

### 3.4.8 Compressed Gas Cylinders

Compressed gas cylinders in the laboratory pose both chemical and physical hazards. These cylinders are safe under normal use; however, serious accidents have resulted from the misuse, abuse, or improper handling of compressed gases. If a valve is damaged as the result of the tank being knocked over, the cylinder can become a projectile causing severe injury. Some gases also present a fire hazard due to their high degree of flammability.

- Use cylinders in an upright position, unless equipment manufacturer provides specific instructions otherwise.
- Turn all valves off when not in use.
- Do not modify relief valves.
- Know the contents, properties, and health hazards associated with the contents. Contents must be clearly labeled.
- Notify distributor immediately of any problems in the operation or condition of the cylinder (e.g. dents).
- Ensure all hardware connecting the cylinder to receiver is compatible with the pressure and contents to which it is exposed always use the correct gauge for the pressure and chemical to which it is exposed.
- Select the smallest reusable cylinder compatible with the need.
- Always release pressure from regulator before disconnecting.
- Emergencies: in the event of a cylinder emergency such as a significant leak, evacuate the area, shut the door, and call 911.
- Always return compressed gas cylinders when finished. If cylinders cannot be returned to supplier, contact the department of Environmental Health, Safety and Risk Management at 468-6034. Cylinders stored for extended periods can result in heavy waste management costs.
- The valve protection cap should be left in place until the cylinder is secured and ready for use. Never struggle with a cylinder cap or use a screw driver to remove a cylinder cap. Do not drop cylinders or allow them to be struck with violent force.
- Secure cylinders in an upright position with proper chain, stand, or strap. Stored cylinders must have the valves closed and the valve covers must be in place.
- Never store cylinders of flammable gases (empty or full) near cylinders of oxygen or other oxidizers. A minimum separation of 20 feet or specially designed separation wall must be maintained. When practical, store cylinders a minimum of 20 feet from flammable liquids and away from sources of heat. If this is not practical, consult EHSRM at 468-6034 for assistance.
- Never store cylinders in a means of egress.
- Clearly mark "empty" cylinders with tag or sign. Writing "MT" in chalk or on label is not acceptable. Separate "empty" and "full" cylinders to avoid confusion and do not store empty cylinders in your laboratory.
- Cylinders should not be placed, stored or used on sides unless recommended by manufacturer.

- Cylinders must be hydrostatically tested every 10 years. Note the last test date on top of the cylinder. Notify the supplier immediately if outdated cylinders are identified.
- Keep amount of flammable gases to a minimum. The number of flammable gas cylinders (10"x50") must not exceed 3 cylinders per 500 square feet in a non-sprinkled building or 6 cylinders per 500 square feet in a sprinkled building.
- Never rely on color-coding as a way to identify the compressed gas cylinder. Color codes are for the owner's convenience.
- Transport cylinders in an upright position.
- Never roll or drag full or empty cylinders. Preferred transport method is to secure cylinders (with valve covers in place) to a hand truck or similar mode of transport.
- Do not move a cylinder that has a regulator on it even if main tank valve is off.
- Treat "empty" cylinders with the same respect as "full" cylinders.
- Transport of cylinders via stairs is discouraged unless other means of upper floor access is not available. When transporting cylinders via stairs, the cylinders must be capped and secured in an upright position to a hand truck suitable for use on stairs.