

## **ToxFAQs Before and After Testing Survey (online)**

## Welcome

Form Approved  
OMB No. 0923-0047  
Exp. Date 05/31/2016

Welcome to the ToxFAQ Survey!

You're being asked to participate in a survey about a fact sheet. We are conducting this survey on behalf of the Agency for Toxic Substances and Disease Registry (ATSDR), part of the U.S. Department of Health and Human Services (HHS).

Public reporting burden of this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Information Collection Review Office, 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; ATTN: PRA (0923-0047).



## Consent

### **Who is working on this project?**

This project is being coordinated by CommunicateHealth, a health communication consulting firm, on behalf of ATSDR, which is part of HHS.

### **What is the goal of this project?**

We are working to make sure that the fact sheet developed for ATSDR is helpful and easy to use.

### **How can I help?**

We are interested in getting your feedback and opinions. Your feedback on this survey will help us create better fact sheets.

### **Do I have to participate in this project?**

No. It is your choice whether to participate or not. You can stop at any time, and you don't have to answer any questions you don't want to answer. If you don't want to participate or decide to stop, that's okay.

We are offering 50 Reward Points as a token of appreciation for taking part in this survey. Panel participants can accumulate points by taking additional surveys (unrelated to this study) through Qualtrics, and eventually redeem for items such as gift cards and subscriptions (e.g., magazines).

### **How will you protect my privacy?**

We will not collect or store your identity or any personal information. Also, your responses will not be linked with your name.

### **How long will this take?**

This survey should take about 20 minutes.

### **For more information:**

If you have questions about the project, contact Health Communication Manager, Katrina Lanahan, MPH, at [katrina@communicatehealth.com](mailto:katrina@communicatehealth.com) or (240) 428-1189.

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I have read the above information and agree to participate. By clicking Yes, you consent that you are willing to answer the questions in this survey.

Yes

No

## Demographic Questions

Please tell us a little bit about yourself.

---

What year were you born?

Next >>

What is your sex?

Male

Female

---

What is your ethnicity?

Hispanic or Latino

Not Hispanic or Latino

---

What is your race? (Please select all that apply.)

White

Black or African American

Asian

Native Hawaiian or Other Pacific Islander

American Indian or Alaska Native

What is the highest level of education that you've completed?

Grade school

Some high school

High school graduate or completed GED

Some college or technical school

Received 4-year college degree

Some post-graduate studies

Received advanced degree

Other

Which of the following categories best describes your total, annual household income?

Under \$20,000/year

\$20,001 - \$30,000/year

\$30,001 - \$40,000/year

\$40,001 - \$50,000/year

\$50,001 - \$60,000/year

\$60,001 - \$80,000/year

\$80,001 - \$100,000/year

Over \$100,000/year

Prefer not to answer

How confident are you filling out forms by yourself?

None of the time
A little of the time
Some of the time
Most of the time
All of the time

In the past 12 months, how many times have you seen a medical provider?

0
1
2
3
4
5
6
7
8
9
10 or more



How often do you look for health information?

Never

Sometimes

Often

Always

## Review Fact Sheet

### Control group:

The next questions are about this fact sheet on carbon monoxide. Please take a few minutes to read it entirely. After 90 seconds you'll be able to continue to the next page (you may stay on this page as long as you like).

## Carbon Monoxide - ToxFQA's™

**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



CS-00054

**Carbon Monoxide**

CAS # 630-08-0

**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 30333.

Phone: 1-800-232-4636

ToxFQA's™ Internet address via WWW is [\[ATSDR website\]](http://www.atsdr.gov).

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.

September 2007 Page 2 of 2

One quick question before you get started: Do you see an image above this question on your screen?

Yes

No

**Intervention group:**

The following questions are about this fact sheet on carbon monoxide. Please take a few minutes to read it entirely. After 90 seconds you'll be able to continue to the next page (you may stay on this page as long as you like).

**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:



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 [\[ATSDR website\]](#).

