



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#### Emergency Numbers

##### Emergency Numbers:

Fire and Medical Emergencies	x5911 (911 on cell phone)
Environmental Health and Safety	x3427
FastMed Urgent Care (employees)	(336) 714-4616
Student Health (students only)	x5218
Poison Control	800-222-1222

#### First Aid

- See SAFETY DATA SHEET for First Aid information on the chemical in use.

#### Spill and Accident Procedure

- See SAFETY DATA SHEET for SPill Response information.
- **DO NOT USE WATER**
- Alert Lab Manager and call EHS at x3427.