

CARBON MONOXIDE – Reducing the Risks in Your Home

Safety
Facts
SF-7



What is carbon monoxide?

Carbon monoxide is a tasteless, odorless, toxic gas created when fuel burns. Any heating system or appliance that burns gas, oil, wood, propane or kerosene is a potential source of carbon monoxide in the home.

Under normal circumstances, carbon monoxide safely exits the house through vents, flues or chimneys. Sometimes, though, air pressure changes outside the home, or malfunctioning or poorly maintained appliances can cause carbon monoxide exhaust gas to remain in the home. A clogged chimney flue or improperly installed appliance or vent can keep carbon monoxide from escaping. Unvented kerosene and gas heaters can also be a source of this dangerous gas. A car left running in an attached garage, or a charcoal grill operated in an enclosed area can cause carbon monoxide to reach unsafe levels.

What is the effect of exposure to CO?

Just how sick people get from CO exposure varies greatly from person to person, depending on age, overall health, the concentration of the exposure (measured in parts per million), and the length of exposure. High concentrations are dangerous, even for a short time. Symptoms include:

- * At low concentrations: fatigue in healthy people and chest pain in people with heart disease, headache, drowsiness, dizziness, shortness of breath on exertion
- * At moderate concentrations: impaired vision and coordination, severe headaches, confusion, nausea, irregular breathing
- * At very high concentrations: coma, seizures, death

If you have any of these symptoms, and if you feel better when you go outside your home and the symptoms reappear once you're back inside, you may be suffering from CO poisoning.

Who is at risk?

Everyone is at risk but children, the elderly, smokers, people with heart and respiratory disease and those with increased oxygen needs due to fever, hyperthyroidism or pregnancy are considered most susceptible.

Infants and children are especially vulnerable to carbon monoxide because of their high metabolic rates. Because children use more oxygen faster than adults, deadly carbon monoxide gas accumulates in their bodies faster and can interfere with oxygen supply to vital organs such as the brain and the heart. Unborn babies have an even higher risk of carbon monoxide¹ poisoning; in fact, carbon monoxide poisoning in pregnant women has been linked to birth defects².

¹Kales, S., "Carbon Monoxide Poisoning," American Family Physician, November 1, 1993, p. 1101.

²Hennequin, Y., D. Blune, E. Vamos, et al, "In-Utero Carbon Monoxide Poisoning and Multiple Fetal Abnormalities." the Lancet, January 23, 1993, p. 240.

Stat Facts

Based on a 10-year study by the National Safety Council of unintentional CO-related deaths the following facts were ascertained:

