

This fact sheet answers the most frequently asked health questions (FAQs) about carbon monoxide. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS:** All people are exposed to carbon monoxide at varying levels by breathing in air. Breathing in high amounts of carbon monoxide may be life-threatening. People with ongoing cardiovascular and/or respiratory disease may be particularly vulnerable to carbon monoxide. This chemical has been found in at least 12 of the 1,699 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

## What is carbon monoxide?

Carbon monoxide is a colorless, nonirritating, odorless, tasteless gas that is found in both indoor and outdoor air. It is made when carbon fuel is not burned completely and is produced from both human-made and natural sources. The most important human-made source is from exhaust of automobiles.

Carbon monoxide levels in indoor air vary depending on the presence of appliances such as kerosene and gas space heaters, furnaces, wood stoves, generators and other gasoline-powered equipment. Tobacco smoke also contributes to indoor air levels.

Industry uses carbon monoxide to manufacture compounds such as acetic anhydride, polycarbonates, acetic acid and polyketone.

## What happens to carbon monoxide when it enters the environment?

- Carbon monoxide mainly enters the environment from natural sources and from the burning of fuel oils.
- It stays in the air for about 2 months.
- It is broken down in air by reacting with other chemicals and is changed into carbon dioxide.
- It is broken down in soil by microorganisms into carbon dioxide.
- It does not build up in plants or in the tissues of animals.

## How might I be exposed to carbon monoxide?

- Breathing in gas from improperly installed/filtered stoves, furnaces, heaters and generators.
- Breathing air containing automobile exhaust.
- Breathing air containing cigarette smoke.
- Working in industries that burn gas and coal, working in smoke-filled places, or working in places where there are high amounts of vehicular exhaust.

## How can carbon monoxide affect my health?

Exposure to high levels of carbon monoxide can be life-threatening. Carbon monoxide poisoning is the leading cause of death due to poisoning in the United States.

Headache, nausea, vomiting, dizziness, blurred vision, confusion, chest pain, weakness, heart failure, difficulty breathing, seizures and coma have been reported in people inhaling carbon monoxide. People who have heart or lung disease are more vulnerable to the toxic effects of carbon monoxide.

## How likely is carbon monoxide to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified carbon monoxide for human carcinogenicity.

# Carbon Monoxide

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## How can carbon monoxide affect children?

Breathing high levels of carbon monoxide during pregnancy can cause miscarriage. Breathing lower levels of carbon monoxide during pregnancy can lead to slower than normal mental development of your child.

In animal studies, exposure to carbon monoxide during pregnancy had effects on birth weight, the heart, the central nervous system, and development.

There is evidence that children who have asthma may be more vulnerable to respiratory effects associated with exposure to carbon monoxide.

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

- Make sure appliances that burn natural gasoline, kerosene, or other fuels are properly installed and vented.
- Have appliances routinely maintained.
- Always follow the manufacturer's recommendations on installing and using these devices.
- Do not use portable propane heaters in enclosed indoor settings such as campers and tents.
- Do not let your car run idle for a long period of time in your garage.
- Carbon monoxide is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
- Have carbon monoxide and smoke detectors installed in your home.

## Is there a medical test to determine whether I've been exposed to carbon monoxide?

Medical devices called carbon monoxide-oximeters that are found in clinical laboratories or hospitals can estimate the level of carbon monoxide in blood by a simple test.

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

The EPA has established an environmental limit of 10 mg/m<sup>3</sup> (9 parts per million by volume, ppmv) 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 55 mg/m<sup>3</sup> (50 ppmv) for carbon monoxide in air for an 8-hour work day, 40 hour workweek.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for Carbon Monoxide. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

## Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.