

**UNIVERSITY OF ROCHESTER
ENVIRONMENTAL HEALTH & SAFETY**

Policy No.: LS008	Approved by: Mike Liberty
Title: Perchloric Acid	Date: 02/11/2019
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Prepared by: Carolyn Place	

I. PURPOSE

This policy establishes procedures for the safe procurement, handling, storage, and disposal of perchloric acid.

II. PERSONNEL AFFECTED

All research and clinical lab personnel who work with perchloric acid.

III. DEFINITIONS

Perchloric acid is strong mineral acid, that has strong oxidizing and, under certain conditions, explosive properties. Classified as corrosive, oxidizer, and specific target organ toxicant (thyroid) it should be handled with extreme caution.

IV. RESPONSIBILITIES

The Principal Investigator, or Laboratory Supervisor is responsible for ensuring the proper use, handling, and storage of perchloric acid within their laboratory as documented in the lab's Standard Operating Procedures (SOPs). They are to ensure that no more than 50mL is currently stored or used by the laboratory, with concentrations less than 40% by volume (v/v) or by weight (v/w).

The Laboratory Safety Unit will perform periodic University-wide inventory verifications through Chematix to ensure all perchloric acid used and stored has been assessed and documented with each laboratory, and the quantities do not exceed 50mL per lab, with concentrations below 40% (v/v) or (v/w).

The Environmental Compliance Unit will assist in the proper collection and disposal of perchloric acid Hazardous Waste, upon generation, labeling, and notification by the laboratory.

V. PROCEDURES

Laboratories are to purchase and possess perchloric acid in quantities less than 50mL total. All perchloric acid purchased must be in concentrations less than 40% (v/v) or (v/w). These limitations are in place as the University of Rochester does not possess a designated perchloric acid fume hood anywhere on campus. Moderate to high quantities and concentrations **MUST** be used in a designated perchloric acid fume hood, as perchloric acid fumes can generate and deposit perchloric acid salts, which are contact metal explosives. Designated perchloric acid fume hoods have integrated safety and wash-down systems to prevent these explosive metal salts from forming.

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Any lab that wishes to purchase perchloric acid must notify the Laboratory Safety Unit for an evaluation and assessment of use before purchasing. The University's purchasing system has flagged this chemical as hazardous, requiring the approval of EH&S prior to purchase.

Periodic University-wide inventory checks, along with annual safety inspections will be used to verify and audit the possession and safe use of perchloric acid.

Perchloric acid must be kept in glass or porcelain secondary containment as High Density Polyethylene (HDPE) and Low Density Polyethylene (LDPE) are not recommended for long term storage.

All perchloric acid must be used, dispensed, and diluted in a chemical fume hood.

Personal Protective Equipment (PPE) required when handling perchloric acid must include, chemical goggles, face shield, heavy nitrile or neoprene gloves, and rubber apron.

Ensure that all organic materials (solvents, acids, and oxidizers) are clear of the immediate working area, as these are incompatible materials.

Labs must inspect all perchloric acid containers and caps for integrity and a tight seal, before and after every use. If a tight seal on the container cannot be maintained or achieved, the container must be discarded along with any remaining material in the container through the Environmental Compliance Unit. If white crystals or substance can be seen on or at the neck or cap of the bottle, do not handle bottle and call the Environmental Compliance Unit immediately for disposal. Any discolored perchloric acid must also be disposed of through the Environmental Compliance Unit.

In case of a spill, if in a chemical fume hood, on a chemical resistant surface, use sodium carbonate or inorganic based absorbent (sand, kitty litter, diatomaceous earth) to neutralize the spill or spill pad to clean the area. Perform a final wipe-down of the surface with water to ensure no perchloric acid remains. **Never use paper towels or other cellulose materials (paper, cotton) to clean up a spill, as this may lead to a fire and/or explosion.** Place all spent materials into a tightly sealed container that has a lid. Fill out a Hazardous Waste Card and worksheet in Chematix to request a pick-up of the materials.

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If a spill occurs outside of a chemical fume hood or in conjuncture with other hazardous substances, stop or shut down all reactions in the immediate area that may escalate the spill, evacuate the area and call Public Safety (x13) to have the EH&S Spill Response Team dispatched to the scene.

VI. REFERENCES

VII. APPENDICES/FORMS

VIII. REVISION HISTORY

Date	Revision No.	Description
2/11/2019	NEW	NEW