



NFPA 70E

[eSafetyLine](#)

Bringing Attention to All Electrical Hazards

Electrical Safety is a topic worth repeating. It is covered by both government and private organizations. The Occupational Safety and Health Administration (OSHA) has developed regulations addressing electrical hazards. Organizations, such as the Institute of Electrical and Electronics Engineers (IEEE) and National Fire Protection Association (NFPA), have also created consensus standards to address electrical issues. In particular the NFPA developed 70E – the Standard for Electrical Safety in the Workplace. While a great deal of this standard appears to apply to work done by electricians, all can benefit from an awareness of the hazards it address and the precautions it offers.

The first benefit of NFPA 70E is that it has brought attention to the fact that electrical mishaps can present many hazards. The one we are most familiar with is shock. However this is not always addressed completely. In addition, there are the hazards associated with an arc flash. An arc flash (or arc blast) is a type of electrical explosion that results when a short circuit occurs through air. When an object offering a path to ground or a lower voltage comes near an exposed live circuit or part the current will flash over. And, of course there is the fire hazard associated with electricity.

Looking more closely at the shock hazard you need to understand a little more about the body and electricity. Your body uses electrical impulse to move your muscles. Electrical current when passing through any object generates heat. Considering both factors you can better understand what happens when you get a shock. The external electricity during a shock over powers the impulse in your nerves. If muscles contract too much as a result, bones will break. If it takes over your heart muscle, it can stop beating. As the current enters and exit the body it

will burn those sites. It may also burn nerves, blood vessels and internal organs as it passes between these points.

When an arc flash occurs energy is released in the form of light, noise, heat and pressure. Temperatures associated with an arc-flash can reach 35,000° F. High-intensity flash can damage to eyesight. Pressures can reach thousands of pounds per square feet. This pressure alone can damage, but combined with the molten metal from the heat generated can shoot shrapnel at more than 700 mph. Finally the noise created can exceed 160 dB causing permanent hearing damage.

Last, but not least of the dangers, is fire. Heat from the flash can ignite almost anything. But, even without a flash, the heat that is generated when current is forced through an object with high resistance can reach levels that will cause a fire. Consider the heat caused when a homeowner at Christmas overloads an extension cord and then places the cord under a carpet. The heat captured will melt the cord and ignite the carpet.

With knowledge of all the hazards associated with electricity, you should recognize the danger. Observe warning signs. Listen to the precautions offered in safety talks on electricity and observe boundaries established for qualified and unqualified workers. More information on the precautions and boundaries will be discussed in future talks.

Discussion Questions

Why is it important to pay attention to arc flash?

What can happen if external electricity takes over the muscles of the heart?

MEETING / TRAINING ATTENDANCE ROSTER

COMPANY: _____

_____ SAFETY MEETING

JOB/DEPT: _____

_____ SAFETY TRAINING

DATE: ___/___/___

TIME: _____

TOPICS ADDRESSED: _____

EMPLOYEE'S SIGNATURES

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

EMPLOYEE SUGGESTIONS AND RECOMMENDATIONS: _____

ACTION TAKEN: _____

Supervisor's Signature

_____/_____/_____
Date

Safety Coordinator's Signature

_____/_____/_____
Date