



First Aid for Electrical Hazards

What's so different about an employee's exposure to electrical hazards, versus a typical construction site hazard?

The primary difference is that because of the hazard of electrical shock or burns from an arc or blast when employees are performing work on or with energized lines and equipment, workers may suffer electrocution, or severe injury.

OSHA requires all companies to have one or more trained **First-Aid/CPR Givers** on each jobsite, so that employees will have assurance that they can be provided emergency first-care treatment, or be transported to a hospital or clinic where they can receive professional medical care.

What's so different about electrical hazards? Let's talk a little about the theory of electricity. When an electrical current passes through the body, there is a path drawn from the two points of contact—where it enters, and where it exits.

Along this path appears the greatest magnitude of electrical current. Damage to tissue or organs along this "current pathway" dictates the severity of the injury.

As an example, a "common pathway" is current that enters on one of the hands or arms, exits through the other hand, or arm. This type of shock is very dangerous in that it can cause severe burning, respiratory arrest, or ventricular fibrillation, when it crosses the chest area.

How does "shock" occur? On any given jobsite, at least one of the following conditions exists, and therefore the potential for major electrical injury (or death) exists:

- Path of current through body/duration of contact
- Damp/wet conditions
- Current loop from source back to source
- Metal objects
- Type/amount of voltage
- Personal protective equipment
- Metal objects (rings, buckles, bracelets, jewelry)
- Metal step-ladders/extension ladders
- Ungrounded power tools/cords

Electrical shock, in most cases, causes "ventricular fibrillation," which means the heart is now beating irregularly, and the patient will probably die within minutes.

Most rescue squad vehicles carry defibrillation equipment, but the typical response time for EMT's is between ten to fifteen minutes. Therefore, the only immediate treatment that most first-care givers can provide is CPR, which can, in some cases, reverse ventricular fibrillation.

Most electrical shock victims also sustain major burns over sizeable portions of their bodies. First-aid treatment in all such cases is flushing the burn area with water, for

a period of ten to fifteen minutes. (Note: Burn ointments should NEVER be applied over burned area...only water.).

And clothing of any kind must be immediately removed from the victim. Also, rings and other jewelry that could restrict swelling would result in loss of blood flow to the limbs, possibly resulting in amputation.

Injuries resulting from electrical shock and burns are grievous in nature, so all such victims require immediate hospital care.