Welcome to the Hard Hat Training Series!

Welcome to the Hard Hat Training Series. Today we will discuss general and construction industry standards for electrical safety. We will go over the best practices of the industry, and how to avoid injury in the workplace.

On December 31, 1879, Thomas Edison did his first demonstration of the light bulb. This became the start of a new era, one where you didn't have to go to bed because it was dark. People all over the world now use electricity in their everyday life. Some would even say that electricity was the greatest discovery ever made.

Image from PBS News Hour

While electricity has been a great tool, when you don't take the necessary precautions, it can be dangerous. The following story will reveal why electrical safety is crucial to keeping you out of harms way.

On his break, Christopher leaned against a hydraulic forklift while the machine was in operation. The forklift then unintentionally touched a 23,000-volt line. Electricity coursed through the machine and electrocuted him.

To make matters worse, two coworkers tried to save him and did not have any of the needed tools to pull Christopher from the machine. As they tried to pull him away, they were also shocked. They were never trained on how to handle this situation.

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Even with the efforts of his coworkers, Christopher passed away. The other two sustained injuries and had to go to the hospital. As a by product of this horrific event, 300 residents temporarily lost power.

The company that Christopher worked for ended up facing $331,101 in penalties and was placed in OSHA's Severe Violator Enforcement Program. The company had not trained their workers, nor had they obtained the proper permits for the work they were doing. Also, the employees were not where they should have been, especially when there was working machinery around them.

While tragic, what happened to Christopher is not an isolated situation. There are more than 300 deaths and 4,000 electricity-related injuries each year. Over 50% of those accidents occur in the construction industry, with a large amount being preventable. Often, the incidents were caused by carelessness or unqualified workers who didn't recognize the hazards.

In this training we will discuss the safe operating practices that you will follow in order to avoid creating hazards at your worksite. We will go over the correct personal protection equipment that you must wear for each hazard.

This training will briefly go over arc flashes as well. Injuries from arc flashes occur more often than those from electric shock, with over 600 reported fatalities and 30,000 injuries in a year. A large amount of these incidents could have been avoided if the workers had followed correct protocols.

