



Carbon Monoxide Poisoning and Disasters

Carbon monoxide, or CO, is an odorless, colorless, poisonous gas produced by furnaces, barbecue grills, gas-powered generators, and other appliances that burn organic fuels. Organic fuels include wood, gasoline, natural gas, propane and charcoal. While CO poisoning is most often thought of as a winter problem—often due to malfunctioning heating equipment—it is an important public health concern during disasters as well.

Why does the risk of CO poisoning increase during disasters?

During emergencies such as hurricanes and ice storms, power outages may lead to an increase in the use of organic fuel-burning appliances or encourage their inappropriate use, heightening the risk of CO poisoning. Following Hurricane Katrina, there were 27 occurrences of CO poisoning, resulting in 78 non-fatal cases and 10 deaths¹—gasoline-powered generators caused nearly all of these incidents. Additionally, people may use generators unsafely. For example, after hurricanes in Texas², many people were afraid their generators would be stolen and brought them indoors.



What types of activities increase the risk of CO Poisoning?

Several activities rapidly increase the concentration of CO in the air and present poisoning hazards following disasters. These include:

- Using gas-powered space heaters or burning any type of fuel to heat an enclosed space without adequate ventilation
- Running a generator indoors (i.e. in a garage), or outdoors but too close (within a few feet) of an open window, door, or an air intake vent
- Cooking with barbecue grills indoors
- Using gas ranges or ovens to heat homes
- Using organic fuel-burning appliances following storms with high winds. High winds can damage exhaust systems and clog chimneys and flues with debris, causing CO to back up into buildings.

Who is at highest risk for CO poisoning?

Highest risk populations include:

- Infants and young children
- The elderly
- Pregnant women
- People with chronic heart disease, anemia or respiratory illness

What are the symptoms of CO poisoning and how is it treated?

Red flags for CO poisoning include nonspecific flu-like symptoms without fever and multiple people with similar symptoms.

- Symptoms of low-level CO poisoning are similar to flu symptoms and are easily overlooked. They include headache, dizziness, fatigue, and nausea. The symptoms improve when someone goes outdoors or moves away from the source of the CO.
- More severe poisoning may cause confusion, convulsions, unconsciousness, and death. Severe poisoning can cause long-term health effects including brain damage and cardiac injury.

CO poisoning is detected through blood testing and treated using oxygen supplementation.

How Can We Prevent Carbon Monoxide Poisoning?

- Provide information on safely using generators, on how to heat homes and cook following disasters and during power outages. Important messages to include are:
 - Avoid using any appliance with a gas-burning motor (like a generator or power washer) indoors. Opening windows and turning on fans will not provide enough ventilation to prevent CO poisoning.
 - If generator theft is a concern, put a chain and lock on it, do not bring it indoors
 - Do not use barbecue grills to cook indoors or in enclosed spaces such as garages or enclosed porches.
 - Never use a gas oven for heat, even for short periods of time
 - After a disaster, check exhaust systems, flues, and chimneys before using them.
- The International Code Council (ICC) recently passed a new requirement making carbon monoxide detectors mandatory in all homes with attached garages or fuel-fired equipment. The requirement covers new and existing dwellings and will take effect in 2009. Encourage community members to install CO detectors, which are available from most hardware stores for \$20-\$60. Reinforce that detectors are not fail-safe devices and that even with a detector, safety measures need to be followed when using organic fuel-burning appliances to prevent CO poisoning.
- Promote yearly servicing of all gas, coal, and oil burning appliances
- Provide information on recognizing the red flags of CO poisoning and steps to take when they occur (get outside right away and call 911)

Where can I learn more on carbon monoxide poisoning during disasters?

- The CDC lists FAQs about CO poisoning during emergencies, with links to educational materials in multiple languages: <http://www.bt.cdc.gov/disasters/cofacts.asp>

References:

1 CDC. Carbon Monoxide Poisoning Prevention Clinical Education. <http://www2a.cdc.gov/phtn/webcast/COPoisonPrev/CO.pdf>

2 University of Texas Health Center at Houston. Carbon Monoxide Poisoning: a year-round danger. http://publicaffairs.uth.tmc.edu/hleader/archive/Preventive_Health/2007/cmp-0815.html



YALE CENTER FOR PUBLIC HEALTH PREPAREDNESS

55 Church Street, Suite 801

New Haven, CT 06510

Phone: 203-764-9713

E-mail: cphp@yale.edu

<http://publichealth.yale.edu/ycphp>

<http://blogs.yale.edu/roller/page/prepare>

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