

Carbon Monoxide Facts

What is Carbon Monoxide?

- Carbon Monoxide is the leading cause of accidental poisoning deaths in America, according to the Journal of the American Medical Association (JAMA). 1,500 people die annually due to accidental carbon monoxide exposure, and additional 10,000 seek medical attention. (Medical experts agree that it's difficult to estimate the total number of carbon monoxide incidents because the symptoms of carbon monoxide poisoning resemble so many other common ailments.)
- Carbon monoxide is a flammable, colorless, odorless, tasteless toxic gas produced during incomplete combustion of fuel - Natural Gas, Oil, Coal, Wood, Kerosene, etc.
- During normal combustion, each atom of carbon in the burning fuel joins with two atoms of oxygen - forming a harmless gas called carbon dioxide. When there is a lack of oxygen to ensure complete combustion of the fuel, each atom of carbon links up with only one atom of oxygen - forming carbon monoxide gas.

What is the danger to me?

- Carbon monoxide inhibits the blood's capacity to carry oxygen. In our lungs, CO quickly passes into our bloodstream and attaches itself to hemoglobin (oxygen carrying pigment in red blood cells). Hemoglobin readily accepts carbon monoxide - even over the life giving oxygen atoms (as much as 200 times as readily as oxygen) forming a toxic compound known as carboxyhemoglobin (COHb).
- By replacing oxygen with carbon monoxide in our blood, our bodies poison themselves by cutting off the needed oxygen to our organs and cells, causing various amounts of damage - depending on exposure.
- Low levels of carbon monoxide poisoning (with COHb levels of 10%) result in symptoms commonly mistaken for common flu and cold symptoms - shortness of breath on mild exertion, mild headaches, nausea.
- With higher levels of poisoning (COHb levels of 30%) the symptoms become more severe - dizziness, mental confusion, severe headaches, nausea, fainting on mild exertion.
- At high levels (COHb of 50% or more) there may be unconsciousness and death.

How does CO enter the home or work area?

- Carbon monoxide can escape from any fuel-burning appliance, furnace, water heater, fireplace, woodstove, or space heater.
- Most newer homes are built very air-tight, thus cutting down on the supply of fresh air to your furnace - and creating an oxygen starved flame. Tight closing replacement windows and doors, as well as additional insulation can cause similar problems in older homes.
- Carbon monoxide can spill from vent connections in poorly maintained or blocked chimneys. If the flue liner is cracked or deteriorated, CO can seep through the liner and into the house - slowly creeping up to dangerous levels. If a nest or other materials restrict or block the flue, CO will mostly spill back into the house.
- Improperly sized flues connected to new high-efficiency furnaces and water heaters can also contribute to CO spillage. (Many new furnaces and water heaters are installed using the existing chimneys which may be the wrong size to allow the furnace to vent properly.)
- Warming up vehicles in an attached garage, even with the garage door opened, can allow concentrated amounts of CO to enter your home through the car port door or near-by windows.
- Carbon monoxide can creep into confined spaces.

CO Poisoning Symptoms

- Know the symptoms of CO poisoning. At moderate levels, you or your family can get severe headaches, become dizzy, mentally confused, nauseated, or faint. You can even die if these levels persist for a long time. Low levels can cause shortness of breath, mild nausea, and mild headaches, and may have longer term effects on your health. Since many of these symptoms are similar to those of the flu, food poisoning, or other illnesses, you may not think that CO poisoning could be the cause.

What to do in a CO emergency.

- If you are suffering from chronic flu-like symptoms, see your doctor and ask him if it could be a low-level CO poisoning.
- If you have a CO detector, and it alarms, open windows and ventilate your home w/ fresh air, have your heating system checked by a professional.
- If your alarm sounds and you are feeling drowsy or dizzy, leave the house and call 911 from your neighbors home. You may need medical attention for CO poisoning.

Carbon Monoxide Detectors - UL Standard

- "According to UL Standard 2034, home carbon monoxide detectors must sound a warning before carbon monoxide levels reach 100 parts per million over 90 minutes, 200 parts per million over 35 minutes or 400 parts per million over 15 minutes. The standard requires the alarm must sound before an average, healthy adult begins to experience symptoms of carbon monoxide poisoning. The warning provides time to evacuate the premises."

Placement of Carbon Monoxide Detectors Important

- Proper placement of a carbon monoxide detector is important. If you are installing only one carbon monoxide detector, the Consumer Product Safety Commission (CPSC) recommends it be located near the sleeping area, where it can wake you if you are asleep. Additional detectors on every level and in every bedroom of a home provides extra protection.
- Homeowners should remember not to install carbon monoxide detectors directly above or beside fuel-burning appliances, as appliances may emit a small amount of carbon monoxide upon start-up. A detector should not be placed within fifteen feet of heating or cooking appliances or in or near very humid areas such as bathrooms.
- **When considering where to place a carbon monoxide detector, keep in mind that although carbon monoxide is roughly the same weight as air (carbon monoxide's specific gravity is 0.9657, as stated by the EPA; the National Resource Council lists the specific gravity of air as one), it may be contained in warm air coming from combustion appliances such as home heating equipment. If this is the case, carbon monoxide will rise with the warmer air.**
- For this reason, the makers of First Alert (R), the leading brand in carbon monoxide detector technology, suggests mounting the detector on the ceiling. This also puts the detector out of the way of potential interference, such as pets or curious children.

Reference:

- <http://www.reynoldshtg.com/carbon.htm>
- <http://www.nsc.org/library/facts/carbmono.htm> National Safety Council 2006
- http://www.osha.gov/OshDoc/data_General_Facts/carbonmonoxide-factsheet.pdf
- 09/06/06 Safety Tip