

PI: _____
 Phone: (____) ____-____ Email: _____

Alternative Contact: _____
 Phone: (____) ____-____

Environmental Health & Safety: Compressed Gas Questionnaire

Purpose: This questionnaire serves as a safe use and compliance reference for primary investigators and their research groups who possess compressed gas cylinders on site. It is important for research teams to understand the nature of compressed gases, how they can be harmful, and what they can do to safeguard their laboratory space. In order to ensure that this questionnaire proves useful for research teams, it would be best to fill out the questionnaire and place a copy with the team’s chemical control plan. Every member of the research team should be made aware of the location of the chemical control plan.

Questions, comments, or concerns? Please contact EHS at (216) 368 – 2907

Please list all compressed gases on site:	Check all that apply to each compressed gas:		
_____ Gas Name _____ Gas Location	Corrosive <input type="checkbox"/>	Oxidizer <input type="checkbox"/>	Non liquefied gas <input type="checkbox"/>
	Flammable <input type="checkbox"/>	Pyrophoric <input type="checkbox"/>	Liquefied gas <input type="checkbox"/>
	Highly toxic <input type="checkbox"/>	Unstable <input type="checkbox"/>	Compressed gas <input type="checkbox"/>
	Irritant nonflammable <input type="checkbox"/>	Inert <input type="checkbox"/>	Compressed mixture <input type="checkbox"/>
_____ Gas Name _____ Gas Location	Corrosive <input type="checkbox"/>	Oxidizer <input type="checkbox"/>	Non liquefied gas <input type="checkbox"/>
	Flammable <input type="checkbox"/>	Pyrophoric <input type="checkbox"/>	Liquefied gas <input type="checkbox"/>
	Highly toxic <input type="checkbox"/>	Unstable <input type="checkbox"/>	Compressed gas <input type="checkbox"/>
	Irritant nonflammable <input type="checkbox"/>	Inert <input type="checkbox"/>	Compressed mixture <input type="checkbox"/>
_____ Gas Name _____ Gas Location	Corrosive <input type="checkbox"/>	Oxidizer <input type="checkbox"/>	Non liquefied gas <input type="checkbox"/>
	Flammable <input type="checkbox"/>	Pyrophoric <input type="checkbox"/>	Liquefied gas <input type="checkbox"/>
	Highly toxic <input type="checkbox"/>	Unstable <input type="checkbox"/>	Compressed gas <input type="checkbox"/>
	Irritant nonflammable <input type="checkbox"/>	Inert <input type="checkbox"/>	Compressed mixture <input type="checkbox"/>
_____ Gas Name _____ Gas Location	Corrosive <input type="checkbox"/>	Oxidizer <input type="checkbox"/>	Non liquefied gas <input type="checkbox"/>
	Flammable <input type="checkbox"/>	Pyrophoric <input type="checkbox"/>	Liquefied gas <input type="checkbox"/>
	Highly toxic <input type="checkbox"/>	Unstable <input type="checkbox"/>	Compressed gas <input type="checkbox"/>
	Irritant nonflammable <input type="checkbox"/>	Inert <input type="checkbox"/>	Compressed mixture <input type="checkbox"/>

PI: _____
 Phone: (____) ____-____ Email: _____

Alternative Contact: _____
 Phone: (____) ____-____

Are your charged or full compressed gas cylinders...	Yes <input checked="" type="checkbox"/>	No <input checked="" type="checkbox"/>
...provided with a pressure relief device to protect the cylinders from rupture in the event of over pressure?		
...affixed with the proper regulator for the particular gas?		
...properly marked with gas name and hazard warning? Visible labeling?		
...secured against accidental dislodgement with chains or by other means? Each cylinder with its own securing device? No more than two per chain or strap?		
...stored at room temperature and protected against temperature extremes?		
...in an upright position (valve end up), except those designed in a horizontal position?		
...separated from materials and conditions that pose an exposure hazard (accidental release or chemical compatibility concerns)?		
...stored so they do not interfere with exit paths?		
...labeled and stored away from empty cylinders?		
In regards to piping that is designed or intended to carry more than one gas at various times:		
○ Are the appropriate signs and markings posted at the manifold, along the piping, and at each point of use to provide clear indication that a gas is being used?		
○ Are the compressed gas systems and controls designed to prevent materials from leaving the process or reaction system?		
Are response plans for your gases currently available for all laboratory workers?		
Is every laboratory worker knowledgeable on the type of gas they will be working with, potential hazards, and how to use shutoff valves?		
Are leaking, damaged, or corroded systems replaced, repaired, or removed from service?		
Do you have flammable gases, combustible liquids or flammable cryogenic fluids? (If yes, please continue with the questionnaire)		
○ Are compressed gas systems conveying flammable gases tested and maintained annually?		
○ Is each system equipped with manual or automatic emergency shut off valves?		
○ Are the gases stored away from ignition sources?		
○ If applicable: Are oxygen and fuel gas cylinders separated by a minimum of 20 feet?		

Please note: *The researcher is responsible for knowing the characteristics of the gases being used: toxicity, flammability, compatibility with materials and other gases.*

PI: _____
Phone: (____) ____-_____ Email: _____

Alternative Contact: _____
Phone: (____) ____-_____

Relevant Vocabulary

Absolute pressure – pressure based on a zero reference point, the perfect vacuum

Combustible liquid – a liquid having a closed-cup flash point at or above 37.8°C, which is subdivided into classes (II, IIA, IIIB)

Compressed gas container – a pressure vessel designed to hold compressed gas at an absolute pressure greater than 1 atm at 20°C that includes cylinders, containers, and tanks

Cryogenic fluid – a fluid with a boiling point lower than -90°C at an absolute pressure of 14.7 psi (101.3 kPa)

Cylinder – a pressure vessel designed for absolute pressures higher than 40 psi (276 kPa) and having a circular cross-section.

Emergency shutoff valve – a designated valve designed to shut off the flow of gases or liquids

Automatic – fail-safe automatic closing valve designed to shut off the flow of gases or liquids that is initiated by a control system where the control system is activated by either manual or automatic means

Manual – designated valve designed to shut off the flow of gases or liquids that is manually operated

Flammable cryogenic liquid – a cryogenic fluid that forms flammable mixtures in air when in its vapor state

Personnel training – persons in areas where hazardous materials are stored, dispensed, handled, or used shall be trained in the hazards of the materials employed and actions required by the emergency plan. The level of training should be consistent with the responsibilities of the persons to be trained.

Pressure relief device – a device designed to open to prevent a rise of internal pressure in excess of a specified value

Emergency plan requirements (optional, but should be included if one decides to implement):

1. The type of emergency equipment available and their locations
2. A brief description of any testing or maintenance programs for the available emergency equipment
3. An indication that hazard identification labeling is provided for each storage area
4. The location of posted emergency procedures
5. A Material Safety Data Sheet MSDS or equivalent for each compressed gas or cryogenic fluid stored or used on the site
6. A list of personnel who are designated and trained to be liaison personnel for the fire department and who are responsible for the following:
 - a. Aiding the emergency responders in pre-emergency planning; Identifying location
 - b. Accessing MSDS's & Knowing the site emergency procedures
7. A list of the types and quantities of compressed gases and cryogenic fluids found within the facility