ATSDR

Agency for Toxic Substances and Disease Registry

Division of Toxicology and Human Health Sciences

Carbon Monoxide CAS Number: 630-08-0

One quick question before you get started: Do you see an image above this question on your screen?

Yes

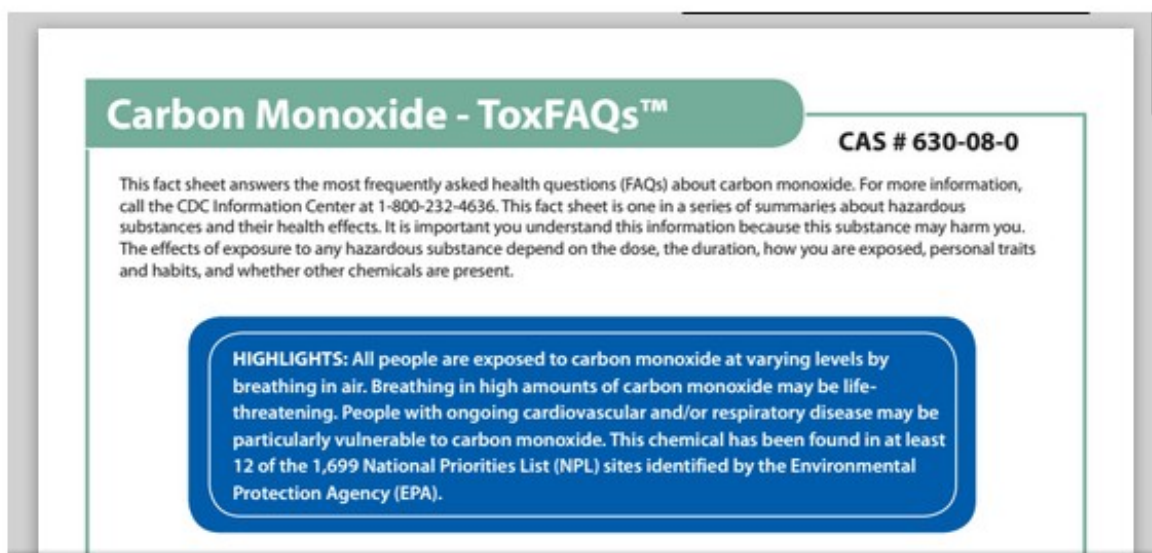
No



## Knowledge Questions

### Control group:

First, we would like to ask you a few questions about the information you read in the fact sheet on carbon monoxide. You'll see that the fact sheet appears again below. You can use it to answer the questions – you don't need to answer from memory. (Use your mouse to scroll through the fact sheet.)



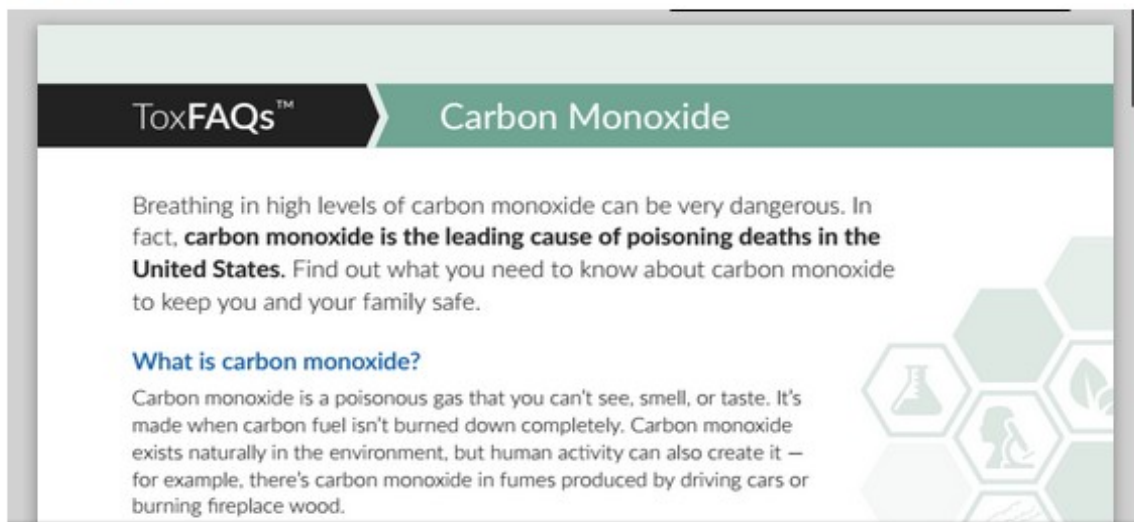
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**HIGHLIGHTS:** All people are exposed to carbon monoxide at varying levels by breathing in air. Breathing in high amounts of carbon monoxide may be life-threatening. People with ongoing cardiovascular and/or respiratory disease may be particularly 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).

