

Explosive Materials Disposal

Summary/Purpose: The Explosive Materials Disposal Policy details the minimum requirements and procedures for the safe packaging, removal and disposal of potentially explosive materials.

Explosive Materials Disposal

Definition of Explosives

Explosives are a class of materials, either solids or liquids that can undergo a rapid chemical decomposition when subject to an external force (shock, friction, sparks, etc.)

The rate of decomposition across the explosive material travels faster than the speed of sound, and produces large amount of heat and gas.

The amount of energy required to initiate this chemical reaction determines the sensitivity and stability of the explosive material.

There are several common laboratory reagents that can become unstable or explosive. Factors that can transform common reagents into explosives may be as simple as extended storage time, increased storage temperatures, or allowing a material to dry out.

What Happens if I Locate an Explosive Material?

Whenever you find of suspect that you have found a potentially explosive material, **DO NOT MOVE THE CONTAINER.**

Post a sign, and alert personnel in your area of your discovery. **CONTACT** Laboratory Services (LS) (915) - 5433.

If a peroxidized compound (see list below) forms within a screw cap bottle, some of the potentially explosive material may rest within the threads inside the cap. **Unscrewing the cap may initiate an explosion.**

- When a material is identified as explosive, LS must take specific precautions to
 - Remove the material from high traffic areas,
 - Transport the material away from personnel or buildings, and,
 - Stabilize, Dilute or detonate the material.
- Additional State and Federal requirements come into play when dealing with explosive materials.
- Removal and/or disposal may take an extended period of time to complete.
- Please be patient.
- We are concerned for your safety, as well as for our own.

Common Explosive Materials

- The most Common Explosive and Peroxides forming Materials on this campus are :
 - Picric Acid (2,4-Trinitro Phenol) that has become dry
 - Hydrazine
 - Dinitro Phenyl Hydrazine
 - Diethyl Ether (Ethyl Ether)
 - Dioxane
 - Isopropyl Ether
-

Peroxide Forming Materials

These common materials that can form peroxides during extended storage.

Peroxides are an extremely sensitive byproduct formed when a compound reacts with air.

Chemicals that form explosive levels of peroxides without concentration:

Butadiene a
Chloroprene a
Divinylacetylene
Isopropyl ether
Tetrafluoroethylene
Vinylidene chloride

Chemicals that form explosive levels of peroxides on concentration:

Acetal Acetaldehyde
Benzyl alcohol
2-Butane
Cumerie
Cyclohexanol
2-Cyclohexen-1-ol
Cyclohexene
Decahdronaphtalene
Diacetylene
Dicyclopentadiene
Diethyl ether
Diethyl glycol dimethyl ether (dyglyme)
Dioxanes
Ethylene glycol dimethyl ether (glyme)
4 Heptanol

2-Hexanol
Methyl 1 -butanol
Methylcyclopentane
Methyl isobutyl ketone
4-Metho1 2- pentanol
2 Pentanol
4-Pentan-1 ol
1 Phenylethanol
2 Phenylethanol
2 Propanol
Tetrahydronaphthalene
Vinyl ethers
Other secondary alcohols

Chemicals that may autopolymerize as a result of peroxide accumulation:

Acrylic acid **b**
Acrylonitrile **b**
Butadiene **c**
Chloroprene **c**
Methyl Methacrylate **b**
Styrene
Tetrafluoroethylene **c**
Vinyl acetate
Vinyl acetylene
Vinyl chloride
Vinyladiene chloride

- a** When stored as a liquid monomer.
- b** Although these chemicals form peroxides, no explosion involving these monomers have been reported.
- c** When stored in liquid form, these chemicals form explosive levels of peroxides without concentration. They may also be stored as a gas in gas cylinders. When stored as a gas, these chemicals may autopolymerize as a result of peroxide accumulation.
- d** These chemicals easily form peroxides and should probably be considered under part B.
- e** Regulated carcinogen.
- f** Extremely reactive and unstable compounds.

