

HAZARD ALERT

CHEMICALS WHICH BECOME UNSTABLE WITH AGE

During recent inspections in three laboratory areas several chemical containers which are known to become unstable or potentially explosive with age, were discovered. Some of the current laboratory users were unaware of the potential hazards of these materials and in two cases were not aware of the existence of the material.

Many chemicals can be kept for long periods of time without degrading or becoming unstable. However, some chemicals either oxidize in the presence of air forming explosive peroxides or lose stabilizing solvents. In either case these materials require extra precautions. If you have any of this type of material on hand which has deteriorated with age do not attempt to open it. Opening such containers has been known to result in detonation.

Materials which may become unstable and how they should be handled include:

1. **Peroxide Formers** - These materials react with air which results in the formation of the unstable -O-O- peroxy group. Whenever a container of material from this group is opened it should be dated. The container should be disposed of prior to the dates suggested below.

Dispose at 3 months isopropyl ether, divinyl acetylene, vinylidene chloride, butadiene, chloroprene, tetrafluoroethylene

Dispose at 12 months diethyl ether, tetrahydrofuran, dioxane, acetal, vinyl ethers, diacetylene, methyl acetylene, cumene, cyclohexene

Caution: If you find a container of one of these materials where the date is uncertain or there is any kind of white powdery residue around the cap arrange for the proper disposal through OHS. If your lab is located off campus contact the waste disposal system for your facility.

2. **Picric Acid** Picric acid is supplied with 10 percent water. It is a shock sensitive material when dry. Upon aging, the water evaporates and the crystals may become completely dry. To prevent this from occurring, containers of picric acid should be inspected monthly and distilled water added if dry. If crystals are apparent around the lid the container should be disposed of.

3. **Perchloric Acid** Perchloric acid is not unstable itself but reaction products, including some inorganic perchlorates and all organic perchlorates, are shock sensitive. Never store perchloric acid directly on a wooden shelf. Leakage from the acid may result in shock sensitive perchlorates forming on the wood and if the shelf has had sulfuric acid on it there can be an immediate fire. Any perchloric acid container with crystals or other material around the cap should be treated with extreme caution. If perchloric acid is being routinely used for digestions, it must be used in a special fumehood equipped with a water wash to prevent buildup of explosive perchlorates in the duct work.

4. **Peroxy Compounds** Peroxy compounds are used as hardening catalysts in resin systems. They are usually shipped in solvents or water. These materials become unstable when the solvent evaporates. Examples of these materials include benzoyl peroxide and peracetic acid. These should be purchased in small quantities and stored in a refrigerator. The residues should be disposed of 6 months after they are opened.

PREVENTATIVE MEASURES

1. **Chemical Inventories** In order to prevent surprises described above, an up-to-date inventory of all chemicals in the lab needs to be developed and regularly maintained. The inventory can include dates for disposal or inspection of special chemicals.

2. **Proper Storage** Proper storage of many of these shock sensitive materials can minimize the risk. Review the suppliers material safety data sheet for recommended storage practices.

If you have any questions about the storage and disposal of these or similar compounds please contact Occupational Health and Safety at 661-2111 ext.88242.

Originally issued August 1996
Revised August 2002