

### **What is carbon monoxide?**

Carbon monoxide (CO) is a poisonous, odorless, colorless, and tasteless gas. Carbon monoxide is produced when fuel such as natural gas, propane, gasoline, oil, kerosene, wood, or charcoal is burned. This gas is produced from both human-made and natural sources. Possible sources of carbon monoxide include heating systems, stoves, portable generators, fireplaces, furnaces, automobile exhaust, gasoline engines, and boats. Each year, nearly 400 Americans die from unintentional carbon monoxide poisoning (not linked to fires), and more than 4,000 are hospitalized in the United States. Carbon monoxide poisoning is the most common cause of poisoning deaths in the United States.

### **Who is exposed to carbon monoxide?**

Exposure to carbon monoxide can occur by breathing in the following:

- tobacco smoke;
- gas from broken or improperly vented stoves, fireplaces, furnaces, heating systems, and generators;
- gas from fuel-powered equipment such as lawn mowers, snow blowers, forklifts, and chain saws, (especially when used in confined areas);
- exhaust from recreational watercraft, boats, and automobiles

### **How can carbon monoxide affect my health?**

People can be exposed to unsafe levels of carbon monoxide and not have any symptoms. Common symptoms of carbon monoxide poisoning include headache, dizziness, difficulty breathing, weakness, vomiting, chest pain, confusion, and fatigue. Suffocation, loss of consciousness, brain damage, or death can occur after exposure to high levels of carbon monoxide. People who are more susceptible to carbon monoxide poisoning include the elderly, infants, smokers, and those with anemia, heart, or breathing problems.

### **How likely is carbon monoxide to cause cancer?**

The Department of Health and Human Services (DHHS), the Environmental Protection Agency (EPA), and the International Agency for Research on Cancer (IARC) have not classified carbon monoxide as a human cancer-causing substance.

### **How can carbon monoxide affect children?**

Children can be affected by carbon monoxide exposure in the same way as adults. Infants may be at greater risk. Pregnant women who are exposed to high levels of carbon monoxide may be at risk for miscarriage, or the mental development of their fetus may be harmed.

### **Is there a medical test to determine whether I have been exposed to carbon monoxide?**

Carbon monoxide-oximeters are medical devices that can estimate how much carbon monoxide is in the blood.

### **How can I reduce the risk of exposure to carbon monoxide?**

In the home and your car:

- Install battery-powered carbon monoxide alarms and smoke detectors.
- Never use portable generators inside the home. Ensure it is at least 20 feet from the house.
- Schedule annual maintenance of heating systems and fuel-burning appliances to ensure proper ventilation.
- Install and use an exhaust fan over gas stoves. The fan must exhaust to the outside of the building.
- Never use your gas oven to heat your home.
- Never burn fuels indoors except in stoves or furnaces that are designed for indoor use and properly installed.
- Do not let your car run idle in the garage.
- Check the exhaust system of your car each year.
- Consult an expert if you smell an odor from your gas refrigerator.
- Avoid smoking inside the home or car. (Carbon monoxide is a component of tobacco smoke).

In the workplace:

- Install an effective ventilation system that will remove carbon monoxide.
- Maintain equipment and appliances that produce carbon monoxide.
- Discourage the use of gasoline-powered engines in poorly ventilated areas.
- Regularly test areas where carbon monoxide may be present (e.g. small spaces).
- Install carbon monoxide alarms that can be easily heard.

### **Has the federal government made recommendations to protect human health?**

The EPA has established an environmental limit of 9 parts per million (ppm) of carbon monoxide in air averaged over 8 hours and not to be exceeded more than once per year. The Occupational Safety and Health Administration (OSHA) has set a legal limit of 50 ppm for carbon monoxide in air for an 8-hour work day, and 40 hour work week.

### **Where can I get further information on carbon monoxide?**

- If you have concerns about carbon monoxide, contact your healthcare provider.
- Call your local health department. A directory of local health departments is located at <https://www.vdh.virginia.gov/local-health-districts/>. Contact the Virginia Department of Health at (804) 864-8182 or at [toxicology@vdh.virginia.gov](mailto:toxicology@vdh.virginia.gov).
- Visit the Agency for Toxic Substances and Disease registry page on carbon monoxide at <https://www.atsdr.cdc.gov/phs/phs.asp?id=1146&tid=253>.

October 2018