# STANDARD OPERATING PROCEDURES FOR HAZARDOUS AND PARTICULARLY HAZARDOUS CHEMICALS

For

## Sulfuric Acid

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| 1. PROCEDURE /  PROCESS | Sulfuric Acid is used in **Building, Room.** **Insert procedure here:****REMEMBER!** Always add acid to water to limit exothermic reactions such as splatter, bubbling and fuming.A large amount of heat is generated when strong acids are mixed with water. Adding more acid releases more heat. Adding water to acid forms an extremely concentrated solution of acid. Heat causes the solution to boil violently, splashing concentrated acid out of the container. Adding acid to water, the resulting solution is dilute and the heat released is absorbed by the water. **Always Add Acid** to water. |
| 2. CHEMICAL NAME(S) and associated  PHYSICAL and  HEALTH HAZARDS  | **Sulfuric Acid- CAS# 7664-93-9**; also known as Oil of Vitriol, hydrogen sulfate, battery acid. It is a colorless to dark-brown, oily, odorless liquid. [Note: Pure compound is a solid below 51°F. Often used in an aqueous solution.]* **Sulfuric acid is highly corrosive and causes severe burns on eye and skin contact and upon inhalation. May lead to blindness.**
* **May cause respiratory irritation of the nose, throat, and lungs.**
* **Repeated exposure can cause permanent lung damage, damage to teeth, and upset stomach.**
* **It is also highly reactive and reacts violently with many organic and inorganic substances.**
* **May corrode metallic surfaces.**
* **Sulfuric acid is a human carcinogen, classified by the IARC as Group 1: Carcinogenic to Humans, by the NTP as Known to be a Human Carcinogen.**
* **Sulfuric Acid is reactive and a dangerous explosion hazard. It is not combustible, but it is a strong oxidizer that enhances the combustion of other substances.**

 Signal Word: **DANGER**Exposure Limits:**DOSH:** TWA: 1 mg/m3; STEL: 3 mg/m3**NIOSH:** TWA: 1 mg/m3**ACGIH:** TWA: 0.2 mg/m3 (as the *Thoracic fraction*)Toxicological Data:**ORAL (LD50):** 2,140 mg/kg 4 hours [Rat]. **INHALATION (LC50):** 510 mg/m 2 hours [Rat]; 320 mg/m 2 hours [Mouse].\***Always refer to the Safety Data Sheet for the most detailed information**\* |
| 3. NAME OF TRAINER /  RESOURCE PERSON  | **Principal Investigator Name, Building, Room, Phone Number****Secondary contact Name, Building, Room, Phone Number** |
| 1. LOCATION OF

 HEALTH & SAFETY  INFORMATION | The Safety Data Sheet (SDS) for Sulfuric Acid is located in the Laboratory Safety Manual in **Building, Room** Labeling: Containers shall either have original warning label affixed or a label identifying the contents and hazards. |
| 5. PROTECTIVE  EQUIPMENT | Wear at the minimum nitrile, neoprene, butyl, Viton or Silver Shield gloves, chemical splash goggles, and a fully buttoned lab coat. (Note: Nitrile and neoprene gloves are NOT recommended for concentrated (>47%) sulfuric acid. Always check the manufacturer’s glove compatibility chart for proper glove selection.) A face shield is also recommended. Wash hands after removing gloves. Always work within a properly functioning, certified laboratory chemical fume hood. |
| 1. WASTE DISPOSAL

 PROCEDURES | **Waste Sulfuric Acid** must be managed as Dangerous Waste if the solution has a pH of 5 or lower. Collect solution in a compatible container with a vented lid. The container should be stored away from incompatible materials such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, strong bases, alkalis, alcohol, water, and moisture. A completed Dangerous Waste label should be attached when waste is first added to the container. When container is full or no longer being used complete a Chemical Collection Request Form, and deliver to the Waste Accumulation Area Operator at **Building, Room, Phone Number.**  If the solution has a pH between 5 and 9 it may be drained discharge. The solution can not legally be diluted to alter the pH for disposal purposes. |
| 7. DESIGNATED AREA  INFORMATION | The sulfuric acid is stored and dispensed in **Building, Room.**Diluted acid solutions using this chemical are prepared immediately prior to use in **Building, Room**.**Confine all work with sulfuric acid to a properly functioning certified laboratory chemical fume hood.**The designated area(s) should be shown on the floor plan in Laboratories Chemical Hygiene Plan.  |
| 8. DECONTAMINATION  PROCEDURES | **Upon Accidental Exposure**: In case of **eye contact**, flush eyes with copious amounts of water at an emergency eyewash station for at least 15 minutes and seek medical attention. In case of **skin contact**, flush skin with copious amounts of water for 15 minutes and seek medical attention. For exposure over a large portion of the body, remove clothing and shoes and rinse thoroughly in an emergency shower for at least 15 minutes. Seek medical attention. In case of **inhalation**, move person to fresh air and seek medical attention. In case of **ingestion**, immediately seek medical attention and follow instructions on SDS. **Upon Accidental Release**: **Large Spill:** If a significant amount of sulfuric acid is spilled outside the fume hood, immediately evacuate, secure area and call 911 to contact EH&S. **Small Spill:** If a small amount of sulfuric acid is spilled (it can be cleaned up in 10 minutes) and you have been appropriately trained to clean it up, you may do so. Trained personnel should wear at the minimum nitrile, neoprene, butyl, Viton or Silver Shield gloves, chemical splash goggles, and a fully buttoned lab coat. (Note: Nitrile and neoprene gloves are NOT recommended for concentrated (>47%) sulfuric acid. Always check the manufacturer’s glove compatibility chart for proper glove selection.) A face shield is also recommended.Additional PPE such as respirators may be necessary depending upon material and concentration. (Note: You must be medically cleared, fit tested and enrolled in WSU’s respiratory protection program to wear a respirator). If it is necessary to use a respirator and personnel are not cleared to wear a respirator and not trained to appropriately clean up the spill, the employee should immediately evacuate, secure area, and call 911 to contact EH&S.Absorb with an inert dry material and place material in an appropriate waste disposal container (resealable bag, etc.) and dispose of as hazardous waste (see above WASTE DISPOSAL PROCEDURES). Please do not use a neutralizer to clean up spill unless you are currently in the respiratory protection program and have been properly trained. As with all accidents, report any exposure as soon as possible to your Principal Investigator or Supervisor. Additional health and safety information on sulfuric acid can be obtained by referring to the SDS or by calling the EH&S Office (335-3041). |
| 1. SPECIAL STORAGE

AND HANDLING  PROCEDURES | Store in a secured, cool and well-ventilated area away from direct sunlight, heat, sparks, flame, or other sources of ignition. Store segregated from incompatible chemicals (below). Store in a tightly closed container until ready for use. Store in secondary containment such as a Nalgene/polypropylene tub. Sulfuric acid is hygroscopic and reacts violently with water. It readily absorbs moisture from air. Do not store above 23°C (73.4°F).Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, strong bases, alkalis, alcohol, water, and moisture. |

**Certification of Hazard Assessment**

Is this document a certification of Hazard Assessment for the processes identified within? ***Yes No***

If yes, provide the name of the person certifying the Hazard Assessment and the date it was performed:

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Name Date

The location of the Hazard Assessment is indicated in the document preceding this form.

**Certificate of Employee Training**

Name of person providing training for employees working with this process:

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The following employees have been trained in when, where and how to use selected PPE, the maintenance, limitations and disposal of the PPE selected, and have demonstrated the correct use of the PPE selected on the reverse of this certification.

**Name**  **Date Trained**

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