

Carbon monoxide poisoning

Carbon monoxide is a poisonous gas that has no smell or taste. Breathing it in can cause sickness and even death.

When you breathe in carbon monoxide, it enters your bloodstream. It mixes with haemoglobin to form carboxyhaemoglobin. Haemoglobin is the part of red blood cells that carry oxygen around your body.

When this happens, the blood can no longer carry oxygen. This lack of oxygen causes the body's cells and tissue to fail and die.

Symptoms of carbon monoxide poisoning

The symptoms of carbon monoxide poisoning aren't always obvious, particularly in low-level exposure.

Low-level exposure symptoms

Low-level exposure symptoms include:

- tension-type headache
- dizziness
- nausea (feeling sick) and vomiting
- tiredness and confusion
- stomach pain
- shortness of breath and difficulty breathing

The symptoms of exposure to low levels of carbon monoxide can be like those of food poisoning and flu. Carbon monoxide poisoning doesn't cause a high temperature.

The longer you inhale the gas, the worse your symptoms will be. You may lose balance, vision and memory and even consciousness.

This can happen within 2 hours if there's a lot of carbon monoxide in the air.

The smaller an animal or person is, the faster they'll be affected. Pets are often the first to show symptoms.

High-level exposure symptoms

Long-term exposure to low levels of carbon monoxide can cause neurological symptoms.

This may mean you have difficulty thinking and experience regular emotional changes. You might become easily irritated, depressed or make impulsive, irrational decisions.

High-level exposure symptoms include:

- impaired mental state and personality changes (intoxication)
- the feeling that you or your surroundings are spinning (vertigo)
- loss of coordination (ataxia)
- breathlessness and a fast heart rate
- chest pain
- muscle spasms (seizures)
- loss of consciousness
- death, in minutes, in cases where there are very high levels of carbon monoxide

Causes of carbon monoxide

Carbon monoxide is produced when fuels such as gas, oil, coal and wood don't burn fully.

Burning charcoal, running cars and smoke from cigarettes also produce carbon monoxide gas.

Dangerous levels of carbon monoxide can rise as a result of the following:

- blocked flues and chimneys
- faulty or blocked car exhausts
- smoking shisha pipes indoors
- paint fumes

Household appliances

Household appliances cause most cases of accidental exposure to carbon monoxide. They may be badly installed, maintained or ventilated.

Gas, oil, coal and wood are common fuels in many household appliances. These appliances include boilers, fires, water heaters and cookers.

Portable devices

There's also a risk of exposure to carbon monoxide from portable devices. These are often used in caravans, boats and mobile homes.

Complications of carbon monoxide poisoning

Long-term exposure to carbon monoxide can cause serious complications.

Around 10% to 15% of people who have severe carbon monoxide poisoning have complications.

Brain damage

Prolonged exposure to carbon monoxide can cause memory problems and difficulty concentrating.

It can also cause vision loss and hearing loss.

In rare cases, severe carbon monoxide poisoning can cause Parkinsonism. This involves tremors, stiffness and slow movement.

Parkinsonism is not the same as Parkinson's disease. Parkinson's disease is a degenerative neurological condition linked to ageing.

Heart disease

Coronary heart disease is a serious condition. It can develop as a result of long-term carbon monoxide exposure.

It's where the heart's blood supply is blocked by fatty substances (atheroma) in the coronary arteries.

If the blood supply is blocked, it can cause angina (chest pains).

If the coronary arteries are completely blocked, it can cause a heart attack.

People who are more at risk

People who are more at risk of carbon monoxide poisoning include:

- children
- pregnant women
- people with chronic heart disease or respiratory problems

Long-term exposure to carbon monoxide gas can also damage an unborn baby.

A child may be born with a low birth weight and could develop behavioural problems.

Risks also include perinatal death (stillbirth) and death within the first 4 weeks.

Signs of carbon monoxide

Suspect carbon monoxide is present if:

- other people in the building become ill with similar symptoms
- your symptoms disappear when you go away and return when you come back
- symptoms tend to be seasonal – for example, if you get headaches more often during the winter
- your pets also fall ill

Other possible clues of a carbon monoxide leak include:

- black, sooty marks on the front covers of gas fires
- sooty or yellow or brown stains on or around boilers, stoves or fires
- smoke building up in rooms due to a faulty flue
- yellow instead of blue flames coming from gas appliances
- pilot lights frequently blowing out

If your pet is suddenly ill or dies from an unknown cause, check for a carbon monoxide leak.

