



## Standard Operating Procedure (SOP)



### WATER REACTIVES

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

**Revised Date:** 8/23/2013

#### 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 and sodium hyposulfite.

#### GENERAL LAB RULES

1. No eating, drinking, smoking, handling contact lenses, or applying cosmetics in the laboratory.
2. Persons shall wear buttoned lab coat, long pants, safety glasses or goggles and appropriate gloves when working with hazardous chemicals.
3. Mouth pipetting is prohibited; mechanical pipetting devices are to be used at all times.
4. All procedures are performed carefully to minimize the creation of splashes or aerosols.
5. Wash hands
  - after handling chemicals materials,
  - after removing gloves, and
  - before leaving the laboratory.

Additional Lab Specific Rules Here

#### 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.

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#### HEALTH HAZARDS

- **Inhalation:** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
- **Skin:** May be harmful if absorbed through skin. Causes skin burns.
- **Eyes:** May cause eye burns.
- **Ingestion:** May be harmful if swallowed.

#### PERSONAL PROTECTIVE EQUIPMENT

##### EYE PROTECTION

- Safety glasses, goggles or face shields shall be worn during operations in which WATER REACTIVES 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

- 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 REACTIVES. Protective clothing shall be worn to prevent any possibility of skin contact with WATER REACTIVES.

#### 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.
- Make sure an appropriate fire extinguisher is available.
- Before conducting the actual procedure, always perform a dry run (without the water reactive material) to identify and resolve possible safety hazards.
- Work within sight and/or hearing of at least one other person who is familiar with the hazards and written procedures.

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#### 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 water tight or water resistant container.
- Store alkali metals under mineral oil to prevent exposure to moisture in the air.

Additional Lab Specific Special Handling/Storage Procedures

#### WASTE DISPOSAL

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

#### EMERGENCY PROCEDURES

**Emergency Numbers:**

Fire and Medical Emergencies	x5911 (911 on cell phone)
Environmental Health and Safety	x3427
Hillcrest Urgent Care (employees)	336-760-8999
Student Health (students only)	x5218
Poison Control	800-222-1222

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#### FIRST AID

1. If chemical exposure occurs, remove contaminated clothing and flush exposed area for 15 to 20 minutes using emergency eyewash station and/or safety shower.
2. If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Call x5911 for medical assistance.
3. Call x5911 and describe the extent of injuries.
4. Report all accidental exposures to EHS and Human Resources (employees) or Student Health (students).
5. Complete an [online injury/illness report](#) if there is an over-exposure to the chemical or if there is an accident involving the chemical.

#### SPILL AND ACCIDENT PROCEDURES

If the chemical spilled is considered a carcinogen, reproductive toxin or highly toxic chemical, contact x3427 and evacuate area immediately, regardless of spill amount.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**DO NOT USE WATER FOR CLEAN UP.** See SDS for details.

For all other spills use the chart below for spill reporting and response:

SPILL QUANTITY	PROPER SPILL RESPONSE
Spill less than 500 mL	<b>Contact Environmental Health and Safety (x3427) and clean up spill using spill kit.</b>
Spill greater than 500 mL	<b>Do not attempt to clean up spill. Leave the area and immediately report to WFU Police (x5911) and EHS (x3427).</b>