

Carbon Monoxide Hazards from Small Gasoline-Powered Engines Fact Sheet

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Every year, about 50,000 people in the U.S. visit emergency rooms due to accidental carbon monoxide (CO) poisoning, and at least 430 die.¹ Many people fall victim to these hazardous vapors while using gasoline-powered tools inside buildings or in other semi-enclosed spaces.

High-pressure washers, concrete cutting saws, power trowels, floor buffers, welders, pumps, compressors, generators, and other small gasoline-powered tools can cause a rapid, dangerous, and sometimes fatal CO buildup within minutes -- even in well-ventilated areas. For example:²

- a farmer died of CO poisoning 30 minutes after using an 11-horsepower gasoline-powered pressure washer to clean his barn;
- a municipal employee lost consciousness due to CO poisoning while trying to exit from a 59,000-cubic-foot room with open doors at a water treatment plant where he was working with an eight-horsepower gasoline pump;
- five workers received treatment for CO poisoning after using two eight-horsepower gasoline-powered pressure washers in a poorly ventilated underground parking garage; and
- a plumber using a gasoline-powered concrete saw in a basement with open doors, windows, and a cooling fan was diagnosed with CO poisoning after experiencing a severe headache, dizziness, and paranoid behavior.



These CO poisoning reports show a range of effects, work settings, exposures, times, and different types of ventilation. Workers in areas with closed doors and windows experienced symptoms within minutes. **Opening doors and windows or operating fans do not guarantee safety.** Operating gasoline-powered engines and tools indoors presents serious health hazards.

Recognizing CO Poisoning

Gasoline-powered equipment and tools produce high amounts of CO — a colorless, odorless, nonirritating, poisonous gas that can cause illness, permanent nerve damage, and death. CO can overcome an exposed person without warning. Often when a person experiences symptoms, there is not enough time to seek safety. Previously using gas-powered equipment without experiencing symptoms has sometimes given users a false sense of safety. However, such users can be poisoned at other times in similar work environments.

The most common symptoms of CO poisoning are **headache, dizziness, weakness,**

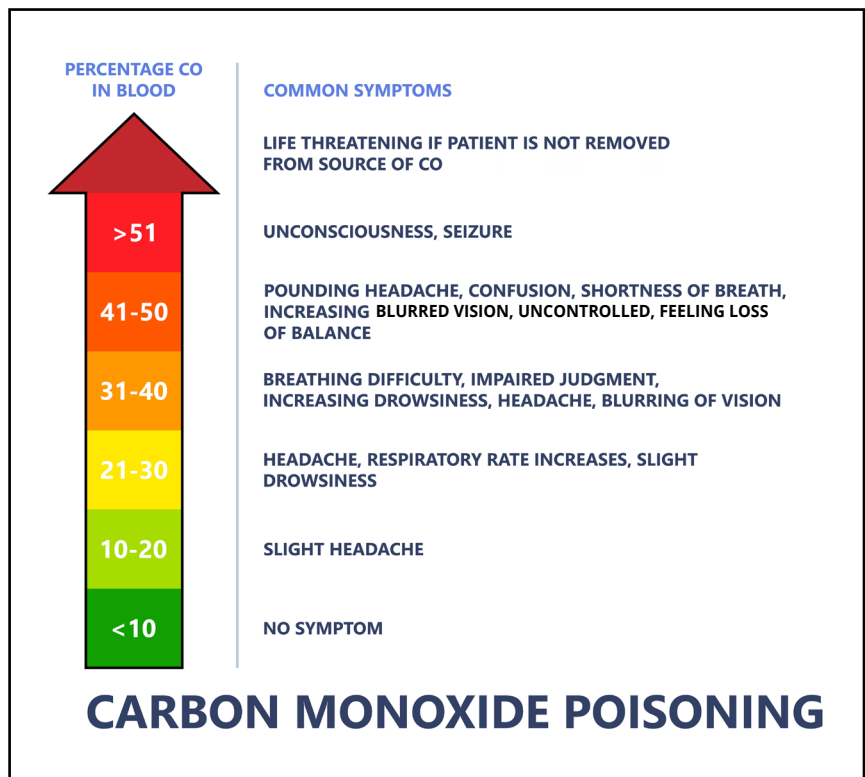
nausea, vomiting, chest pain, and confusion. Other symptoms may include **visual disturbances, changes in personality, and loss of consciousness.** People who are sleeping or who have been drinking alcohol can die from CO poisoning before ever having symptoms.³

Safety Tips

The following tips can prevent CO poisoning:

Employers and equipment users should:

- ban the use of gasoline-powered engines or tools inside buildings or in partially-enclosed areas unless gasoline engines can be located outside and away from air intake vents (except in emergency rescues when equipment operators, assisting personnel, and the victim are provided with [supplied-air respirators](#));
- learn and recognize the symptoms of CO overexposure;
- run only washer lines inside facilities when using a high-pressure washer, and place the pump and power unit outdoors away from air intake;
- use electric or compressed air tools when available and safe to use;
- use personal CO monitors with audible alarms to warn workers when CO concentrations become high;



- watch coworkers for signs of CO toxicity;
- immediately turn off equipment and go outdoors or to a place with uncontaminated air if experiencing symptoms;
- call 911 or another local emergency number for medical attention or assistance if symptoms occur;
- never allow a person with symptoms to drive a motor vehicle to a health care facility or other location; and
- never return to a work area that has had high CO levels until the equipment or tool is deactivated, gas vapors are measured, and concentration readings are below [accepted guidelines and standards](#).

Employers should also:

- conduct a workplace survey to identify all sources of possible CO exposure;
- educate workers about the sources, conditions, symptoms, and control of CO exposure;
- substitute less hazardous equipment when possible and always use equipment that allows



gasoline-powered engines to be placed outdoors and away from air that enters the building; and

- monitor employee CO exposure to determine possible hazards.

Tool rental agencies should:

- put warning labels on gasoline-powered tools such as “WARNING — CARBON MONOXIDE PRODUCED DURING USE CAN KILL — DO NOT USE INDOORS OR IN OTHER SHELTERED AREAS”;
- tell renters that gasoline-powered tools should NOT be used indoors and explain why;
- recommend safer tools for the intended use if available;
- have portable, audible CO monitors for rent and encourage their use; and

- provide renters with educational materials such as this [fact sheet](#).

Tool manufacturers should:

- design tools that are safe for indoor use;
- provide warning labels for existing and new gasoline-powered equipment;
- provide recommendations for equipment maintenance to reduce CO emissions; and
- recommend the use of portable, audible CO monitors with small gasoline-powered engines.

For more information on CO poisoning prevention tips, contact the [Centers for Disease Control and Prevention](#), the [Occupational Safety and Health Administration](#), or the [Environmental Protection Agency](#).

References

- ¹ National Center for Environmental Health, "Carbon Monoxide (CO) Poisoning Prevention," Website. <https://www.cdc.gov/nceh/features/copoisoning/index.html#:~:text=Every%20year%2C%20at%20least%20430,your%20household%20from%20CO%20poisoning>. Accessed December 29, 2021.
- ² The National Institute for Occupational Safety and Health, "Carbon Monoxide Hazards from Small Gasoline Powered Engines," Website. <https://www.cdc.gov/niosh/topics/co/default.html>. Accessed December 27, 2021.
- ³ National Center for Environmental Health, "Carbon Monoxide (CO) Poisoning Prevention," Website. <https://www.cdc.gov/nceh/features/copoisoning/index.html#:~:text=Every%20year%2C%20at%20least%20430,your%20household%20from%20CO%20poisoning>. Accessed December 29, 2021.



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