



Process Name • Compressed Gas Cylinders Program

(07/11/2018 Revision)

Overview of Compressed Gas Cylinders Program

Purpose: To prevent injury from failure of compressed gas cylinders and to establish requirements for handling, lifting and storing compressed gas cylinders safely.

Scope: This program covers all employees/students who handle, transport and/or use compressed gas cylinders.

CNM Way Expert: Safety and Environmental Health Department

Functional Units Involved-Responsibilities:

- A. Managers/Supervisors
 - 1. Ensures that all affected employees are aware of the proper handling, storage and use requirements for compressed gas cylinders.
 - 2. Ensures that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.
 - 3. Ensures department does biannual inspections on all their compressed gas cylinders, using the form on page 2-3 and submits it immediately.
 - 4. Sends the safety department annual inventory of all compressed gas cylinders.
- B. Employees: Follow all procedures discussed in this program.
- C. Safety Director/Designee
 - 1. Develops and maintains the compressed gas program, and reviews it annually.
 - 2. Ensures Spring & Fall Semester inspections are completed by department and received by Safety Department.

Beginning of Process: Development of the Compressed Gas Cylinders program.

End of Process: Dynamic and continuing.

Related Documents and Forms:

- A. Compressed Gas Storage/Inspection Checklist (page 2-3)

Compressed Gas Storage/Inspection Checklist

Campus: _____ Room Number: _____

Date: _____ Inspector: _____

	Yes	No
Are cylinders stored in upright positions and immobilized by chains or other means to prevent them from being knocked over?		
Are cylinders stored away from highly flammable substances such as oil, gasoline, or waste?		
Are cylinders stored away from electrical connections, gas flames or other sources of ignition, and substances such as flammable solvents and combustible waste material?		
Are flammable gases separated from oxidizing gases in storage areas?		
Are oxygen and fuel gas cylinders separated by a minimum of 20 feet when in storage? Note: A fire-resistant partition between the cylinders can also be used.		
Are storage rooms for cylinders dry, cool, and well-ventilated?		
Are cylinders stored away from incompatibles, excessive heat, continuous dampness, salt or other corrosive chemicals, and any areas that may subject them to damage?		
Is the storage area permanently posted with the names of the gases stored in the cylinders?		
Are all compressed gas cylinder valve covers in place when cylinders are not in use?		
Is the storage area permanently posted with the names of the gases stored in the cylinders?		
Do all compressed gas cylinders have their contents and precautionary labeling clearly marked on their exteriors?		
Are all compressed gas cylinders stored so they do not interfere with exit paths?		
Are all compressed gas cylinders subjected to periodic hydrostatic testing and interior inspection?		
Do all compressed gas cylinders have safety pressure relief valves?		
Are cylinders always maintained at temperatures below 125°F?		
Are safety devices in the valve or on the cylinder free from any indication of tampering relief?		
Are charged or full cylinders labeled and stored away from empty cylinders?		
Is the bottom of the cylinder protected from the ground to prevent rusting?		
Are all compressed gas cylinders regularly inspected for corrosion, pitting, cuts, gouges, digs, bulges, neck defects and general distortion?		
Are cylinder valves closed at all times, except when the valve is in use?		
Are compressed gas cylinders always moved, even short distances, by a suitable hand truck?		

Is using wrenches or other tools for opening and closing valves prohibited? Note: Hammering on valve wheels to open them should be strictly prohibited. For valves that are hard to open, contact the supplier for instruction.		
Are suitable pressure regulating devices in use whenever the gas is emitted to systems with pressure-rated limitations lower than the cylinder pressure?		
Are all compressed gas cylinder connections such as pressure regulators, manifolds, hoses, gauges, and relief valves checked for integrity and tightness?		
Are all compressed gas cylinders regularly subjected to leak detection?		
Are procedures established for when a compressed gas cylinder leak cannot be remedied by simply tightening the valve?		
Are compressed gases only handled by experienced and properly trained people?		

