

The New York Times

What to Know About Carbon Monoxide Poisoning

Miller Gardner, the 14-year-old son of the retired Yankees player Brett Gardner, died from carbon monoxide poisoning while on vacation in Costa Rica. Here's why the gas is so dangerous.



Be sure to install carbon monoxide detectors, which can be purchased at any home improvement store, on every floor of your home, and change their batteries at least once a year. Credit Kristina Barker for The New York Times



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Published April 3, 2025 Updated April 4, 2025, 8:19 a.m. ET

Carbon monoxide gas, which is invisible and odorless, can be fatal. It can kill people in their homes as they sleep, seeping undetected from generators. It can accumulate within the walls of closed garages, wafting from cars left running by residents seeking warmth or power in a storm.

On Thursday, another fatality by unintentional carbon monoxide poisoning was confirmed. Miller Gardner, the 14-year-old son of the longtime Yankees player Brett Gardner, died of

carbon monoxide poisoning while on vacation with his family in Costa Rica. The authorities said [contamination from machinery](#) near their room at their resort could have been to blame.

While it is preventable, carbon monoxide poisoning is a [leading cause of poisoning-related deaths](#) in the United States.

Why is carbon monoxide dangerous?

Breathing in carbon monoxide causes the gas to build up in the blood and bind to hemoglobin, a protein in red blood cells that is responsible for transporting oxygen from the lungs to the tissues in the rest of the body.

When carbon monoxide binds to hemoglobin, it “kicks the oxygen off” the protein, and prevents tissues and organs from getting the oxygen they need to function properly, said Dr. Jason Rose, the chief of pulmonary, critical care and sleep medicine at the University of Maryland School of Medicine.

Exposure to carbon monoxide can also lead to inflammation and cellular damage to important organs, namely the heart and brain, said Dr. Anthony Pizon, chief of medical toxicology at the University of Pittsburgh Medical Center, who said he typically treats a couple of patients with carbon monoxide poisoning each month.

A person exposed to high concentrations of the gas for an extended period of time can lose consciousness and stop breathing, leading to death, Dr. Rose said. Inhaling the toxic gas can also cause your blood pressure to drop or can induce potentially fatal heart problems, he added. And those who survive carbon monoxide poisoning may experience [long-term neurological](#) problems, including worsened memory, problems with motor skills and symptoms of anxiety or depression, Dr. Rose said.

People might not realize that they have been exposed to carbon monoxide right away, Dr. Rose said, because some of the symptoms — headache, fatigue, nausea and vomiting — can look similar to the onset of the flu or another illness. Since the gas is colorless and odorless, Dr. Pizon said, it can also be difficult to know if there is an exposure.

And while the gas is considered highly toxic to everyone, Dr. Rose said that children, pregnant women, older adults and people with preexisting chronic illnesses such as heart disease are particularly vulnerable to getting sick after an exposure. So are those with [breathing problems or anemia](#), which occurs when people have lowered levels of red blood cells or hemoglobin already.

How do you stay safe at home?



Many car engines release carbon monoxide as well, so don't leave your car running when you're not using it, especially in an enclosed garage connected to your home. Credit Christina Gandolfo for The New York Times

If you think you've been exposed to carbon monoxide, immediately seek fresh air and call 9-1-1, Dr. Pizon said. The fire department can come to your home and help determine where the gas is coming from. And if you're experiencing any symptoms, seek treatment right away at your nearest emergency room.

"This isn't something you go to your primary doctor for," Dr. Rose said.

At the emergency room, a health provider will give you pure oxygen through a ventilator or face mask, which will help your body flush out the carbon monoxide, Dr. Rose said.

Any home appliance that uses natural gas and burns fuel in your home, such as a stove, furnace, clothing dryer or gas-powered generator, can potentially leak carbon monoxide and cause poisoning if there is not proper ventilation, Dr. Pizon said. Make sure that all fuel-burning appliances are vented outside so that carbon monoxide cannot accumulate inside, he added. And if you are not sure whether your appliances are safely ventilated, call a [technician to inspect them](#).

Many car engines release carbon monoxide as well, so don't leave your car running, especially in an enclosed garage connected to your home.

Lastly, be sure to install carbon monoxide detectors, which can be purchased at any home improvement store, on every floor of your home, Dr. Pizon said. And change their batteries at least [once a year](#). You can also purchase a [portable carbon monoxide detector](#) to use in hotels and lodging while traveling.

Most poisonings are reported in the winter.

More than 400 Americans die each year from unintentional carbon monoxide poisoning that is not linked to fire, according to the [Centers for Disease Control and Prevention](#).

Poisonings are most often reported during the winter or in severe storms in which power goes out and people turn to generators, ovens and automobiles for warmth.

In [2021, when a freezing weather system swept parts](#) of the United States, at least two people died and about 100 were sickened in Houston by [carbon monoxide poisoning](#), and another four people died in Oregon, the authorities said.

In 2022, [three people died of carbon monoxide poisoning](#) caused by a faulty water heater in an Airbnb rental unit in Mexico City.

In December, [12 people were found dead](#) of suspected carbon monoxide poisoning in a ski area in the Caucasus Mountains in Georgia. They were found in an area above a restaurant, where they were employed. A power generator had been plugged in and left inside after the restaurant lost power, the police said.

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