

# Electrical Safety



# Electrical Safety

- Before use of any electric power tool you must first be trained on use and inspection before use.
- Are any guards missing?
- Is ground plug missing?
- Is it Doubled Insulated?
- Is any insulation missing from electrical cord?  
(Worn or Frayed)



# Electrical Safety

- Are electrical cords in walkways or doorways?
- Do have a GFCI? (Ground Fault Circuit Interrupter) (Outside and /or Wet Areas)
- Are electrical covers in place?
- Only qualified maintenance personal can repair electrical tools.



# Cabinets, Boxes, and Fittings

- Junction boxes, pull boxes and fittings must have approved covers
- Unused openings in cabinets, boxes and fittings must be closed (no missing knockouts)



# Electrical Safety Guidelines

- De-energize electric equipment before inspecting or making repairs
- Use electric tools that are in good repair
- Use good judgment when working near energized lines
- Use appropriate protective equipment



# De-Energizing Electrical Equipment

- The accidental or unexpected sudden starting of electrical equipment can cause severe injury or death.
- Before ANY inspections or repairs are made, the current must be turned off at the switch box and the switch padlocked in the OFF position. At the same time, the switch or controls of the machine or other equipment being locked out of service must be securely tagged to show which equipment or circuits are being worked on.



# De-Energizing Electrical Equipment

- For more information on the Lockout/Tagout (LOTO) standard, 1910.147, see the Lockout/Tagout Interactive Training Program at the OSHA web site, [www.osha.gov/dts/osta/lototraining](http://www.osha.gov/dts/osta/lototraining).



# Electrical Safety

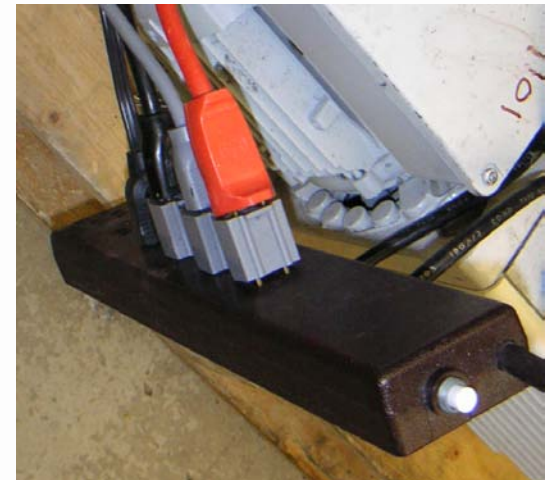
- Grounding: Ground circuits provide a path for stray current to pass directly to the ground, and greatly reduce the amount of current passing through the body of a person in contact with a tool or machine that has an electrical short. Properly installed, the grounding conductor provides protection from electric shock.
  - All instruments must be grounded including household type appliances, coffee pots, etc.
  - The only exceptions to this rule are items entirely encased in plastic (such as microscopes).
  - Grounding check will be done annually.





# Grounding - How Do I Avoid Hazards

- Ground all power supply systems, electrical circuits, and electrical equipment
- Do not remove ground pins/prongs from cord- and plug-connected equipment or extension cords
- Use double-insulated tools
- Ground all exposed metal parts of equipment



# How Shocks Occur

- Electricity travels in closed circuits, and its normal route is through a conductor.
- Electric shock occurs when the body becomes a part of the electric circuit.
- The current must enter the body at one point and leave at another.



# Preventing Electrical Hazards

- Electrical accidents appear to be caused by a combination of three possible factors:
  - Unsafe equipment and/or installation
  - Workplaces made unsafe by the environment
  - Unsafe work practices



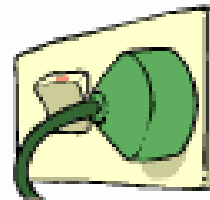
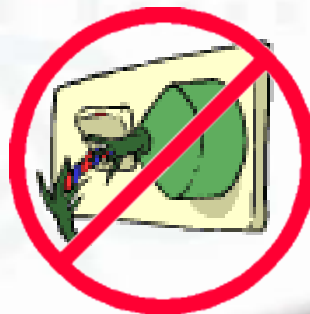
# ELECTRICAL SAFEGUARDING

- No unauthorized person may tamper with any electrical appliance or distribution board.
- Do not overload sockets. Ask for an additional outlet to be installed.
- If an electrical cable becomes warm to the touch, it must be disconnected and reported without delay.
- Cable and extension cords should not be run unprotected beneath carpeting nor should they span walkways without being secured in an encapsulation device.



# ELECTRICAL SAFEGUARDING

- Conduct regular safety inspections to identify potentially hazardous work conditions or unsafe work practices, but even frequent inspections can't detect every danger. You should know your work area better than anyone else.
- Do carry out your own visual inspections of plugs and leads and get them repaired as necessary.
- Look out for:
  - Physical damage to the cable
  - Damage to the plugs
  - Insecure connections to the plug
- Do switch off equipment before unplugging and before cleaning





# Burns

- The most common shock-related injury is a burn. Burns suffered in electrical incidents may be one or more of the following three types:
  - Electrical Burns cause tissue damage, and are the result of heat generated by the flow of electric current through the body. Electrical burns are one of the most serious injuries you can receive and need to receive immediate medical attention.
  - High temperatures near the body produced by an electric arc or explosion cause Arc or Flash Burns (also need prompt medical attention)
  - Thermal Contact Burns occur when skin comes in contact with overheated electric equipment, or when clothing is ignited in an electrical incident.



# Water and Conduction

*Conductors*- Substances with relatively little resistance to the flow of electrical current (e.g., metals).

*Water*- influences the conductive properties of some materials

Dry wood is a poor conductor

Wood saturated with water becomes a ready conductor

Use *extreme caution* when working with electricity where there is water in the environment or on the skin.



# Remember

- Visually inspect all electrical equipment before use.
- Remove any equipment with frayed cords, missing ground prongs, cracked tool casings, etc. from service.
- Apply a warning tag to any defective tool and do not use it until it has been properly repaired.





- You may now finish this safety training tutorial by completing the [OSHA Assessment Quiz](#).

