



# Compressed Gas & Air Safety



## Compressed Gas & Air Equipment Safety

*This training is best viewed in Internet Explorer 6.0 or above.*

### Introduction

Compressed gases and air present many dangers in the workplace. Hazards range from toxicity to flammability to extremely high pressures.

Working safely with compressed gases and air starts with knowing what substance you have and following our facility's safe practices.

# Hazards of Compressed Gases & Air

## *IMPROPER HANDLING*

This can lead to injuries from the cylinders, such as strains or impact, as well as injuries and accidents resulting from the accidental release of gas or air, such as fire or chemical burns.

## *HEALTH HAZARDS*

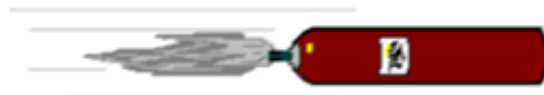
These include inhalation of toxic gases, asphyxiation, and corrosion of the skin or other body tissues. Even "harmless" gases, like nitrogen, can cause suffocation if they leak and build up in the atmosphere.

## *PHYSICAL HAZARDS*

Some gases are flammable, explosive, or combustible. In addition, the sudden release of pressure for any gas cylinder can send objects or particles flying across the room.

## **Warning!**

*IF A COMPRESSED GAS CYLINDER EXPERIENCES  
A SUDDEN RELEASE OF PRESSURE THROUGH A SMALL OPENING,  
THE CYLINDER WILL TURN INTO A PROJECTILE ROCKET  
OF 65 MPH THAT CAN PENETRATE CEMENT WALLS!*



This is why it's so important to secure gas cylinders at all times!

## Compressed Air Safety Tips

- If you have a choice of pressure, use the lowest pressure that will do the job.
- Before each use, make sure the air hose and equipment are in good condition.
- Keep the air hose off the floor to reduce trip hazards.
- When finished, coil the air hose (without kinks) and hang over broad support.
- **NEVER POINT THE AIR NOZZLE OR HOSE AT ANYONE!**  
Potential injuries can be severe and may lead to death. For instance:
  - Blowing out eardrums and eye sockets
  - Internal hemorrhage
  - Bursting internal organs

## Labeling

Cylinders must be clearly marked with the name of the gas contained, with either stencil, stamp, or label. Any relevant hazard warnings must also be marked clearly. Never remove or deface a cylinder label.

If the label becomes worn or damaged to the point where you can't read it, then mark the cylinder "*Contents Unknown*" and send it back to the manufacturer.

### **ALWAYS READ THE LABEL.**

Never assume you know what's inside a cylinder. And never guess by the cylinder color or cap, since these vary by supplier.



## Before You Begin Work

Know and understand the properties, uses, and safety precautions of the gas before using it.

Plan ahead. Determine the type of equipment required, and know how to safely operate the equipment.

Use the appropriate equipment when handling tall cylinders. They have a high center of gravity and may fall over easily.

## Cylinder Valves and Fittings

The Compressed Gas Association has created standards for valves and fittings to prevent mixing of incompatible gases. These standards translate into different threads and diameters.

***ALWAYS MAKE SURE THE REGULATOR AND VALVE FITTINGS ARE COMPATIBLE AND UNDAMAGED.***

Do not use adaptors to force incompatible parts together; any remaining residue could cause a bad reaction between gases.

## Keep Gas Cylinders Secured

Secure gas cylinders at all times to prevent tipping, even while in use, transit, or storage. Use chains or sturdy straps to secure gas cylinders:

- To bench top
- To wall
- In holding cage

If a cylinder is in use (connected to regulator), then the cylinder must be individually secured to a stable surface.

If cylinders are not in use (regulators not connected), then they may be group chained.

## Safe Work Practices

- Industrial safety glasses with side shields are required on the Manufacturing floor. This includes working with compressed gas and air equipment.
- Position cylinders so that you can access the valves quickly and easily.
- Keep cylinder valves closed except when the cylinder is being used. This includes every time you walk away or shut down the system.
- When opening or closing a valve, use only wrenches or tools provided by the supplier. Do not use pliers, as this could damage the valve.
- Never apply oil or grease to the fittings; these could react badly with the gas.
- Keep cylinders away from electrical circuits, sparks, and flame.
- If a cylinder valve is difficult to operate, discontinue use. Contact the supplier.
- Never empty a cylinder to less than 25 psi.

## Use Piping Safely

Make sure the piping material is compatible with the gas you are using. In addition, do not use plastic piping for a high-pressure system.

Do not cover or conceal distribution lines. Make sure all lines and their outlets are labeled clearly as to the type of gas contained.

Inspect for leaks and cracks on a regular basis. Especially examine fittings.

## Move Gas Cylinders Safely

Before moving a cylinder, close all valves, bleed the system if possible, remove the regulator and replace the safety cap.

Handle all cylinders carefully, whether full or empty.

Transport cylinders by strapping them on a properly designed cart.

Do not drop, bang, or roll cylinders; this could break the valve, weaken the cylinder, or turn the cylinder into a projectile rocket.

Only move or handle one cylinder at a time.

# Storage of Gas Cylinders

Store cylinders upright with valves closed and valve protection caps in place. Cylinders must be secured to a stable surface, regardless of whether they are full or empty.

Keep cylinders in a well-ventilated area to prevent build-up of gas. This storage area should be far from high-traffic areas, doorways, and emergency exits. Cylinders should also be separated from sparks, flames, or other sources of ignition.

Store empties separate from full tanks.

## Cylinder Disposal

### **CYLINDER LEAKS**

If you discover a cylinder with a leak, move it to a safe place if it can be moved safely. Inform your supervisor immediately.

### **EMPTY CYLINDERS**

Remove the regulator and replace the safety cap.  
Clearly mark the cylinder as "Empty".  
Move the cylinder to the storage area for empties by securing to a cart.  
Contact the supplier to arrange for cylinder pick-up.

## Summary

- Improper handling of compressed gas and air cylinders during usage and transport can cause severe injuries, fires, or explosions.
- Compressed air should never be directed at people.
- Gas cylinders must be clearly marked with the name of the gas and appropriate hazard warnings.
- Make sure the regulator and valve fittings are compatible and undamaged. Never apply oil or grease to the fittings.
- Keep gas cylinders secured to a stable surface or to the cart during transport.
- Close gas cylinder valves when the cylinder is not being used, even for just a short period of time.
- Keep cylinders far away from sparks, flame, or electrical circuits.

## Conclusion

This concludes Compressed Gas and Air Equipment Safety Training.

For more information, please consult either  
your supervisor or the Safety Director.

Don't forget to complete and submit the quiz to Human Resources!