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**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.

**All participants:**

Can you smell carbon monoxide in the air?

Yes

No

Sometimes

I'm not sure

Why might someone get carbon monoxide poisoning from a gas-fueled appliance?

It's not set up (installed) correctly

It's not used properly

It's not cleaned properly

All of the above

None of the above

What can you do to prevent contact with carbon monoxide?



## Modified Consumer Information Rating Form (CIRF)

### Control group:

Now, we would like to ask you what you thought about this fact sheet. Remember, you can use the fact sheet below to answer the questions – you don't need to answer from memory. (Use your mouse to scroll through the fact sheet.)

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**All participants:**

For each of the following questions, please select the answer that most closely reflects **your opinion**.

Overall, how **easy or hard** would you say this information is to...

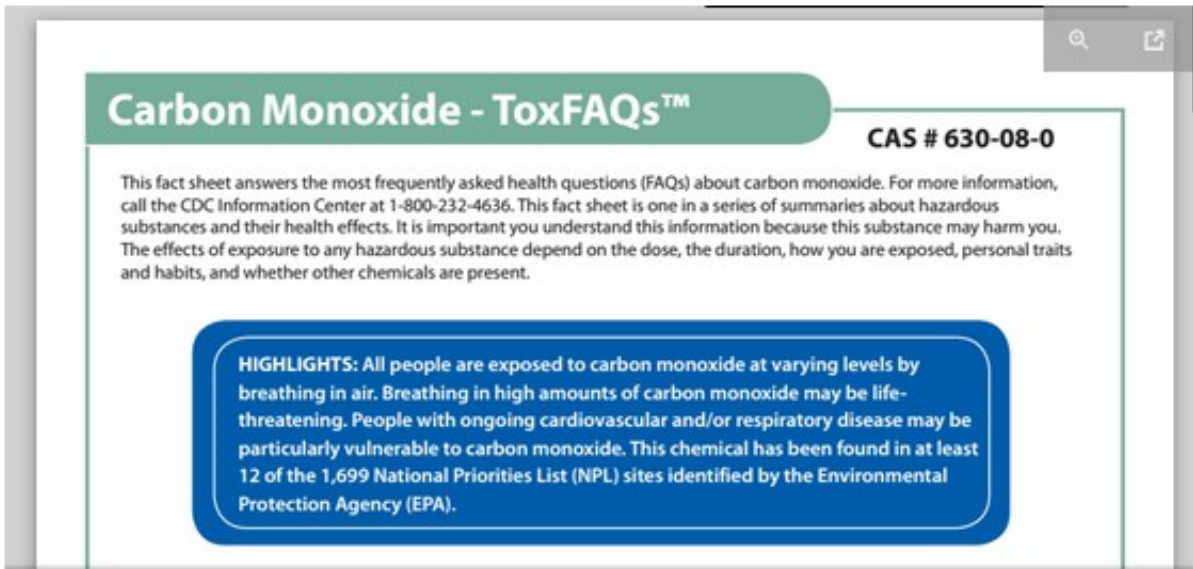
	Very easy (1)	Pretty easy (2)	In between (3)	Pretty hard (4)	Very hard (5)
read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
remember	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
locate important information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
keep for future reference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you came into contact with this substance for the first time and received this information, **how likely** is it that you would...

