

Diseases Fact Sheet - Carbon Monoxide Poisoning

South Dakota Department of Health

Office of Disease Prevention Services - 605-773-3737 -(1-800-592-1861 in South Dakota only)

This material is provided for informational purposes only and is not a substitute for medical care. We are not able to answer personal medical questions. Please see your health care provider concerning appropriate care, treatment or other medical advice.

What is it?

Carbon monoxide (CO) is a colorless, odorless, tasteless, and non-irritating poisonous gas.⁽¹⁾ When working with equipment that exhausts carbon monoxide make sure that you are in a well ventilated area and able to leave the work area immediately to an area with fresh air (e.g., outside) if you develop any symptoms related to carbon monoxide poisoning. Carbon monoxide cannot be detected without a carbon monoxide detector, therefore be very cautious when using equipment that produces carbon monoxide.

What happens when I breathe carbon monoxide?

Carbon monoxide is easily absorbed by the body's red blood cells in place of oxygen. When you breathe in high levels of carbon monoxide, your red blood cells bind with the carbon monoxide instead of oxygen, starving your body of oxygen and preventing oxygen from getting to vital organs such as your brain and heart. ^(2, 3) Carbon monoxide poisoning occurs when your body replaces enough oxygen with carbon monoxide to cause your carboxyhemoglobin level to be greater than 5% which may cause you to feel ill.

Who is at risk for carbon monoxide poisoning?

Everyone is at risk for carbon monoxide poisoning, but infants, the elderly, and people with chronic heart disease, anemia, or breathing problems are more likely to get sick from carbon monoxide. "Each year, more than 400 Americans die from unintentional carbon monoxide poisoning that are not linked to fires, more than 20,000 people visit the emergency room, and more than 4,000 are hospitalized due to carbon monoxide poisoning." ⁽⁴⁾

What are the symptoms of carbon monoxide poisoning?

- Headache
- Weakness
- Dizziness
- Sleepiness

- Nausea
- Vomiting
- Shortness of breath
- Confusion
- Blurry vision
- Loss of consciousness ([5](#))

How do I protect myself from carbon monoxide poisoning?

Make sure your house has one or more carbon monoxide detectors, based on your home's layout and the recommendations of the manufacturer. Some key locations to install a detector include outside bedrooms, in kitchens and near gas powered appliances in the basement.

Another way to prevent exposure is to read and follow all manufacturer's instructions for any machines or appliances that produce carbon monoxide during use. Some ****do****s and **don'ts** of carbon monoxide prevention and protection are as follows: ([4](#), [6](#))

- **Do** have your heating system, water heater, and any other gas, oil, or coal burning appliances serviced by a qualified technician every year.
- **Do** install a battery-operated or battery back-up carbon monoxide detector in your home and check or replace the battery when you change the time on your clocks each spring and fall. If the detector sounds, leave your home immediately and call 911.
- **Do** buy gas powered equipment carrying the seal of a national testing agency, such as underwriters' laboratories.
- **Do** ensure that your gas appliances are vented properly. Horizontal vent pipes for appliances, such as a water heater, should go up slightly as they go toward outdoors. This prevents carbon monoxide from leaking if the joints or pipes aren't fitted tightly.
- **Do** have your chimney checked or cleaned every year. Chimneys can be blocked by debris. This can cause carbon monoxide to build up inside your home or cabin.
- **Do** have an expert service your gas refrigerator if you smell an odor from it. An odor from your gas refrigerator can mean it could be leaking carbon monoxide.
- **Don't** use a generator, charcoal grill, camp stove, or other gasoline or charcoal-burning device inside your home, basement, camper, boat or garage or within 20 feet of a window to the house or garage.
- **Don't** burn charcoal indoors. Burning charcoal - red, gray, black or white - gives off carbon monoxide.
- **Don't** run a car or truck inside a garage attached to your house, even if you leave the door open.
- **Don't** burn anything in a stove or fireplace that isn't vented.
- **Don't** use portable flameless chemical heaters indoors.

