

A.R.E.S. Safety Around Electricity

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Electricity has existed even before humans. Electricity exists as natural and human generated. As humans, we need electricity to live. Our bodies generate our own electricity. Our bodies produce electricity which is sent across the heart in a specific pattern. This specific pattern causes the muscles of the heart to contract in a specific order. This specific order causes what we know as a heartbeat, which we as humans need to circulate blood and keep us alive. While electricity causes our hearts to beat, it can also cause our hearts to stop.



Defibrillator with paddles



AED/Automatic External Defibrillator

Each of these machines fires electricity across the heart. Before a person can be defibrillated, nobody else can be touching the person being defibrillated. Before a person is defibrillated, we make sure there is nobody touching the patient and we say “CLEAR” loudly. The electricity these machines deliver will stop a heart as quickly as restarting one that needs it.

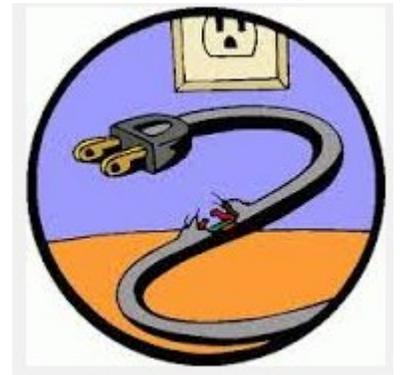
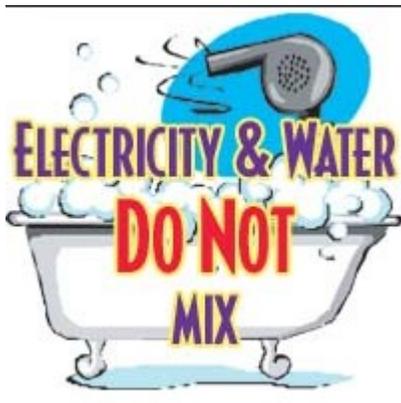
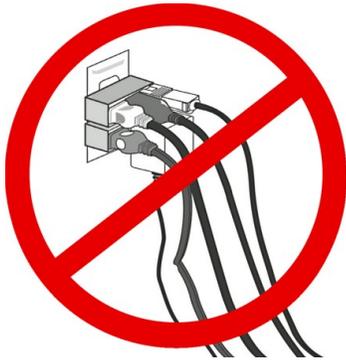


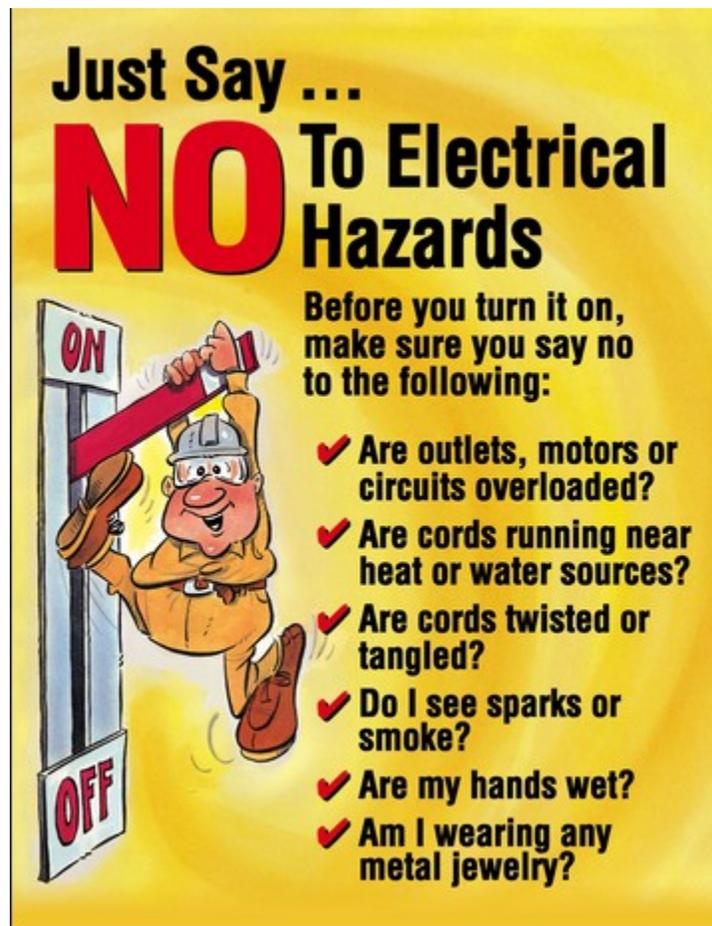
Natural Electricity



Man made electricity

A Few Electrical “NO NO's”





Electrical safety tips

U.S. fire departments responded to an estimated annual average of 47,820 reported home structure fires involving electrical failure or malfunction in 2007-2011. These fires resulted in 455 civilian deaths, 1,518 civilian injuries and \$1.5 billion in direct property damage.

