# Standard Operating Procedure

## Water-Reactive Chemicals

**Hazard Description:** Water-reactive chemicals are those chemicals, when in contact with water, may emit flammable gases that can form explosive mixtures with air. Such mixtures are easily ignited by ordinary sources of ignition and may result in a blast wave and flames. Some water-reactive chemicals can react vigorously with water to rapidly produce gases which are deadly at low concentrations.

**Labeling:** The term used for these chemicals by GHS is: "Chemicals Which, in Contact with Water, Emit Flammable Gas". Water-reactive chemicals are labeled with the following pictogram:

**Storage:** Storage of water-reactive chemicals must adhere to the requirements outlined in the Chemical Hygiene Plan. Water-reactive chemicals must not be stored with aqueous (water-containing) solutions, or near other sources of water such as sinks, water baths, or recirculating chillers. Do not store water-reactive chemicals with flammable materials or in a flammable liquid storage cabinet. Store water-reactive chemicals away from ignition sources.

**Handling:** In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling PEC's.

- Never return excess chemicals to the original container. Small amount of impurities may be introduced into the container which may cause a fire or explosion.
- Immediately close all containers of PCE's after use and return to their storage location.
- Work in a glovebox or fume hood with sash closed as much as possible.
- Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction.
- Remove combustible and flammable materials and sources of ignition from the work area.
- Use fresh, dry solvents and thoroughly dried glassware.

**Personal Protective Equipment:** Reference SDS. Unless working in a glove box, it is recommended a fire-resistant lab coat be worn while manipulating large quantities of water-reactive liquids. Consider the use of Nomex/Leather polit's gloves over nitrile gloves.

**Spill and Decontamination:** Reference SDS. Once spilled, certain liquid or solid water-reactive chemicals may ignite. Use an appropriate extinguishing agent (do not use water). Do not use water to clean up spills or decontaminate a surface or equipment. Instead use wipers with a dry, non-polar solvent. Be sure all ignition sources are secured before beginning cleanup.