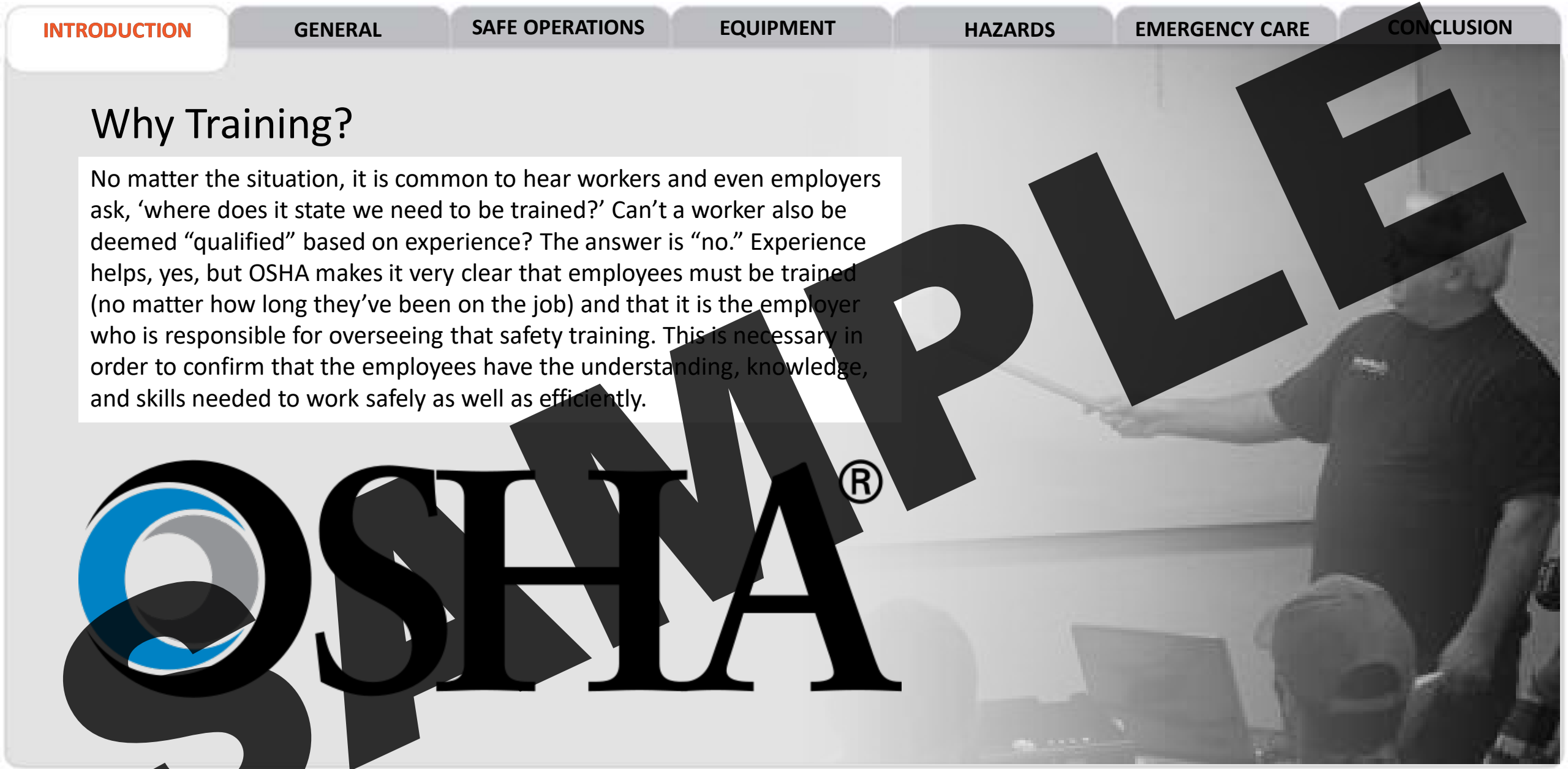
Following those sections, we will talk about different hazards that exist with electricity and how to see them quickly. We will then show you what to do when you face these hazards, including the emergency care that must be taken when these hazards do arise.

We will focus on the general safety guidelines, as well as the best practices to use in the field. By the time you finish with this training, you will be able to avoid disastrous events like those we just mentioned.