- Replace or repair damaged or loose electrical cords.
- Avoid running extension cords across doorways or under carpets.
- In homes with small children, make sure your home has tamper-resistant (TR) receptacles.
- Consider having additional circuits or outlets added by a qualified electrician so you do not have to use extension cords.
- Follow the manufacturer's instructions for plugging an appliance into a receptacle outlet.
- Avoid overloading outlets. Plug only one high-wattage appliance into each receptacle outlet at a time.
- If outlets or switches feel warm, frequent problems with blowing fuses or tripping circuits, or flickering or dimming lights, call a qualified electrician.

- Place lamps on level surfaces, away from things that can burn and use bulbs that match the lamp's recommended wattage.
- Make sure your home has ground fault circuit interrupters (GFCIs) in the kitchen bathroom(s), laundry, basement, and outdoor areas.
- Arc-fault circuit interrupters (AFCIs) should be installed in your home to protect electrical outlets.

Outdoor electrical safety

Lighting to improve the look and safety of our homes, electric tools to make our outdoor work easier, and power lines to our home, all need to be handled with care.

Outside electrical work

- Have a qualified electrician do all electrical work.
- To prevent an electrical shock, make sure all your outside electrical receptacles are GFCI (ground fault circuit interrupter) protected.

Equipment safety

- Use lighting and power tools that have the label of an independent test laboratory and make sure they are made for outdoor use.
- Store your electrical tools indoors.
- Keep electric tools away from children.
- Keep the area around your electric meter and other electrical equipment clear.
- Check lighting and extension cords for damage before using. Replace any damaged cords right away.
- Use extension cords that have the label of an independent testing laboratory and are marked for outdoor use.
- Extension cords are not meant for long-term use.

Power lines

Have a professional tree cutting service trim branches that might fall on electric wiring. Use a wooden or fiberglass ladder outside. Keep the ladder at least 10 feet away from power lines. Never touch anyone or anything in contact with a downed wire. Power lines may be live, stay a safe distance away. Report downed wires to authorities right away.

What are some general safety tips for working with or near electricity?

Inspect portable cord-and-plug connected equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.

- Always tape extension cords to walls or floors when necessary. Nails and staples can damage extension cords causing fire and shock hazards.
- Use extension cords or equipment that is rated for the level of amperage or wattage that you are using.
- Always use the correct size fuse. Replacing a fuse with one of a larger size can cause excessive currents in the wiring and possibly start a fire.
- Be aware that unusually warm or hot outlets may be a sign that unsafe wiring conditions exist. Unplug any cords or extension cords to these outlets and do not use until a qualified electrician has checked the wiring.
- Always use ladders made with non-conductive side rails (e.g., fiberglass) when working with or near electricity or power lines.
- Place halogen lights away from combustible materials such as cloths or curtains. Halogen lamps can become very hot and may be a fire hazard.
- Risk of electric shock is greater in areas that are wet or damp. **Install Ground Fault Circuit Interrupters (GFCIs)** as they will interrupt the electrical circuit before a current sufficient to cause death or serious injury occurs.
- Use a portable in-line Ground Fault Circuit Interrupter (GFCI) if you are not certain that the receptacle you are plugging your extension cord into is GFCI protected.
- Make sure that exposed receptacle boxes are made of non-conductive materials.
- Know where the panel and circuit breakers are located in case of an emergency.
- Label all circuit breakers and fuse boxes clearly. Each switch should be positively identified as to which outlet or appliance it is for.
- Do not use outlets or cords that have exposed wiring.
- Do not use portable cord-and-plug connected power tools with the guards removed.
- Do not block access to panels and circuit breakers or fuse boxes.
- Do not touch a person or electrical apparatus in the event of an electrical accident. Always disconnect the power source first.

Never Break OFF the Third Prong on a Plug

- Replace broken 3-prong plugs and make sure the third prong is properly grounded.

Never Use Extension Cords as Permanent Wiring

- Use extension cords only to temporarily supply power to an area that does not have a power outlet.
- Keep extension cords away from heat, water and oil. They can damage the insulation and cause a shock.
- Do not allow vehicles to pass over unprotected extension cords. Extension cords should be put in protective wireway, conduit, pipe or protected by placing planks alongside them.

Inspect Cords and Plugs

- Check extension cords and plugs daily. Do not use, and discard if worn or damaged. Have any extension cord that feels more than comfortably warm checked by an electrician.

Eliminate Octopus Connections

- Do not plug several items into one outlet.
- Pull the plug, not the cord.
- Do not disconnect power supply by pulling or jerking the cord from the outlet. Pulling the cord causes wear and may cause a shock.