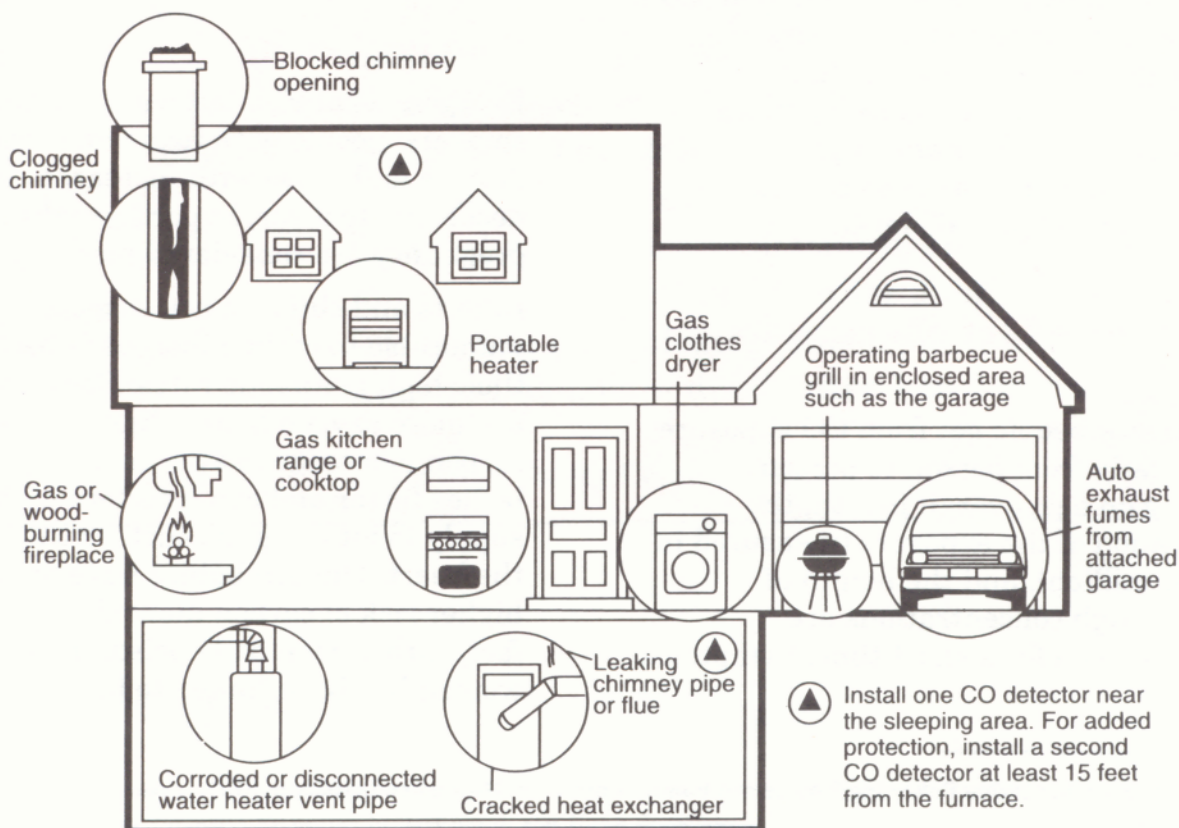
- * Motor vehicles are the primary cause of all unintentional CO deaths
 - ☛ 40% in stationary vehicle
 - ☛ 10% in moving vehicle
- * Stoves, fireplaces, and natural or LP gas combustion accounted for one in five deaths
- * The number of deaths peak in the month of January
- * Death rates are highest in Alaska, Rocky Mountains, and at the higher elevations. The death rate is lowest in southern and coastal states

A Common Scenario³

It's winter. John has been feeling "under the weather" all week. He appears to be fine at work but at home he experiences severe headaches and weakness. He notices that other household members are also ill, and his young children are most severely affected. Even the family pet does not seem well. The medication he purchased for the family to relieve their flu-like symptoms does not seem to be working. What could be causing the family's illness?

The source of the family's illness is a kerosene heater that has not been working properly. Malfunction of gas, oil, or kerosene heaters can release CARBON MONOXIDE gas (CO) which presents a serious health threat.

Potential Carbon Monoxide Sources in the Home



³Lee, Shannon, "Let's Clean the Air", Poison Pen Notes, Winter 1994

Some symptoms of CO poisoning, such as headache, dizziness, nausea, and fatigue, often are confused with the common flu. The flu is passed from one family member to another, and usually does not affect everyone in the family at the same time. Flu symptoms do not disappear after leaving the house. CO poisoning, on the other hand, will produce similar symptoms in the entire family, at the same time including the family pets. Symptoms may improve upon leaving the area of exposure.

John and his family should go immediately to an emergency room and not return home until the malfunctioning heater has been fixed or replaced. The gas company, oil company, and local health authority often provides help with identifying and removing sources of CO contamination.

What Can You Do?