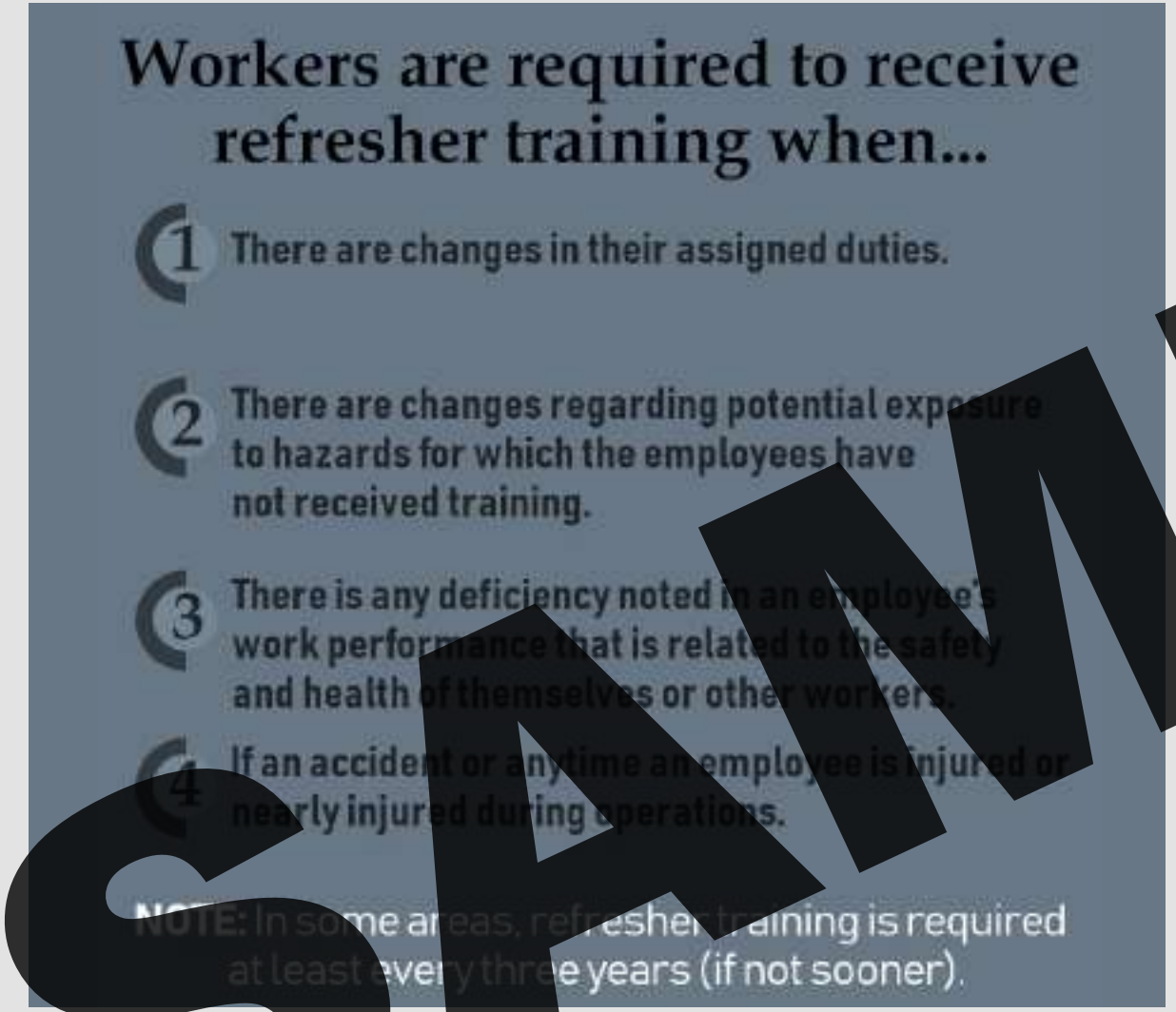
These are some of the main standards concerning electrical and arc flash safety. Many states have additional standards, as do some industries. We have provided these as a guide, but it's your responsibility to know all federal, local and company rules that apply to your job site.

Why Training?

No matter the situation, it is common to hear workers and even employers ask, 'where does it state we need to be trained?' Can't a worker also be deemed "qualified" based on experience? The answer is "no." Experience helps, yes, but OSHA makes it very clear that employees must be trained (no matter how long they've been on the job) and that it is the employer who is responsible for overseeing that safety training. This is necessary in order to confirm that the employees have the understanding, knowledge, and skills needed to work safely as well as efficiently.



Initial training and refresher training, as well as any written and practical evaluations, must be documented and filed. At the very least, in the case of an investigation, OSHA will want to see proof of proper and consistent training (in the way of training outlines, class lists, training goals, tests, certificates, and so on.) These documents should include the name of the person who taught the class or conducted the evaluation.

