

SOP FOR COMPRESSED GASES

Securing of gas cylinders

Cylinders of compressed gases must be handled as high energy sources. The cylinder's cap must be securely in place to protect the stem when the cylinder is in storage or when it is moved. Transport cylinders using a cylinder cart. Never carry or "walk" cylinders by hand. All cylinders are to be stored and used in an upright position. Use suitable racks, straps, chains or stands to support cylinders.

Decontamination procedures

Not applicable

Designated area

Corridors are not to be used for the storage or use of any gas cylinder.

Compressed gas cylinders which contain acutely toxic gases must be stored in a designated area. See the SOP for acutely toxic compressed gases.

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 should be worn at all times when handling compressed gases. Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion these glasses cannot pass the rigorous test 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 a splash hazard exists, other eye protection and/or face protection must be worn.

Eyewash

Where the eyes of any person may be exposed to corrosive gases, 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

Manipulation of compressed gases should be carried out in a fume hood if the compressed gas is an irritant, oxidizer, asphyxiant, or has other hazardous properties.

Glove (dry) box

Not applicable.

Gloves

Disposable gloves should be worn when installing/removing a regulator on a gas cylinder to help keep the cylinder's threads free of oil/grease. Once a regulator is in place, gloves are generally not applicable. If corrosive gases are used, the selection of gloves materials should be made according to the MSDS and the recommendations of the glove manufacturer.

Hazard assessment

Hazard assessment for work with compressed gases should assure that all staff understands proper use and handling precautions; that all pressurized equipment is properly shielded; regulators are not interchanged between different gas types; all hose connections are properly secured and are appropriate for the pressure(s) used.

Gas cylinders present a special hazard to personnel. Individuals manipulating gas cylinders are to be certified by their supervisors.

EHS Notification

Not applicable.

Clothing & Protective Apparel

Dermal protection from gases is normally not required. However, lab activities usually involve other activities involving liquid and dry hazardous chemicals. Therefore, personnel should wear a layer of clothing to prevent splash/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 compressed gases 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

Where any person may be exposed to corrosive gases, suitable facilities for quick drenching or flushing of the body shall be provided within 100 feet for immediate emergency use. The path to the shower must be clear and unobstructed.

Signs and labels

All compressed gas cylinders must be clearly labeled with the correct chemical name and the hazard class warning. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.

Special storage

Cylinders should be stored in an upright position and secured to a wall or laboratory bench through the use of chains or straps. Cylinder caps should remain on the cylinder at all times unless a regulator is in place. Cylinders should be stored in areas where they will not become overheated. Avoid storage near radiators, areas in direct sunlight, steam pipes and heat releasing equipment such as sterilizers. Flammable gases should not be stored near exits.

Special ventilation

Manipulation of a compressed gas that is an irritant, oxidizer, asphyxiant, or has other hazardous properties outside of a fume hood may require special ventilation controls in order to minimize exposure to the material. Fume hoods provide the best protection against exposure to compressed gases in the laboratory and are the preferred ventilation control device. If you have questions, contact the Laboratory Safety Unit to review the adequacy of all special ventilation.

Spill response

In the event of a spill of a compressed gas that is an irritant, oxidizer, asphyxiant, or has other hazardous properties all personnel in the area should be alerted. Vacate the laboratory immediately and call Public Safety (x13) to report the release. Remain on the scene, but at a safe distance, to receive and provide information to safety personnel when they arrive.

Vacuum protection

Not applicable.

Waste disposal

All empty, partially filled compressed gas cylinders, and those no longer in use should be returned to the supplier. If the supplier does not accept empty or partially filled cylinders, contact the Environmental Compliance / Hazardous Waste Unit (x5-2056) concerning disposal.