# Working Safely Around Electricity Meeting Kit




## WHAT'S AT STAKE

Working around live electricity is a serious hazard. Engineers, linemen, electricians, and others who work with electricity directly, and workers who work with electricity indirectly may be exposed to serious electrical hazards.

## WHAT'S THE DANGER

**UNDERSTANDING AN ELECTRICAL RISK**

An electrical risk is a risk to a person of death, shock or other injury caused directly or indirectly by electricity.

The risk of injury from electricity is strongly linked to where and how it is used. The risks are greatest in harsh conditions, for example:

- outdoors or in wet surroundings – equipment may become wet and may be at greater risk of damage.
- in cramped spaces with earthed metalwork, such as inside a tank or bin.

**ELECTRICITY KNOWLEDGE**

- All electrical systems have the potential to cause harm. Electricity can be either "static" or "dynamic." Dynamic electricity is the uniform motion of electrons through a conductor (this is known as electric current). Conductors are materials that allow the movement of electricity through it. Most metals are conductors. The human body is also a conductor.
- Static electricity is accumulation of charge on surfaces because of contact and friction with another surface. This contact/friction causes an accumulation of electrons on one surface, and a deficiency of electrons on the other surface.
- Electric current cannot exist without an unbroken path to and from the conductor. Electricity will form a "path" or "loop". When you plug in a device (e.g., a power tool), the electricity takes the easiest path from the plug-in to the tool, and back to the power source. This is action is also known as creating or completing an electrical circuit.

**INJURIES RESULT FROM ELECTRICAL CURRENTS.** Electrocution, Electric Shock, Burns, Falls.

- When electrical current travels through our bodies, it can interfere with the normal electrical signals between the brain and our muscles (e.g., heart may stop beating properly, breathing may stop, or muscles may spasm).
- When the electricity arcs (jumps, or “arcs”) from an exposed energized conductor or circuit part (e.g., overhead power lines) through a gas (such as air) to a person who is grounded (that would provide an alternative route to the ground for the electrical current).
- Thermal burns including burns from heat generated by an electric arc, and flame burns from materials that catch on fire from heating or ignition by electrical currents or an electric arc flash.
- Thermal burns from the heat radiated from an electric arc flash. Ultraviolet (UV) and infrared (IR) light emitted from the arc flash can also cause damage to the eyes.
- An arc blast causes physical injuries, collapse your lungs, or create noise that damage hearing.
- Muscle contractions, or a startle reaction, can cause a person to fall from a ladder, scaffold, or aerial bucket.

**EXAMPLES OF ELECTRICAL HAZARD RISKS FOR WORKERS EXPOSURE TO ELECTRICITY**

- Electric shock and burns from live wire contact.
- Fires from faulty wiring
- Overloading circuits
- Leaving electrical parts exposed
- Electrocution or burns from lack of PPE.
- Explosions and fires from explosive and flammable substances.
- Contact with overhead power lines.
- Electrical exposure to water

# HOW TO PROTECT YOURSELF

**ELECTRICAL SAFETY TIPS FOR WORKERS**

1. **Prevent all Potential Contact with Live Electrical Current.** The best way to stay safe is to stay away from electrical hazards. Unqualified personnel should not interact or come close to electrical currents.
2. **De-Energize Equipment and Use Lockout/Tagout.** Prevent accidents and isolate electrical energy by locking and tagging out the electrical system or parts of the system.
3. **Ensure Safe Use of Electrical Equipment.** Employees should take care to handle electrical cords properly:

- Always unplug cords by pulling on the plug head, rather than the cord
- Don’t press or overstretch electrical cords.
- Don’t fasten cords with staples.
- Don’t hang electrical equipment from cords.

1. **Install Proper Physical Barriers Around Electrical Hazards.** Physical barriers should always be used to protect employees from any electrical hazards. Cabinet doors on panel should always be closed.
2. **Beware Of Conductive Tools and Cleaning Materials.** If you are working in an area where an electrical hazard is present, always assume that electrical parts are live.
3. **When Working Overhead, Look Above for Electrical Lines.** When performing any work or maintenance overhead, beware of electrical lines.
4. **Use Extreme Caution with Flammable Materials.** Electrical equipment that can cause ignition must not be used where flammable vapors, gases, or dust are

present.

5. **Only Qualified Personnel Should Work on Live Electrical Wires.** If you encounter a live electrical wire, stay away. Only qualified personnel with the proper training should work on live electrical wires.
6. **Always Follow Your Company’s Electrical Safety Work Practices.** Every company has unique electrical safety work practices depending on the electrical equipment and hazards present in your workplace.
7. **Electrical Shock Can Be Deadly.** To ensure safety, it’s best to assume that any electrical part is live.

## FINAL WORD

Workers are injured when they become part of the electric circuit. Humans are conductive than the earth which means if there is no other easy path, electricity will to try to flow through our bodies.