2 - Electrical Hazards: Safety Training

EH&S – MGA

Goals: This safety session should teach you to:

A. Understand the causes and consequences of electrical hazards.
B. Take proper precautions around electricity.

OSHA Regulations: 29 CFR 1910.331-335

1. Electrical Hazards Are a Major Cause of On-the-Job Injuries and Accidents

A. Safety requires understanding how electricity works and when it's hazardous.

2. Electrical Current Travels Through Insulated Conductors

A. Conductors are the wires and cables that carry electricity from the power plant.
B. Conductors are wrapped in insulators—electricity-resistant materials like rubber, plastic, and glass that keep the electric current on its path and prevent accidents.
    1. Don't use anything electrical that has missing or frayed cord or wire insulation.

3. Grounding Connects Electrical Equipment to Earth

A. Grounding keeps the power on a low-resistance path and helps protect against shock.
    1. Most electrical equipment is grounded with metal frames and covers and/or 3-pronged plugs.
    2. In outdoor or wet areas, special electric outlets called ground fault circuit interrupters (GFCIs) provide added protection.
        a. GFCIs monitor current and are designed to shut power off if an imbalance could cause shock.

4. Uninsulated or Ungrounded Electrical Equipment Can Cause Shock

A. Shock occurs when you touch the ground plus a live wire or poorly insulated tool or machine at the same time.
    1. When electric current goes through your body, it causes shock and may result in:
        a. Pain
        b. Loss of muscle control that can lead to falls or contact with powered equipment
        c. Nerve, muscle, or tissue damage
        d. Internal bleeding
        e. Cardiac arrest or death
    2. The longer your contact with live power, the greater the shock (especially if the current enters your body near your heart).
    3. Water, even moisture in the air, can turn you, your equipment, or even wooden items into conductors.
        a. Don't touch anything electrical with wet hands or if standing in a wet area.
        b. Wear rubber boots for work in a damp area that contains electrical equipment.
    4. Metal is a conductor; don't wear metal jewelry when working with electricity.

5. Electricity Can Burn Your Body

A. Contact with electrical arcs, flashes and fires, or overheated electrical wires or equipment can burn the skin.
B. Electric current that enters your body can also burn body tissue.

6. Electricity Can Cause Fire and Explosion

A. Overheated currents or electrical contact with flammable liquids, or vapors, or combustible dust can cause fires or explosions.

7. Check Equipment to Prevent Accidents and Injuries

A. Be sure cords have good insulation and have coding that shows they're adequate for the voltage, wire size, and conditions.
B. Don't bend 3-pronged plugs or try to force them into 2-pronged outlets.
C. When working around flammable materials, use only tools designed for such use.
D. If an electrical tool shocks, smokes, smells, or sparks, turn it off. Don't use it.

8. Know and Follow Electrical Safety Precautions

A. Don't work on or with live power unless you're trained as a qualified worker.
B. Be sure electrical equipment is properly locked and tagged out before testing, repair, or maintenance is done.

Summation: Be Aware of Electrical Hazards

Electrical shock can be deadly. Take precautions to keep power on its proper path and keep yourself from becoming an electrical conductor.