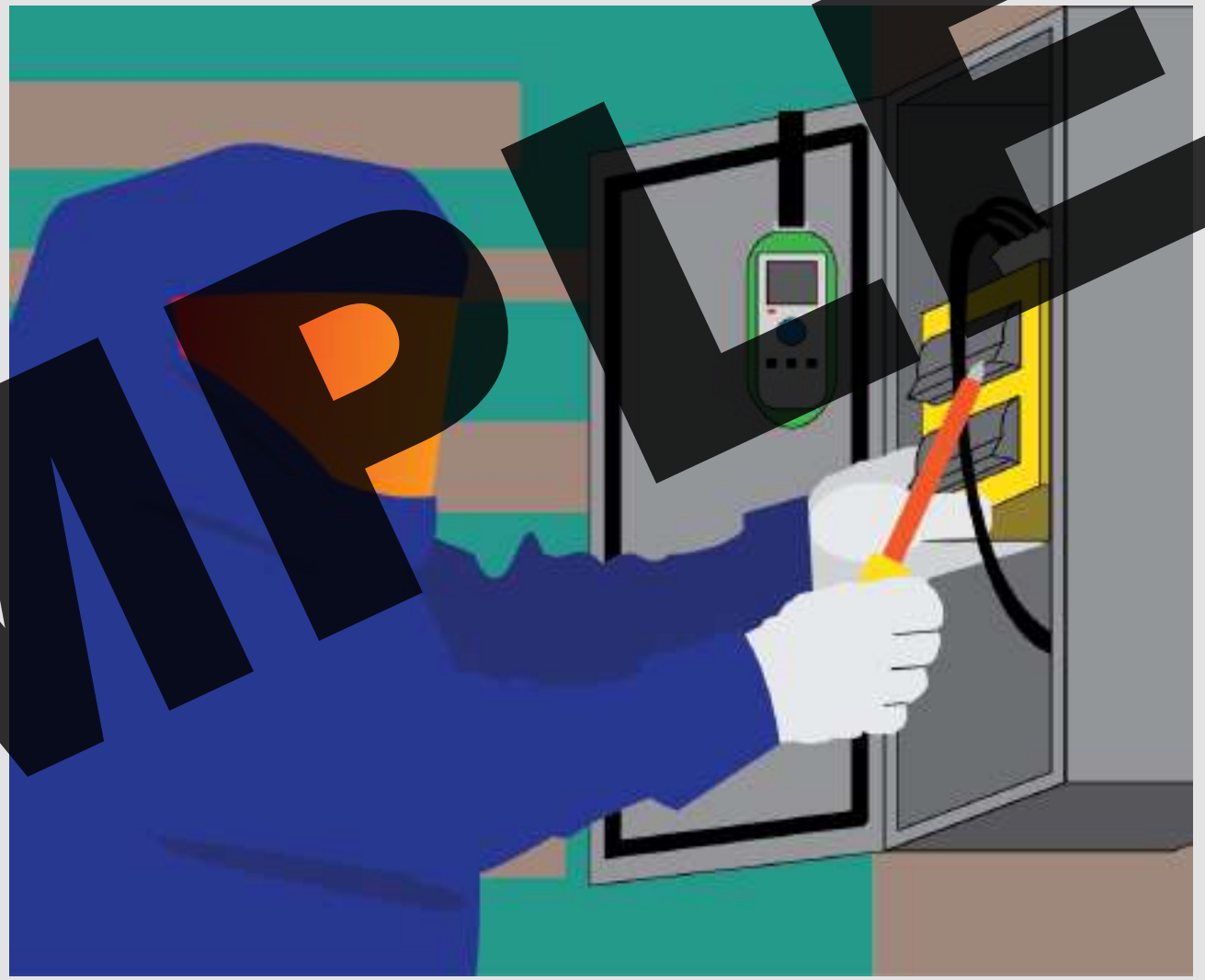


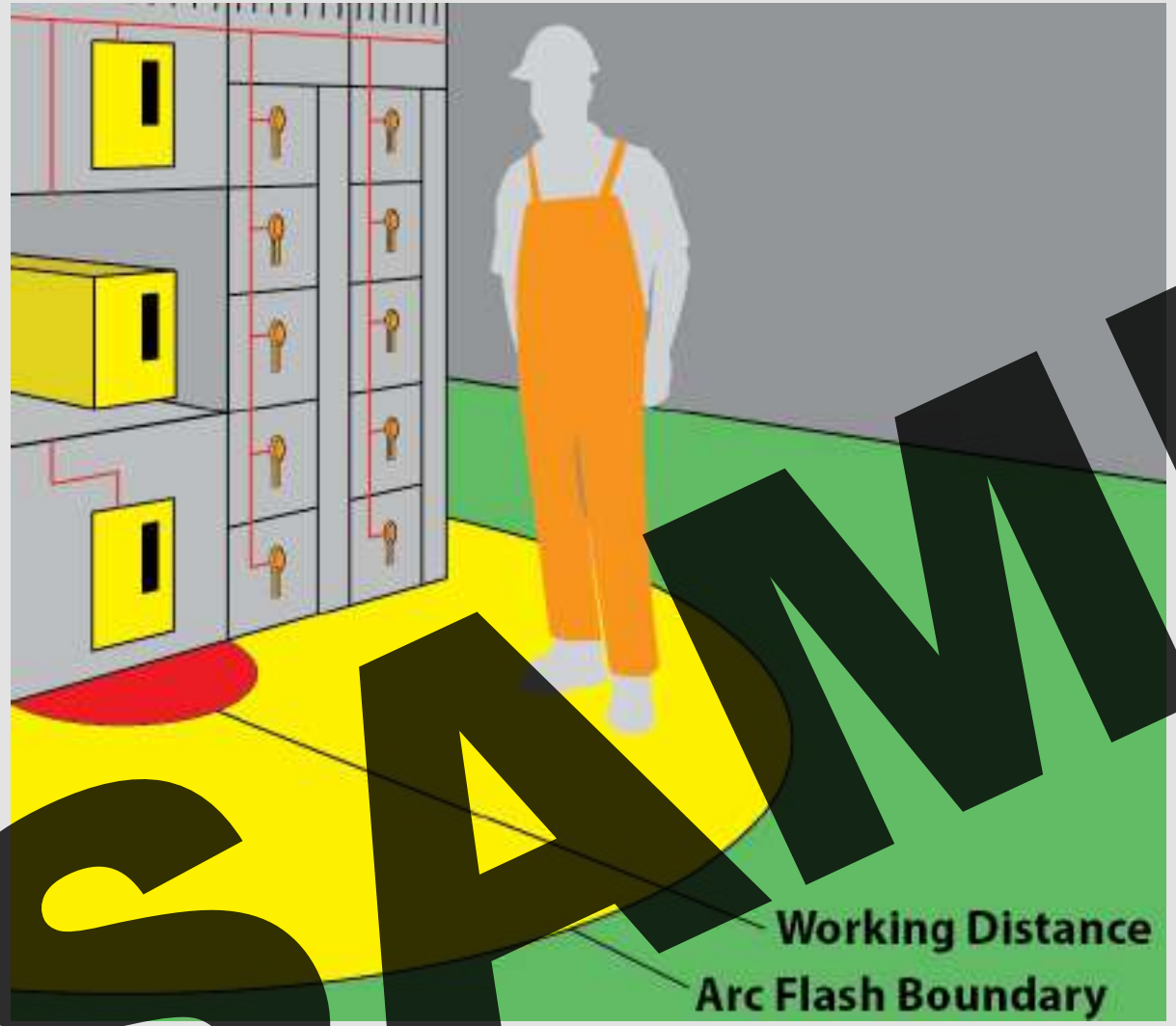
Training is not just a one-and-done occurrence; it is on-going. In fact, similar to the guidelines set down for when initial training is required, OSHA is also specific when it comes to "refresher training." More specifically, OSHA acknowledges the need for "refresher" or "follow up" training whenever there is a demonstrated need for it, as listed here. Can you think of any others?

The extent of training will be determined by the employer, but at the very least it should include classroom instruction followed by a written and practical examination that prove continued competency.

Qualified Person

A **qualified person,** as defined by the NFPA and OSHA, is "One who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training to identify and avoid the hazards involved."





A qualified person is someone who is trained and trusted to work with electricity. They are familiar with the pertinent instruments and equipment. The qualified person is familiar with the risks involved while working on energized equipment and has been trained to do so. Also, they are able to identify hazards and use the necessary control methods to mitigate risks.

Only a qualified person may work on equipment with exposed energized parts. And only a qualified person may work in areas with exposed energized parts of 50 volts or more without supervision.

A qualified person isn't necessarily able to perform every task required. However, a qualified person must be trained in the material below, according to the NFPA.

1. Distinguish exposed energized electrical conductors and circuit parts from other parts.
2. Determine the nominal voltage of exposed energized electrical conductors and circuit parts.
3. Approach distances and the corresponding voltages to which the qualified person will be exposed.
4. Decision-making process necessary to do the following:
    a) Identify electrical safety hazards
    b) Assess the associated risk
    c) Perform the job safety planning
    d) Select the appropriate risk control methods from the hierarchy of controls including PPE.

General