

Realize. **Safety** first.

# Safety Advisory

## Event:

During renovations in 2014/2015, it was discovered that a fume hood had been used for experiments involving perchloric acid. This discovery led to a very costly (~\$20k) decontamination process as well as significant delays (~6 weeks) in the renovation project. Situations such as this at other institutions have also led to injuries/fatalities due to explosions that occur when work on these fume hoods commences. Since then, there have been several instances of lab personnel attempting to purchase and use this acid without risk assessing the experiment, thus putting the University at risk of future problems like this. In both of these cases, suitable alternatives were found that did not require the use of perchloric acid after all.

## Background Information:

- When perchloric acid is used in fume hoods that are not designed for this purpose (without functioning wash-down equipment installed) the vapours travel up into the fume hood and can collect at joints, bolts, seams etc. Perchlorate salts that form and accumulate in the duct work are both shock and friction sensitive.
- When workers attempt to dismantle these ducts, explosions can result from something as simple as turning a bolt.
- Likewise, there have been incidents where these contaminated fume hoods are subsequently used with organic chemicals, those vapours then causing explosions when contacting the perchlorate residues.

## Recommendations:

- If you are aware of any fume hoods that may have been used for heated perchloric acid experiments in the past, please notify HSW immediately. These fume hoods and associated duct work will need to be

identified to ensure no maintenance work is performed on these hoods/ducts until testing has ruled out the possibility of perchlorate salts being present.

- If at all possible, please consult with former lab users/managers to determine if any work with perchloric acid was performed in the fume hoods prior to you taking over the lab. Many of the fume hoods on campus are quite old, and the researchers/students who may have used them in the past have since left the university.
- All UofR personnel who wish to use the following acids must risk assess the experiment and notify HSW to ensure that proper controls are in place to mitigate the hazards to both lab users and maintenance personnel in the future:
  - Perchloric acid;
  - Picric acid, and;
  - Hydrofluoric acid.
- There are special handling and waste disposal considerations that must be made prior to working with these acids, and it must be determined if the lab infrastructure is appropriate for these acids, or if other arrangements/modifications need to be made.

***Please ensure that all lab personnel and Faculty members have received this communication.***

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