



## Gas Cylinders Go “Boom”

*Have you ever seen a gas cylinder explode? Well, have you ever witnessed a Space Shot at Cape Kennedy in Florida? They're about the same thing. The only difference is that those so-called harmless compressed gas cylinders on jobsites go in any/every direction across the jobsite . . . whereas those Space Shots and astronauts travel into space hundreds and thousands of miles into the sky. POWERFUL CYLINDERS, those space missiles and compressed gas cylinders both start with a powerful boom!!!*

**All gases must be used** in a manner that will not endanger personnel or property in routine shop use, or on construction sites. Hazards associated with handling and use of flammable and/or high-pressure gases include the following:

- Injuries caused by flying objects accelerated by an explosion or pressure release.
- Almost certain death if a flammable mixture is inhaled and then ignited.
- Asphyxiation.
- Secondary accidents such as falls or electrical shocks.
- Fires caused by ignition of flammable gases.

**High School chemistry** almost always starts off with the teacher illustrating the principal of the “triangle”:

Fire requires three elements: fuel, oxygen and ignition.

Any experiment that places a flammable gas in the presence of air, oxygen, and an ignition source (spark, flame, high temperature) is extremely dangerous.

**Remove any of the three**, and you've pretty well ruled out a fire/explosion.

**Now let's get down to basics.** How many of you fully realize how dangerous gas cylinders (of any kind) can be? What about the manner in which you store gas cylinders on jobsites? Are the “valve covers” in place? Are the cylinders stored in any upright position? Are the cylinders “secured?”

**Are dissimilar gas cylinders stored apart?** As an example, when in a storage mode, acetylene and oxygen (principal ingredients for welding) stored a minimum of 25 feet apart? Or do you have a fire-rated wall at least six feet high between them? When they are deemed to be in a “storage mode,” they cannot be kept in the welder's cart overnight. They must be separated.

**Before you move those cylinders**, check the condition of the protective covers. Caps must be secured, and all welding leads/hoses removed accordingly.

**Never move cylinders** (of any kind) when regulators are attached unless the cylinders are secured in a cylinder cart/truck. Otherwise, remove the regulator and put on a protective valve

cap. Regulators, on many occasions, can and will break off if they are jostled/bumped/kicked over/impacted.

**Always hoist cylinders** by using a cradle or pallet. This is when cylinders almost always are mishandled by ill-informed workers, resulting in explosions, fires, contamination, and sometimes death.

**Does your company** have a bulk storage fire plan? Do you inventory your cylinders by category, placard them by category, have suitable MSDS sheets by category? Bet you don't.

**Here is a list** of where most hazards associated with cylinders occur:

- **Refueling** (Improper Storage of Drums/Tanks)
- **Improper Clothing** (Rayon/Nylon Outer Clothing)
- **Fires/Flames/Sparks** (Near Cylinders)
- **Placarding** (Incorrect Placards/Misdiagnosing Content)
- **Smoking** (NO SMOKING Signs Not Posted)
- **Valves** (Not Capped/Secured)
- **Welding Hoses/Gauges** (Not Disconnected)
- Dot Placarding (No Placarding/Improper Placarding)
- Fire Extinguishers (None Posted/Near Cylinders)
- Bulk Storage (No Fire Walls/Failure to Advise Fire Marshall of Quantity)
- Air-Supplied Respirators (None On-Site for Emergencies)
- Loading/Unloading (New Hires Used Without Training)
- Fork Lift Operations (Unauthorized/Inexperienced Forklift Operators)
- Tanks Lying on Side (Potential for Explosion)
- Empty or Full (Tanks Not Marked "Empty" on Loading Docks)
- Cylinders Improperly Labeled (Reactivity/Explosivity Not Known)

**Drums sometimes explode?** A 55-gallon drum that once contained some type of flammable product (even when empty) can sometimes explode, causing the drum to go sky high ... and if a human being is in its path, be killed instantly. WHY?

**Drum containers** (or hollow structures which have contained toxic or flammable substances) before welding, cutting or hearing is undertaken on them, shall either be filled with water or thoroughly cleaned of such substances and ventilated and tested.

Additionally, before heat is applied to a drum, container, or hollow structure, a vent or opening shall be provided for the release of any built-up pressure during the application of heat.

*Empty cylinders/containers are just as volatile as filled ones. Take the extra precaution to determine what "used to be in this cylinder/container." Once it explodes, or ignites, you're dead meat. Be cautious, drums sometimes do explode.*