

**Principal Investigator:** \_\_\_\_\_





**Date Approved:** \_\_\_\_\_

This document covers basic chemical safety information for perchloric acid. The use of perchloric is subject to pre-approval by the Principal Investigator (PI) and/or Supervisor. PI and/or Supervisor may use the sheet attached to this SOP to document any lab specific training for Perchloric Acid. **DO NOT USE PERCHLORIC ACID UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.**

## Perchloric Acid

Perchloric acid is a clear, odorless liquid with the chemical formula  $\text{HClO}_4$ . It is a very strong acid and powerful oxidizer, but aqueous solutions up to 70% behave as strong, non-oxidizing acids at room temperature. When heated or at higher concentrations perchloric acid is a potent oxidizing agent which can form explosive salts with nearby organic, inorganic, and metallic substances. These salts are shock sensitive and pose a risk of fire and/or violent explosion.



Personal Protective Equipment & Personnel Monitoring			
 <b>Lab Coat</b>	 <b>Gloves</b>	 <b>Eye Protection</b>	 <b>Face Shield</b>
Traditional lab coat.	Nitrile or neoprene gloves when handling small quantities. Use thicker polyvinyl chloride (Vinyl) gloves for larger volumes.	ANSI Z87.1-compliant safety goggles, or face shield if a splash hazard is present. Consider using a blast shield for extra protection.	

## Labeling & Storage

Store in secondary containment in a cool, dry, well-ventilated area away from metals and combustible materials. Do not store with hygroscopic chemicals (concentrated sulfuric acid, anhydrous phosphorous pentoxide, etc.). Avoid storage on wood floors or in wooden cabinets. Keep away from organic acids, all bases, and all organic material. Shelves and floor material should be non-combustible and acid-resistant. Protect from freezing. Primary containers should be labeled according to the UNC Charlotte Chemical Hygiene Plan. The secondary container's label must contain the chemical name and corresponding hazards. Also, if not plainly visible (e.g. through a cabinet window), labelling must be applied to storage locations where perchloric acid is kept to avoid an inadvertent encounter.

## Engineering Controls, Equipment & Materials

### Fume Hood

Any procedure involving heating of perchloric acid must be conducted in a fume hood with a built-in wash-down system. Perchloric acid vapors have the potential to condense and crystallize in the fume hood exhaust system. Crystallized perchloric acid is unstable and vibration in the duct and exhaust fans may result in an explosion. Fume hoods with a wash-

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down system flush away crystals deposited in the ductwork. Do not store organic materials in the fume hood where perchloric acid is used. If your protocol does not permit the handling of perchloric acid in a fume hood, contact EHS to determine whether additional respiratory protection is warranted.

## **Housekeeping**

### ***Spills***

Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 911 from any campus phone (or 704-687-2200 from a cell phone). Report any exposure to EHS at 704-687-1111. Remain on-site (at a safe distance) to provide detailed information to first responders.

### ***Decontamination***

Clean contaminated surfaces with soap and water. Dispose of the paper towels as hazardous waste.

### ***Waste***

Perchloric acid should not be mixed with any other type of waste. Refer to the UNC Charlotte Chemical Hygiene Plan for more details.

## **First Aid & Emergencies**

### ***Skin or Eye Contact***

Remove contaminated clothing and accessories; flush affected area with water. If symptoms persist, get medical attention.

### ***Inhalation***

Move person into fresh air. If symptoms persist, get medical attention.

### ***Ingestion***

Rinse mouth with water. If symptoms persist, get medical attention.

Name	Signature	Date