

Preventing Carbon Monoxide Poisoning

What is Carbon Monoxide?



Carbon monoxide (CO) is an extremely poisonous gas that results from the incomplete combustion of fuels (e.g. natural gas, oil, wood, coal, kerosene, or other fuels). CO sources such as furnaces, generators, gas heaters, and motor vehicles are common in homes or work environments and can put people at risk for CO exposure and poisoning.

CO is called the “silent killer” because it gives no warning of its presence. Since CO is an invisible, odorless, and tasteless gas, it is not easily detected by the human senses and can harm someone before they know it is there. All too often, the warning signs of CO exposure (e.g., headache, nausea, and fatigue) are ignored or mistaken for other causes because the symptoms mimic the flu and other illnesses. Undetected or unsuspected CO exposure can result in CO poisoning, and at high levels can kill a person in minutes.

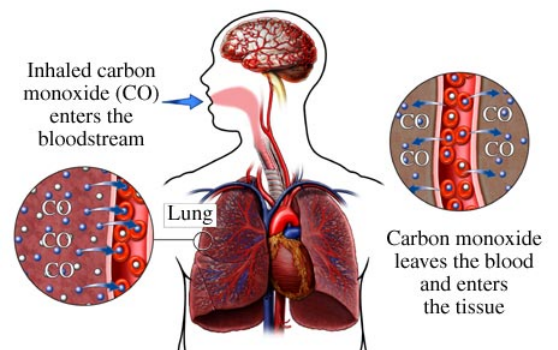
The Dangers of CO



According to the Carbon Monoxide Medical Association, CO is the leading cause of accidental fatal poisonings in the United States. Each year, hundreds of people die accidentally from CO poisoning caused by malfunctioning or improperly used fuel burning appliances, and thousands of others become ill or seek medical attention. Most of the deaths could be prevented if people were more aware of the dangers. However, more efforts are needed to educate the public about preventing CO exposure.

Health Effects

The health effects of CO vary depending on the concentration, length of exposure, and individual's health condition. Fetuses, infants, the elderly, and people with anemia or with a history of heart or respiratory disease can be especially susceptible to CO poisoning. As it is taken into the body through breathing, CO inhibits the blood's capacity to carry oxygen. By replacing oxygen with CO in the blood, the body poisons itself by cutting off the needed oxygen to vital organs and cells.



Symptoms of CO Poisoning

The first physical symptoms of CO poisoning include headache, fatigue, dizziness, and nausea. Although these symptoms mimic the flu, another indicator of CO poisoning is whether the symptoms disappear when leaving the home, or if everyone in the household has the same symptoms at the same time. As the concentrations of CO increase, the symptoms become more severe, including loss of consciousness and possible death.

Health Effects of Carbon Monoxide Poisoning		
Air concentration	Health Effects	Actions
Outdoor: 0-2 ppm*	Normal outdoor ambient level	None needed
Less than 10 ppm	None	None needed
10-20 ppm	Fatigue in healthy people; Chest pain in people with heart disease	Investigate possible source of CO. Repair when located.
20-75 ppm	Impaired vision and concentration; Headaches, dizziness, confusions, nausea; Symptoms can mimic the flu but clear up after leaving home.	Investigate possible source of CO. Repair when located. Move all residents to fresh air
75-200 ppm	Angina, impaired vision, reduced brain function may result.	Get out of house immediately; call 911 from outside of the house
Greater than 400 ppm	Can be fatal.	Evacuate immediately. Call 911 from outside of the house.

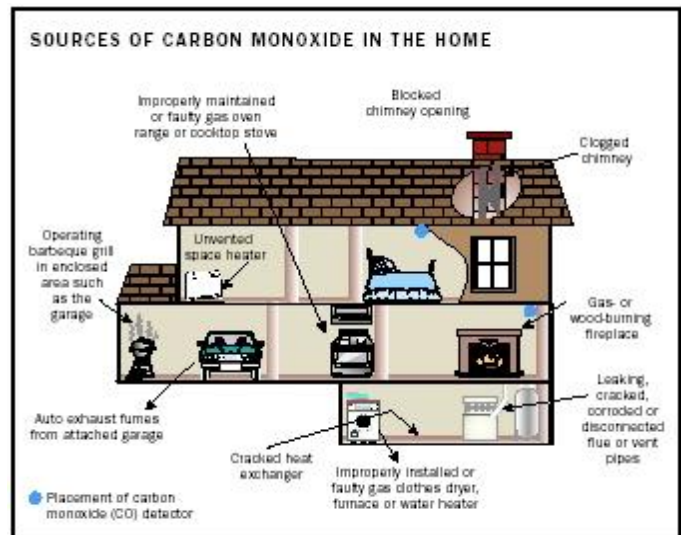
*parts per million
Any reading over 10 ppm indicates that there is an unusual source of CO that needs to be investigated.

