Carbon monoxide, also known as CO is a killer. Do not confuse it with CO2, which is carbon dioxide. CO2 is in the exhaled breath of humans and land animals. This is the gas used in the process known as photosynthesis. Remember your elementary school life science class where you learned that plant life absorbs carbon dioxide, light, and water to produce carbohydrate energy as energy for growth. In that process the plants give off oxygen as a waste product, which helps to sustain life for humans and animals on planet earth.

CO is a highly toxic gas that has no color, so you can’t see it. It has no odor so you can’t smell it, and has no taste. CO is produced by the partial oxidation of carbon-containing compounds when there is not enough oxygen to produce carbon dioxide. Simply put, it comes from the incomplete burning of carbon fuels. When cars, gas heaters, furnaces, boilers, and water heaters burn fuel, they generate CO.

A recent article by USA Today (December 5, 2012) highlighted the growing issue of CO poisoning. The article listed three incidents where schools had recently been evacuated, sending many to the hospital for treatment due to carbon monoxide poisoning.

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The problem is, since CO is odorless, colorless, and tasteless, you can’t tell if or when it is present or at what level this toxic gas may become lethal. There is a low level of CO that naturally occurs and is present in our atmosphere.

A typical concentration of CO in the natural atmosphere is 0.1 ppmv (parts per million by volume).
The average level in a home is 0.5 to 5 ppmv.

Near-properly adjusted gas stoves in homes, and modern vehicle exhaust emissions have levels of 5 to 15 ppmv.

Exhaust from a home wood fire has 5,000 ppmv.

CO levels become toxic for a healthy adult at 35 ppmv, with continuous exposure over an eight hour time period. As the ppmv increases the exposure time before poisoning symptoms occur decreases. At a level of 800 or higher death can occur in just minutes.

CO gas is slightly lighter than air and therefore rises, but when trapped inside a building it has no escape, which is why the CO level inside homes is higher than outside. Another major factor in dealing with CO is that it is cumulative; it builds up in the body. The half-life of CO is about five hours in fresh air. That means that a person exposed to CO on a daily basis would, over time, have an increasing level of CO in their system.

CO poisoning symptoms include headache, dizziness, drowsiness, nausea, vomiting, and fatigue. All of those things are common to flu, food poisoning, or the common cold, thus making it hard to diagnose, and many times not even considered.

How do you avoid CO poisoning? By reducing potential CO generators. Have all fuel burning appliances regularly inspected by a qualified technician. Never run gas-powered equipment in an enclosed area. Overall, the best solution is to install CO detectors. They constantly check the air quality and will alert you before there is a problem. Detectors should be placed near the ceiling in rooms and hallways and near gas burning equipment, such as stoves, water heaters, and furnaces.

Regulations are put in place when there is a problem that has a solution, but the solution is not being voluntarily used. The USA Today article should elicit action from everyone who reads it. As responsible individuals, administrators and leaders should see that CO detectors are installed in schools and churches where they are responsible for the safety of those who are within their gates.

By Bill Cochran,
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