

East Carolina University Compressed Gas Safety Training Program



Presented by the Office
of Environmental
Health and Safety

COMPRESSED GAS SAFETY

Hazards



High Pressure +



Flammable



Asphyxiant



Oxidizer



Corrosive



Toxic



Cryogenic

COMPRESSED GAS SAFETY

Hazards



Users of compressed gas should become familiar with the proper procedures for operating the cylinders and the properties and inherent hazards of the products they contain.



Reference labeling, material safety data sheets and other safety literature for specific hazard information.

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Identification



The contents of any compressed gas cylinder must be clearly identified.



The labels applied by the gas manufacturer to identify the cylinder contents shall not be defaced or removed.



No compressed gas cylinder should be accepted for use that does not legibly identify its contents.






Never rely on the color of the cylinder for identification.

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Inspection



-  Gas cylinders should be visually inspected to ensure that they are in safe condition.
-  The cylinder's contents should be identified at all times as well as the cylinder status (full, empty or in service).
-  Cylinders shall be equipped with connections as required by the Compressed Gas Association standards.

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Inspection



Cylinders should be inspected daily and prior to each use for corrosion, leaks, cracks, etc.



Inspection should include the cylinder, piping, safety relief devices, valves, protection caps and stems.



Leaking regulators, cylinder valves or other equipment should be taken out of service.

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Use and Handling



Cylinders must be secured in an upright position at all times.



The user shall not modify, tamper with, obstruct, remove, or repair any part of the cylinder, including the pressure relief device and the cylinder valve or the valve protective device.



Compressed gas streams shall not be directed toward any person as this may cause serious injury to the eyes or body.

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Use and Handling



Cylinder valve connections that do not fit shall not be forced. Threads on regulator connections or other equipment shall match those on the cylinder valve outlet.



If a valve must be forced, it is a good sign that the wrong valve is being used.






The cylinder valve shall be kept closed at all times except when the cylinder is in use. Valve outlets shall be pointed away from all personnel when the valve is being opened.

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Use and Handling



-  Piping, regulators, and other apparatus shall be kept gas tight to prevent leakage. This can be confirmed by the use of a compatible leak test solution.
-  A leak test must be conducted every time the cylinder is re-connected such as during cylinder replacement.
-  Never use oil or grease on cylinders.

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Use and Handling



Before a regulator is removed from a cylinder, the cylinder valve shall be closed and the regulator relieved of gas pressure.



Regulators, gauges, hoses and other apparatus shall not be used on gas cylinders having different chemical properties unless information obtained from the gas manufacturer indicates that this can be done safely.

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Use and Handling



Maintenance of cylinders and their valves or relief devices shall be performed only by trained personnel.



An emergency response plan shall be developed and implemented wherever compressed gas cylinders are used, handled or stored.



Never smoke around compressed gas cylinders.

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Cylinder Storage



Containers shall not be placed where they might become part of an electrical circuit or arc.



Containers shall not be exposed to temperature extremes. Storage areas shall not exceed 125 degrees F.



Valve protection caps must remain in place at all times except when cylinders are secured and connected to dispensing equipment.

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Cylinder Storage



Adequate spacing, or segregation by partitioning shall be provided to group cylinders by hazard class. When oxygen and any fuel gas are stored, they shall be separated by a distance of 20 feet or by a non-combustible barrier at least 5 feet high with a fire rating of one half hour.



Full and empty cylinders should be separated.



Containers are not to be stored near readily ignitable substances or be exposed to corrosive chemicals or fumes.

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Cylinder Storage



Containers shall not be stored near elevators, walkways, building egresses, unprotected platform edges, or in locations where heavy moving objects may strike or fall on them.



All cylinders shall be secured to prevent falling/tipping/rolling and shall be stored and used valve end up. Secure with straps or chains connected to a wall bracket or other fixed surface, or by use of a cylinder stand. Do not secure by the valve.

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Transport of Cylinders



Cylinders shall not be rolled in the horizontal position or dragged. A suitable cart carrier or similar material handling device designed for cylinder transport should be used with the container properly secured to the device. Never lift cylinders by the cap.



Care must be taken not to drop cylinders or anything that could damage the cylinder valve as these high pressure vessels have the potential to destroy property and/or injure personnel.

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Responsibilities



Compressed gas cylinders shall be handled and used only by trained personnel in accordance with applicable regulations and guidelines.



Cylinders will not be issued to personnel until they have received appropriate training.



In addition to this general safety training, individual departments must provide specific training for the gas and cylinder system used in their areas.

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Responsibilities



At SOM, medical storeroom personnel receive cylinders from the supplier and are responsible only for delivery and removal of stored cylinders for clinics and laboratories. Elsewhere, cylinders are delivered to the end user by the supplier.



They are not authorized to make connections or disconnections of piping, regulators or other apparatus.

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Responsibilities



The end user is responsible for the safe use of compressed gas cylinders and their contents and for maintaining the cylinder in the same condition as it was received.



They are also responsible for placement of the cylinder in the work area, connection of piping, regulators and other apparatus and leak testing of the system.