

GENERAL INDUSTRY

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TARGET → ON SAFETY

Electrical Safety

Why Should We Be Concerned?

Electricity is essential to almost every aspect of our lives today – at home and on the job. Since electricity is such a familiar part of our daily life, we don't always give much thought to the hazards electricity poses and often fail to recognize that even small amounts of electricity can hurt or kill us.

The Effects of Electricity on the Body

An electric shock can result in anything from a slight tingling sensation to immediate cardiac arrest. The severity depends on the following:

- Amount of current flowing through the body
- Current's path through the body

- Length of time the body remains in the circuit

The list below shows the general relationship between the amount of current received and the reaction when current flows from the hand to the foot for just one second. Measurements are listed in milliamps - 1/1000th of an amp.

- **1 mA:** Perception level. Slight tingling sensation. Still dangerous under certain conditions.
- **5 mA:** Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
- **6 – 30 mA:** Painful shock, muscular control is lost.

This is called the freezing current or "let-go" range.

- **50 – 150 mA:** Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go. Death is possible.
- **1000 – 4300 mA:** Ventricular fibrillation (the rhythmic pumping action of the heart ceases.) Muscular contraction and nerve damage occur. Death is most likely.

Can the Current Found in the Average Residence Kill You?

Yes. At any given time, there are as much as 10-15 amps available at any outlet. Your circuit breakers are probably 10-amp or 15-amp

breakers. The numbers in this chart are 1/1000th of an amp, far less than what flows through the outlets in a home.

Qualified or Unqualified?

Working with electricity requires specialized training. Electricians and electrical engineers are people who, because of their training, are qualified to work on electrical systems. Those without proper training are unqualified and cannot work or adjust electrical components. Re-wiring your basement or installing new outlets in a garage does not make you a qualified electrician.

Some Basic Reminders

Here are some basic reminders about electrical issues we face every day.

- **Electrical Panels:** All electrical panels must have a clear space of 36 inches in front of the access panel and that clear space has to be maintained continuously. Nothing can be stored in front of the panels, even temporarily.
- **Extension Cords:** Extension cords are to be used on a temporary basis only and never as a substitute for permanent wiring. Extension cords can become damaged and bare wires can be exposed. The plugs on

extension cords need to be three-prong plugs so equipment is properly grounded. Always inspect an extension cord before use to make sure there are no breaks in the insulation. Look to see how and where extension cords are placed so they do not become a trip hazard and so they won't be driven over by motorized vehicles.

- **GCFI Outlets:** Outlets in wet (or potentially wet) locations should be protected with a ground fault circuit interrupter (GFCI). This outlet has that red 'test' button on it. It measures how much electricity goes out and how much comes back through the outlet. When there is a deviation greater than 15 milliamps, it switches off within 1/10th of a second.
- **Conduit:** Conduit (metal tubing) that has come loose from a junction box is a potential problem and should be reported.