

Electrical Safety at Work and Home

MAY IS NATIONAL ELECTRICAL SAFETY MONTH AND A GOOD time to review electrical safety practices.

Increasing electrical safety awareness, following electrical safety guidelines and using tools and technology designed to address electrical hazards are all components of a safety program.

What causes the top electrical hazards? Many are the result of the growing use of electrical power, combined with electrical systems that are over 20 years old. Wiring hazards are both a major cause of electrocutions and home fires, killing hundreds and injuring thousands each year. Misuse of surge suppressors, power strips and extension cords is also a cause of electrocutions and fires. Contact with power lines and major appliances contribute to hundreds of deaths annually, both at home and in the workplace. Eliminating these electrical hazards will help reduce deaths and injuries.

Eliminating electrical hazards begins with education and awareness. A focus on electrical safety, both at home and in the workplace, can prevent the hundreds of deaths, thousands of injuries and billions of dollars in economic losses that occur each year because of electrical hazards.

Use of tools and technology can also make our reliance on electrical power less hazardous. Investing in ground fault circuit interrupters (GFCIs), arc fault circuit interrupters (AFCIs), circuit testers and where necessary, personal protective equipment (PPE), can significantly reduce risk.

For additional electrical safety information, visit the Electrical Safety Foundation International's Web site at www.electrical-safety.org or call 703-841-3229.

Eliminate Top Safety Threats to Prevent Electrical Injuries

Eliminating the top electrical safety threats around the home and workplace can prevent thousands of injuries and hundreds of deaths that needlessly occur each year.

According to data, top electrical safety hazards

include:

- Electrical fires caused by aging wiring;
- Misuse of surge suppressors and extension cords; and
- Electrocutions from power lines, wiring systems and large appliances.

U.S. Consumer Product Safety Commission (CPSC) research indicates that each year we can expect more than 140,000 electrical fires, which result in hundreds of injuries and deaths. Electrocutions associated with wiring and consumer products cost hundreds of lives annually. In the workplace, more than 300 workplace fatalities and approximately 4,000 injuries occur each year due to electrical hazards, according to a study published by the National Safety Council.

GFCIs: Top Safety Device

Installing a Ground Fault Circuit Interrupter (GFCI) in every home and workplace could prevent nearly 70 percent of the approximately 400 electrocutions that occur each year. GFCIs are especially useful for cord-connected appliances and equipment used outdoors or near water.

GFCIs are electrical safety devices that trip electrical circuits when they detect ground faults or leakage currents. A GFCI can be an electrical receptacle, circuit breaker or portable device. A person who becomes part of a path for leakage current will be severely shocked or electrocuted.

An Electrical



Facts and Statistics

Safety Foundation International (ESFI) survey found that nearly one-half of U.S. families never test the GFCIs in their homes. More than 25 percent do not know that GFCIs can help prevent electrocution.

Even among those who routinely tested their GFCIs, none said that they tested their units as recommended – at least once a month and after storms.

GFCIs are subject to wear and possible damage from power surges during an electrical storm. Industry studies suggest that as many as 10 percent of GFCIs in use may be damaged. ESFI recommends performing a simple monthly test to determine if GFCIs are functioning properly.

Among the estimated millions of GFCIs installed nationwide, many are the standard wall or receptacle-type GFCIs. To test your GFCIs, follow this simple procedure:

- Push the “Reset” button of the GFCI receptacle to prepare the unit for testing.
- Plug a light into the GFCI and turn it on. The light should now be ON.
- Push the “Test” button of the GFCI. The light should go OFF.
- Push the “Reset” button again. The light should again turn ON.

The light should go out when the test button is pushed. If the light does not go out, then the GFCI is not working or has been installed incorrectly. If the “Reset” button pops out during the test but the light does not go out, the GFCI may have been improperly wired. In this case, the GFCI may have been damaged and does not offer shock protection. Contact a qualified electrician to check the GFCI and correct the problem.

Avoid Outdoor Electrical Hazards at Work and Home

Warmer weather brings an increase in outdoor work in many parts of the country, both on the job and at home. Increasing electrical safety awareness can help ensure those activities do not result in injuries and deaths, according to the Electrical Safety Foundation International (ESFI). ESFI notes that following safety rules can reduce electrical deaths

and injuries:

- Ladders – even those made of wood – that contact a power line can prove fatal.
- Unplug outdoor tools and appliances when not in use.
- Inspect power tools and appliances for frayed cords, broken plugs and cracked or broken housing and repair or replace damaged items.
- Water does not mix with electricity. Avoid damp conditions – including wet grass – when using electricity.

Power Line Safety

The Electrical Safety Foundation International (ESFI) reminds those on the job to look up, look down, and look out for electrical safety hazards.

On average, 325 people die and 4,400 are injured each year because of electrical hazards, according to data published by the National Safety Council. Electricity ranks sixth among all causes of occupational fatalities. The leading cause of fatal electrical incidents while on the job is contact with power lines, both above and below ground.

ESFI reminds workers using ladders or scaffolds, and those carrying aluminum siding, poles, fencing and even lumber, to be aware and stay clear of power lines. Such contacts caused approximately 22 percent of the work-related fatalities over a seven-year period, according to research (“Occupational Electrical Injuries in the US, 1992-1998,” published in the *Journal of Safety Research*).

Eliminating power line contacts with equipment such as cranes, boom trucks and dump trucks could reduce workplace electrical fatalities by another 17 percent annually, the study suggests.

The study also notes that construction workers, who make up approximately 7 percent of the U.S. workforce, suffer 44 percent of the electrical fatalities. Electrical safety experts suggest that the best insulator to keep workers safe from electricity is to stay at least 10 feet away from power lines.



The most recent data from the U.S. Consumer Product Safety Commission shows that on average, there are over 400 electrocutions in the United States each year. Of these, approximately 180 are related to consumer products. Large appliances were responsible for the largest proportion of the electrocutions — 10 percent.

- Electrocutions from wiring hazards, including damaged or exposed wiring and household wiring together totaled approximately 20 percent.
- Ladders contacting power lines caused 9 percent of electrocutions; in another 5 percent of deaths, victims contacted high voltage power lines.
- Power tools were responsible for another 9 percent of deaths.
- Landscaping, gardening and farming equipment cause 7 percent of electrocutions each year.

In the workplace, data from the National Safety Council indicates that electrical hazards cause nearly one workplace fatality every day.

- Annually, electrical hazards are listed as the cause of approximately 4,000 injuries.
 - Electrical incidents, while only a small portion of those that occur on-the-job, are far more likely to be fatal.
 - Electricity ranks sixth among all causes of occupational injury in the United States.
 - Before the installation of Ground Fault Circuit Interrupters (GFCIs), which de-energize a circuit when they detect a ground fault, nearly 800 people died annually from household electrocutions.
- Currently, fewer than 200 people die annually from household electrocutions.
- 25 percent of U.S. consumers don't understand the purpose of their GFCIs.
 - More than 25 percent of consumers do not know that GFCIs can help prevent electrocution.
 - Nearly one-half of U.S. families never test their GFCIs.
 - Among those who routinely test their GFCIs, none do so according to safety recommendations – at least once a month and after storms.

Electrocutions do not tell the entire story. Electricity is the cause of more than 140,000 fires each year, resulting in 400 deaths, 4,000 injuries and \$1.6 billion in property damage. Total economic losses due to electrical hazards are estimated to exceed \$4 billion annually.