Process:

1) General Procedure

- a) Cylinders shall not be accepted, stored or used if evidence of denting, bulging, pitting, cuts, neck or valve damage is observed. If damage is observed:
 - i) The cylinder must be taken out of service.
 - ii) The cylinder's owner shall be notified to remove the cylinder from the premises.
 - iii) If owned, the cylinder shall be de-pressured and inspected as required by this program.
- b) Cylinder Identification: Gas identification shall be stenciled or stamped on the cylinder or a label used. No compressed gas cylinder shall be accepted for use that does not legibly identify its content by name.
- c) Handling
 - i) Valve caps must be secured onto each cylinder before moving or storage.
 - ii) The preferred means to move compressed gas cylinders is with a cart or carrier.
 - iii) Compressed gas cylinders must not be allowed to strike each other.
 - iv) When a cylinder cap cannot be removed by hand the cylinder shall be tagged "Do Not Use" and returned to the designated storage area for returning to vendor.
- d) Storing (See Compressed Gas Storage/Inspection Checklist pg.2-3)
 - i) All cylinders must be secured upright in a safe, dry, well-ventilated area that limits corrosion and deterioration.
 - (1) Cylinders must be secured by means that will prevent the cylinder from falling.
 - (2) When securing the cylinder, the restraints shall not be attached to electrical conduit or process piping.
 - ii) Empty and non-empty cylinders shall be stored separately. All stored cylinders shall be capped.
 - iii) Oxygen cylinders must be stored a minimum of 20 feet from combustible gas cylinders or areas where there may be open flame or arcing. Cylinders may also be stored where the oxygen is separated from combustible gas cylinders by a 5 foot or higher wall with a fire resistance rating of 30 minutes.
 - iv) Storage areas for full and empty cylinders must be designated and labeled. Cylinders should be stored in definitely assigned places away from elevators, stairs or gangways.
- e) Use
 - i) Cylinders must be equipped with the correct regulators. Regulators and cylinder valves should be inspected for grease, oil, dirt and solvents. Only tools provided by the supplier should be used to open and close cylinder valves.
 - ii) Never force or modify connections.
 - iii) Only regulators and gauges shall be used within their designated ratings.
 - iv) The use of a pressure-reducing regulator is required at the cylinder, unless the total system is designed for the maximum cylinder pressure.
 - v) Valves must be closed when cylinders are not in use.
 - vi) Cylinders shall not be used as rollers or supports.
 - vii) Cylinders shall not be placed where they can come in contact with electrical circuits.

- viii) Cylinders must be protected from sparks, slag or flame from welding, burning or cutting operations.
- ix) Empty cylinders must be returned to designated storage areas as soon as possible after use.

2) Inspection of Compressed Gas Cylinders

- a) CNM Supervisor/Instructor shall determine that compressed gas cylinders under their control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation (See Compressed Gas Storage/Inspection Checklist pg.2-3) Where those regulations are not applicable, visual and other inspections shall be conducted in accordance with Compressed Gas Association Pamphlets (See Compressed Gas Storage/Inspection Checklist pg.2-3)
- b) Affected department supervisor inspection must ensure:
 - i) Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.
 - ii) Owned cylinders are visually inspected prior to charging, before each use and at least annually.
 - iii) All inspections and testing is documented.
- c) High Pressure Cylinders are those cylinders marked for service pressures of 900 psi and greater.
 - i) High pressure cylinders shall be taken out of service and submitted for re-qualification testing by a vendor when any of the following conditions are identified by visual inspection.
 - ii) Cuts, dings, gouges, dents bulges, pitting, neck damage or evidence of exposure to fire.
- d) Low Pressure Cylinders are those cylinders marked for service pressures of less than 900 psi.
 - i) Low pressure cylinders fall into two categories, those requiring requalification and those that do not require re-qualification.
 - ii) Low pressure cylinders that do not require re-qualification shall be taken out of service and condemned when any of the following conditions are identified during inspection:
 - iii) The tare weight of the cylinder is less than 90% of the stamped on weight of the cylinder.
 - iv) Observed pitting, dents, cuts, bulging, gouges or evidence of exposure to fire.
 - v) Low pressure cylinders subject to re-qualification shall be taken out of service, inspected and retested when visual inspection identifies any of the following conditions; dents, bulges, pitting or neck damage.
- e) Leaking Cylinders: should be moved promptly to an isolated, well-ventilated area, away from ignition sources. Contact the supplier and ask for instructions.
- f) Transportation: Cylinders must be transported in a vertical secured position using a cylinder basket or cart and must not be rolled. Regulators should be removed and cylinders capped before movement. Cylinders should not be dropped or permitted to strike violently and protective caps are not used to lift cylinders.

- g) First Aid-Emergency eyewash facilities should be present where corrosive gases or materials are used.