

# FIREHOUSE<sup>®</sup>

## Weekly Drill

### DRILL #84: HAZMAT CYLINDER INCIDENTS

#### Introduction

An area that we don't have a lot of experience in is that of handling cylinders at hazmat incidents. As we know, these cylinders contain compressed gases that can be flammable, toxic, oxidizing or even an asphyxiant. All but 13 gases are heavier than air, which tells us something; check the atmosphere with our metering devices at ground level, especially if we are working in low- or below-grade spaces.

One of the first items of business at an incident involving cylinders is that of performing an assessment. All cylinders need to be assessed for damage. Once assessed, cylinders may be relocated to an area for temporary storage. When picking a relocation area, it is important to ensure the area is large enough to comply with the applicable regulations for safe distances between oxygen and acetylene cylinders.

One assessment of these cylinders on a construction site would be to identify those cylinders that have regulators attached to them. It is recommended that the fire department remove these regulators and reinstall the protective caps to guard the cylinder valve. Another safety aspect is to move the cylinders using a hand truck.

Cylinders that have been directly exposed to fire are subject to scrutiny. Should the fire cause a cylinder to weaken to a point where it begins leaking, it cannot be moved until the leak is secured.

#### Acetylene Cylinders

Acetylene, for example, is a triple-bonded molecule and as such has a characteristic that create a main hazard for the acetylene to decompose if not handled right. Also, keep in mind that the flammability range for acetylene is 2.5 percent to 100 percent. Having such a wide flammable range, this material is easily ignited. Use metering to detect leaks and should the levels be sufficient (10 percent of the Lower Explosive Limit) begin an evacuation of the area.

Acetylene cylinders are equipped with fusible plugs or a valve with fusible metals on smaller cylinders. If a fusible plug has been activated, do not try to stop the leak by replugging it as it could cause a void space that could cause decomposition. Should the cylinder fusible



plug remain intact after exposure to fire, do not attempt to move the cylinder until it has been allowed to reach ambient temperatures, as the acetylene may be decomposing internally and the cylinder is still subject to a violent failure!

#### Propane Tanks

Propane is a flammable liquefied petroleum gas that is stored in cylinders under pressure. Use caution when dealing with cylinders that have released their product rapidly, as the liquid may have gone into an auto-refrigeration mode giving a false impression that the cylinder has emptied.

In addition to the two cylinders mentioned here, there are many others out there that require these same cautious handling when dealing with them. Keep in mind that many of these cylinders come in different colors, however, these colors hold no significance to the contents being stored within the cylinder. Read the labels and markings to correctly identify the products you are dealing with.

*—Prepared by Russell Merrick*