

ToxFAQs Before and After Fact Sheets

Before Version

Carbon Monoxide - ToxFAQs™

CAS # 630-08-0

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.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences



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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/m³ (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/m³ (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 30333.

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.

After Version

ToxFAQs™

Carbon Monoxide

Breathing in high levels of carbon monoxide can be very dangerous. In fact, **carbon monoxide is the leading cause of poisoning deaths in the United States**. Find out what you need to know about carbon monoxide to keep you and your family safe.

What is carbon monoxide?

Carbon monoxide is a poisonous gas that you can't see, smell, or taste. It's made when carbon fuel isn't burned down completely. Carbon monoxide exists naturally in the environment, but human activity can also create it — for example, there's carbon monoxide in fumes produced by driving cars or burning fireplace wood.

Carbon monoxide is most dangerous when it builds up indoors.

How can I come in contact with carbon monoxide?

You can come in contact with carbon monoxide by breathing in:

- Gas from gas-powered stoves, furnaces, heaters, generators, and other appliances (usually this happens when appliances aren't set up or cleaned correctly)
- Exhaust fumes from motor vehicles
- Cigarette smoke

People who have certain jobs may also be more likely to come in contact with carbon monoxide — for example, people who work in factories that burn coal.

How can carbon monoxide affect my health?

Breathing in too much carbon monoxide causes carbon monoxide poisoning. People poisoned by carbon monoxide can pass out or even die. It's also important to know that people who are sleeping can die of carbon monoxide poisoning without waking up.

Symptoms of carbon monoxide poisoning may include:

- Headache
- Stomach problems
- Feeling dizzy or confused
- Blurred vision
- Chest pain



Did you know?



People who have heart or lung diseases are especially sensitive to the health effects of carbon monoxide.

Carbon Monoxide and Pregnancy

If a woman breathes in high levels of carbon monoxide when she's pregnant, it can seriously harm her unborn baby. Animal studies show that if a pregnant woman has contact with lower levels of carbon monoxide, her baby may have problems with development after birth.

Carbon Monoxide: Numbers to Know

Upper Limits

Government agencies make upper limit recommendations to protect your health. Anything above these numbers increases your risk of getting sick.

10 

in the air you breathe, according to EPA* (measured as milligrams per cubic meter)

55 

in the air that workers breathe on the job, according to NIOSH** (measured as milligrams per cubic meter)

* For people who breathe air for 8 hours

** For people who work an 8-hour day

For Public Health Professionals

Get more information about carbon monoxide by checking out ATSDR's [Public Health Statement](#) and [Toxicological Profile](#).

- Weakness
- Trouble breathing

Less serious cases of carbon monoxide poisoning can cause flu-like symptoms.

Can I get a test to check for carbon monoxide?

Yes. If you're worried you may have had contact with carbon monoxide, a doctor can test your blood to find out.

What steps can I take to protect my family?

The good news is there's a lot you can do to prevent carbon monoxide poisoning.

If you have any appliances that burn fuel (like gas, kerosene, or wood):

- Make sure they are set up correctly — that includes being vented to the outside.
- Always read the instruction manual so you know how to use them safely.
- Find out if you need to do anything to keep your appliances working like they're supposed to. For example, you may need to have a professional clean your appliance once each year.
- Check the vents regularly to make sure they aren't blocked.
- Never use generators, charcoal grills, or gas-powered tools indoors.
- Never use portable camping stoves in a camper or tent.

And always follow these tips to **protect your family**:

- Never leave your car running in the garage — even if the garage door is open.
- Keep your home and car tobacco smoke-free.
- Get carbon monoxide and smoke detectors for your home.

For more information, call us at **1-800-232-4636**. You can also visit us online at www.atsdr.cdc.gov.



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