	Very likely (1)	Somewhat likely (2)	Unsure (3)	Somewhat unlikely (4)	Very unlikely (5)
<b>read</b> the fact sheet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>use</b> the information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>keep</b> the fact sheet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Control group:**

Remember, you can use the fact sheet below to answer the questions – you don't need to answer from memory. (Use your mouse to scroll through the fact sheet.)



The screenshot shows a digital fact sheet titled "Carbon Monoxide - ToxFAQs™" with the CAS number "CAS # 630-08-0". The text explains that the sheet answers common health questions and provides contact information for the CDC. A blue callout box contains highlights about exposure levels and vulnerability.

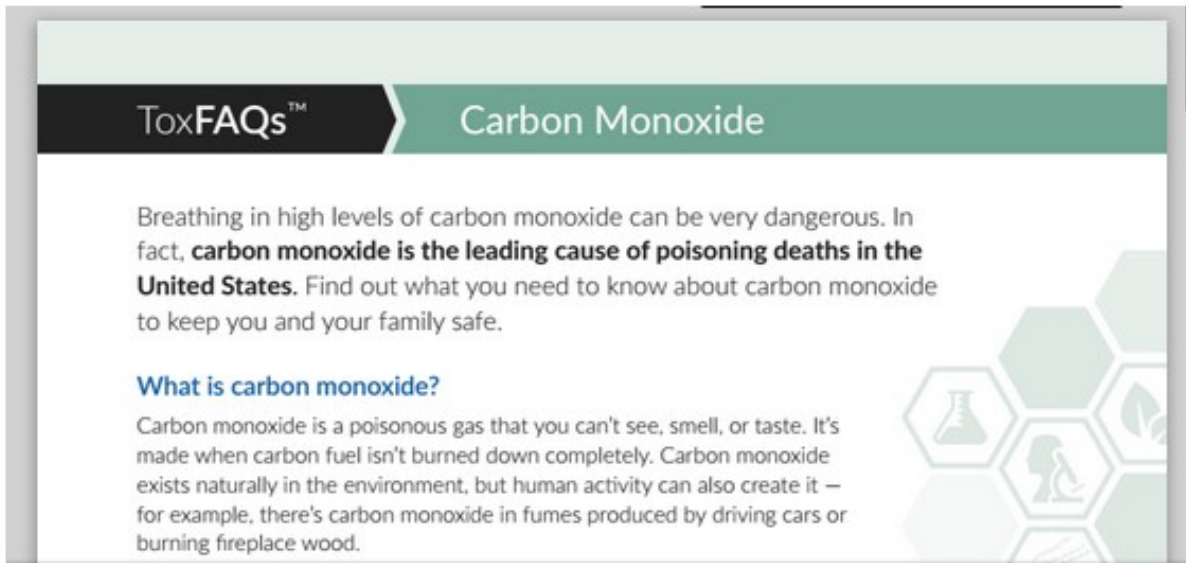
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The screenshot shows a digital fact sheet titled "ToxFAQs™ Carbon Monoxide". The text states that breathing in high levels of carbon monoxide is very dangerous and is the leading cause of poisoning deaths in the United States. It includes a section titled "What is carbon monoxide?" which explains that it is a poisonous gas created from incomplete carbon fuel combustion.

