Healthcare: Working Safely with Compressed Gases

Safety Talk

What's at Stake?

Compressed gases play a useful role in a variety of industries including healthcare.

However, healthcare workers and patients, are at risk of injury or death from gas inhalation, burns, flying debris, and unsafely handling heavy cylinders.

What's the Danger?

If a compressed gas cylinder is not stored, moved, or maintained correctly there is a risk the cylinder will explode as the gas becomes agitated and volatile. Not only is there a risk of burns from the explosion, there is a risk of harm from flying debris.

Many compressed gases are toxic if inhaled or if they come in contact with the skin, in inappropriate amounts.

The biggest risk for people working with compressed gas cylinders, is suffering fractures, strains, sprains, and bruising from moving, lifting, and working with cylinders.

How to Protect Yourself

9 easy ways to keep yourself safe while working with compressed gases.

1. **Know the risks – in a healthcare setting**
    - Exposure to carbon dioxide can cause burns if touched (dry ice) or suffocation because it replaces oxygen in the air.
    - Breathing pure oxygen can cause dizziness and vision loss.
    - Nitrogen can cause suffocation if it is present in confined spaces.

- Nitrous oxide – sometimes known as laughing gas, can cause drowsiness, dizziness, suffocation, and is flammable.

2. **Know the risk, no matter the setting**

- Always work in well ventilated areas if working with compressed gas e.g. changing gas supply over to a full bottle.
- Check the cylinder is equipped with the correct regulator.
- Check regulator and cylinder valves for grease, oil, dirt, or solvent.
    - Remove what you find or do not use the contaminated component.
- Never grease or oil the regulator, valve, or fittings of an oxygen cylinder.
- Know the risks specific to the gas inside the container, they can create added hazards.
- Flammable gases can be ignited by the smallest of ignition sources.
    - Smoking is not allowed near cylinders – whether they are being stored or are in use.
    - Control other sources of ignition such as open flames, sparks, or static electricity.

3. **Protect yourself**

- Your employer must train you to work with compressed gases.
- Wear the right PPE, including chemical safety goggles and a face shield – standard safety glasses are insufficient.
- Wear gloves when handling compressed gas cylinders, protective footwear if moving cylinders, and wear a respirator if required.

4. **Check new cylinders on delivery**

- A stamped hydrostatic test date within the last five years.
- A stenciled or labeled identification of its contents.
- Cylinder condition issues and the presence of a valve protection cap.
- If the test date, identification, markings, or cap are not in order or if the cap is rusted or inoperable, the cylinder

should not be accepted.

5. **Before use**

   - Always read the label prior to use.
   - Use a cylinder that clearly identifies the contents by the following means:
     - Stenciled or stamped on the cylinder.
     - Has a label that is solidly attached to the cylinder.
     - Commercially available tag systems may also be used for identification.
   - If the cylinder label becomes unclear, mark the cylinder “contents unknown” and return it to the supplier—it’s safer that way.

6. **Don’t rely on color**

   - Do not rely on the color of the cylinder for identification; color coding is not reliable because cylinder colors may vary with supplier, and containers are reused.
   - Also, do not rely on the cylinder cap label because the caps are interchangeable.

7. **Move it safely**

   - **For yourself**
     - Use equipment such as a hand truck, to reduce the need for you to lift, carry or drag a cylinder.
     - Tilt slightly and gently roll a cylinder into place rather than lifting or dragging it.
   - **For the cylinder and contents**
     - Always secure cylinders with chain or cart.
     - Never lay a cylinder down and roll it on its side to move it.
     - Never move or carry a cylinder by the valve.
     - Never leave an open or unsecured cylinder unattended.

8. **Store it**

   - Do not secure more than four cylinders in any one row.
   - Do not subject cylinders to sources of heat or temperature extremes.

- Segregate full and empty cylinders.
    - If a cylinder with an insufficient supply is used for patient care, the patient could die.
- Make sure cylinders are securely fixed while being stored, to prevent them toppling over.

9. **Stop leaks**

- Always double check valves are closed before leaving the cylinder.
- Report leaks promptly.
- Evacuate the area until appropriate staff and equipment can be found.
    - Never use an open flame to find the source of the leak.
- Do not use adapters or converters to change equipment to different threads.
- Only use regulators that have both high and low-pressure gauges.

Final Word

Compressed gases are widely used in healthcare settings, mostly in patient care areas. Working with compressed gas carries minimal risk provided you are correctly trained and you follow the rules for safe use, handling, and storage.