Compressed Gas

Description

Compressed gas cylinders are found in many of the laboratories and shops throughout the University. Those individuals working with compressed gas cylinders should have a copy of the UF Safety Rules for Storage and Use of Compressed Gas Cylinders as outlined below. Labs must post a condensed version of the Compressed Gas Cylinder Rules in the space where gas cylinders are stored.

Compressed Gas Cylinder Rules (PDF)

Handling and Use of Compressed Gas Cylinders

1. All compressed gas cylinders (regardless of size) shall be secured to racks, walls, work benches, or hand trucks by a strong chain or strap, or secured by any other approved method capable of preventing the cylinder from falling or being knocked over.
2. All questionable gas cylinders or equipment shall be reported immediately to the supplier for correction or replacement.
3. All cylinders shall be clearly labeled to identify the contents.
4. Only personnel trained in the proper transportation and safe use of gas cylinders should handle cylinders.
5. Compressed gases shall be used only in areas with adequate ventilation for the gas being used.
6. Cylinders shall not be intentionally dropped, struck, or permitted to violently strike each other and shall be reasonably protected from violent impact of any kind.
7. All cylinders shall be kept far enough away or shielded while in the work area in order to prevent contact with sparks, flame, or radiant heat.
8. Valve protection caps are required on all cylinders that are threaded to accommodate a cap unless the cylinder valve is actually connected for use to a regulator or manifold.
9. All gas cylinders shall be equipped with a functioning gas regulator while in use.
10. No one shall attempt to connect a regulator and/or accessory equipment by the use of improvised hookups or adapters.
11. When personnel have finished using a compressed gas cylinder for the day, the cylinder valve shall be closed and the pressure in the regulator and associated equipment released.
12. If a compressed gas is used to maintain a static pressure on a closed system, a clearly visible warning sign shall be posted indicating the approximate pressure the system is under and the gas involved.
13. All empty cylinders shall have their valves closed.
14. All empty cylinders shall be handled with the same care as a full cylinder.
15. Compressed gas or compressed air shall not be used for cleaning purposes (to blow dust and debris away) without appropriate reduction valves (30 p.s.i. maximum).
16. Under no conditions shall a person direct high pressure gas at another person.
17. While in use, all cylinders of flammable gases shall be protected by a flashback protection device approved by the EH&S Division.

18. Cylinders of flammable gas shall not be opened more than 1-1/2 turns of the cylinder valve to allow for quick closing. If a special wrench is required, the wrench shall be left in position on the stem of the valve while the cylinder is in use. This allows the gas flow to be shut off quickly in case of an emergency.
19. All oxygen or nitrous oxide cylinders and manifolds shall be at least 20 feet away from or separated by a half-hour rated fire resistant partition from all flammable gases and materials (such as oil, grease, and all petroleum products in general) in the area of use.
20. All manifold enclosures for oxygen and nitrous oxide in excess of 2000 cubic feet of manifold capacity shall be vented to the outside and the cylinder or manifold shall be protected with check valves or alarms.
21. Due to the possibility of an explosion, all regulators and other equipment used for oxygen shall be identified as being “OXYGEN ONLY” and the equipment used for other gases shall not be used for oxygen.
22. Due to the possibility of an explosion, all oxygen regulators, tubing, etc. shall be kept clean and free of all organic materials such as oil and lint.
23. In the event a particularly hazardous gas (e.g., phosgene, hydrogen chloride, hydrogen cyanide) is used, a procedure shall be established for evacuating, sealing, and isolating the area of use. The EH&S Division shall be notified prior to procuring such hazardous gases.
24. Only personnel properly instructed in the chemical and biological hazards of a corrosive and/or toxic gas are to release or use the gas or operate any equipment using the particular gas.
25. All supervisory personnel are to have available the necessary emergency treatment and first aid supplies and be able to administer or have administered the necessary first aid that may be required as a result of any hazardous gas being used.

Storage of Compressed Gas Cylinders

1. Compressed gas cylinder storage areas must be in a fire resistant enclosure located away from emergency exits and must be kept well-drained, well-ventilated, cool, and protected from the weather. Regardless of size, all cylinders shall be provided with supports (straps, chains, or other similar devices) capable of preventing the cylinders from falling.
2. Under no Condition shall the temperature of gas cylinders exceed 50°(125°F). When Type E gas cylinders are being not exceed 34°C (93°F) since the relief valves of Type E cylinders are set to release above 35°C.
3. Excessive storage time shall be prevented by the use of the smallest practical size cylinder for a particular gas application.
4. Corrosive gases shall not be stored for more than six (6) months. Usually after this period of time, there is a deterioration of the gas purity which increases the possibility of cylinder valve malfunction.
5. Oxygen or nitrous oxide shall not be stored in the same area with flammable gases unless separated by at least 20 feet or by a half-hour rated fire resistant partition. Cylinders stored in an area outside a building must be a minimum distance of 20 feet from flammable gases or combustible material.
6. All storage rooms that contain in excess of 2000 cubic feet of oxygen and/or nitrous oxide shall be vented to the outside.

Transportation of Compressed Gas Cylinders

1. Only personnel of sufficient physical stature and strength are physically to move gas cylinders to minimize any potential hazard resulting from the size and weight of the cylinders.
2. When cylinders are moved, they shall be disconnected from any regulators or manifolds, and where threaded to accept protective valve caps, the valve caps shall be secured in place before the cylinders are released from their securing device.
3. Cylinders shall be moved only on a hand truck or other cart designed for handling gas cylinders.
4. No more than one cylinder shall be handled at a time except on carts designed to transport more than one cylinder.