VDH VIRGINIA DEPARTMENT OF HEALTH

ROANOKE CITY and ALLEGHANY HEALTH DISTRICTS
Your Partner in Community Wellness

FAQs on Carbon Monoxide Exposure/ Carboxyhemoglobin:

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.

What is carboxyhemoglobin?

Hemoglobin is a protein in red blood cells that carries oxygen. Carboxyhemoglobin results when someone is exposed to carbon monoxide , and the carbon monoxide binds to the hemoglobin. Carboxyhemoglobin levels can be used to diagnose carbon monoxide exposure.

How is a diagnosis of carbon monoxide poisoning made?

Diagnosis of carbon monoxide poisoning can be a challenging task. Carboxyhemoglobin levels of patients may not correlate with symptoms or outcome, but they are used as a marker of exposure to carbon monoxide.

What are the symptoms of carbon monoxide poisoning?

Depending on the levels of carbon monoxide a person is exposed to, different symptoms may occur. Symptoms of carbon monoxide poisoning can include, but are not limited, headache, nausea, dizziness, and drowsiness. Diagnosing carbon monoxide poisoning from symptoms alone can be difficult because many of the symptoms are similar to other illnesses such as viral infections.

What levels of carboxyhemoglobin are considered dangerous?

- Carboxyhemoglobin levels are normally less than 1.5% in people's blood, although levels can be higher in people who smoke.

- The Centers for Disease Control and Prevention defines a laboratory confirmed case of carbon monoxide poisoning to be "a person who does not smoke, or a child (under age 14) whose smoking status is unknown, **and** has a carboxyhemoglobin (COHb) level of greater than 5.0% as measured in a blood sample."
- Carboxyhemoglobin levels begin to decrease as soon as the exposure is eliminated. This decrease typically takes several hours, so people who are exposed should return to levels within normal limits with one day.

What is the treatment for high levels of carboxyhemoglobin?

Only people who have symptoms of severe carbon monoxide poisoning, such as loss of consciousness or altered mental status, require treatment. In those situations, the standard treatment is 100 % oxygen. People who do not have symptoms or who have minor symptoms will improve when the source is removed, and the space is ventilated with fresh air.

What are the remaining concerns from the situation at Covington Middle School?

The investigation of the Covington Middle School event on 1/31/2025 has been completed. The findings of elevated carboxyhemoglobin levels that have been reported to the Roanoke City and Alleghany Health Districts on and after Monday 2/3/2025 cannot be attributed to the January 31 event. RCAHD is conducting an ongoing investigation of the more recent findings provided by local healthcare providers.

What are possible common sources of carbon monoxide?

The most common sources of carbon monoxide are from breathing smoke from fires, poorly functioning heating systems, fuel (wood, kerosene, natural gas, propane burning devices, heaters, grills) and vehicle exhaust.

It is important to make sure to not use outdoor heaters inside, since they produce carbon monoxide.

How can I reduce exposure to carbon monoxide in my home and car?

- Install battery-powered carbon monoxide alarms and smoke detectors. If your carbon monoxide alarm goes off, immediately get to fresh air.
- Never use portable generators inside the home. Portable generators should be run only when 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 idle in the garage.
- Do not set up a grill inside your garage, even if the garage door is up.
- Check the exhaust system of your car each year.
- Consult an expert if you smell an odor from your gas refrigerator.