**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.

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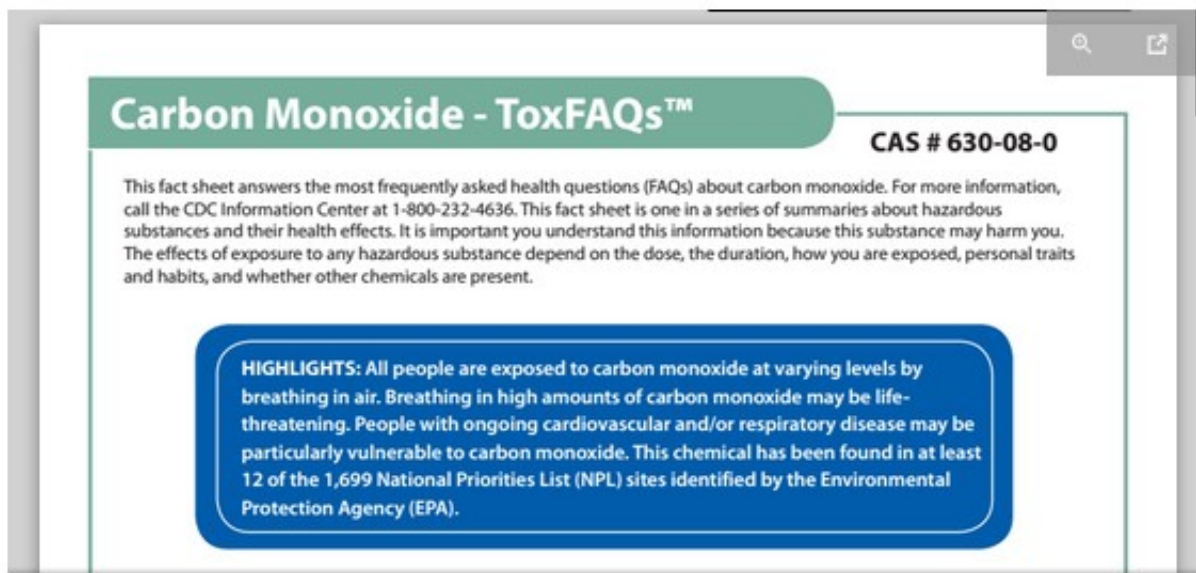
Below is a list of topics. Please indicate your opinion about **how much** information was provided on each topic.

	Too much	About right	Too little
Carbon monoxide and its dangers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The impact of carbon monoxide on the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How you can come into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health effects related to coming into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How you can limit coming into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What to do if you have come into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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The screenshot shows a digital fact sheet titled "Carbon Monoxide - ToxFAQs™" with the CAS number "CAS # 630-08-0". The text explains that the sheet answers common health questions and provides contact information for the CDC. A blue callout box highlights that all people are exposed to carbon monoxide and that it is a leading cause of poisoning deaths in the US.

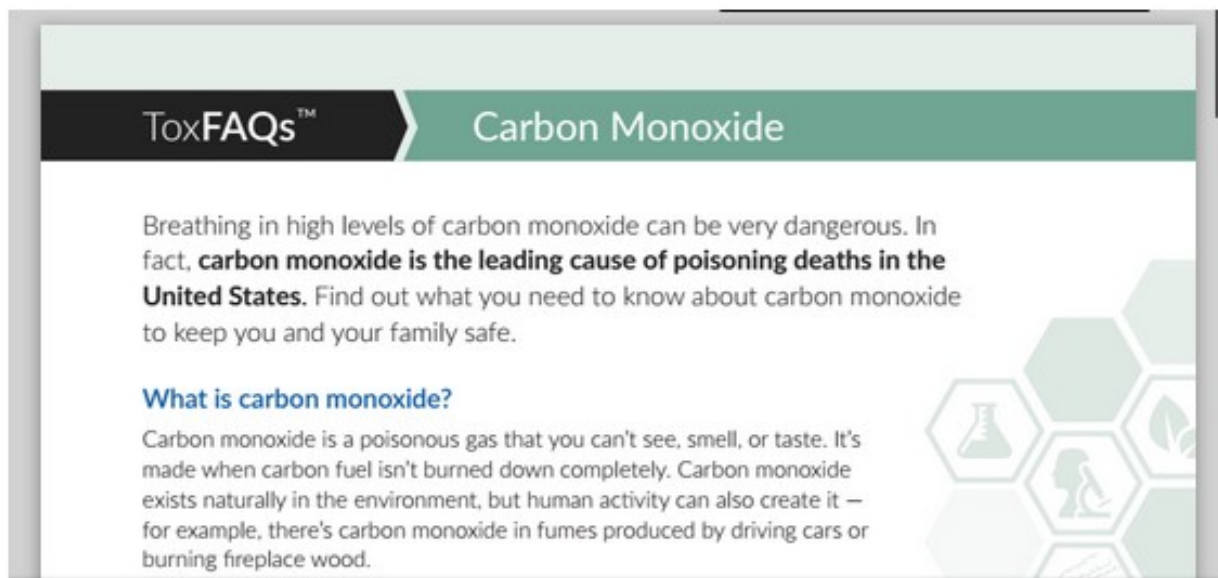
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The screenshot shows a digital fact sheet titled "ToxFAQs™ Carbon Monoxide". The text states that breathing in high levels of carbon monoxide is very dangerous and is the leading cause of poisoning deaths in the United States. It also includes a section titled "What is carbon monoxide?" which explains that it is a poisonous gas created from incomplete combustion of carbon fuel.

