



# Fire ground electrocution

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To survive firefighting, firefighters must know how other firefighters have died fighting fires. Electrocution is one cause of fire ground death.

**Causes of firefighter death:**

1. Stress
2. Falls, falling objects in contact with electricity and other dangerous objects
3. Products of combustion

#### **4. Structural collapse**

**Firefighters electrocuted while fighting fires are often using metal ladders or metal tools near line electricity. One firefighter was electrocuted when**

**repositioning a metal ground ladder. Three firefighters were carrying the ladder vertically; one slipped on ice, causing the ladder to sway and the tip**

**hit a nearby overhead electric wire spanning street utility poles.**

**Although electric power shut off would not have prevented this firefighter's death, cutting off electric power to a burning building is an important**

**safety procedure.**

**Fire officers should know who, when, where and how to shut off electric power to a burning building.**

#### **Who**

**When there is a working structure fire, an electrician from the local utility company should respond and report to the officer in command. The utility**

**company employee should be equipped and know how to remove power to a burning building by disconnecting wires from a utility pole or street**

**shut off. The utility company employee does this upon orders of the chief in charge. When a utility company cannot guarantee 24-hour availability to**

**respond to fires, they must train firefighters to do the job.**

#### **When**

**Generally at a structure fire, electric power should remain on for as long as safety permits. Electricity provides power for lights, which assists**

**search and rescue operations. It keeps fire pumps running for fire extinguishment and elevators operated by firefighters for evacuation. However, there**

**are certain times during a fire or emergency operation when electric power should be immediately removed to protect firefighters and trapped victims.**

**1. Electricity should be cut off before overhaul starts. Normal current in a residential building can kill firefighters. During overhaul, walls, ceilings and**

**floors are sometimes broken open in order to search for hidden fire. Metal tools can come in contact with electric wires behind these walls and**

**ceilings. Firefighters standing on a wet floor in a burned out room can get a metal tool entangled in a live wire. This can cause the firefighter to be**

**electrocuted or severely shocked. So, after a fire is extinguished and overhaul is about to start, electric power should be shut off.**

**2. When electricity is the source of heat causing the fire, power must be immediately cut off. Also, if a victim is being electrocuted, power must be**

**removed from the wire or appliance threatening the trapped person. To handle this type of fire or emergency, firefighters must be trained to safely**

**shut off electricity to residential buildings. Utility companies cannot respond quickly enough to do the job.**

**3. Explosions and structural collapse rip open walls, ceilings and floors of a structure. Live electric wires are threaded throughout the rubble, hanging**

**dangerously in midair and laying around the ground. A collapse search and rescue plan must be put into action. This plan must include: safety survey**

**and reconnaissance, surface search and rescue, void search, selected debris removal and general rubble removal. One of the most important parts of the**

**first step of the collapse rescue plan is to shut off all the utilities such as water and electricity. Shutting off electric power can save the lives of**

**searching firefighters and trapped victims in the collapse rubble.**

### **Where**

**The fire officer ordering power shut off must limit the area of electric power loss to as small an area as possible; increasing the area affected as needed:**

**one room, one apartment, one floor, one building section. Also, the electric power should be cut off as near to the area of operations as possible. For**

**example, first consider removing apartment fuses or opening circuit breakers. If this is not possible, consider shutting off the power from the electric**

**panel box in the basement. Only utility company employees or trained firefighters would be permitted to pull meters outside a residence or cut**

**electric wires. Firefighters ordered to remove electric power should know the hazards they face. There are several dangers firefighters are exposed to**

**when cutting off electric power to a structure. Firefighters sent to basements to pull the switch on an electric panel box have been severely burned in**

**several ways. Searching for an electric panel box in the dark or in smoke, firefighters have walked into live electrical equipment. When the cover to the**

**electric equipment has been left open or removed, firefighters have been severely burned or electrocuted. Also when you pull the switch to open the**

**circuit, if the cover to the electrical panel is open or removed, arcing or an electric flame can explode outward and burn the firefighters standing in front**

**of the panel box.**

### **How**

**To protect yourself when pulling a switch to an electric panel box, use a light to locate the box; make sure the panel box cover is closed, and stand**

**away from the electric panel box. After the switch is opened, an arc explosion inside the enclosed box can blow the cover or panel off the wall. Eye**

**shields should be donned or an SCBA facemask worn. Meters outside private dwellings should only be removed when life is threatened and the inside**

**service switch box in the basement cannot be reached because there is a danger of arcing during the meter removal from the panel. Whenever electric**

**current is interrupted, an arc can be produced. This is an explosion, like a flash of blinding light. Hot sparks and splattering molten metal may**

**accompany the arc explosion. Safety precautions recommended when pulling meters outside a private dwelling are: protective lineman gloves, eye**

**shields, standing on rubber matting or dry wood surfaces and keeping the face and body away from the meter in case there is an arc.**

### **Electrocution**

**If an electric panel box, in a basement or an outside meter is not available to cut off electric power, electric wires entering the residential building may**

**have to be cut. This is extremely dangerous. Only a utility company employee or trained firefighter should do this.**

**A study by the National Institute for Occupational Safety and Health revealed how incidents of electrocution occur most often around normal house**

**current 110-120 volts. The study also revealed "many personnel did not realize that contact with 110/120 volts could cause death."**

**The following safety precautions must be taken by utility company personnel or trained firefighters when cutting electric wires:**

- 1. Wear rubber lineman gloves at all times**
- 2. Wear eye protection at all times**
- 3. Use lineman-cutting tool**
- 4. Cut one wire at a time**
- 5. Stand on a dry non-conductive rubber mat or dry wood surface.**

**Have a person stand by for assistance**

### **Lessons Learned**

**Fire departments must establish preplanned emergency responses with local utility companies and train firefighters to do the electric shut off**

**procedures. Departments must provide trained firefighters with required personal protective equipment: rubber nonconductive mats, lineman gloves**

**and lineman insulated cutting tools. If utility companies do not respond, and we don't train our firefighters to shut off electricity, then untrained**

**firefighters may risk their lives attempting an extremely dangerous act to save lives.**