Other Chemicals that may form peroxides:

Acrolein
Allyl ether **d**
Allyl ethyl ether
p-(n-amyloxy) benzoyl chloride

n-Amyl ether
Benzyl n-butyl ether **d**
Benzyl ether **d**
Benzyl ethyl ether **d**
Benzyl methyl ether
Benzyl 1 naphthyl ether
1,2 Bis (2chloroethoxy)ethane
Bis (2-chloroethyl)ether
Bis (2methoxyethoxy)ethyl ether
Bis (2 chloroethyl) ether
Bis (2-methoxyethyl) adipate
Bis (2-ethoxyethyl) phthalate
Bis (2-methoxyethyl) carbonate
Bis (2-methoxyethyl) ether
Bis (2-methoxyethyl) phthalate
Bis (2-methoxymethyl) adipate
Bis (2-butoxyethyl) phthalate
Bis (2-phenoxyethyl) ether
Bis (4-chlorobutyl) ether
Bis (chloromethyl) ether **c**
2-Bromomethyl ether
3-Bromophenetole
0-Bromophenetole
p-Bromophenetole
3-Bromopropyl phenyl ether
1,3 Butadiyne
Buten 3-yne
tert-Butyl ethyl ether
tert-Butyl methyl ether
n-Butyl phenyl ether
n-Butyl vinyl ether
Chloroacetaldehyde diethylacetal **d**
2-Chlorobutadiene
1(2-Chloroethoxy)-2-phenoxyethane
Chloroethylene
Chloromethyl methyl ether **c**
B-Chlorophenetole
o-Chlorophenetole
Diethyl ethoxymethylmalonate
Diethyl fumarate **d**
P-Chlorophenetole
Cyclooctene **d**
Cyclopropyl methyl ether
Diallyl ether **d**
p-Di-n-butoxybenzene
1,2 Dichloroethyl ethyl ether

p-Dibenxyloxybenzene **d**
1, 2 Dichloroethyl ethvl ether
2,4 Dichlorophenetole
Diethoxymethane **d**
2,2 Diethoxypropane
Diethyl acetal **d**
Diethylketene **f**
m, o, p - Diethoxybenzene
1,2 Diethoxymethane
Dimethoxymethane **d**
1,1 Dimethoxymethane **d**
Dimethoxyketene **f**
3,3 Dimethoxpropene
2,4 Dinitrophenetole
1,3 Dioxepane **d**
Di (1 propynyl) ether
Di (2-propynyl) ether
Di-n-propoxymethane **d**
1,2 Epoxy 3-isopropoxypropane **d**
1,2 Epoxy 3-phenoxpropane
p-Ethoxyacetophenone
1-(2-Ethoxyethoxy) ethyl acetate
2-Ethoxyethyl acetate
(2-Ethoxyethyl)-o-benzoyl benzoate
1-Ethoxynaphthalene
o,p,-Ethoxyphenyl isocyanate
1-Ethyoxy-2-propyne
3 -Ethoxyopropionitrile
2-Ethylacrylaldehyde oxime
2-Ethylbutanol
Ethyl B-ethoxypropionate
2-Ethylhexxanal
Ethyl Vinyl Ether
Furan
2,5 Hexadiyn- 1-ol
4.5 Hexadien-2-yn- 1-ol
n-Hexyl ether
o,p-Iodophenetole
Isoamyl benzyl ether **d**
Isoamyl ether **d**
Isobutyl vinyl ether
Isophorone **d**
3-Isopropoxypropiontrile **d**
Isopropy 1,2,4,5-trichlorophenoxyacetate
Limonene
1,5-p-Methadiene

Methyl p-(n-amyl) benzoate
4-Methyl-2-pentanone
n Methylphenetole
2-Methyltetrahydrofuran
3-Methoxy- 1-butyl acetate
2-Methoxyethanol
3-Methoxyethyl acetate
2-Methoxyethyl vinyl ether
Methoxy- 1,3,5,7-cyclooctatetraene
B-Methoxypropionitrile
m-Nitrophenetole 1-Octene
Oxybis (2 ethyl acetate)
Oxybis (2-ethyl benzoate)
B,B Oxdipropionitrile
1 -Pentene
Phenoxy acetyl chloride
a-Phenoxypropionitrile chloride
Phenyl o-propyl ether
p-Phenylphenetone
n-Propylisopropyl ether
Sodium 8, 11, 14 elcosate traenoate
Sodium ethoxyacetylde
Tetrahydropyran
Triethylene glycol diacetate
Triethylene glycol dipropionate
1,3,3-Trimethoxypropene **d**
1,1,2,3,-Tetrachloro-1,3-butadiene
4-Vinyl Cyclohexene
Vinylene carbonate
Vinylidene chloride **d**

Note: There may be more materials that form peroxides. Use this as a general guide only.
Always refer to the latest research and manufacturers MSDS for current information on the materials you use.