

# PERCHLORIC ACID

## Hazard Description

Perchloric acid is extremely hazardous, and every effort should be made to find safer alternatives. It is normally bought as a 70-72% solution (the dihydrate) and in this form it is an extremely corrosive liquid. Mists or vapors from use at elevated temperatures can condense on surfaces in the ductwork of the hood, where they form perchlorate salts. These salts are often highly friction and shock-sensitive posing a serious explosion hazard.

## Prohibited Uses

The University of Waterloo does not have perchloric acid washdown hoods. Therefore, the following uses of perchloric acid are prohibited on campus:

- Using perchloric acid in concentrations above 85% w/w
- Heating perchloric acid solutions, or perchloric acid containing solutions
- Working alone with perchloric acid
- Concentrating perchloric acid via vacuum distillation

## Prior to the use of Perchloric Acid

- Complete a research specific laboratory risk assessment.
- Ensure that all required materials are available in case of spill, emergency, and waste collection.
- Perchloric acid requires an SOP prior to purchase or use. The SOP should be submitted to the Safety Office for review. Once approved, ensure the SOP is signed off on by the supervisor and that appropriate personnel are trained.

## Handling

- All operations involving perchloric acid must be conducted in a fume hood.
  - **No other organic chemicals or oxidizable materials should be present in the hood being used for perchloric acid work**
- Use dilute solutions (< 60%) wherever possible
- Do not handle perchloric acid on a wooden surface or around oxidizable materials (cloths, paper towels, greases, etc.), which may ignite spontaneously or explode after contact with perchloric acid liquid or vapor.
- Treat wet digestions with nitric acid before adding perchloric acid to destroy any easily oxidizable material.
- **Personal protective equipment (PPE) must always be worn when handling perchloric acid.**

- Transfer perchloric acid over a suitable containment tray to limit the extent and spread of spillage and to facilitate clean-up and disposal.
- For small spills, follow as per spill procedures, in addition, remove all ignition sources and do not use sawdust or other flammable absorbents. Residues must be diligently removed, as these can also become explosive.

## Emergency Procedures

Always review SDS of purchased product for manufacture specific recommendations. Look at SDS for other modes of exposure.

<b>Contacts</b> <b>Emergency: 911</b> UW Special Constables: 519-888-4911 or ext. 22222 Poison Control: 1-800-268-9017	
Whenever 911 is called, if possible, UW Special Constables should also be informed to make them aware of the emergency on campus and allow them to support as needed. Ask them to meet the paramedics and direct them to the incident location.	
Inhalation	<ul style="list-style-type: none"> <li>▪ Remove individual from contaminated area</li> <li>▪ Call 911 for transport to hospital</li> <li>▪ Corrosive substances may cause severe lung damage if inhaled</li> <li>▪ Perform CPR and artificial respiration if necessary</li> </ul>
Skin Contact	<ul style="list-style-type: none"> <li>▪ Call 911 for transport to hospital</li> <li>▪ Remove contaminated clothing and quickly but gently wipe material off skin</li> <li>▪ Flush with water</li> </ul>
Eye Contact	<ul style="list-style-type: none"> <li>▪ Call 911 for transport to hospital</li> <li>▪ Flush eyes using eyewash station for a minimum of 15 minutes</li> </ul>

## Storage

Storage Group OA – Oxidizing Acids

## Hazardous Waste

- Must be disposed of as per the [University's Hazardous Waste Standard](#).
- Perchloric acid stocks should be inspected monthly and prolonged storage should be avoided due to the potential formation of shock sensitive perchloric salts. **Do not mix waste with organic waste!**