

SOP FOR OXIDIZING CHEMICALS

Oxidizing chemicals are materials that spontaneously evolve oxygen at room temperature, or with slight heating, or promote combustion. This class of chemicals includes peroxides, chlorates, perchlorates, nitrates, and permanganates. Strong oxidizers are capable of forming explosive mixtures when mixed with combustible, organic or easily oxidized materials.

Examples of strong oxidizers are listed at the end of this section.

Securing of gas cylinders

Not applicable.

Decontamination procedures

Personnel: Immediately flush contaminated area with copious amounts of water after contact with oxidizing chemicals. Remove any jewelry to facilitate removal of chemicals.

Area: Carefully clean work area after use. Paper towels or similar materials contaminated with strong oxidizing chemicals may pose a fire risk.

Designated area

Not applicable.

Emergency procedure

Emergency procedures address response actions to fires, explosions, spills, or injury to staff. Utilize the information available in the "Emergency 13" flip chart. The following emergency phone numbers should be utilized to initiate an emergency response:

All emergencies:	x13 (Public Safety)
Chemical Exposures:	x5-4955 (UHS)
Laboratory Safety Unit	x5-2402
Occupational Safety Unit:	x5-3241
Environmental Compliance/Hazardous Waste	x5-2056
Radiation Safety Unit:	x5-3781

Eye Protection

Eye protection in the form of safety glasses or goggles must be worn at all times when handling oxidizing chemicals. Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion these glasses do not pass the rigorous tests for industrial safety glasses.) Adequate safety glasses must meet the requirements of the current version of Practice for Occupational and Educational Eye and Face Protection (ANSI Z.87.1) and must be equipped with side shields. Safety glasses with side shields do not provide adequate protection from splashes, therefore, when the potential for splash hazard exists, other eye protection and/or face protection must be worn.

Eyewash

Where the eyes of any person may be exposed to oxidizing chemicals, suitable facilities for quick drenching or flushing of the eyes shall be provided within 50 feet immediate emergency use. Bottle type eyewash stations are not acceptable.

Fume hood

The use of certain concentrations of perchloric acid must be performed in a fume hood equipped with wash down facilities. Contact the Laboratory Safety Unit for fume hood requirements.

Glove (dry) box

Not applicable.

Gloves

Gloves should be worn when handling oxidizing chemicals. The selection of glove materials should be made according to the MSDS and the recommendations of the glove manufacturers.

Hazard assessment

Hazard assessment should address proper use and handling techniques, fire safety, storage, and waste disposal issues.

EHS Notification

The Laboratory Safety Unit must be notified prior to the use of perchloric acid.

Clothing & Protective Apparel

To prevent dermal exposure to these chemicals: A layer of clothing will help prevent splash and droplet exposures. Personnel should wear a long sleeve shirt and pants. A lab coat can also be recommended. Personnel should wear non-skid sole shoes. The following types of shoes are not recommended: open-toes shoes, open heeled shoes, shoes made with cotton or a material that readily absorbs liquids.

Safety shielding

Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. All manipulations of oxidizing chemicals that pose this risk should occur in a fume hood with the sash in the lowest feasible position. Portable shields, which provide protection to all laboratory occupants, are acceptable.

Safety shower

A safety or drench shower should be available within 100 feet where oxidizing chemicals are used. The path to the shower must be clear and unobstructed.

Signs and labels

All oxidizing chemicals must be clearly labeled with the correct chemical name and hazard warnings. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.

Special storage

Oxidizers should be stored in a cool and dry location. Keep oxidizers segregated from all other chemicals in the laboratory. Minimize the quantities of strong oxidizers stored in the laboratory. Never return excess chemical to the original container. Small amounts of impurities may be introduced into the container that may cause a fire or explosion.

Special ventilation

The use of certain concentrations of perchloric acid must be performed in a fume hood equipped with wash down facilities. Contact the Laboratory Safety Unit for fume hood requirements.

Spill response

Anticipate spills by having the appropriate clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the safety data sheet. This should occur prior to the use of any oxidizing chemical. Spill control materials for oxidizers are designed to be inert and will not react with the reagent. Never use paper towels or other inappropriate materials that are combustible. The waste materials generated during spill cleanup may pose a flammability risk and should not remain in the laboratory overnight, unless it is stored in the appropriate container.

In the event of a spill, alert personnel in the area that a spill has occurred. Do not attempt to handle a large spill of oxidizing chemicals. Vacate the laboratory immediately and call Public Safety (x13) for a spill response.

Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

Vacuum protection

Evacuated glassware can implode and eject flying glass and splattered chemicals. Such glassware should be wrapped or taped for protection. Vacuum work involving oxidizing chemicals must be conducted in a fume hood, glove box, or isolated in an acceptable manner.

Mechanical vacuum pumps must be protected using cold traps and, where appropriate, filtered to prevent particulate release. The exhaust for the pumps must be vented into an exhaust hood.

Waste disposal

All materials contaminated with oxidizing chemicals pose a fire hazard and should be disposed of as hazardous waste. Alert the Environmental Compliance / Hazardous Waste Unit if you generate wastes contaminated by oxidizers. Do not let contaminated wastes remain in the laboratory overnight unless proper containers are provided. Questions regarding waste pick up should be directed to the Environmental Compliance / Hazardous Waste Unit (x5-2056). This office can also assist you in minimizing waste generation.

Strong Oxidizers

NAME	CAS #	NAME	CAS #
Ammonium perchlorate	7790-98-9	Ammonium permanganate	13446-10-1
Barium peroxide	1304-29-6	Bromine	7726-95-6
Calcium chlorate	10137-74-3	Calcium hypochlorite	7778-54-3
Chlorine trifluoride	7790-91-2	Chromic anhydride	7738-94-5
Chromic acid	1333-82-0	Dibenzoyl peroxide	94-36-0
Fluorine	7792-41-4	Hydrogen peroxide	7722-84-1
Magnesium peroxide	14452-57-4	Nitrogen trioxide	10544-73-7
Perchloric acid	7601-90-3	Potassium bromate	7758-01-2
Potassium chlorate	3811-04-9	Potassium peroxide	17014-71-0
Propyl nitrate	627-13-4	Sodium chlorate	7775-09-9
Sodium chlorite	7758-19-2	Sodium perchlorate	7601-89-0
Sodium peroxide	1313-60-6		

** THIS LIST IS PROVIDED AS A GUIDE AND IS NOT ALL INCLUSIVE. CAREFULLY REVIEW SAFETY DATA SHEET BEFORE WORKING WITH CHEMICALS.