

## Common Standard Operating Procedure

for work with

<b>Chemical name/class:</b>	<b>Compressed Gases</b>	<b>CAS #:</b>	<b>Various</b>
<b>PI:</b> Henderson		<b>Date:</b>	1-23-2013
<b>Building:</b> Stepan		<b>Room #:</b>	Laboratory 386

1. **Circumstances of Use:**

Various.

2. **Potential Hazards:**

Definition – A compressed gas is any mixture or material in a container with either an absolute pressure exceeding 40 psi at 70°F or an absolute pressure exceeding 104 psi at 130°F. Any liquid flammable material having a vapor pressure exceeding 40 psi at 100°F is also considered a compressed gas.

*The large amount of potential energy contained makes these cylinders a potential rocket or bomb if the pressure is released through rupture of the valve or container failure.*

**Compressed gases may also be toxic, flammable, or explosive – check the MSDS for more information. Safety considerations for these properties must also be followed – see SOPs for those hazards.**

3. **Engineering Controls:**

Storage of compressed gas cylinders requires sturdy chains secured to a wall or cabinet, and/or a cylinder stand.

4. **Work Practice Controls:**

All compressed gas cylinders shall be legibly marked by stenciling or stamping with at least the chemical name or commonly accepted name of the material contained. In addition, cylinders should bear the approved markings of the Department of Transportation stamped in the metal at the top of the cylinder.

5. **Personal protective equipment (PPE):**

Safety glasses must be worn for all work involving compressed gas cylinders.

6. **Transportation and Storage:**

- Cylinders (full or empty) shall be secured by chains, straps, or other sturdy tiedowns during storage and transport.
- Cylinders shall be grouped by type of gas and the groups segregated as to compatibility.
- Full cylinders shall be separated from empty cylinders within the storage area.
- Cylinders shall not be stored at temperatures above 125 °F. or in direct sunlight, or outside of the temperature range specified by the manufacturer.
- Cylinder valves shall be kept closed when not in use.
- Removable caps should be kept on cylinders at all times, except when cylinders are in use.

- Cylinders shall be protected against tampering and damage.
- Cylinders shall not be stored near combustible materials.
- Cylinders shall not be refilled except by authorized suppliers.
- Open flames and smoking shall not be permitted in areas where oxygen is used or stored.
- Cylinders, except for those containing compressed air, shall not be used or stored in cold rooms or other unventilated enclosures. An exception may be approved by RM&S for inert gases when an oxygen monitor is in place.

7. **Waste Disposal:**

In most cases, the compressed gas cylinder, including any unused gas, will be returned to the vendor from which the cylinder was purchased. If the vendor cannot be determined, contact RM&S at 1-5037 for information on disposal.

8. **Exposures/Unintended contact:**

Contact RM&S for medical advice on occupational chemical exposures, **1-5037**. For an actual chemical exposure or injury, complete the work-related injury or illness report found at: <http://chemistry.nd.edu/safety/supervisors-report-of-injury-to-the-health-center.pdf>. If medical attention is needed, see <http://chemistry.nd.edu/safety/procedures-for-injury-illness-or-incident.pdf>.

9. **Spill/Release Procedure:**

If there is an uncontained release of a toxic, flammable, or explosive compressed gas, contact the Police by calling 911 from a campus phone or 574-631-5555 from a cell phone. The Police will contact RM&S.  
In the case of catastrophic cylinder or valve failure, leave the area immediately and contact the Police by calling 911 from a campus phone. The Police will contact the fire department, facilities and/or RM&S as needed.

10. **Training of personnel:**

All personnel are required to complete the General Lab Safety session thru RM&S. This session includes an introduction to general chemical safety. Furthermore, all personnel shall read and fully adhere to this SOP when handling compressed gases.