



Environmental Health & Safety

Owner C.H.O	DOC. NO. SOP GAS	REV. 2	DATE Feb 4, 2020
DOC. TITLE SOP FOR GAS CYLINDERS			

STANDARD OPERATING PROCEDURES (SOP) FOR WORKING WITH GAS CYLINDERS AT AMHERST COLLEGE

General Information

There is a wide range of cylinder sizes, colors, and the gases that come in them. The hazards associated with cylinders result from the type(s) of gas(es) in them and from the fact that they are under pressure. Gas release can also lead to an oxygen deficient environment in an area that is not adequately ventilated.

Some examples of cylinders that exist at Amherst College include inert gases such as nitrogen, argon, and helium, which are all inert; flammables such as hydrogen and acetylene; oxidizers, which include oxygen; along with ammonia and chlorine which are toxic.

Personal Protective Equipment

When working with cylinders, the following personal protective equipment (PPE) **must** be worn:

Safety glasses or splash goggles

Note that the following **may** be required when doing certain procedures with certain types of gases. Consult the SDS for each gas cylinder

Lab coat

Long pants

Impact resistant boots

face shield

Respirator

Safety Devices and Engineering Controls

Gas cylinders should only be used in a well ventilated area. When working with dense gases in small rooms, vent openings should be placed as close to the ground as possible.

Identify the location of all the safety devices in the room before starting your procedure. Also, familiarize yourself with all the possible means of egress.



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Specific Health Hazards

Depending on the type of gas, a release from cylinders can have severe health effects, ranging from minor burns to death due to direct inhalation or oxygen deficiency.

The Permissible Exposure Limit (PEL) for some gases are extremely low. Consult the SDS of each gas for specific exposure limits.



Pictogram:

Hazard: gases under pressure

Note that additional hazards might be associated with other gas cylinders. Again, Consult the SDS for each gas cylinder

Possible Routes of Entry

Inhalation, eye/skin contact, ingestion

If *any part of your body* comes in contact with cylinder gases, call the Amherst College Emergency phone number 413-542-2111. Also call this number if you begin to feel ill after working with or in the vicinity of gas cylinders

Inhalation

Consult the SDS for the particular gas

Eye contact

Consult the SDS for the particular gas

Skin Contact

Consult the SDS for the particular gas

Ingestion

Do not induce vomiting

Storage



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When storing gas cylinders:

Store in a cool, dry, well ventilated area

Regulator or cap must be in place

Labels must face forward such that they can be read without turning the cylinder

Firmly chain or strap to wall immovable items such as storage rack system

Store cylinders that are compatible with each other (familiarize yourself with the storage chart)

label cylinders with “full”, “empty”, or “in use” labels. (Note that an empty cylinder poses as much of a hazard as one that is full)

Transportation

When transporting cylinders in-house:

Wear impact resistant boots

Valve must be closed

Regulator must be removed

Cap must be in place and tightly closed

Use a cylinder cart, with chains or straps in locking position (you may roll the cylinder if moving less than 10ft)

Never move a cylinder by the cap

Handling and Use

Cylinders must be regularly inspected for cylinder integrity

An appropriate cap wrench should be used to loosen caps; screw driver or other devices might damage or turn **on** valve

If pressure release valve freezes, use warm water to melt – do not use grease or flammable products

Valves and caps should not be contaminated (particularly using grease, flammable substances)

DISPOSAL / PICK UP



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Empty Cylinders and cylinders you no longer need must be returned to vendor. In the New Science Center, out-going cylinders are stored in the cage on the dock.

In the rare case the cylinder cannot be returned, you may be able to dispose of it as hazardous waste. Contact the Chemical Hygiene Officer for more information on the disposal of cylinders.

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