

Electrical Safety

Electric Shock

Electrical hazards can cause burns, shocks and electrocution (death). There are several precautions against accidental grounding that we all should observe when using portable electric tools.

Check your tools for these conditions:

- Defective or broken insulation
- Improper or poorly made connections to terminals
- Loose or broken switches
- Sparking brushes

If any of these conditions exist, return the tool to the tool room and report it to your supervisor. Do not use the defective tool. Faulty tools can be responsible for an incident. Tools should receive proper care, so they will not become faulty. They should always be returned to their proper place, should be handled with care and should be inspected regularly.

Question: What should you look for when you are conducting electrical equipment inspections?

Answer: Broken or bent plugs, frayed cords, bare wires, smokes, sparks from switches or controls, liquids spilled in or around equipment.

Arc Flash OE Example

Crystal River Unit 3, Concrete Batch Plant - August 31, 2010

An electrician was brought on site by the concrete supply company to troubleshoot an air compressor. The electrician spoke with the on shift batch plant operator and indicated that he did not require the batch plant or control panel to be deenergized before his work. In preparation for work on the air compressor, the electrician attempted to pull the fuses from the energized 480-volt electrical distribution panel that supplied power to the compressor. The electrician was not wearing PPE. In addition, a key lock switch defeated a device that would have deenergized the cabinet when the door was opened. The fuse catastrophically failed as it was being removed, resulting in an arc flash.

Causes:

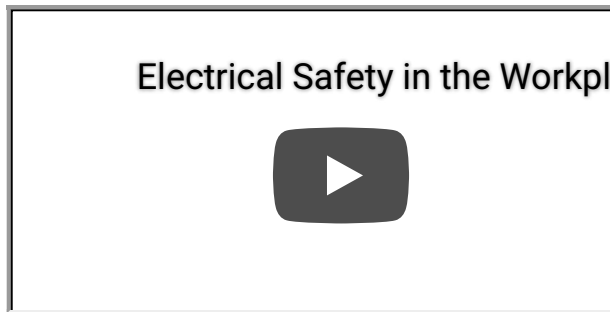
1. The energized electrical conductors and circuit parts to which the worker was to be exposed were not put in an electrically safe working condition.
2. A written work permit was not provided (required for work on energized equipment).
3. Proper PPE was not worn (required when working within the arc flash protection boundary).

Several safe work practices that could have prevented or mitigated this event were not adhered to. The individual received 2nd and 3rd degree burns on over 70% of his body, which were ultimately fatal. Make sure that the equipment you use is properly grounded. Grounding drains dangerous electrical current leaks away to the earth. If an electrical device is grounded, its cord will have a three wire plug and require a three way receptacle to accommodate it. Grounding is especially important when the equipment is used on metal surfaces. (Equipment need not be grounded if it is double insulated; a label usually indicates this). When using extension cords, use heavy-duty ones and plug them into a GFCI plugged in at the power source. Check for proper grounding and exposed wires, as well as the conditions of cords, plugs and insulation.

- Elevate cords to prevent tripping hazards and being subject to wet conditions.
- Always remove cords from receptacles by the plug. Pulling by the cord damages them.

- Be sure that cords are not pinched in doors, drawers, equipment, or anything else as this also damages the cords.
- Avoid placing cords where they are subject to being damaged by vehicles and mobile equipment.

The following is a video from DL Steiner regarding Electrical Safety and the Workplace which is available on YouTube:



#Electricity

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