

PHOENIX FD SUFFERS CLOSE CALL FROM CO2

On May 31, 2011, the Phoenix (AZ) Fire Department was dispatched for a female employee who had fallen at a Mc Donald's. The female was pregnant and upon arrival was found lying on the floor near the top of a basement stairway.

Firefighters began patient assessment but the patient was not really talking, more crying and muttering, breathing too fast. While firefighters worked on their patient, two other firefighters went down the stairwell to see if she might have fallen or slipped on something.

After descending the stairs they felt something wasn't right. One was not feeling well, so they went back up the stairs. As one crew member reached the top of the stairs he fell, the other crew member reported feeling dizzy and light-headed. They reported to their Captain that something in the basement was not right. The Captain quickly ordered the crew to take the patient and evacuate the building and, with the assistance of a police officer on scene, completely evacuated the restaurant and called for the haz mat team.

The crew had noted a liquid carbon dioxide (CO2) tank in the basement. There has been a move lately for restaurants to switch from the pressurized CO2 tanks to liquid CO2 to carbonate beverages. Where a pressurized CO2 bottle has to be filled every couple days, the liquid CO2 tank usually lasts a month. The liquid CO2 tank has an expansion rate of 3,000 to 1.

Upon arrival of the haz mat team they descended the basement stairs with full turnout gear and SCBA and several gas meters. As they went down the stairs their meters started to alarm. At the bottom of the stairs all of the meters alarmed, including their natural gas meter, which was showing nearly 100% gas. The team evacuated to reevaluate the situation. They turned off utilities to the restaurant and discussed their findings.

They had seen the liquid CO2 tank and felt that the incident might be a CO2 leak from the tank. However, there was a CO2 detector right next to the tank and it was not in alarm mode. They later found that someone had taped over the sensor to prevent it from going off when the tank was being filled and had not removed the tape, rendering the meter useless.

They were also surprised about their natural gas meter going off but later learned that CO2 will mimic natural gas and give a false positive on gas meter readings. Up until this time, crew members had never been aware of this.

The crew reentered the building to shut down the CO2 tank. There were no shut down procedures on the tank but they found thumb valves and shut them down. They noted that oxygen readings were only 17% as opposed to normal air readings of 21% oxygen.

Because CO2 is heavier than air and clings to the ground, they had to use a confined space fan and bellows to ventilate the basement. They found that the tank, which had just been filled that morning was already half empty. The CO2 has leaked out and filled the basement, displacing the oxygen.

This was a "near miss" call for their firefighters. Had the two who went down to the basement not immediately sensed that something was wrong, they might have both

passed out in the basement. With the oxygen depleted air, they could have suffocated in a short period of time. When others came to rescue them, they could have suffered a similar fate. They were very lucky that no one died that day. It was noted that potential rescuers often become the victims of CO2.

Though a CO2 leak in the basement caused a decrease in oxygen, similar incidents can occur even outside. Because CO2 is heavier than air and settles next to the ground, it creates a cloud of CO2. A person who enters cloud can become dizzy and pass out, and if they remain in the oxygen deprived cloud, they can die of asphyxiation even outdoors.

CO2 creates two hazardous situations:

- ▶ It displaces air, causing a reduction of oxygen concentration
- ▶ The high concentration of CO2 has a "narcotic effect"-CO2 narcosis. In situations, such as the Mc Donald's incident where there was a 25% concentration of CO2, victims can feel light headed, experience a constriction of their visual field, have an increased heart rate and pass out. Victims may also note a bitter taste in their mouth from their saliva mixing with the CO2 creating carbonic acid.

The Phoenix FD has posted a video regarding the incident on youtube at

http://www.youtube.com/watch?v=eY__H-CMvw0

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CARBON DIOXIDE BLAMED FOR GEORGIA DEATH

Sept. 24: Pooler, GA: A Florida women died of asphyxiation after carbon dioxide, used to make the restaurant's soda fizzy, leaked into the women's bathroom of the Mc Donald's on Sept. 7.

A line which was used to funnel excess CO2 out of the restaurant got disconnected, causing the gas to flow into the wall next to the women's bathroom instead of going outside. An 80-year old woman in the rest room died and a 56-year old woman was found unconscious nearby. The restaurant's liquid CO2 tank had just been filled that morning.

Nine people- three firefighters, a Mc Donald's employee, and a Savannah family of three who tried to help the two women found down in the restroom- were all taken to the hospital with dizziness and trouble breathing. The 80-year old woman died the next day. The other eight people have since been released from the hospital.

Officials in Pooler were trying to determine the cause of the mysterious incident when the Phoenix Fire Department contacted the Chief of the Pooler Fire Department and relayed to them information about a incident in Phoenix in May. This enabled Pooler officials to determine that CO2 was the cause of the women's death.

Editor's note: Since the publicity about these incidents, many firefighters in our area have reported seeing these liquid CO2 tanks at Mc Donald's and many other area restaurants. Just one more hazard that you need to be aware of!