



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES
HARBOR-UCLA MEDICAL CENTER

SUBJECT: HANDLING, TRANSPORTATION, STORAGE AND USE OF
COMPRESSED-GAS CYLINDERS

POLICY NO. 461

CATEGORY: Safety	EFFECTIVE DATE: 3/99
POLICY CONTACT: David Chambers	UPDATE/REVISION DATE:
REVIEWED BY COMMITTEE(S): Environment of Care	

PURPOSE:

To identify the appropriate safeguards to be used when using, handling, transporting, and storing compressed gas cylinders at Harbor-UCLA Medical Center.

POLICY:

Harbor-UCLA Medical Center's compressed gases may include oxygen, medical air, carbon dioxide, helium, nitrogen, nitrous oxide, mixed gases, etc. These gases are used in medical treatment and procedures or to power medical equipment.

It is the responsibility of Department Chairs and Service Directors to educate their workforce members and enforce this policy.

PROCEDURE:

A. USE OF GAS CYLINDERS


All staff that uses compressed gases are required to be properly trained. The training should be in the correct applications of the direct products. It should also include training to ensure that workforce members are:


1. Alerted to and reminded of the possible hazard associated with using compressed gases.
2. Able to recognize and carefully examine compressed gas labels.
3. Able to ensure that each vessel they connect bears the correct label.
4. Trained to connect medical gas vessels properly if they are responsible for changing or installing cryogenic vessels.
5. Trained that adapters must never be used to make a connection. Personnel should understand how vessels are connected and be alerted to the serious consequences of changing connections.

REVISED: 9/04, 6/07, 8/11, 12/14, 12/17

REVIEWED: 2/02, 9/04, 1/06, 6/07, 12/14, 12/17, 2/22

APPROVED BY:


 Anish Mahajan, MD
 Chief Executive Officer
 Chief Medical Officer


 Griselda Gutierrez, MD
 Associate Chief Medical Officer


 Jason Black, MBA, DNP, RN
 Chief Nursing Officer



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES
HARBOR-UCLA MEDICAL CENTER

SUBJECT: HANDLING, TRANSPORTATION, STORAGE AND USE OF
COMPRESSED-GAS CYLINDERS

POLICY NO. 461

B. GENERAL HANDLING

1. Carefully handle all compressed-gas cylinders. If the contents are not completely exhausted, the energy stored inside can cause fatal injuries if released through a broken valve.
2. **Always** keep the valve cap on a compressed-gas cylinder when it is not in use or when in transport, to prevent the possibility of accidental valve damage or breakage.
3. **Always** keep the valve of a flammable compressed gas cylinder closed when not in use.
4. **Never** use a compressed-gas cylinder if:
 - It lacks a printed content label affixed to the side of the cylinder.
 - Its contents are identified merely with a tag. The tag may be in error.
 - Its contents are identified merely on the basis of a color code. Not all manufacturers use the same color-coding system.
5. The type of gas is indicated by the correct color, and the contents of each cylinder should be properly identified by both label and color code. Do **not** rely solely on the color code as variability exists between manufacturers:
 - Oxygen- -----Green
 - Compressed air- ----- Yellow
 - Nitrous oxide- -----Light Blue
 - Carbon dioxide- ----- Gray
 - Helium- -----Brown
 - Nitrogen- -----Black
6. **Never** attempt to use a damaged or malfunctioning compressed gas cylinder. Never attempt to force a “stuck” valve or make repairs to a malfunctioning cylinder or its regulator.
7. Immediately tag and report as “damaged” any compressed-gas cylinder that is damaged or malfunctioning. This will help prevent others from using it.
8. **Never** oil or lubricate connector throats and surfaces. They always must be clean and tight-fitting.
9. When opening the valve of a compressed-gas cylinder, **always** open the valve slowly **and never** stand directly in front of the valve’s gauge. This will help prevent injury if the gauge face blows out.
10. When setting the maximum flow rate, **always** use only the high-pressure valve. When making fine adjustments, use the needle/regulator valve.
11. **Never** change the fitting on cryogenic vessels under any circumstances. If a cryogenic vessel fitting does not seem to connect to a supply system fitting, contact the supplier immediately. The vessel should be returned to the supplier to determine the filling or connection problems.

C. STORAGE

1. **Never** store compressed-gas cylinders near heat sources, such as heaters or steam lines, in direct sunlight, or in areas where the temperature exceeds 130 degrees F. (54 degrees C). This will help prevent explosions.
2. **Always** store a compressed-gas cylinder in an upright position by one of the following methods:
 - Chain it in a four-wheeled cart specifically designed for cylinder storage.
 - Chain it in a rack designed for cylinder storage.
 - Chain it to a wall.
 - Store it in a cylinder stand.
3. **Never** store industrial and medical-grade gases together.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES
HARBOR-UCLA MEDICAL CENTER

SUBJECT: HANDLING, TRANSPORTATION, STORAGE AND USE OF
COMPRESSED-GAS CYLINDERS

POLICY NO. 461

4. Per National Fire Protection Association's (NFPA) 99-2012 – Centers for Medicare and Medicaid Services' interpretation of the code is: Storage of < 300 cf of bottled medical oxygen may NOT be within 20 feet of electrical outlets, combustibles, flammable liquids, vapors, and gases if the area does not have a sprinkler system and 5 feet if the area is sprinklered.
5. **Never** leave a compressed-gas cylinder in a corridor or passageway, even if the cylinder is properly secured. This will help prevent a heavy object, such as a portable x-ray machine, from striking the cylinder and breaking or damaging the regulator or its valve.
6. **Always** immediately remove the tear-offs from the cylinder tag to indicate when the cylinder is empty.
7. **Always** cap a compressed-gas cylinder if its regulator has not been installed.
8. The medical gas storage areas are to remain locked at all times to prevent the theft of any medical gas products. Nothing other than medical gas cylinders, carts, and regulators are to be located in the storage areas.
9. **Never** store any compressed gas cylinders in the vicinity of an MRI. There is a chance that the magnetic field will pull the loose tank into its magnet. If compressed gas is required in the vicinity of an MRI, an aluminum cylinder must be requested.
10. The 2012 Edition of NFPA 99 section 9.4.3 states that: The "Storage for non-flammable gases with a total volume compressed equal to or less than 8.5 m³ (300 ft³) shall comply with the requirements in 9.4.3(A) and (B). An E-cylinder holds about 25 ft³ of gas; therefore, twelve cylinders would be allowed to be in an area. The number is based on cubic feet of gas, not just the number of cylinders. An H-cylinder in the same area reduces the number of E-cylinders that can be stored to two (2)."
11. Cylinders attached to beds, wheelchairs, or other patient-care equipment, or in a patient room for "as needed" (but regular) individual use is not required to be stored in an enclosure when properly secured.

D. HAZARDS OF CERTAIN GASES

1. **Toxic Compressed Gas:**
Some of the compressed gases used in the hospital are toxic. A leaking cylinder that contains toxic compressed gas may be cause for an area evacuation. Consult your supervisor to learn if toxic gas is used in your work area.
2. **Flammable Compressed Gas:**
Some of the compressed gases used in the hospital are flammable. Such gases can easily be ignited by sparks. Consult your supervisor to learn if flammable gas is used in your work area.