

	Compressed Gas Cylinder safety Policy	Effective:	November 28, 2005
		Originator	T. Beths
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		Updated by:	T. Beths

Background:

Mishandled cylinders may rupture violently, release their hazardous contents or become dangerous projectiles. If the neck of a pressurized cylinder should be accidentally broken off, the energy released would be sufficient to propel the cylinder to over three-quarters of a mile in height.

Oxygen supports and can greatly accelerate combustion of flammable materials. Oxygen, as a liquid or gas, may cause severe frostbite to the skin and the eyes.

1. Purpose:

The purpose of this Policy is to ensure adequate handling, storage and transportation of compressed gas cylinders and oxygen in particular

2. Scope:

This policy applies to all RUSVM personal (technicians, faculty and staff) as well as students in contact with compressed gas cylinders of any nature with special consideration for oxygen when appropriate.

2. Procedure

The purpose of this instruction is to ensure that safety measures are read, understood and applied by all personnel working in RUSVM laboratories where compressed gas cylinders are stored and/or used.

2.1 Identification of contents of compressed gas cylinders:

- 2.1.1 The content of **any** compressed gas cylinder should be identified clearly so as to be easily, quickly, and completely determined by any laboratory worker.
- 2.1.2 A durable label should be present and should not be removed from the compressed gas cylinder
- 2.1.3 No compressed gas cylinder should be accepted for use that does not identify its contents legibly by name
- 2.1.4 Color-coding is not a reliable means of identification; cylinder colors may vary from supplier to supplier, and labels on caps have no value because many caps are interchangeable.
- 2.1.5 If the labeling on the gas cylinder becomes unclear or defaced so that the contents cannot be identified, the cylinder should be marked “**contents unknown**” and the manufacturer contacted regarding appropriate procedures.

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2.2 Transporting gas cylinders

- 2.2.1 Cylinders transported by truck or other vehicle must be fastened securely in upright position so that they will not fall or strike each other.
- 2.2.2 Cylinders should not be transported without safety caps. A cylinder's cap should be screwed all the way down on the cylinder's neck ring and should fit securely. Do not lift cylinders by the cap. The cap is for valve protection only.
- 2.2.3 Cylinders should not be transported with the regulator attached to the cylinder
- 2.2.4 Always use a cylinder cart to move compressed gas cylinders. Refrain from sliding, dragging or rolling cylinders on edge.
- 2.2.5 Only one cylinder should be handled (moved) at a time.

2.3 Storage of compressed gas cylinders

- 2.3.1 Cylinders should not be allowed to drop nor be struck violently.
- 2.3.2 Cylinders should be properly secured at all times whether attached to a wall, cylinder truck, cylinder rack, or post.
- 2.3.3 Liquefied flammable gas cylinders should be stored in an upright position or such that the pressure relief valve is in direct communication with the vapor space of the cylinder.
- 2.3.4 Caps for valve protection should be kept on the cylinders at all times except when the cylinder is actually being used or charged
- 2.3.5 Cylinders should not be used for rolling, supports or any purpose other than the transportation and supply of gas.
- 2.3.6 Cylinders should be stored in a well-ventilated area away from flames, sparks, or any source of heat or ignition. Keep cylinders away from electrical circuits.
- 2.3.7 Cylinders should not be exposed to an open flame or to any temperature above 125 degrees F.
- 2.3.8 **Oxygen** cylinders (empty or full) in storage should be separated from fuel –gas cylinders and combustible materials by a minimum distance of 20 feet or by a barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.
- 2.3.9 Flammable gas cylinders should not be stored with **oxygen** or nitrous oxide cylinders or adjacent to oxygen charging facilities.
- 2.3.10 Full and empty cylinders of all gases should be stored separately and identified by signs to prevent confusion.
- 2.3.11 Cylinders may be stored outdoors but should be protected from the ground to prevent bottom corrosion. Where extreme temperatures prevail, cylinders should be stored so they are protected from the direct rays of the sun.
- 2.3.12 Cylinders should not be exposed to continuous dampness, stored near salt or other corrosive chemicals or fumes. Corrosion may damage cylinders and cause their protection caps to stick.
- 2.3.13 Do not charge, ship or use any cylinder, which is not provided with a legible decal that identifies its contents.

2.4 Use of compressed gas cylinders

- 2.4.1 Always use the proper regulator for the gas in the cylinder. Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used.
- 2.4.2 Before attaching cylinders to a connection, be sure that the threads on the cylinder and the connection mate are of a type intended for the gas service.
- 2.4.3 Do not permit oil or grease to come in contact with cylinders or their valves
- 2.4.4 Never use a regulator that has been altered or tampered with.
- 2.4.5 Wipe the outlet with a clean, dry, lint-free cloth before attaching connections or regulators. The threads and mating surfaces of the regulator and hose connections should be cleaned before the regulator is attached.
- 2.4.6 Attach the regulator securely before opening the valve wide. Always use a cylinder wrench or another tightly fitting wrench to tighten the regulator nut and hose connections.
- 2.4.7 Open cylinder valves **slowly**. Do not use a wrench to open or close a hand wheel type cylinder valve. If it cannot be operated by hand, the valve should be repaired.
- 2.4.8 Stand to the side of the regulator when opening the cylinder valve.
- 2.4.9 Do not attempt to repair cylinder valves or their relief devices while a cylinder contains gas pressure. Tag leaking cylinders or cylinders with stuck valves and move to a safe, secure outdoor location.
- 2.4.10 When the cylinder needs to be removed or is empty, all valves shall be closed, the system bled, and the regulator removed. The valve cap should be replaced.
- 2.4.11 Close valves on empty cylinders and mark the cylinder “**empty**” and add on the following letter “**MT**” (short for **EMPTY**). Return to storage area for pickup by the supplier.

2.5 Things not to do

- Never roll a cylinder to move it
- Never carry a cylinder by the valve.
- Never leave an open cylinder unattended
- Never leave a cylinder unsecured.
- Never force improper attachments on the wrong cylinders.
- Never grease or oil the regulator, valve or fittings of an **oxygen** cylinder.
- Never refill a cylinder
- Never use a flame to locate gas leaks.
- Never attempt to mix gases in a cylinder