UNIVERSITY OF VICTORIA
Occupational Health, Safety and Environment

Chemical Safety – Special Hazards

Safe Work Procedure (SWP – 002)

Compressed Gas Cylinder Safe Handling and Use

Last revised: 15 November 2019

REVISION HISTORY

	Revision Date	*Author*	*Position*
1.	15-Nov-2019	Troy Hasanen	OHSE Consultant

DOCUMENT APPROVAL

Approved by: Laboratory Safety Committee

Martin Boulanger _____ *November 18, 2019*

Chair, Laboratory Safety Committee *Date Approved*

**This revision replaces all previous versions of this document. If a copy is printed, it is the users' responsibility to verify the copy is the most current version of the document.*

University of Victoria

PURPOSE

To provide general guidance and instruction on the safe use of compressed gas cylinders in laboratories and to ensure regulatory compliance with WorkSafeBC (WSBC). In addition to this general Safe Work Procedure (SWP), each lab must develop a lab specific safe work procedure unique to the experiments and activities being performed.

SCOPE

This procedure is intended for individuals at UVic who will be purchasing gas cylinders, moving gas cylinders, and using gas cylinders as part of their duties on campus. It is the responsibility of your Supervisor to provide job-specific training related to the gases you are using in the workplace.

TRAINING

The following training is required to be completed prior to being permitted to perform these procedures:

- WHMIS
- Compressed Gas Cylinders: Safe Handling & Use (Part 1 & Part 2)

REGULATION AND POLICY

The University of Victoria will follow WorkSafeBC Occupational Health and Safety Regulation *(Substances under pressure 5.36-5.47; Toxic process gases 6.116-6.132)* and the University of Victoria Occupational Health, Safety & Environment Department.

RESPONSIBILITY

It is the responsibility of personnel undertaking activities with special hazards to complete all required training and adhere to the safe work procedures, including any additional lab or job-specific procedures.

It is the PI's or supervisor's responsibility to ensure that individuals working with special hazards have been trained prior to commencing work and have demonstrated competency in safely performing all duties associated with the special hazard in accordance with the safety work procedures.

DEFINITIONS

CGA – Compressed Gas Accessory

MATERIALS

The following personal protective equipment is required when transporting gas cylinders:

1. Safety glasses
2. Steel-toed safety shoes (users who transport frequently); or
3. External steel-toe cap overshoes (users who transport infrequently)

General purpose work gloves are also recommended to protect against handling injuries.

HAZARD

Compressed gas cylinders must be properly stored, transported, and handled to prevent accidents or injuries. The hazards associated with compressed gas cylinders include potential exposure to flammable, combustible, explosive, corrosive, or poisonous environments; asphyxiation due to displacement of oxygen; cold burns or frostbite; projectile objects arising from a dropped or damaged cylinder or an incorrectly fitted regulator; and sprains, strains, bruises or fractures due to improper manual handling.

Please observe the following safety information when handling compressed gas cylinders, familiarize yourself with the appropriate Safety Data Sheet, and contact your supervisor for instruction on the proper selection and use of regulators, piping, fittings and related connections, leak testing and emergency procedures.

PROCEDURES

1. Handling

Compressed gas cylinders should only be transported by those familiar with hazards and who have received prior hands-on training.

a. Visually inspect cylinders for any indication of damage or leakage. If a cylinder is leaking, close the valve, place a warning tag and report to your supervisor. Do not transport until repaired.
b. All cylinders should be properly marked to identify the contents. Check label to ensure it corresponds to the expected gas.
c. Only move cylinders using a suitable cart designed for cylinder transport and secure in an upright position.
d. Transport cylinders with the regulator removed, valve closed and safety cap in place.
e. If you need to move a cylinder between floors, travel with it in the elevator to ensure it is properly secured. Do not leave an unaccompanied cylinder in the elevator. Ensure no one else is in the elevator during transportation.
f. Do not lift cylinders by the cap with magnets, chains or slings; do not pull, drag, drop, or slide cylinders.

2. Regulators and connections

a. Never use a compressed gas cylinder without a regulator that will safely reduce the cylinder pressure.
b. Visually inspect the regulator for damage. Ensure the regulator is approved for the specific gas and the CGA number of the cylinder matches that of the regulator. Confirm the regulator is rated and marked for the maximum pressure rating of the cylinder.
c. Use an appropriate wrench when fitting regulators and do not force cylinder valve connections that do not readily fit. Do not apply oil/grease/WD40 or Teflon tape on gas connections to cylinder.
d. A leak test must be performed to check the regulator-cylinder valve seal prior to use (i.e. Static Pressure test or Snoop test).
e. Slowly open the cylinder valve to avoid damaging the regulator. Do not stand directly in front of a regulator attached to a compressed gas cylinder when the valve is being opened.

3. Storage

a. Cylinders should be stored in a dry, well-ventilated area away from extreme temperatures and combustible materials.
b. Store in an upright position and secure to prevent falling or rolling.
c. Larger cylinders must be strapped or chained to a secure object. At minimum, ensure the cylinder is secured between its mid-point and shoulder.
d. Smaller cylinders must be secured as above, or in an appropriate rack (i.e. lecture bottles).
e. The valve on a compressed gas cylinder must be kept closed when the cylinder is not in use.
f. A cylinder not in use must have the regulator removed and the safety valve cap in place.
g. Store only the amount of compressed gas required for the specific application.
h. An empty cylinder must be identified as being empty and must be stored separately from other compressed gas cylinders and capped.
i. Store cylinders away from areas of high traffic and emergency exits.

4. Spills

a. If a cylinder has a minor leak, close the valve, place a warning tag and report to your supervisor.

b. In the event of a large uncontrolled gas release, evacuate the area, notify your supervisor and contact Campus Security at 721-7599.

5. Decontamination

a. Cylinders should be returned free from any laboratory contaminants.

6. First Aid and Emergencies

a. Call 911 to summon an ambulance if there is a medical emergency.

b. Call Campus Security at 250-721-7599 for first aid.

c. It is extremely important to have the safety cap in place during transport. A damaged or severed valve can cause the cylinder to become a missile.

d. If a cylinder starts to fall, do not attempt to catch it. Stand back and let the cylinder fall to the ground to avoid a physical injury. With the safety cap in place, cylinders can generally withstand a fall and not result in damage to the valve or cylinder body.

e. If a cylinder has a minor leak, close the valve, place a warning tag and report to your supervisor.

f. In the event of a large uncontrolled gas release, evacuate the area, notify your supervisor and contact Campus Security at 721-7599.

7. Waste Disposal

a. Refillable cylinders should be returned to the supplier.

b. Single use cylinders that are non-returnable can be disposed of through the UVic Hazardous Waste system.