**Safe Operating Principles - Peroxidizable Chemicals**

Some chemicals (mainly organic, but also inorganic) can form peroxide compounds upon storage in contact with air. A peroxide contains the -O-O- functional group. Peroxides are strong oxidants and in contact with reducing material can cause fires and explosions. Tendency to form peroxides and severity of the hazard varies by chemical. A list of peroxide-forming chemicals can be found in the UBC RMS Chemical Safety Manual (available from rms.ubc.ca or mtrl.ubc.ca > Safety > Safety forms and resources > Resources and guides > Chemical safety manual. That list is not comprehensive; SDS information or internet sources can also be consulted. If your lab has peroxidizable chemicals in use then the following requirements must be met:

* A separate chemical inventory of peroxidizable chemicals must be kept and updated at annually.
* Keep a minimum of peroxidizable chemicals on hand and order in as needed.
* Someone in the lab should be appointed to administer peroxidizable chemicals use and storage.
* Peroxidizable chemicals must be tested on a schedule for the presence of peroxides. The frequency of testing depends on the severity of the hazard. Testing frequency varies from 3 to 12 months from the date of opening the container. Consult the UBC RMS Chemical Safety Manual for testing frequency.
* The testing date and the results must be recorded. It can be indicated on a label on the container and/or in the inventory.
* A suitable test in many cases is to mix 0.5-1 mL of the chemical with a solution of the same volume of glacial acetic acid (100% acetic acid) containing 0.1 g of KI or NaI. Stir well. If a yellow or darker yellow-brown colour forms this indicates the presence of peroxides. Commercial peroxide test strips may also be used.
* **NOTE: some peroxidizable chemicals will dangerously react with acetic acid regardless of the presence of peroxides (e.g. potassium metal)! Check for chemical incompatibility with acetic acid first.**
* If a chemical tests positive for peroxides it must be treated to destroy the peroxides or the chemical must be disposed of. If a test indicates high levels of peroxides and/or the chemical is particularly dangerous when peroxides are present (see the UBC RMS Chemical Safety Manual) then contact the LST and/or JOHSC for advice.

Peroxides may be destroyed in many instances with a reducing agent. For example, calcium hydride can destroy many organic peroxides. However, chemical compatibility must be confirmed before attempting such procedures. In addition, a compendium of procedures for purification of specific chemicals should be consulted for details of how to purify a given chemical. If in doubt it is best to dispose of the chemical.