

Accident Prevention

5-Minute Talk

Overview of topic

Electrical accidents are caused by one or more of the following reasons:

- Unsafe equipment and/or installation.
- Unsafe workplaces caused by environmental factors.
- Unsafe work practices.

Protection from electrical hazards is one way to prevent accidents. Protective methods include insulation, electrical protective devices, guarding, grounding, personal protective equipment (PPE), and safe work practices.

Circuit protective devices

At construction sites, the most common electrical hazard is the ground fault electrical shock. The OSHA electrical rules require employers to provide either: (1) ground fault circuit interrupters (GFCIs) for receptacle outlets, or (2) an assured equipment grounding conductor program. Either method can eliminate ground fault electric shock hazards.

Circuit protective devices, such as fuses, circuit breakers, and GFCIs, automatically limit or shut off current flow in the event of a ground-fault, overload, or short circuit in a wiring system.

Fuses and circuit breakers protect conductors and equipment. They prevent overheating of wires and components that could create hazards for workers. They also open the circuit under certain hazardous ground-fault conditions.

Insulation

Employees should be trained to check their equipment daily for insulation breakdown. They should check for such things as broken or exposed wires, and scuffed insulation on extension cords. Electrical conductor insulation must be suitable for the voltage and conditions under which the item will be used. Employees can also wear insulated non-conductive gloves and shoes. Non-conducting coatings on tool handles also aid in insulating from electrical shock.



Guarding

Any “live” parts of electrical equipment operating at 50 volts or more must be guarded to avoid accidental contact. Entrances to areas with “live” electrical parts must be marked with warning signs. The signs should forbid entrance except by qualified persons.

Grounding

Grounding is required to protect employees from electrical shock, safeguard against fire, and protect against damage to electrical equipment. There are two kinds of grounding: (1) service or system ground—where one wire, the neutral conductor, is grounded. This type of ground is designed to protect machines, tools, and insulation; (2) equipment ground—provides a path for current from a tool or machine to ground. This safeguards the operator in the event of a malfunction.

Personal protective equipment

If your employees work where there are potential electrical hazards, you must provide them with electrical protective equipment. You must use equipment appropriate for the body parts needing protection, and the work being done.

Employee training

No specific training requirements is mentioned in the electrical standard. However, you must always, “instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.”

Training tips

Have a supply of circuit breakers, fuses, GFCIs, etc., on hand to explain their functions for protecting workers. Promote the fact that these are only mechanical devices and subject to failure. The best accident preventive methods are still correct installation of temporary wiring and safe work places and practices.

Where to go for more information

- Regulatory text: 29 CFR 1926.400–.449
- National Electrical Code, National Fire Protection Association
- Regulatory text 29 CFR 1926.21(b)(2)—Safety training and education, employer responsibility