(Image Courtesy of http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/co.pdf)

Common Sources of CO

Any fuel-burning appliance that is not adequately vented and maintained can be a potential source of CO in the home or workplace including:

- Gas appliances (furnaces, ranges, ovens, water heaters, clothes dryers, etc.)
- Fireplaces, wood and coal stoves, space heaters
- Operating charcoal grills, camp stoves, gas-powered lawn mowers, and power tools in enclosed area
- Automobile exhaust from an attached garage
- Cracked heat exchanger; leaking, corroded or disconnected flue or vent pipes



(Image Courtesy of <http://www.pollutionissues.com>)

Carbon Monoxide Safety Precautions

Steps for Prevention

Preventing CO poisoning is possible by taking some simple steps:



- ✓ Have your heating system, chimney and flue and any other combustion appliance inspected and cleaned by a qualified technician every year.

- ✓ Install and use an exhaust fan vented to outdoors over gas stoves.

- ✓ Don't use unvented stoves, ovens or gas ranges to heat your home, even for a short time.

- ✓ Don't use a charcoal grill inside a home, even in a fireplace.

- ✓ Never use portable fuel-burning camping equipment inside a home, garage, vehicle, or tent.



- ✓ Read and follow all of the instructions that accompany any fuel-burning device. If you cannot avoid using an unvented gas or kerosene space heater, carefully follow the cautions that come with the device. Use the proper fuel and keep doors to the rest of the house open. Crack a window to ensure enough air for ventilation and proper fuel-burning.



- ✓ Never operate unvented fuel-burning appliances in any room with closed doors or windows or in any room where people are sleeping.

- ✓ Never operate gasoline-powered engines (mowers, weed trimmers, etc.) in garages or basements.



- ✓ Never idle the car inside a garage, even if the door to the outside is open. Fumes can build up very quickly in the garage and living area of your home.

- ✓ Install a CO detector with an audible alarm in your home and garage.



- ✓ If you are feeling dizzy, light-headed, or nauseous and you suspect CO poisoning, see a doctor.

CO Monitors

Domestic CO poisoning can be prevented by the use of household CO detectors. CO detectors should be used as a back-up, but not as a replacement for proper use and maintenance of fuel-burning appliances. Although CO detectors are widely available in stores, some brands are considered less reliable than others. When shopping for a CO detector, it is important to research the features and options of each product. For instance, CO detectors should meet the Underwriters Laboratories, Inc. standards, have a long-term warranty; and be easily self-tested and reset to ensure proper functioning. Carefully follow the manufacturers' instructions for its placement, use, and maintenance. For maximum effectiveness during sleeping hours, CO detectors should be placed as close to sleeping areas as possible.



What to do in a CO emergency

If you have a CO detector and it alarms, check to see if any member of the household is experiencing symptoms of poisoning. If no one is feeling symptoms, ventilate the home with fresh air, turn off all potential sources of CO, (e.g. oil or gas furnace, gas water heater, gas range and oven, gas dryer, gas or kerosene space heater and any vehicle or small engine). Have a qualified technician inspect your fuel-burning appliances and chimneys to make sure they are operating correctly and that there is nothing blocking the fumes from being vented out of the house.



If you or a family member experience symptoms of CO poisoning such as feeling drowsy or dizzy, leave the house immediately and call 911 from a cell phone or neighbor's home. Seek prompt medical attention and tell the doctor that you suspect CO poisoning. Call your fuel supplier or licensed heating contractor for an emergency inspection.

Finally, if you or a household member has been suffering from chronic flu-like symptoms, see a doctor and ask whether it could be a low-level CO poisoning.



References and Additional Resources

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