- **Don't** patch a vent pipe with tape, gum, or something else. This kind of patch can make carbon monoxide build up in your home, cabin or camper.
- **Don't** use a gas range or oven for heating. Using a gas range or oven for heating can cause a buildup of carbon monoxide inside your home, cabin or camper.
- **Don't** use a generator inside your home, basement, or garage or less than 20 feet from any window, door or vent.
- **Don't** idle your boat engine for long periods of time and never teak surf or engage in water sports near the exhaust port of the boat.

How can I avoid carbon monoxide poisoning from my car or truck?

- Have a mechanic check the exhaust system of your car or truck every year. A small leak in the exhaust system can lead to a buildup of carbon monoxide inside the car.
- Never run your car or truck inside a garage that is attached to a house, even with the garage door open.
- If you drive a car, truck, or SUV with a tailgate, when you operate the vehicle with the tailgate open, vent the vehicle by opening any rear vents or windows to make sure air is moving through the cab of the vehicle. If only the tailgate is open, carbon monoxide from the exhaust may be pulled into the vehicle. (6)

What can I do to prevent carbon monoxide poisoning?

Install carbon monoxide detectors in your home and develop a plan to keep your family safe. Installing detectors based on the layout of your house and having a home evacuation plan for when the alarms sound, allows you and your family to get out as quickly and efficiently as possible when the alarm sounds. Carbon monoxide alarms should be placed outside the doors of sleeping areas, on each floor of your home and near any equipment in the house that produce carbon monoxide. Develop an evacuation plan detailing which door everyone will use to leave the house and the location they will meet, for example by a tree in the front lawn, to make sure everyone gets out safely.

What should I do when my carbon monoxide alarm goes off?

Immediately leave the house and call the police to inform them that your carbon monoxide alarm has gone off. Most importantly, stay outside the house until a professional has determined that the level of carbon monoxide has decreased to a healthy level.

Related Sites and Resources:

Related Sites

- NFPA Public Education Carbon Monoxide- <http://www.nfpa.org/public-education/by-topic/fire-and-life-safety-equipment/carbon-monoxide>
- OSHA Fact Sheet: Carbon Monoxide Poisoning- <http://www.carbon-monoxide-survivor.com/information/carbon-monoxide-poisoning-osha.pdf>
- US Coast Guard: carbon monoxide boating pamphlets- <http://www.carbon-monoxide-survivor.com/information/carbon-monoxide-boat.pdf> and http://www.uscgboating.org/assets/1/Publications/co_brochure_0105.pdf
- Federal Aviation Administration Carbon Monoxide: A Deadly Menace- <http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/cobroforweb.pdf>

Resources

1. Carbon Monoxide Poisoning: Dangers, Detection, Response, and Poisoning (AEN-193). (1997, April) Agricultural and Biosystems Engineering. [Accessed September 09, 2016]. <http://www.abe.iastate.edu/extension-and-outreach/carbon-monoxide-poisoning-dangers-detection-response-and-poisoning-aen-193/>.
2. Fallon, L. "Carbon Monoxide Poisoning." Gale Encyclopedia of Children's Health: Infancy through Adolescence. 2006. [Accessed September 09, 2016]. Encyclopedia.com: <http://www.encyclopedia.com/doc/1G2-3447200110.html>.
3. Townsend CL, Maynard RL. 2002. "Effects of health of prolonged exposure to low concentrations of carbon monoxide". Occupational Environmental Medicine 59: 708-711. [Accessed September 09, 2016]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1740215/pdf/v059p00708.pdf>.
4. Frequently Asked Questions, Carbon Monoxide. (2015, December 30). Centers for Disease Control and Prevention [Accessed September 07, 2016]. <http://www.cdc.gov/co/faqs.htm>.
5. Carbon Monoxide Poisoning. (2015, February 24). Mayo Clinic. [Accessed September 09, 2016]. <http://www.mayoclinic.org/diseases-conditions/carbon-monoxide/basics/symptoms/con-20025444>. Symptoms.
6. Prevention Guidelines: You Can Prevent Carbon Monoxide Exposure. (2017, August 29). Centers for Disease Control and Prevention. [Accessed July 05, 2023]. <http://www.cdc.gov/features/timechangecodetectors/>.