

Compressed Gases 101

Compressed gases of all types are very common in today's workplace, be it manufacturing, high tech research, construction, food service, heating and cooling and health care. The use of compressed gases has become common place. Compressed gas, if handled incorrectly, improperly stored, or misused can result in a dangerous and even deadly incident.

What is compressed gas?

While many items are referred to as a "compressed gas" the true official definition is:

- A material or mixture in a container with an absolute pressure of 40 psi at 70 degrees Fahrenheit.
- A material or mixture in a container with an absolute pressure exceeding 104 psi at 130 degrees Fahrenheit.
- A liquid having a vapor pressure exceeding 40 psi absolute at 100 degrees Fahrenheit.

Absolute pressure is the term that refers to the pressure reading on the gauge plus local atmospheric pressure (14.7 psi at sea level). For many people it is far easier to simply consider anything that contains a gas under any type or level of pressure to be a compressed gas.

Compressed gases may be hazardous because they are:

- **under high pressure:** cylinders can rupture or a valve could break off, turning the cylinder into a rocket;
- **flammable:** they can catch fire and burn — when stored in a pressurized cylinder the gas is easily ignited and burned.
- **an asphyxiant:** they displace oxygen in the area around the cylinder, such as a closed room or vehicle, causing asphyxiation and death from lack of oxygen.
- **oxidizing:** they can explode violently when they react with organic and combustible materials.
- **corrosive:** corrosive gases such as Chlorine attack tissue and other mucus membranes in the body.
- **toxic or highly toxic:** poisonous.
- **cryogenic:** can cause frostbite or burns if they contact the skin — they can also displace oxygen in the air causing asphyxiation.

OSHA has several specific requirements and standards related to compressed gases. It is important to know if you fall under the Construction Standards (1926) or the General Industry (1910). The Compressed Gas Association also has a pamphlet available on compressed gasses (P-1-1965) that may be helpful.

It is important to make sure that yourself and anyone who handles or transports compressed gases is well educated and trained on how to safely work and handle the gases. Training should cover the dangers and warnings related to each gas such as flammability, reactivity, oxidizing, etc as well as

related health concerns and dangers. Proper storage and transporting of cylinders should also be reviewed with the training tailored to the requirements for your industry and the applicable OSHA standards.

Some compressed gases, such as acetylene, hydrogen, and oxygen have their own storage and transporting regulations. Some gases, such as chlorine, and sulfur dioxide have EPA requirements for reporting and tracking. Additionally your local fire or municipality may have their own requirements for storage and reporting of various compressed gases. If your company uses compressed gases, you should have a written Compressed Gas Plan that lists the various gases that you store and use and the specifics about how you will store, transport, track and keep safe these gases. Your plan should be reviewed on a regular basis (at least annually) and updated whenever the information changes or you add or discontinue using a particular compressed gas.

The Safety Consultants from Maine Oxy are available to assist you with developing a written plan if you need some help in getting started. Your sales representative can help you connect to a variety of safety services available from Maine Oxy.