



## Portable Electric Generator Safety Tips

Portable electric generators offer great benefits when outages affect your home. Below are guidelines for safely connecting and operating portable generators.

### **Don't connect your generator directly to your home's wiring.**

A generator that is directly connected to your home's wiring can 'backfeed' onto the power lines connected to your home which can be deadly to you and others.

The only safe way to connect a portable electric generator to your existing wiring is to have a licensed electrical contractor install a transfer switch. The transfer switch transfers power from the utility power lines to the power coming from your generator.

### **Never plug a portable electric generator into a regular household outlet.**

Plugging a generator into a regular household outlet can energize "dead" power lines and injure neighbors or utility workers. Connect individual appliances that have their outdoor-rated power cords directly to the receptacle outlet of the generator, or connect these cord-connected appliances to the generator with the appropriate outdoor-rated power cord having a sufficient wire gauge to handle the electrical load.

### **Don't overload the generator.**

Do not operate more appliances and equipment than the output rating of the generator. Overloading your generator can seriously damage your valuable appliances and electronics. A portable electric generator should be used only when necessary, and only to power essential equipment.

### **Never use a generator indoors or in an attached garage.**

Just like your automobile, a portable generator uses an internal combustion engine that emits deadly carbon monoxide. Be sure to place the generator where exhaust fumes will not enter the house. Only operate it outdoors in a well-ventilated, dry area, away from air intakes to the home, and protected from direct exposure to rain, preferably under a canopy, open shed or carport.



**Use the proper power cords.**

Plug individual appliances into the generator using heavy-duty, outdoor-rated cords with a wire gauge adequate for the appliance load. Overloaded cords can cause fires or equipment damage. Don't use extension cords with exposed wires or worn shielding. Make sure the cords from the generator don't present a tripping hazard. Don't run cords under rugs where heat might build up or cord damage may go unnoticed. Protect the cord from getting pinched or crushed if it passes through a window or doorway.

**Read and adhere to the manufacturer's instructions for safe operation.**

Don't cut corners when it comes to safety. Carefully read and observe all instructions in your portable electric generator's owner manual.

**To prevent electrical shock, make sure your generator is properly grounded.**

Consult your manufacturer's manual for correct grounding procedures.

**Do not store fuel indoors or try to refuel a generator while it's running.**

Gasoline (and other flammable liquids) should be stored outside of living areas in properly labeled, non-glass safety containers. They should not be stored in a garage if a fuel-burning appliance is in the garage. The vapor from gasoline can travel invisibly along the ground and be ignited by pilot lights or electric arcs caused by turning on the lights. Avoid spilling fuel on hot components. Put out all flames or cigarettes when handling gasoline. Always have a fully charged, approved fire extinguisher located near the generator. Never attempt to refuel a portable generator while it's running.

**Turn off all equipment powered by the generator before shutting down your generator.**

**Avoid getting burned.**

Many generator parts are hot enough to burn you during operation.

**Keep children away from portable electric generators at all times.**

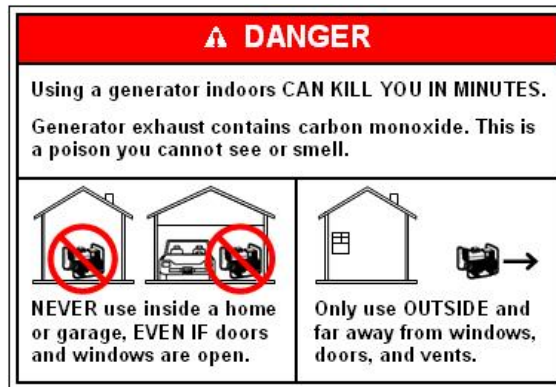
## Portable Generator Hazards

Portable generators are useful when temporary or remote electric power is needed, but they also can be hazardous. The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, fire and burns.

Every year, people die in incidents related to portable generator use. Most of the incidents associated with portable generators reported to the Consumer Product Safety Commission (CPSC) involve CO poisoning from generators used indoors or in partially-enclosed spaces.

### Carbon Monoxide Hazards

When used in a confined space, generators can produce high levels of CO within minutes. When you use a portable generator, remember that you cannot see or smell CO. Even if you do not smell exhaust fumes, you may still be exposed to CO.



Danger labels are required on all portable generators manufactured or imported on or after May 14, 2007.

If you start to feel sick, dizzy, or weak while using a generator, get to fresh air **RIGHT AWAY. DO NOT DELAY.** The CO from generators can rapidly kill you.



