



Ready to Respond to an Electrical Emergency?

Electrical accidents require fast but careful response to save injured workers and protect rescuers. Find out how to prepare your workplace and your workers for an electrical emergency.

Electric shock generally occurs in one of three ways. Individuals, while in contact with the ground, must come in contact with:

- Both wires of the electric circuit
- One wire on an energized circuit and the ground
- A metallic part that has become "hot" by contact with an energized conductor

The extent of injuries depends on the current's magnitude, the pathway of the current, and the duration of current flow through the body.

Resistance Factor

Because the skin offers most of the body's electrical resistance, the point of electrical contact with the skin will determine the amount of shock received.

The condition of the skin also affects resistance to electricity. Resistance is increased if electricity contacts in an area that has thick or callused skin or if the skin is dry. Resistance is decreased if the electricity contacts thin, wet or sweaty, or broken skin.

The presence of moisture from standing water, wet clothing, high humidity, or perspiration decreases resistance. Under dry conditions, the resistance offered by the human body may be as high as 100,000 ohms. Wet or broken skin may drop the body's resistance to 1,000 ohms.

People have different levels of resistance to electric shock because every human body is different. Different medical conditions may also affect a person's reactions. This is why a similar voltage shock can feel minor to one person but be deadly to another.

Caution a Must

When an electrical accident occurs, the victim may be incapable of moving or releasing the electrical conductor because of the effect of something called "muscle clamping."

As a result of this effect, attempts to rescue a victim of an electrical accident may pose a hazard for the rescuer. A rescuer who touches a victim who is affected by muscle clamping and is still in contact with an electrical current could also be exposed to that current.



Caution, therefore, should always be a primary consideration during rescue in response to any electrical accident or emergency.

At the same time, speedy and effective response is essential, because to survive, victims must be rescued as soon as possible.

Rescue Basics

The first rule of electrical rescue is that co-workers should never rush in to an accident situation.

While one person calls 911 and summons a maintenance worker qualified for electrical work, other emergency responders should visually examine the victim to determine if he or she is in contact with energized conductors.

Metal surfaces, objects near the victim, or the ground itself may be energized. Responders could become victims if they touch an energized victim or conductive surface.

Any active electrical circuits should be de-energized, if possible. Once the power is off and it is safe to approach, the victim should be examined to see if he or she can be safely moved.

If the electrical circuit can't be de-energized, emergency responders must use extreme care. They should:

- Ensure that hands and feet are dry.
- Wear protective equipment such as low-voltage gloves and overshoes, if available.
- Stand on a clean, dry surface, or stand on a dry rubber blanket or other insulating material, if possible.
- Use a nonconductive material (for example, nonconductive rope or cord, or a dry stick or board) to remove the victim from the conductor.

First aid for a victim of an electrical accident may include CPR if the person isn't breathing and has no pulse. If the victim is breathing and has a heartbeat, first aid for shock and burns may be required until emergency medical help arrives.