What is a Ground Fault Circuit Interrupter (GFCI)?

A Class A Ground Fault Circuit Interrupter (GFCI) works by detecting any loss of electrical current in a circuit (e.g., it will trip at a maximum of 6mA). When a loss is detected, the GFCI turns the electricity off before severe injuries or electrocution can occur. A painful non-fatal shock may occur during the time that it takes for the GFCI to cut off the electricity so it is important to use the GFCI as an extra protective measure rather than a replacement for safe work practices.

GFCI wall outlets can be installed in place of standard outlets to protect against electrocution for just that outlet, or a series of outlets in the same branch circuit. A GFCI Circuit Breaker can be installed on some circuit breaker electrical panels to protect an entire branch circuit. Portable in-line plug-in GFCIs can be plugged into wall outlets where appliances will be used.

When and how do I test the Ground Fault Circuit Interrupter (GFCI)?

It is important that you follow the manufacturer's instructions with respect to the use of a GFCI. Test permanently wired GFCIs monthly, and portable devices before each use. Press the "test" and "reset" buttons. Plug a "night light" or lamp into the GFCI-protected wall outlet (the light should turn on), then press the "TEST" button on the GFCI. If the GFCI is working properly, the light should go out. If not, have the GFCI repaired or replaced. Press the "RESET" button on the GFCI to restore power.

If the "RESET" button pops out but the "night light" or lamp does not go out, the GFCI has been improperly wired and does not offer shock protection at that wall outlet. Contact a qualified electrician to correct any wiring errors.

What are some tips for working with power cords?

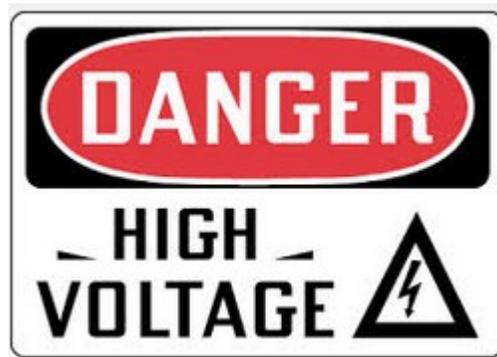
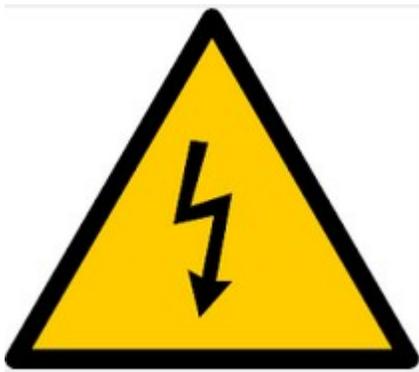
- Keep power cords clear of tools during use.
- Suspend extension cords temporarily during use over aisles or work areas to eliminate stumbling or tripping hazards.
- Replace open front plugs with dead front plugs. Dead front plugs are sealed and present less danger of shock or short circuit.
- Do not use light duty extension cords in a non-residential situation.
- Do not carry or lift up electrical equipment by the power cord.
- Do not tie cords in tight knots. Knots can cause short circuits and shocks. Loop the cords or use a twist lock plug.

What should I do if I think I am too close to overhead power lines?

Do not work close to power lines. Recommended distances vary by jurisdiction and/or utility companies. Check with both your jurisdiction and electrical utility company when working, driving, parking, or storing materials closer than 15 m (49 feet) to overhead power lines.

- If you must be close to power lines, you must first call your electrical utility company and they will assist you.
- If your vehicle comes into contact with a power line:
 - **DO NOT** get out of your vehicle.
 - Call 911 **and** your local utility service for help.
 - **Wait** for the electrical utility to come and they will tell you when it is safe to get out of your vehicle.

- Never try to rescue another person if you are not trained to do so.
- If you must leave the vehicle (e.g., your vehicle catches on fire), exit by jumping as far as possible - at least 45 to 60 cm (1.5 to 2 feet). Never touch the vehicle or equipment and the ground at the same time. Keep your feet, legs, and arms close to your body.
- Keep your feet together (touching), and move away by shuffling your feet. Never let your feet separate or you may be shocked or electrocuted.
- Shuffle at least 10 metres away from your vehicle before you take a normal step. Do not enter an electrical power substation, or other marked areas.
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Electricity can burn the body as it enters, burn the body where it exits, and burn an unseen path inside the body between the two visible burns. These burns hurt, can get infected, and kill. Electricity can stop a beating heart. Always follow the rules of safety around electricity. Never become part of the path of least resistance. Always give electricity the highest level of respect. If you violate a safety rule, electricity will let you know in a millisecond.