Duke OESO Guidelines for Safe Use of
SULFURIC ACID
(Order in lowest concentration possible)
Labs must create a lab-specific SOP describing circumstances of use, concentration, and quantity.

### Hazards

#### Potential Hazards
- **Corrosive** - causes severe skin burns and serious eye damage. Corrodes metals.
- **Reacts** with most metals to produce hydrogen gas, which is flammable and explosive.
- **Can react** with many substances to generate highly toxic products. Reactions may be violent.
- **OSHA Permissible Exposure Limit (PEL)** is 1 mg/m3 over 8 hours.
- For more information, see the SDS and the Lab Chemical Safety Summary for Sulfuric Acid.

### Selection & Purchase
- Purchase the smallest, shatter resistant containers, at the lowest concentration possible.
- Purchase in shatter-resistant containers (such as PVC-coated glass) if available.
- Consider alternate methods and use a less dangerous acid if possible.
- Buy inert spill pads or pillows that can be used to absorb small spills of sulfuric acid.

### Storage & Transport
- Store in secondary containment in a well ventilated area.
- Store away from incompatibles such as organics, bases, halides, nitrate, chlorates, reducing agents, and others.
- Transport in secondary containment, preferably a Polyethylene or other non-reactive acid/solvent bottle carrier.
- Store below eye level but not on the floor.
- Store away from metal and do not store under the sink.

### Engineering Controls
- **Eyewash/drench hose** is required in immediate work area.
- For large quantities a safety shower will also be needed.
- Work in a clean chemical fume hood free of incompatibles if there is a potential for inhalation exposure (including mists or vapor).

### Work Practice Controls
- When diluting, add acid to water slowly, in small amounts. (Never add water to acid!)
- Work with the smallest practicable amount and lowest practicable concentration.
- Decontaminate work area by wiping it down with a soap and water solution.

### Personal Protective Equipment (PPE)
- Wear closed-toed shoes and clothing covering the legs.
- **Minimum PPE:**
  - Buttoned lab coat
  - Safety goggles
  - 5 mil NEOPRENE gloves or 2 pairs of 4 mil NITRILE gloves for 10 - 30 minutes of protection. Change immediately if splashed.
- Risk of splash/work with >100 ml: add: face shield, impervious apron & sleeves (or coverall).
- For expected glove contact use gloves rated for > 60 minutes with sulfuric acid (e.g., laminate or butyl).
- Wash hands at time of glove change.

### Emergencies
- See Emergency Response Flip Chart and/or lab specific chemical hygiene plan.
- For clean-up of small spills (<200 ml), wear butyl or laminate gloves and neutralize with sodium carbonate from edge to center, then absorb with inert material. Do not use combustible materials such as saw dust to absorb sulfuric acid spills!

### Other
- **Waste**
  - See lab-specific chemical hygiene plan, Lab Chemical Waste Management Practice, and Drain Disposal Practice. **DO NOT MIX** sulfuric acid waste with incompatible wastes (e.g., organics)!!!
- **Training**
  - Sign signature page in lab-specific chemical hygiene plan to indicate review.
- **Questions**
  - Contact OESO Lab Safety at 919-684-8822 or labsafety@dm.duke.edu

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