

## CARBON MONOXIDE . . . . FACTS FOR STUDENTS & LANDLORDS

*The following information is provided by the Center for Campus Fire Safety and reflects important information about Carbon Monoxide that was recently published by the CPSC and UL. Please feel free to reprint and distribute to students, local landlords, and faculty.*

### What is carbon monoxide (CO) and how is it produced?

Carbon monoxide (CO) is a deadly, colorless, odorless, poisonous gas. It is produced by the incomplete burning of various fuels, including coal, wood, charcoal, oil, kerosene, propane, and natural gas. Products and equipment powered by internal combustion engine-powered equipment such as portable generators, cars, lawn mowers, and power washers also produce CO.

### How many people are unintentionally poisoned by CO?

On average, about 170 people in the United States die every year from CO produced by non-automotive consumer products. These products include malfunctioning fuel-burning appliances such as furnaces, ranges, water heaters and room heaters; engine-powered equipment such as portable generators; fireplaces; and charcoal that is burned in homes and other enclosed areas. In 2005 alone, CPSC staff is aware of at least 94 generator-related CO poisoning deaths. Forty-seven of these deaths were known to have occurred during power outages due to severe weather, including Hurricane Katrina. Still others die from CO produced by non-consumer products, such as cars left running in attached garages. The Centers for Disease Control and Prevention estimates that several thousand people go to hospital emergency rooms every year to be treated for CO poisoning.

### What are the symptoms of CO poisoning?

Because CO is odorless, colorless, and otherwise undetectable to the human senses, people may not know that they are being exposed. The initial symptoms of low to moderate CO poisoning are similar to the flu (but without the fever). They include: Headache, Fatigue, Shortness of breath

Nausea, Dizziness, High level CO poisoning results in progressively more severe symptoms, including: Mental confusion, Vomiting, Loss of muscular coordination,

Loss of consciousness, Ultimately death. Symptom severity is related to both the CO level and the duration of exposure. For slowly developing residential CO problems, occupants and/or physicians can mistake mild to moderate CO poisoning symptoms for the flu, which sometimes results in tragic deaths. For rapidly developing, high level CO exposures (e.g., associated with use of generators in residential spaces), victims can rapidly become mentally confused, and can lose muscle control without having first experienced milder symptoms; they will likely die if not rescued.

### How can I prevent CO poisoning?

Make sure appliances are installed and operated according to the manufacturer's instructions and local building codes. Most appliances should be installed by qualified professionals. Have the heating system professionally inspected and serviced annually to ensure proper operation. The inspector should also check chimneys and flues for blockages, corrosion, partial and complete disconnections, and loose connections.

Never service fuel-burning appliances without proper knowledge, skill and tools. Always refer to the owners manual when performing minor adjustments or servicing fuel-burning equipment.

Never operate a portable generator or any other gasoline engine-powered tool either in or near an enclosed space such as a garage, house, or other building. Even with open doors and windows, these spaces can trap CO and allow it to quickly build to lethal levels.

Install a CO alarm that meets the requirements of the current UL 2034 or CSA 6.19 safety standards. A CO alarm can provide some added protection, but it is no substitute for proper use and upkeep of appliances that can produce CO. Install a CO alarm in the hallway near every separate sleeping area of the home. Make sure the alarm cannot be covered up by furniture or draperies.

Never use portable fuel-burning camping equipment inside a home, garage, vehicle or tent unless it is specifically designed for use in an enclosed space and provides instructions for safe use in an enclosed area.

Never burn charcoal inside a home, garage, vehicle, or tent.

Never leave a car running in an attached garage, even with the garage door open.

Never use gas appliances such as ranges, ovens, or clothes dryers to heat your home.

Never operate unvented fuel-burning appliances in any room where people are sleeping.

Do not cover the bottom of natural gas or propane ovens with aluminum foil. Doing so blocks the combustion air flow through the appliance and can produce CO.

During home renovations, ensure that appliance vents and chimneys are not blocked by tarps or debris. Make sure appliances are in proper working order when renovations are complete.

### What CO level is dangerous to my health?

The health effects of CO depend on the CO concentration and length of exposure, as well as each individual's health condition. CO concentration is measured in parts per million (ppm). Most people will not experience any symptoms from prolonged exposure to CO levels of approximately 1 to 70 ppm but some heart patients might experience an increase in chest pain. As CO levels increase and remain above 70 ppm, symptoms become more noticeable and can include headache, fatigue and nausea. At sustained CO concentrations above 150 to 200 ppm, disorientation, unconsciousness, and death are possible.