## **Follow these safety tips to protect against CO poisoning:**

- **NEVER** use a generator inside homes, garages, crawlspaces, sheds, or similar areas, even when using fans or opening doors and windows for ventilation. Deadly levels of carbon monoxide can quickly build up in these areas and can linger for hours, even after the generator has shut off.
- Follow the instructions that come with your generator. Locate the unit outdoors and far from doors, windows, and vents that could allow CO to come indoors.
- Install battery-operated CO alarms or plug-in CO alarms with battery back-up in your home, according to the manufacturer's instructions. CO alarms should be certified to the requirements of the latest safety standards (UL 2034, IAS 6-96, or CSA 6.19.01). Test batteries monthly.
- Connect appliances to the generator using heavy-duty extension cords that are specifically designed for outdoor use. Make sure the wattage rating for each cord exceeds the total wattage of all appliances connected to it. Use extension cords that are long enough to allow the generator to be placed outdoors and far away from windows, doors and vents to the home or to other structures that could be occupied. Check that the entire length of each cord is free of cuts or tears and that the plug has all three prongs. Protect the cord from getting pinched or crushed if it passes through a window or doorway.

## **Fire Hazards**

- **Never** store fuel for your generator in the home. Gasoline, propane, kerosene, and other flammable liquids should be stored outside of living areas in properly-labeled, non-glass safety containers. Do not store them near a fuel-burning appliance, such as a natural gas water heater in a garage.
- Before refueling the generator, turn it off and let it cool down. Gasoline spilled on hot engine parts could ignite.

## Safe Uses of Extension Cords



### The Statistics

The U.S. Consumer Product Safety Commission (CPSO) estimates that each year, about 4,000 injuries associated with electric extension cords are treated in hospital emergency rooms. About half the injuries involve fractures, lacerations, contusions, or sprains from people tripping over extension cords. Thirteen percent of the injuries involve children under-five years of age; electrical burns to the mouth accounted for half the injuries to young children.

CPSC also estimates that about 3,300 residential fires originate in extension cords each year, killing 50 people and injuring about 270 others. The most frequent causes of such fires are short circuits, overloading, damage, and/or misuse of extension cords.

### The Standards

The National Electrical Code says that many cord-connected appliances should be equipped with polarized grounding type plugs. Polarized plugs have one blade slightly wider than the other and can only be inserted one way into the outlet. Polarization and grounding ensure that certain parts of appliances that could have a higher risk of electric shock when they become live are instead connected to the neutral, or grounded, side of the circuit. Such electrical products should only be used with polarized or grounding type extension cords.

Voluntary industry safety standards, including those of Underwriters Laboratories Inc.(UL), now require that general use extension cords have safety closures, warning labels, rating information about the electrical current, and other added features for the protection of children and other consumers.

In addition, UL-listed extension cords now must be constructed with #16 gauge or larger wire, or be equipped with integral fuses. The #16 gauge wire is rated to carry 13 amperes (up to 1560 watts), as compared to the formerly-used # 18 gauge cords that were rated for 10 amperes (up to 1200 watts).

**The following are recommendations for the purchase and safe use of extension cords:**

- Use extension cords only when necessary and only on a temporary basis.
- Use polarized extension cords with polarized appliances.
- Make sure cords do not dangle from the counter or table tops where they can be pulled down or tripped over.
- Replace cracked or worn extension cords with new. #16 gauge cords that have the listing, of a nationally-recognized testing laboratory, safety closures, and other safety features.
- With cords lacking safety closures, cover any unused outlets with electrical tape or with plastic caps to prevent the chance of a child making contact with the live circuit.
- Insert plugs fully so that no part of the prongs is exposed when the extension cord is in use.
- When disconnecting cords, pull the plug rather than the cord itself.
- Teach children not to play with plugs and outlets.
- Use only three-wire extension cords for appliances with three-prong plugs. Never remove the third (round or U-shaped) prong, which is a safety feature designed to reduce the risk of shock and electrocution.
- In locations where furniture or beds may be pushed against an extension cord where the cord joins the plug, use a special "angle extension cord," which is specifically designed for use in these instances.
- Check the plug and the body of the extension cord while the cord is in use. Noticeable warming of these plastic parts is expected when cords are being used at their maximum rating, however, if the cord feels hot or if there is a softening of the plastic, this is a warning that the plug wires or connections are failing and that the extension cord should be discarded and replaced.
- Never use an extension cord while it is coiled or looped. Never cover any part of an extension cord with newspapers, clothing, rugs, or any objects while the cord is in use. Never place an extension cord where it is likely to be damaged by heavy furniture or foot traffic.
- Don't use staples or nails to attach extension cords to a baseboard or to another surface. This could damage the cord and present a shock or fire hazard.
- Don't overload extension cords by plugging in appliances that draw a total of more watts than the rating of the cord.
- Use special, heavy duty extension cords for high wattage appliances such as air conditioners, portable electric heaters, and freezers.
- When using outdoor tools and appliances, use only extension cords labeled for outdoor use.