



Photo #9--Typical basement installation. Note the amount of plastic tubing present. Also note the system is installed onto the side of a walk-in refrigerator. A leak into this area could quickly displace O2.

DOT 4L292, known in the industry as the "292." This cylinder stores CO2 in its liquid form and is passed through a regulator as a gas to be used. On the top of the cylinder, numerous valves can be found, many with tubing running from them. Shutting down the valve with the regulator will isolate the cylinder supply to the soda system.

The "292" is a 160-liter cylinder that can be filled with up to 387 pounds of liquid CO2. Liquid CO2 has an expansion ratio of 553, which means even a small leak in the tubing from a full cylinder can cause dangerous O2 displacement anywhere within a structure.

The Dewar cylinder is shut down by turning the valve located on the top of the cylinder. Since many of these cylinders have more than one shut-off on them, members should shut off any and all valves that have plastic tubing attached to them, effectively isolating the cylinder. Due to the nature of CO2 as a (cryogenic) liquid stored at very cold temperatures, it is recommended that members attempting to shut off a cylinder be equipped with full PPE, including gloves.

Types of installation

A typical interior installation will have a large supply line hose connected to the cylinder. This hose will lead to an exterior fill connection used by the vendor to re-supply the CO2 tank, similar to the way a fuel oil truck makes a delivery. The exterior connection often can be found on the exterior wall closest to the cylinder, provided that it is accessible for a delivery truck to re-supply. If the closest wall is not accessible, this fill connection usually will

Members are urged to review Pass It On Program, Issue 8/2011, Carbon Dioxide (CO2) Incident.

be found at another exterior wall that is accessible for a delivery. This type of installation is common in areas of the City where real estate is at a premium or the occupancy does not have room on the exterior for tank storage.

A typical exterior installation will have a tank up against the building in an area that is away from the front of the occupancy, typically behind a chain-link fence for security. From the cylinder on the exterior, a plastic tubing supply line will be run to the interior of the occupancy to the location of the soda system.

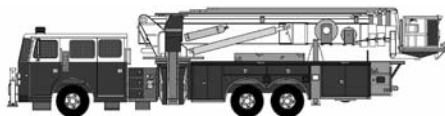
Lessons reinforced

- Maintaining situational awareness on all responses helps keep FDNY members safe. This is true when responding to occupancies that use CO2. A CO2 leak initially may be reported as an unconscious patient in a restaurant.
- CO2, similar to propane, is heavier than air. High concentrations may be found in low-lying areas, such as the basement or in confined spaces or small rooms within occupancies, which will reach higher concentrations faster than a large area.
- Units operating at a fire in which the supply tubing or tank is involved or compromised in any way must ensure the CO2 tank is shut down to prevent a potentially lethal CO2 build-up.
- Use the Building Inspection Safety Program (BISP) to identify occupancies that use/store large amounts of CO2 and enter this information into the critical information dispatch system (CIDS).
- Frost or condensation on the exterior of a CO2 cylinder is a strong indicator that a leak exists, either in the supply tubing or the tank itself.



About the Author...

Battalion Chief Frank Leeb is a 19-year veteran of the FDNY. He is covering in Division 14. Prior assignments include Engine 323 and Squad 270 as a Firefighter; Engine 324 as a Lieutenant; and Captain of Engine 76. He holds a BS degree in Fire Service Administration from Empire State College. This is his first article for WNYF.



Taking Up

October-December 2011



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