

## Electrical Safety

### Why is it so important to work safely with or near electricity?

The electrical current on the job and in the offices, has enough power to cause death by electrocution. People are injured when they become part of the electrical circuit. Humans are more conductive than the earth which means if there is no easier path to ground, electricity will try to flow through the body first before trying to flow through less conductive materials. You could say that the human body is a magnet for electricity.

### How do electrical injuries occur?

The four most common injuries that occur include electrocution, electric shock, burns, and falls. These injuries can happen in various ways:

- **Direct contact with the electrical energy:** When electricity travels through our bodies, it can interfere with the normal electrical signals between the brain and our muscles causing the heart to stop beating properly or our breathing could stop, or our muscles can spasm and cause us to fall or stumble.
- **Indirect contact with the electrical energy:** When electricity arcs through a gas, such as air, to a person who is grounded:
  - Arc flashes result in intense heat that causes burns, intense light which can cause blindness, or ignition of other materials.
  - Arc blasts cause the same conditions as an arc flash but are more intense and can include a strong pressure wave. These pressure waves can damage machinery, throw a person, collapse a lung, or rupture ear drums.
- **Thermal burns** include flash burns from heat generated by an electric arc. Fires can start from materials that catch on fire from heating or ignition by electrical currents.
- **High voltage contact burns** can burn internal tissues while leaving only very small injuries on the outside of the skin.
- **Muscle contractions**, or a startle reaction can cause a person to fall from a ladder, scaffold, or aerial bucket. The fall can cause serious injuries or even death.

### What safety precautions should you take?

- Inspect cords and plugs daily and discard if worn or damaged.
- Have any cord that feels more than comfortably warm checked by an electrician.
- Eliminate octopus connections (do not plug several power cords into one outlet.)
- Do not disconnect power supply by pulling or jerking the cord from the outlet by the wire body. Pulling the wires causes damage over time.
- Never break off the third prong on a plug.
- Replace broken three 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 power cords away from heat, water, and oil. They can damage the insulation and cause a shock.
- Use LOTO and Energy Isolation as required by the Company Electrical procedures.

### General safety tips for working with or near electricity

- Inspect tools, power cords, and electrical fittings for damage or wear prior to each use and repair or replace damaged equipment immediately.
- Always tape cords to walls or floors when necessary. Nails and staples can damage cords causing fire and shock hazards.
- Use 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 exists. Unplug any cords to these outlets and do not use until a qualified electrician has checked the wiring.
- Always use ladders made of wood or other non-conductive materials 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.
- Make sure that exposed receptacle boxes are made of non-conductive materials.
- Know where the breakers and boxes are located in case of an emergency.
- Label all circuit breakers and fuse boxes clearly.
- Do not use outlets or cords that have exposed wiring.
- Do not use power tools with the guards removed.
- Do not block access to circuit breakers or fuse boxes.
- Do not touch a person or electrical apparatus in the event of an electrical accident. Always disconnect the current first.