

The **danger** of *Electrical Shock*

Electric power does a tremendous amount of work.

But because it's such a powerful force, we need to be very careful with it.

People are injured or killed every year by electricity. The reasons are almost always carelessness, a faulty appliance or tool, or a lack of knowledge about how electricity works. You can reduce electrical injuries and death by doing three things:

1.

Understanding how electricity works

2.

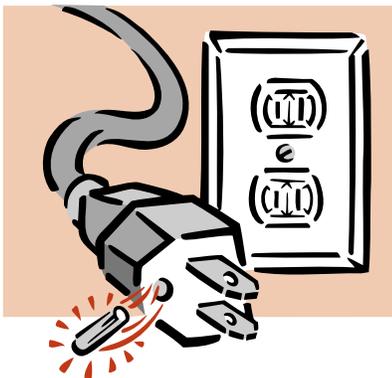
Recognizing potential electrical hazards

3.

Learning about safety devices that prevent shock.

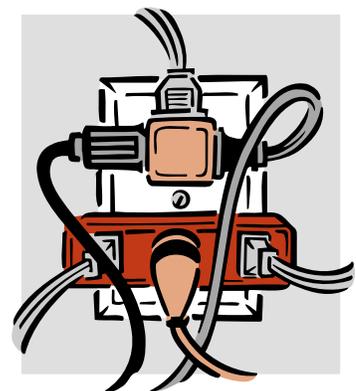
- Electricity naturally flows to the earth, or to ground, through anything that will conduct electrical current. There are some compounds, like wood and glass, that are not good conductors of electricity. But electricity will pass through the human body, sometimes with fatal results, trying to get to ground. If an appliance or tool is faulty or has a shorted wire, for example, the electric current may try to find another path to ground. That's why electrical systems should always be grounded. A safe path to ground for electricity is away from your body and confined within whatever piece of electrical equipment you're using.

- Three-Prong Plugs. You may have noticed that the electrical outlets in most homes now have three-wire receptacles that accommodate electrical cords with three-prong plugs. The third prong provides a path to ground along which the electric current travels. Most major appliances, such as stoves, refrigerators, and computers, have



three-prong plugs, meaning they are grounded. Most older homes do not have three-wire receptacles. If yours does not, you should have an electrician rewire the home to accommodate the three-prong plugs. Although three-prong adapters can be purchased, they are not recommended for permanent use. Also remember never to clip the third prong off a plug to make it fit a two-hole outlet.

- GFCI. Another device that's commonly used to prevent shocks in the home is a ground fault circuit interrupter. These are usually installed in wall-mounted receptacles in areas where electricity and water are most likely to come in contact, such as bathrooms, laundry rooms, kitchens, and outdoors. They have buttons that are marked TEST and RESET. GFCIs monitor electric current and can switch a circuit off before injury occurs. Most electric hair dryers come equipped with GFCIs on their plugs. Consumers are advised to consult a qualified licensed electrician about installing these safety devices, although many newer homes have them already.
- It's advisable to use tools and appliances with three-prong grounding plugs, even if you have a GFCI. Portable, or temporary, GFCIs are available, but they should not be used as a permanent alternative to wall-mounted, receptacle-type GFCIs.
- Overloaded receptacles. Avoid overloading a receptacle or an electrical circuit. Fires can occur when overloaded wires become hot. Most receptacles are designed for two plugs only.



The danger of Electrical Shock (continued)

- Double-insulated tools. Double-insulated tools help protect against electrical shock. An electrical shock in a tool can occur, for example, because of worn wiring that lets bare wire touch the frame of an appliance. Double-insulated tools have an outer casing of plastic or some other nonconductive material and are the only tools with two-wire plugs sold today that are approved by the Underwriters Laboratories (UL).

- In the bathroom. Never touch electrical equipment while in the bathtub. Keep all electrical appliances far enough away from water in tubs, showers, and sinks so you can't touch them, and they can't fall in and discharge electricity through the water—and through you. Receptacles in bathrooms should have a ground fault circuit interrupter so they can detect electricity leakage.

- Throughout the house. It's a good idea to cover electrical outlets so that objects like pins, nails, and other foreign objects can't be inserted into the outlets.



- In the laundry room. An ungrounded faulty appliance anywhere can be a hazard because you could become a connection to ground for escaped electricity. For example, handling an ungrounded clothes iron while touching an operating washing machine could be dangerous because you could become a path to ground for the current. In this example, the washing machine is grounded, but the iron is not. Because electricity is constantly seeking a path to ground, when you touch the washing machine while using the ungrounded iron, the electricity from the iron will travel through you as it tries to get to ground, which in this case would be through the washing machine.

- In the kitchen. An ungrounded faulty appliance, such as an electric toaster, used near a grounded kitchen sink can be dangerous. Do not handle or operate appliances when your hands are wet or when the appliances are on wet surfaces, such as a countertop that has water on it. Receptacles within six feet of a kitchen sink must have a ground fault circuit interrupter.



- In the workshop. Ungrounded faulty tools are always hazardous. Make sure power tools are grounded, or are double-insulated. Wear rubber-soled shoes, stand on a rubber mat, and keep work floors dry. Receptacles in basements and garages must have a ground fault circuit interrupter.



- Check equipment. It's advisable to check the condition of cords, plugs, and insulation on double-insulated tools for signs of fraying or other damage.
- In swimming pools. Pool lights and pumps may become faulty and create hazards. Make sure your pool has only properly installed lighting and equipment. Receptacles near pools should have ground fault circuit interrupters.
- If you have questions about your electrical system or appliances and tools, you may wish to consult an electrician about the best way to ensure your safety.