Compressed Gas Handling, Storage and Disposal

Compressed Gas Cylinders

Compressed gas cylinders must be stored and handled carefully. All compressed gas cylinders are dangerous because of high pressures. In addition to high pressures, many compressed gases include specific dangers based on their chemical contents (flammable, toxic, etc.). Research the MSDS or other appropriate reference to find out about the particular dangers of the gas you are using.

Storage

All cylinders (empty and full) must be secured with chains at the top 1/3 and bottom 1/3 of the cylinder to prevent tipping or walking out of their restraints. Chains need to be fastened to the wall or bench and should be in place at all times.

- Leave the valve protection cap on at all times unless the cylinder is in use.
- All cylinders must be clearly labeled to indicate contents.

Handling

- Never drop or bang cylinders against one another or other objects.
- Know hazards of the contents for each tank and follow appropriate safe use practices. Never alter safety devices.
- Always use the appropriate regulator for the designated compressed gas. Forcing the wrong regulator on a tank can be extremely dangerous.
- Open cylinder valves slowly, directed away from your face.
- Report any suspected leaks to your supervisor or stockroom manager immediately.
- Always leave at least 25 psi minimum pressure in all empty cylinders to prevent contamination and formation of explosive mixtures.

Transport

- Secure cylinders by strapping in the upright position on a cylinder dolly and move carefully.

DO NOT MOVE CYLINDERS BY ROLLING ACROSS THE FLOOR.

Cryogens

Examples: Liquid nitrogen, dry ice, liquid oxygen, liquid carbon monoxide.

- These chemicals are extremely cold (-100 C to -270 C) and can instantly freeze other materials they contact.
- Contact with cryogens can cause living tissue to freeze and become brittle enough to shatter upon contact.
- Cryogenic liquids and gases have many properties and hazards in common with compressed gases, and must be handled with caution.
- Individuals handling cryogens should wear a face shield or goggles, lab coat or apron, and gloves that can be shaken off quickly if material falls into them. Also, long sleeves and long pants are recommended.
- Dewar flasks or other glassware devices should be shatterproof to minimize flying glass particles in the case of implosion.

Lecture Cylinder

Lecture bottles are very small compressed gas cylinders, typically 2-3 inches in diameter and 12-18 inches in height. While most gas suppliers offer lecture bottles for purchase, many will not accept the empty or partially full cylinders back for disposal. Lecture bottle disposal can be very costly, depending on the original contents.

ODU researchers should only purchase lecture bottles that can be returned to the distributor. Most distributors, including the most commonly used sources at ODU, do offer a returnable cylinder, although in some cases, these cylinders are slightly larger than typical lecture bottles. Also, keep in mind that distributors' policies toward lecture bottles are subject to change. In order to avoid costly disposal fees and potential hazards involved in emptying and cutting the cylinder, it is worthwhile to purchase a returnable cylinder, even if it is a bit more than what you need.

Disposal

- If you have unneeded lecture bottles, first call the manufacturer or distributor and ask that they pick up the cylinder for return. If they will not take the cylinder back, contact the EH&S office at 3-4495. **The disposal fee will be charged back to your department.** Also, please indicate whether the cylinder is empty or still contains product above 1 atmosphere of pressure.