

What You Need To Know About Carbon Monoxide

Background on carbon monoxide

Carbon monoxide (CO) is a gas that can kill you quickly. It is called the “silent killer” because it is colorless, odorless, tasteless and non-irritating. If the early signs of CO exposure are ignored or the CO concentration is very high, a person may lose consciousness and be unable to escape the danger. CO exposure is the leading cause of death due to poisoning in the United States. However, CO deaths are entirely preventable.

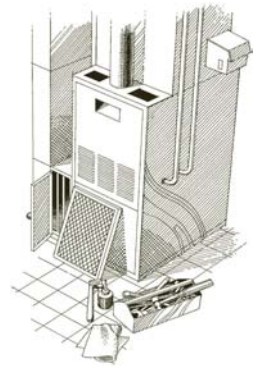
CO is present in outdoor and indoor air, and is produced by burning fuels such as wood, oil, natural gas, propane, kerosene, coal and gasoline. CO in outdoor air is due primarily to exhaust from vehicles. CO in indoor air is related to the presence of appliances which use CO-producing fuels. The normal background level of CO in a home may vary depending on the presence of cigarette smoke and the types of heating and cooking fuels. The World Health Organization recommends that the indoor air level for CO be below an average of nine parts per million (ppm) for any eight-hour period, and below 25 ppm for any one-hour period. One ppm means one part of CO per million parts of air.

Each year, approximately 200 people in New York State are hospitalized because of accidental CO poisoning. About one-third of these victims are poisoned by CO from a fire and about two-thirds are poisoned by CO that is produced by fuel-burning sources. Many more people are treated for CO exposure in emergency rooms without further hospital care. Most CO exposures and poisonings occur when people are in the home.

What are the sources of CO?

Appliances

Malfunctioning or misused fuel-burning appliances are common sources of CO poisoning in the home. These include a malfunctioning furnace or water heater, non-electric kitchen range used for heat, portable non-electric space heater, or a gas or briquette grill used indoors or in a semi-enclosed space such as a porch. However, any appliance or heat source that produces CO and is not properly vented can cause a build-up of CO in the home. Schedule annual maintenance for furnaces and other heat sources to ensure they are properly vented and in good working order. Never operate a gas or briquette grill indoors or use a non-electric kitchen range for warmth.



Portable Generators

A portable generator can also be a source of CO poisoning. While a portable generator is useful for providing electricity when power is out or unavailable, it releases levels of CO that are much higher than an idling car. Never use a portable generator in the home or basement, even if windows are open. Never operate a portable generator inside any enclosed or semi-enclosed structure, such as a crawlspace, garage or porch. A portable generator should always be placed outside and away from windows and doors of any nearby building, the farther the better. One study demonstrated that 15 feet was not far enough to prevent a build-up of CO inside the home.



Tools and Equipment

Fuel-powered tools and equipment, such as lawn mowers, snow blowers, chain saws, and pressure-washers, emit CO. Never start or operate these devices in an enclosed space such as a garage.

Vehicles

A running automobile releases CO in the exhaust. To prevent increased indoor air levels of CO, never idle a vehicle in a garage or other enclosed structure. Another potential source of CO exposure is a blocked exhaust pipe on a running vehicle, which can cause CO to seep into the vehicle's interior through leaks or cracks in the floorboard. A car's exhaust pipe may become blocked in ice or snow from a heavy snowfall or by a passing plow.

The exhaust pipe can also become blocked after backing into a snowbank. Whenever there is accumulated snow, check your vehicle's exhaust pipe to be sure it is not blocked.

Boats

CO sources on a boat include engines, gas generators, cooking ranges, space heaters, water heaters and nearby boats. Know where the boat's engine and generator exhaust outlets are located and keep away from these areas when in operation. Avoid idling your boat in one place for an extended period of time because exhaust gases can build up. If you can smell engine exhaust, you are inhaling CO and need to seek fresh air. Stay off the back deck and the swim platforms while the engines are running. Never enter areas under swim platforms where exhaust outlets are located unless the area has been properly ventilated.

How does CO poison the body?

CO poisons the body primarily by preventing the body from getting the oxygen it needs. When CO is breathed in, it attaches to hemoglobin, the molecule that normally carries oxygen in the blood. As more CO is breathed in, more CO attaches to hemoglobin and less oxygen can be delivered throughout the body. This lack of oxygen results in the symptoms associated with CO poisoning.