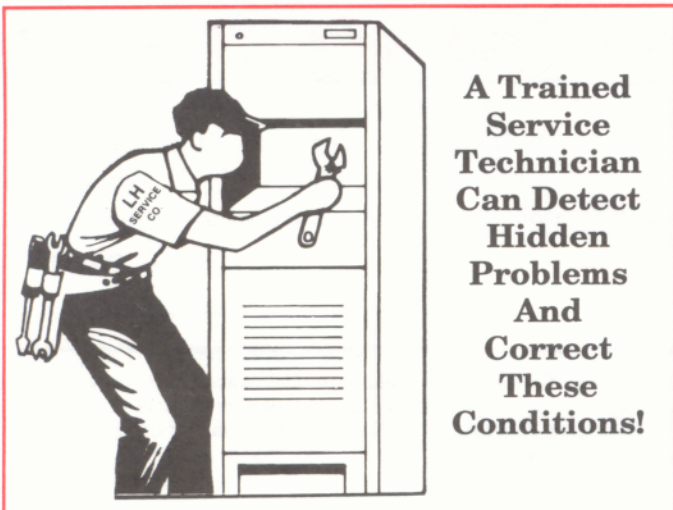
The best defenses against CO poisoning are safe use of vehicles (particularly in attached garages) and proper installation, use and maintenance of household cooking and heating equipment.

Take a minute to review the following safety checklist:

- ✓ Make sure appliances are installed and operated according to manufacturer's instructions and local building codes. Most appliances should be installed by professionals.

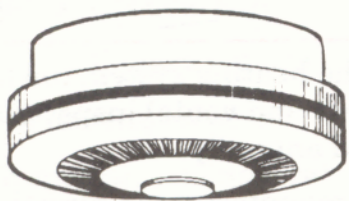


- ✓ Have the heating system (including chimneys and vents) inspected and serviced annually.
- ✓ Follow manufacturer's directions for safe operation.
- ✓ Examine vents and chimneys regularly for improper connections, visible rust or stains.
- ✓ Notice problems that could indicate improper appliance operation:
 - Decreasing hot water supply
 - Furnace unable to heat house or runs constantly
 - Sooting, especially on appliances
 - Unfamiliar or burning odor
- ✓ Never leave the car or other gasoline-powered equipment (chain saws, lawn mowers, snow blowers, etc.) running in your garage, even if the door is open.
- ✓ Never use your barbecue grill indoors or in an enclosed area.
- ✓ Know the symptoms of CO poisoning and instruct children to tell their parents or guardians if they feel sick.
- ✓ Never use the oven to help heat the house.
- ✓ Before enclosing central heating equipment in a smaller room, check with your fuel supplier to ensure that air for proper combustion is provided.
- ✓ When using a fireplace, open the flue for adequate ventilation.
- ✓ Always check with local authorities before buying or using an unvented kerosene heater. Open a window slightly whenever using a kerosene heater. Refuel outside, after the device has cooled.



- ✓ Install CO detectors inside your home to provide early warning of accumulating carbon monoxide.

Install a CO Detector for Added Safety



- ✓ Carbon monoxide detectors are not substitutes for smoke detectors. Smoke detectors react to fire by-products, before CO detectors would alarm. Smoke detectors give earlier warning of a fire, providing more time to escape.
- ✓ Have a home evacuation plan for any home emergency and practice the plan with all family members.
- ✓ Test smoke and CO detectors at least once a month. Also replace the batteries according to the manufacturer's instructions.

Symptoms and Exposure to CO

Concentration (ppm)	Symptoms
35	No adverse effects within 8 hours
200	Mild headache after 2 to 3 hours
400	Headache and nausea after 1 to 2 hours
800	Headache, nausea and dizziness after 45 minutes. Collapse after 2 hours
1,000	Loss of consciousness after 1 hour
1,600	Headache, nausea and dizziness after 20 minutes. Unconsciousness after 30 minutes
3,200	Headache, nausea and dizziness after 5 to 10 minutes. Unconsciousness after 30 minutes
12,800	Immediate physiological effects, unconsciousness and danger of death after 1 to 3 minutes.

Source: U.S. Consumer Product Safety Commission

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