

**Standard Operating Procedure**

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| **Chemical name/class:** | **Perchloric Acid** | **CAS #: 7601-90-3** |
| **PI:** |  | **Date:** |
| **Building:** |  | **Room #:** |

1. **Circumstances of Use:**

***This SOP must be customized for each lab using Perchloric Acid. Use this section to describe the circumstances of use, including concentration and quantity as well as identification of a designated work area.***

2. **Potential Hazards:**

 Perchloric acid can be irritating to the skin, eyes, and respiratory tract. Contact with exposed body parts can cause painful burns and even death.

 It is not recommended to purchase anhydrous perchloric acid, as it is highly explosive.

 Aqueous perchloric acid can cause explosions if concentrated to greater than the normally-available commercial concentration of 72%.

 **Never heat perchloric acid in a standard fume hood, because perchlorates may accumulate in the ductwork and create an explosion hazard for employees servicing the hood.** If you suspect that heated perchloric acid has been used in a hood, contact EH&S before having the hood tested or serviced.

 **Do not use concentrated (>40%) perchloric acid in a fume hood**.

 Do not use perchlorates as drying agents if there is any chance of contact with organic compounds or a dehydrating acid strong enough to concentrate the perchloric acid.

 Currently, there are no established exposure limits for perchloric acid.

3. **Engineering Controls:**

 Work in a chemical fume hood (but do NOT heat perchloric acid in a standard chemical fume hood).

 An eyewash/drench hose combination unit must be available in the immediate work area for any work with corrosive materials.

 If large quantities will be used, or if perchloric acid will be heated, a special perchloric acid hood with water washdown system will be necessary. For large quantities, there must be a safety shower in the immediate area.

4. **Work Practice Controls:**

 Purchase perchloric in the smallest amounts practicable. Purchase in shatter-resistant containers if available

(such as PVC-coated glass).

 Set up a designated area for perchloric acid use and label it as such.

 Hot concentrated solutions are extremely dangerous – heated perchloric acid acts as a strong oxidizing agent.

 Do not use perchlorates as drying agents if there is any chance of contact with organic compounds or a dehydrating acid strong enough to concentrate the perchloric acid.

 Once work with perchloric acid is complete, decontaminate the area by wiping it down with a 10% sodium carbonate (Na2CO3, also known as soda ash) solution.

 Make sure that flammable and/or organic materials are not located in the work area.

5. **Personal protective equipment (PPE):**

Wear a fully buttoned lab coat with sleeves extended to wrists, face shield with safety goggles, double nitrile gloves, long pants (or other clothing covering the entire leg), rubber apron, closed toed shoes.

6. **Transportation and Storage:**

 **Group III – Oxidizing Inorganic Acid**

 Store in well-ventilated areas with secondary containment, such as a non-reactive plastic bin.

 Store below eye level.

 Store perchloric acid away from incompatibles, including organic materials. (Do not store under the sink, in wooden cabinets, or on paper-lined shelving.)

 Transport chloroform in secondary containment, preferably a polyethylene or other non-reactive acid/solvent bottle carrier.

7. **Waste Disposal:**

Handle and store perchloric acid waste following the guidelines above while accumulating wastes and awaiting chemical waste pickup. Chemical waste must be disposed of following UNC Charlotte’s Laboratory Chemical Waste Management practices <https://safety.uncc.edu/laboratory-and-research-safety/hazardous-universal-waste>.

8. **Exposures/Unintended contact:**

 Flush exposed eyes or skin with water for at least 15 minutes, then seek emergency medical attention.

 Call 911 from a campus phone or 704-687-2200 from any phone to request assistance if needed. Contact the Student Health Center at 704-687-7400 for exposure-related advice. If the Student Health Center is closed, obtain treatment at University Hospital.

The work-related injury or illness report found at:

<https://safety.uncc.edu/services/workers-compensation>

9. **Spill Procedure:**

Small spills of perchloric acid can be neutralized by slowly pouring sodium carbonate (Na2CO3) or other appropriate **inorganic** neutralizing agent on the spill. The spill should NOT be wiped up with organic or combustible materials (paper towels, rags, etc) because perchloric acid is incompatible with these materials and when they dry, these materials can spontaneously ignite. Transfer this material to a container of water for disposal. A second neutralization, along with wiping/rinsing down the area with a soap and water solution is recommended.

On the UNC Charlotte campus, “large” spills of perchloric acid must be referred to the Campus Police by calling 911 from a campus phone or 704-687-2200 from any phone.

10. **Training of personnel:**

All personnel are required to complete the UNC Charlotte EHS Laboratory Environment Training Checklist. This checklist includes an introduction to general chemical safety as well as review of the laboratory specific safety plan. Furthermore, all personnel shall read and fully adhere to this SOP when handling the chemical.

**“I have read and understand this SOP. I agree to fully adhere to its requirements.”**

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| **Last** | **First** | **UNC Charlotte ID** | **Signature** |
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