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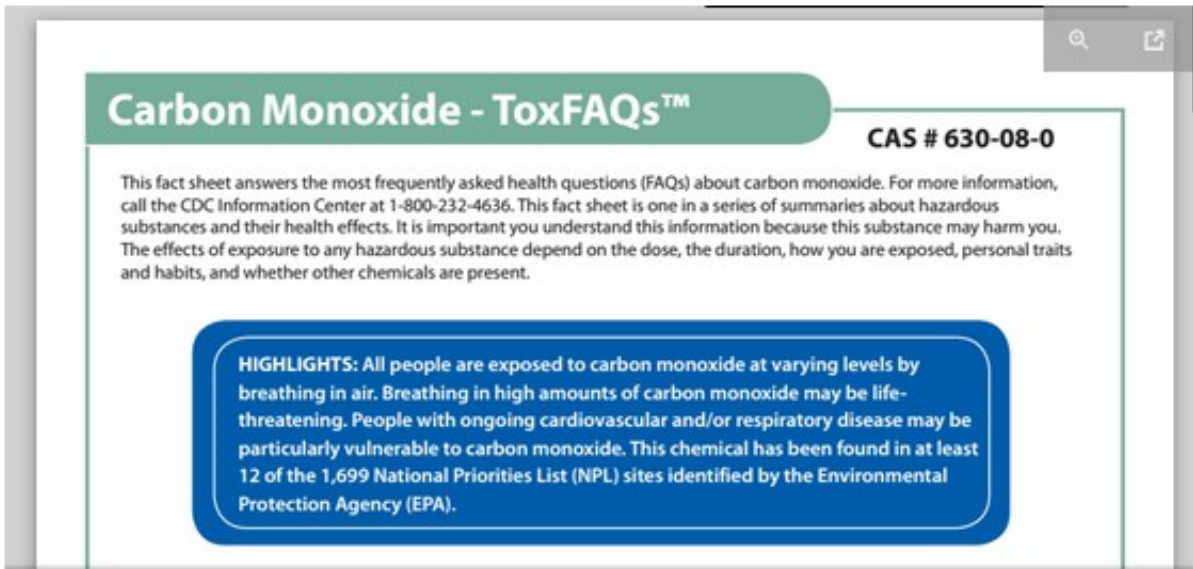
**All participants:**

Please indicate your opinion about **how useful** you think this information would be if you came into contact with this substance for the first time.

	Very useful	Somewhat useful	Not useful
Carbon monoxide and its dangers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The impact of carbon monoxide on the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How you can come into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health effects related to coming into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How you can limit coming into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What to do if you have come into contact with carbon monoxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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The screenshot shows a digital fact sheet titled "Carbon Monoxide - ToxFAQs™" with the CAS number "CAS # 630-08-0". The text explains that the sheet answers common health questions and provides contact information for the CDC. A blue callout box highlights key points: everyone is exposed to carbon monoxide, high levels are life-threatening, and it is found at 12 of the 1,699 National Priorities List sites.

