



Subject: SAFE STORAGE, HANDLING, USE AND DISPOSAL OF COMPRESSED GAS CYLINDERS

Policy No. 104

APPLICATION

This policy applies to all New York University academic, commercial and residential facilities utilizing compressed gas cylinders.

PURPOSE

The purpose of this policy on the safe storage, handling and use of compressed gas cylinders is to provide compliance guidance for *Local Law 59-1987, Subchapter 17 - Gases Under Pressure* and employee information to minimize the hazards associated with this type of equipment.

POLICY AND GENERAL INFORMATION

Serious fire, explosion or rupture accidents may result from the misuse or mishandling of compressed gas cylinders. Observance of the following rules will help control hazards in the storage, handling and use of compressed gas cylinders.

1.0 Storage of Cylinders

- 1.1 Compressed gas cylinders shall be clearly labeled. The label should list contents, concentrations, hazard classifications, safety precautions, and the manufacturer. Upon receipt all compressed gas cylinders shall be inspected for condition. The cylinders must be non-leaking with an operable valve or regulator. For cylinders without valves or regulators, a closure cap should be in place. Damaged or unidentified compressed gas cylinders shall be immediately returned to the supplier.
- 1.2 Compressed gas cylinders shall be stored in a safe, dry, organized, well ventilated and lit area away from combustible materials. Storage room temperature shall not exceed 130° F (54.4° C).
- 1.3 Flammable substances, such as oil or volatile liquids, shall not be stored in the cabinet as compressed gas cylinders.
- 1.4 Compressed gas cylinders should not be exposed to continuous dampness and shall not be stored near corrosive chemicals. Corrosion may damage the cylinders and cause the valve protection cap to be irremovable.
- 1.5 Compressed gas cylinders shall not be stored near elevator shaft ways, stairways or other places where they can fall, be knocked down or damaged.
- 1.6 Compressed gas cylinders shall not be staged, stored or otherwise located near exits, in stairways or in areas normally used or intended for the safe exit of people.

ISSUE DATE	REPLACES	ORIGINATOR	APPROVAL
11/05	10/02	ENVIRONMENTAL SERVICES	SR. VP OPERATIONS AND ADMINISTRATION

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- 1.7 Compressed gas cylinders shall be stored in an upright position with the valve end up, the valve cap in place and the cylinder chained to the wall or otherwise secured. This protects the vulnerable cylinder valve and prevents the cylinder from falling and becoming a dangerous projectile.
- 1.8 Compressed gas cylinder storage shall be planned so that cylinders are used in the order in which they are received from the supplier. Empty cylinders shall be identified and stored separately from full or partially full cylinders. Empty cylinders shall be returned to the supplier as soon as possible.
- 1.9 Compressed gas cylinders shall not be stored beyond their hydrostatic test date. Cylinders should be tagged with the date of delivery, for tracking purposes. Compressed cylinders of corrosive gases shall be recycled to the supplier at least annually.
- 1.10 Storage rooms for compressed gas cylinders shall be well ventilated to prevent the accumulation of explosive concentrations of the gas in the event of a leak.
- 1.11 No source of ignition is permitted and smoking is strictly prohibited in areas where cylinder gas is stored or in use. *NO SMOKING* signs shall be posted in areas where cylinder gas is stored or in use. These areas shall not be allowed to have excessive heat as well.
- 1.12 Where gases of different types are stored at the same location, cylinders shall be grouped by types of gas, and the groups arranged to provide compatible storage.
- 1.13 Storage of compressed gas cylinders shall be minimized to volumes needed for current usage. Delivery by suppliers should be planned to accommodate routine and special deliveries for academic semesters and research projects. Excess storage of cylinder gases is prohibited in order to maximize storage safety.
- 1.14 Compressed gas cylinders, of all types and sizes, including lecture size cylinders, shall be returned to the central storage area when not in use. Under no circumstances shall lecture size gas cylinders be kept in laboratory drawers for convenience.
- 1.14.1 Storage of Flammable Gases - *Rules of the City of New York, Title 3 - Fire Department, Chapter 10 §10-01 (formally NYC Fire Prevention Directive 1-66)* states that storage and use of flammable gases within laboratory units shall be in accordance with the following table. Only flammable gas being used in an on-going operation plus an equal reserve may be kept in a laboratory unit. (See separate Handling and Storage of Flammables and Explosives in Laboratories policy.)