### What should I do if I am experiencing symptoms of CO poisoning and do not have a CO alarm, or my CO alarm is not going off?

If you think you are experiencing any of the symptoms of CO poisoning, get outside to fresh air immediately. Leave

the home and call your fire department to report your symptoms from a neighbor's home. You could lose consciousness and die if you stay in the home. It is also important to contact a doctor immediately for a proper diagnosis. Tell your doctor that you suspect CO poisoning is causing your problems. Prompt medical attention is important if you are experiencing any symptoms of CO poisoning. If the doctor confirms CO poisoning, make sure a qualified service person checks the appliances for proper operation before reusing them.

### Are CO alarms reliable?

CO alarms always have been and still are designed to alarm before potentially life-threatening levels of CO are reached. The safety standards for CO alarms have been continually improved and currently marketed CO alarms are not as susceptible to nuisance alarms as earlier models.

### How should a consumer test a CO alarm to make sure it is working?

Consumers should follow the manufacturer's instructions. Using a test button tests whether the circuitry is operating correctly, not the accuracy of the sensor. Alarms have a recommended replacement age, which can be obtained from the product literature or from the manufacturer.

### How should I install a CO Alarm?

CO alarms should be installed according to the manufacturer's instructions. CPSC recommends that one CO alarm be installed in the hallway outside the bedrooms in each separate sleeping area of the home. CO alarms may be installed into a plug-in receptacle or high on the wall. Hard wired or plug-in CO alarms should have battery backup. Avoid locations that are near heating vents or that can be covered by furniture or draperies. CPSC does not recommend installing CO alarms in kitchens or above fuel-burning appliances.

### What should you do when the CO alarm sounds?

**Never ignore an alarming CO alarm! It is warning you of a potentially deadly hazard.**

If the alarm signal sounds **do not try to find the source of the CO:**

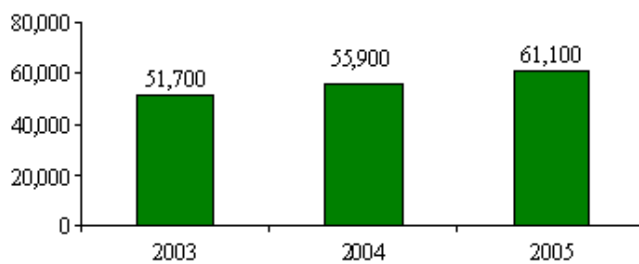
- Immediately move outside to fresh air.
- Call your emergency services, fire department, or 911.
- After calling 911, do a head count to check that all persons are accounted for. DO NOT reenter the premises until the emergency services responders have given you permission. You could lose con-

sciousness and die if you go in the home.

- If the source of the CO is determined to be a malfunctioning appliance, DO NOT operate that appliance until it has been properly serviced by trained personnel.

Consumers can obtain this publication and additional publication information from CPSC's web site or by sending your publication request to [info@cpsc.gov](mailto:info@cpsc.gov).

**Non-Fire Carbon Monoxide Incidents Reported by Responding Fire Departments, by Year**



Source: NFIRS and NFPA survey.

- The peak time of day is between 6:00 p.m. and 9:59 p.m.
- January and December are the peak months for non-fire CO incidents.
- Almost 9 out of every 10 (89%) reported non-fire carbon monoxide incidents took place in the home

## NEWS FROM UL

### Carbon Monoxide Alarm Considerations for Code Authorities:

Underwriters Laboratories has released the following information on Carbon Monoxide Alarms:

"Carbon Monoxide (CO) alarms play an important role in protecting the public against carbon monoxide poisoning. Having a basic understanding of CO poisoning, CO alarms, how they are listed, and how they are to be installed and maintained is an important consideration for code authorities.

**Amanda's Law went into Effect February 22nd in NY:** Carbon Monoxide detectors are required to be installed in nearly all New York homes, regardless of when they were built or sold, beginning next week. Amanda's Law was passed by the NY State Legislature in 2009.

**Wisconsin Legislature Passes Carbon Monoxide Bill - Awaits Governor's Signature:** Last week the Wisconsin Legislature passed a bill requiring carbon monoxide detectors in one- and two-family homes, adding to last year's requirement they be installed in other dwellings.

**Carbon Monoxide Bill in Pennsylvania House (HB 1445):** A bill requiring CO detectors in all new construction as well as existing homes and apartments made it out of a Pennsylvania House committee last week.