Standard Operating Procedure for Compressed Gas Cylinder Use


1. General

When working with a chemical for the first time, please consult a safety data sheet (SDS) to identify the material hazards and proper handling and storage procedures. If you have additional questions, please contact the University of Chicago Environmental Health and Safety Office at 773-702-9999 or safety@uchicago.edu.

Compressed gases represent both physical and potential chemical hazards (gas specific). The gases within the cylinders vary in chemical properties ranging from inert and harmless to toxic and explosive. The high pressures of the gases inside the cylinder pose a serious threat to life and property during physical damage and/or exposure to high temperatures.

[Policy] All gas cylinders shall be used, stored and handled in accordance with this policy.

2. New Cylinders

When a gas cylinder is received, it shall be checked for the following:

1. A stamped hydrostatic test date within the last five years;
2. A stenciled or labeled identification of its contents;
3. Cylinder is in acceptable condition; and
4. Presence of a valve protection cap.

If the test date, identification, markings or cap are not in order or if the cap is rusted or inoperable, the cylinder shall be rejected. The user should also consult a safety data sheet (SDS) for information on the chemical use and proper storage information.

3. Basic Requirements

[Using Compressed Gas Cylinders]

1. Ensure all cylinders are properly labeled as to the contents;
2. Always secure cylinders with chain or cart;
3. Do not secure more than four cylinders in any one row;
4. Keep cylinders away from radiators and other sources of heat;
5. Do not use adapters or converters to change equipment to different threads;
6. Do not subject cylinders to temperature extremes;
7. Do not use cylinders as a support, doorstop or coat rack;
8. Use cylinders containing toxic gases in areas where both local and general ventilation is provided including distribution systems with the receiving end inside a containment hood or other adequately ventilated space;
9. Inspect enclosed systems (e.g., compressed gas containers inside a hood or piped into the hood from a remote location) daily to ensure correct system performance. Note: Class A poisons are not equipped with safety relief devices and extra precautions may need to be taken; and
10. When the cylinder is not in use, close the valve and relieve the pressure from the regulator.
[Storing Compressed Gas Cylinders]
1. Cap cylinders when not in use;
2. Ensure all cylinders are properly labeled as to the contents;
3. Always secure cylinders with chain or cart;
4. Do not secure more than four cylinders in any one row;
5. Keep cylinders away from radiators and other sources of heat;
6. Store cylinders not necessary for current laboratory requirements in a safe location outside the laboratory work area;
7. Do not subject cylinders to temperature extremes;
8. Separate storage of flammable and oxidizing cylinders by at least 20 feet or a fire resistant barrier of at least five feet high and having a fire rating of at least one hour;
9. Mark used cylinders “Empty” and never store with other full cylinders;
10. Do not store cylinders where water is freestanding or may collect;
11. Do not store cylinders where they can become part of an electrical circuit;
12. Do not store cylinders in hallways, closets or vestibules;
13. Do not store cylinders in front of eyewash/emergency shower stations, spill kits or fire extinguishers;
14. Post signage at the entrance to the area for all locations containing flammable gases indicating the presence of such gases. Refer to the Chemical Hygiene Plan; and
15. Cylinders containing acetylene must always be stored in the upright position.

[Transporting Compressed Gas Cylinders]
1. Ensure all cylinders are properly labeled as to the contents;
2. Always secure cylinders with chain or cart;
3. Do not lift cylinder by the protective valve cap;
4. Do not subject cylinders to temperature extremes; and
5. Use a hand truck to transport cylinders and never move cylinders from one location to another by manhandling or rolling.

[Disposal]
To dispose of compressed gas cylinders, label it as empty or to be returned and put the cylinder in the Searle loading dock.

[Training]
All employees affected by this policy shall have training conducted by Environmental Health and Safety. Affected laboratory personnel shall receive this training through Chemical Hygiene Plan training. All other affected University employees shall receive this training through Hazard Communication training. This training shall include information on the safe handling and dangers of compressed gases.