Area of Lab in square feet	up to 500 sq. ft.	per additional 100 sq. ft.	Maximum per Lab Unit
Maximum Capacity** in cubic feet	9.24 cu. ft.	1.54 cu. ft.	15.4 cu. ft.

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**Water container capacity

2.0 Handling Cylinders

- 2.1 Compressed gas cylinders shall be moved using a hand truck or cart designed for that purpose. They may be rolled on the bottom edge but shall never be dragged. Cylinders should be moved only with their protection cap in place. Safety glasses, chemical splash goggles and closed toe shoes should be worn when handling cylinders.
- 2.2 Safety devices in valves on the cylinders shall not be tampered with. The valve shall be closed and the valve protection cap replaced when the cylinders are empty or when cylinders are moved from one location to another. Never lift a cylinder by the valve cap.
- 2.3 Compressed gas cylinders shall never be left in hallways, aisles or unprotected in laboratories. If the user is not present at the time of the delivery, provisions should be made to secure gas cylinders in a designated location. Cylinders can be secured by floor stand, wall or bench mounted bracket before taking off the cylinder cap.

3.0 Using Cylinders

- 3.1 Compressed gas cylinders shall be used in an upright position after the cylinder has been secured by chain or other device to prevent falling or being knocked over, unless necessary to be used in another position.
- 3.2 The metal cap shall be kept in place to protect the valve when the cylinder is not connected for use.
- 3.3 Only Compressed Gas Association (CGA) standard combinations of valves and fittings shall be used on compressed gas systems. The possibility of accidentally mixing incompatible gases will be reduced by this safety practice. The threads and condition of cylinder valves, regulators and fittings should be examined prior to connecting new supplies, to ensure that fittings are undamaged and correct for the gas to be connected. Dust, oil or grease on the connections, should be cleaned off before connecting a regulator. No adapters shall be used.
- 3.4 Only appropriate tools shall be used on gas valves and piping systems. Improper tools may damage or exert unacceptable stresses on a compressed gas system.
- 3.5 A compressed gas cylinder shall not be used without a pressure regulator with rupture protection attached. Bench size compressed gas cylinders shall use the appropriate safety fittings as noted in section 3.3.
- 3.6 Compressed gas cylinder valves should be opened slowly to prevent "over stressing" compressed gas systems.
- 3.7 The valve and opening should always be pointed away from the body and not toward anyone else.
- 3.8 Compressed gases should not be used to dust off clothing as this may cause injury to the body or create a fire hazard.

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- 3.9 Compressed gas cylinders shall not be placed where they may become part of an electrical circuit.
- 3.10 A Material Safety Data Sheet (MSDS) shall be available for each compressed cylinder gas used in a work environment.
- 3.11 Appropriate personal protective equipment shall be worn when working with compressed cylinder gas.
- 3.12 To maximize safety, no more than one compressed gas cylinder and one backup of any type or size shall be in a laboratory at one time. Excess compressed gas cylinders of any type or size shall not be kept in a laboratory. High usage laboratories or clinic areas shall coordinate additional on site supplies through Environmental Services.

4.0 Cylinder Disposal

- 4.1 Compressed gas cylinders shall be leased through a vendor approved by New York University and recycled to the vendor when empty (this does not apply to small, lecture size cylinders).
- 4.2 Should it be necessary to dispose of non-returnable, lecture size, compressed gas cylinders, the Environmental Services Department will locate an approved vendor and disposal location. (Refer to Hazardous Waste Minimization and Disposal Program, Policy No. 101)
- 4.3 Under no circumstances shall compressed gas cylinders be disposed of as conventional waste.