



# BIE SAFETY ADVISOR

## Electrical Safety

Electricity has long been recognized as a serious workplace hazard and working with electricity can be dangerous. OSHA's electrical standards are designed to protect employees exposed to dangers such as electric shock, electrocution, fires, and explosions. Construction workers, engineers, electricians, and other professionals work with electricity directly, including working on overhead lines, cable harnesses, and building wiring. Others, such as office workers and sales people, work with electricity indirectly and may also be exposed to electrical hazards.

Many workers are unaware of the potential electrical hazards present in their work environment, which makes them more vulnerable to the danger of electrocution. The following hazards are the most frequent causes of electrical injuries: Contact with Power Lines, Lack of Ground-fault Protection, Path to Ground Missing or Discontinuous, Equipment Not Used in Manner Prescribed, and Improper Use of Extension and Flexible Cords.

**Contact with Power Lines-** Overhead and buried power lines at your site are especially hazardous because they carry extremely high voltage. Fatal electrocution is the main risk, but burns and falls from elevations are also hazards. Using tools and equipment that can contact power lines increases the risk.

**Lack of Ground-fault Protection-**Due to the dynamic, rugged nature of construction work, normal use of electrical equipment at your site causes wear and tear that results in insulation breaks, short-circuits, and exposed wires, especially with Flexible Cords and Power Tools. If there is no ground-fault protection, these can cause a ground-fault that sends current through the worker's body, resulting in electrical burns, explosions, fire, or death.

**Path to Ground Missing or Discontinuous -** If the power supply to the electrical equipment at your site is not grounded or the path has been broken, fault current may travel through a worker's body, causing electrical burns or death. Even when the power system is properly grounded, electrical equipment can instantly change from safe to hazardous because of extreme conditions and rough treatment.



### ***Improper Use of Extension and Flexible Cords-***

The normal wear and tear on extension and flexible cords at your site can loosen or expose wires, creating hazardous conditions. Cords that are not 3-wire type, not designed for hard-usage, or that have been modified, increase your risk of contacting electrical current.



***Equipment Not Used in Manner Prescribed -*** If electrical equipment is used in ways for which it is not designed, you can no longer depend on safety features built in by the manufacturer. This may damage your equipment and cause employee injuries.



To learn more about the electrical standards that apply to construction, electrical hazard recognition and solutions, visit the OSHA Website at: [www.osha.gov/SLTC/electrical/construction](http://www.osha.gov/SLTC/electrical/construction)



Building Industry Employers  
Of New York State



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Electric shock can cause burns, shocks, falls and electrocution (death). According to the Bureau of Labor Statistics, for the last decade, electrical injury has been responsible for an average of 320 workplace deaths and over 4,000 injuries involving days away from work annually in the United States.

### Electrical Safety Do's And Don'ts

#### Do:

- Do inspect all electrical equipment daily prior to use, and tag as needed and report damaged tools to supervisor.
- Do survey the work site for overhead power lines and other electrical hazards when using ladders or working platforms. Maintain the required distance from electrical equipment and conductors. This distance depends on the voltage hazard.
- Do provide adequate overload and short-circuit protection for safe operation. The interrupting capacity of all breakers and fuses must be sufficient to clear the fault current rapidly and without damage to itself.
- Do provide cord protection for flexible cords and cables passing through doorways or other pinch points.
- Do keep a fire extinguisher on work site at ALL times. The standard procedure for fighting electrical fires is to open the circuit and then apply an approved extinguishing agent. A carbon dioxide (CO<sub>2</sub>) extinguisher offers the advantage of extinguishing the fire, cooling the apparatus, leaving no residue, and having no adverse affect on the insulation and metal parts; it may be used on live circuits. CO<sub>2</sub> should not be used in confined spaces, unless a breathing apparatus is used. A dry chemical extinguisher may be used; however it will leave a residue.
- Do avoid mixing water and electricity. Keep electrical equipment, hands and feet, and working surface dry.
- Do check all electrical equipment and notify others that are also connected to the power source before resetting GFCI or breakers.
- Do use a GFCI on all construction sites.

#### Do Not:

- Do not use Shop Made Cords with Receptacle Boxes. Among the most common electrical violations is when a multiple receptacle box, designed to be surface mounted, is fitted with a flexible cord and is placed on the floor to provide power to various tools or equipment. These are not permitted and should be taken out of service.
- Do not use a length or size (wire gauge) extension cord that exceeds the max recommended by tool manufacturer.
- Do not splice extension cords with electrical tape. Splices should be approved permanent splices. Hard service flexible cords 12 AWG or larger may be repaired if spliced so that the splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.
- Do not leave extension cords in walkways or work areas causing a trip hazard.
- Do not use worn, frayed, or damaged cords
- Do not fasten extension cords with staples, hang from nails, or suspend from wire.
- Do not exit your vehicle if it comes in contact with electricity. Drive away until the electricity is no longer in contact with you vehicle. If the engine stops running, call 911 for assistance.

Information for this Tool Box Talk was provided through the OSHA and SWR Institute Alliance.

