

## USF EH&S Guidelines for Storage of Peroxide-Forming & Time-Sensitive Chemicals

Many chemicals found in the research laboratory can become unstable or may form explosive compounds over a period of time. The following list will assist you in identifying time-sensitive chemicals present in your laboratory and help you to effectively and safely manage the risks associated with those chemicals.

Peroxide-forming compounds are a group of chemicals that form shock-sensitive organic peroxides upon exposure to changes in sunlight, temperature, and pressure. Store these compounds airtight and in their original containers, ideally with an inert gas such as nitrogen in the headspace (the area above the liquid in the bottle). Isolate these chemicals in a flammable storage cabinet away from oxidizers and ignition sources (open flames, direct sunlight, hot surfaces, spark sources). Always date peroxide-forming compounds upon receipt and upon opening.

CHEMATIX is a comprehensive online chemical inventory control system. CHEMATIX provides real-time chemical inventory information to users and emergency responders, and facilitates efficient and compliant disposal of chemical waste. To ensure timely use or disposal, all time-sensitive chemicals should be marked with an expiration date upon receipt and entered into the laboratory's chemical inventory in CHEMATIX. If an expired chemical is discovered in the lab, properly label the container as hazardous waste and request pickup by EH&S through CHEMATIX.

Containers should be inspected periodically to verify their condition. Signs of peroxide formation include: crystal formation in the container, discoloration of liquids, or a "mossy" appearance around the cap. If suspect materials are recognized, **do not** handle the container. Solid peroxide crystals are usually shock and friction sensitive and touching them may set off a violent explosion. Particularly, do not attempt to remove the cap. If explosive crystals have formed around the cap, the friction created by the unscrewing of the cap may be enough to detonate the compounds. Move others from the area and contact the EH&S office immediately at (813)-974-4036.

Peroxide Hazard on Storage-Discard After Three (3) Months	
Divinyl acetylene	Potassium metal
Divinyl ether	Sodium amide
Isopropyl ether	Vinylidene chloride
Potassium amide	

<b>Peroxide Hazard on Concentration-Discard After One (1) Year</b>	
Acetal	Ethylene glycol dimethyl ether (glyme)
Cyclohexane	Furan
Cyclooctene	Metal acetylene
Cyclopentene	Methyl cyclopentane
Cumene	Methyl-i-butyl ketone
Diacetylene	Tetrahydrofuran
Dicyclopentadiene	Tetrahydronaphthalene
Diethylene glycol dimethyl ether (diglyme)	t-Butyl alcohol
Dioxane	Vinyl ethers
Ethyl ether	

<b>Hazardous to Peroxide Initiation of Polymerization-Discard After One (1) Year</b>	
Acrylic acid	Styrene
Acrylonitrile	Tetrafluoroethylene
Butadiene	Vinyl acetate
Chlorobutadiene (Chloroprene)	Vinyl acetylene
Chlorotrifluoroethylene	Vinyl chloride
Dibenzocyclopentadiene	Vinyl pyridine
Methyl methacrylate	Vinylidene Chloride

<b>Other Time-Sensitive Chemicals</b>	
<b>Chemical</b>	<b>Time-Sensitive Hazard</b>
Chloroform	reacts with air over time to produce the toxic gas phosgene
Picric Acid	explosive when dry; sensitive to heat, shock, and friction; forms shock sensitive-explosive compounds on contact with metals
Picryl Chloride	explosive when dry
Picrylsulfonic Acid	explosive when dry
Sodium azide	forms explosive metal azides after prolonged contact with metals

Please contact the Environmental Health and Safety Office if you need clarification on this or any other chemical safety or hazardous waste procedures.

**USF Environmental Health & Safety**  
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