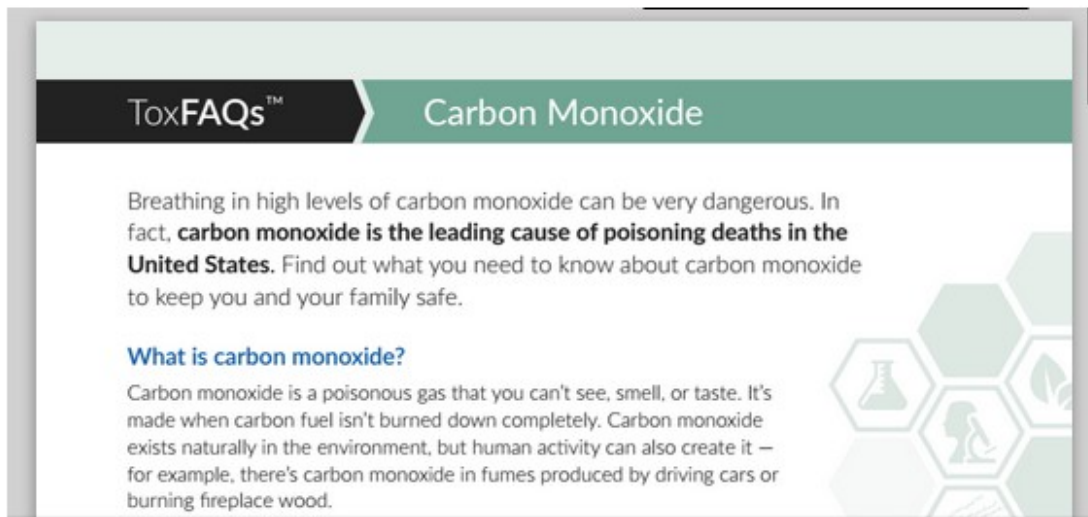
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**What is carbon monoxide?**

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.

**All participants:**

Next, we would like to ask you about the design, layout and tone of the fact sheet. Please select the choice that best describes your opinion.

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**Organization**

1 - Poorly organized	2	3	4	5 - Well organized
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**Attractiveness**

1 - Unattractive	2	3	4	5 - Attractive
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**Print Size**

1 - Poor	2	3	4	5 - Excellent
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**Tone**

1 - Alarming	2	3	4	5 - Comforting
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**Helpfulness**

1 - Unhelpful	2	3	4	5 - Helpful
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**Bias**

1 - Biased	2	3	4	5 - Unbiased
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**Spacing between lines**

1 - Poor	2	3	4	5 - Excellent
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## Side-by-Side Comparison Questions

Finally, we would like for you to select which of the following parts of the fact sheets you find more useful, easy to understand, informative, and better designed.

Select the **design** you like better:

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
- Weakness
- Trouble breathing

**Did you know...** ?

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

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

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 polyesters.

**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.



Select the option you think is **more useful**:

**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.

**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.

Select the option you think is **easier to understand**:

**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.

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

Select the option you think is **more informative**:

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

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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 can carbon monoxide affect my health?**

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Symptoms of carbon monoxide poisoning may include:

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

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

Select the **design** you like better:

**Carbon Monoxide**
**CAS # 630-08-0**

**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 gas, propane, 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.

**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-332, Atlanta, GA 30333.  
Phone: 1-800-232-4636  
ToxFQA's™ internet address via WWW is [ATSDR website].

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.

**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 [\[ATSDR website\]](#).

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

Carbon Monoxide CAS Number: 630-08-0

## End of Survey

Thank you for sharing your opinions with us. Your input will help us create better fact sheets about toxic chemicals.