Treating carbon monoxide poisoning

Seek medical advice from your GP if you think you've been exposed to low levels of carbon monoxide.

Go to the emergency department (ED) if you think you've been exposed to high levels of carbon monoxide.

A blood test will confirm the amount of carboxyhaemoglobin in your blood. A level of 30% indicates severe exposure to carbon monoxide.

People who smoke often have higher levels of carboxyhaemoglobin in their blood. This can sometimes make it difficult to interpret results.

Mild carbon monoxide poisoning doesn't usually need hospital treatment. It's still important that you seek medical advice.

Your house will need to be checked for safety before anyone returns.

Standard oxygen therapy

You will need oxygen therapy in hospital if you've been exposed to high levels of carbon monoxide.

You'll receive 100% oxygen through a tight-fitting mask. Normal air contains around 21% oxygen.

Breathing in concentrated oxygen allows your body to replace carboxyhaemoglobin quickly.

Therapy will continue until your carboxyhaemoglobin levels decrease to less than 10%.

Hyperbaric oxygen therapy

Hyperbaric oxygen therapy (HBOT) floods the body with pure oxygen. This helps it overcome the oxygen shortage caused by carbon monoxide poisoning.

Standard oxygen therapy is usually the recommended treatment option. There's not enough evidence about the long-term benefits of HBOT.

HBOT may be recommended in certain cases. For example, if long exposure to carbon monoxide has led to possible nerve damage.

Recovery

The length of time it takes to recover from carbon monoxide poisoning varies. It depends on the amount of exposure and the length of exposure.

Prevent carbon monoxide poisoning

It's important to be aware of the dangers. Identify any appliances in your house that could leak carbon monoxide.

Maintain and service appliances

Boilers, cookers, heating systems and appliances should be properly installed. Have them serviced by a reputable, registered engineer.

Do not try to install or service appliances yourself.

Sweep chimneys and flues

Make sure all chimneys and flues are swept regularly.

Check engine exhaust


Check your car exhaust for leaks every year. This will help protect you from carbon monoxide poisoning by exhaust fumes.

Before you turn your engine on, make sure your exhaust is clear.

Do not leave petrol-fuelled lawnmowers or cars running in the garage.

Install carbon monoxide alarms

You can buy carbon monoxide alarms from DIY or hardware stores.



An alarm is not a substitute for maintaining and servicing household appliances.

Protect yourself from carbon monoxide poisoning

Follow the safety tips below to help protect yourself at home and in the workplace:

Do

- ✓ make sure rooms are well ventilated (don't block air vents or heaters)
- ✓ wear a safety mask when using chemicals that contain methylene chloride
- ✓ fit an extractor fan in your kitchen

Don't

- ✗ do not use ovens or gas ranges to heat your home
- ✗ do not put oversized pots on your gas stove, or place foil around the burners
- ✗ do not use gas-powered equipment and tools inside your home. Only use in a well-ventilated area and put the engine unit and exhaust outside
- ✗ do not burn charcoal in an enclosed space, such as on an indoor barbecue
- ✗ do not sleep in a room with an unflued gas fire or paraffin heater

What to do if you suspect a leak

If your carbon monoxide alarm sounds or you suspect a leak:

- stop using all appliances and switch them off
- open doors and windows to ventilate the property
- go outside into fresh air immediately
- stay calm and avoid raising your heart rate
- call the Gas Networks emergency line – [0800 300 363](tel:0800300363) to report the incident
- do not go back into the property - wait for advice from the emergency services

⚠ Get medical help

Get medical help if you suspect a carbon monoxide leak. You may not realise that you are affected. Fresh air will not treat exposure by itself.

Content supplied by the [NHS](#) and adapted for Ireland by the HSE

Next review due: 24 March 2024

This project has received funding from the Government of Ireland's Sláintecare Integration Fund 2019 under Grant Agreement Number 123.

HSE Live - we're here to help

Monday to Friday: 8am to 8pm

Saturday: 9am to 5pm

Sunday: Closed

Bank holidays: Closed

Freephone: [1800 700 700](tel:1800700700)

From outside Ireland: [00 353 1 240 8787](tel:0035312408787)

[HSE Facebook](#)

[HSE Instagram](#)

[HSE TikTok](#)

[HSE YouTube](#)

[HSE LinkedIn](#)

[HSE X \(Twitter\)](#)

[Complaints and feedback](#)

[Emergencies](#)

[Cookie settings](#)

[Cookie statement](#)

[Accessibility](#)

[Privacy statement](#)

[Disclaimer](#)

© Health Service Executive