# STANDARD OPERATING PROCEDURES FOR HAZARDOUS AND PARTICULARLY HAZARDOUS CHEMICALS

For

## Phosphoric Acid

|  |  |
| --- | --- |
| 1. PROCEDURE /  PROCESS | Phosphoric 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 | **Phosphoric Acid- CAS# 7664-38-2**; also known Orthophosphoric acid, Phosphoric acid (aqueous), and White phosphoric acid. It is a colorless, odorless solid or a thick, clear liquid. It is used in rustproofing metals, fertilizers, detergents, foods, beverages, and water treatment. [Note: Often used in an aqueous solution.]   * **Causes severe skin burns and eye damage.** * **May affect the respiratory system when inhaled.** * **Breathing Phosphoric Acid can irritate the nose, throat and lungs causing coughing and wheezing.** * **May cause damage to the following organs: blood, liver, skin, eyes, bone marrow.** * **May be corrosive to metals.**   Signal Word: **DANGER**  Exposure Limits:  **DOSH:** TWA: 1 mg/m3; STEL: 3 mg/m3  **NIOSH:** TWA: 1 mg/m3; STEL: 3 mg/m3  **ACGIH:** TWA: 1 mg/m3; STEL: 3 mg/m3  Toxicological Data:  **ORAL (LD50):** 1,530 mg/kg [Rat].  **DERMAL (LD50):** 2,740 mg/kg [Rabbit].  **INHALATION (LC50):** 850 mg/m 1 hour [Rat].  \***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 Phosphoric Acid is located in the Laboratory Safety Manual in **Building, Room**  Labeling: In addition to the standard label that identifies contents, hazards, precautionary measures, and emergency contact information, containers should also be marked as a highly corrosive. |
| 5. PROTECTIVE  EQUIPMENT | Wear at the minimum nitrile, neoprene, butyl, Viton or polyvinyl chloride (PVC) gloves, chemical splash goggles, and a fully buttoned lab coat. (Note: 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 Phosphoric 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 designed for storage of acids and bases. The container should be stored away from incompatible materials such as strong caustics and most metals.  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 cannot legally be diluted to alter the pH for disposal purposes. |
| 7. DESIGNATED AREA  INFORMATION | The phosphoric 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 phosphoric 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 phosphoric acid is released outside the fume hood, immediately evacuate, secure area and call 911 to contact EH&S.  **Small Spill:** If a small amount of phosphoric acid is released (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 polyvinyl chloride (PVC) gloves, chemical splash goggles, and a fully buttoned lab coat. (Note: 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. (Note: You must be medically cleared, fit tested and enrolled in WSU’s respiratory protection program to wear a respirator).  As with all accidents, report any exposure as soon as possible to your Principal Investigator or Supervisor. Additional health and safety information on phosphoric 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 in a tightly closed container until ready for use. Store in secondary containment such as a Nalgene/polypropylene tub.  Keep away from incompatibles such as strong caustics and most metals [Note: Readily reacts with metals to form flammable hydrogen gas. DO NOT MIX WITH SOLUTIONS CONTAINING BLEACH OR AMMONIA.] |

**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:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_