What are the symptoms of CO poisoning?

Initial symptoms of CO poisoning can be mistaken for flu symptoms (See inset box at right). Depending on the air concentration of CO and how long the CO is breathed in, you can experience any of the following symptoms: headaches, dizziness, nausea, weakness, loss of muscle control, shortness of breath, chest tightness, visual changes, sleepiness, fluttering of the heart, redness of the skin, confusion and mild behavioral effects such as slowed reaction time or altered driving skills. CO poisoning should be suspected if more than one member of the family is sick and if those who are sick feel better after being away from the area for a period of time. At high levels or during continued exposure, CO can cause suffocation, resulting in loss of consciousness, brain damage, or death.

The early symptoms of CO poisoning may be similar to the flu. The following clues will help identify symptoms that could be the result of CO poisoning:

- Symptoms occur or get worse shortly after turning on a fuel-burning device (e.g., generator, vehicle, tool).
- More than one person in the home becomes sick at the same time (it usually takes several days for the flu to pass from person to person).
- Symptoms are brought on by being in a certain location and go away soon after leaving the area.

Are some people more sensitive to the effects of CO?

Age and general health may affect susceptibility to CO poisoning. Even low levels of CO can present a health risk to sensitive populations. These include the elderly, infants, the unborn, those with anemia, or those with heart or breathing problems.

What should I do if I suspect CO poisoning?

Rapidly leave the area to get fresh air. If possible, turn off non-electrical appliances in the immediate area. Leave doors open as you exit. Contact the fire department, and the gas company or heating contractor. Remember that you cannot smell CO and, as symptoms of CO poisoning increase, you may become confused and less capable of making decisions that could save your life.

What about CO alarms?

CO alarms are available for purchase. They are similar to smoke alarms and are designed to provide warning as CO levels in the air approach dangerous levels.



Select a CO alarm which is certified by Underwriters Laboratories (UL), and is battery-powered or has a battery back-up. Place CO alarms according to manufacturer installation instructions. Test the CO alarm frequently, at least twice a year when clocks are adjusted for daylight saving time, and replace dead batteries when necessary. Read the CO alarm's owner's manual to learn about the warning sounds and how to test the device. Unlike smoke alarms, CO alarms expire after several years. Replace the alarm as indicated by the manufacturer.



New York State requires CO alarms in residences including single- and multiple-family homes, and in multiple dwellings such as hotels/motels, boarding houses, apartment buildings, fraternity and sorority buildings, and school dormitories. The requirements apply to structures that have an attached garage or have appliances, devices or systems that may emit CO.

A CO alarm is not a substitute for regular maintenance of fuel-burning appliances or equipment. For assistance with CO alarm placement, please contact your local fire department.

Actions You Should Take:

- If you suspect that you or someone else has CO poisoning, seek fresh air immediately and call 911.
- Schedule annual maintenance on home heating systems, including furnaces, fireplaces, chimneys and other heat sources such as non-electric hot water heaters, to ensure that they are properly-vented and maintained.
- Install battery-powered CO alarms in your home. Check them twice a year, such as when clocks are adjusted for daylight saving time, to make sure the batteries are working properly.
- Operate portable generators outdoors and downwind of buildings. The Centers for Disease Control and Prevention recommends a distance of at least 25 feet from the house.
- Never operate fuel-powered equipment or tools in a garage, basement, or any other enclosed space.
- Never use a gas range or oven for warmth.
- Never use a gas or charcoal barbecue grill in your home or other enclosed space.
- Make sure that non-electric space heaters are appropriately installed and vented, and that they are routinely inspected and maintained.
- Never run a car or truck inside any garage or structure, even with the door open.
- Know where boat engine and generator exhaust outlets are located. Keep away from these areas if the boat is idling.

For More Information:

New York State Department of Health

http://www.health.state.ny.us/environmental/emergency/weather/carbon_monoxide/index.htm

Centers for Disease Control and Prevention

<http://www.cdc.gov/co/>

Environmental Protection Agency

<http://www.epa.gov/iaq/co.html>

United States Coast Guard

http://www.uscgboating.org/safety/carbon_monoxide.aspx

Your local Poison Control Center can be reached at 1-800-222-1222.



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