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**safety, health & security**

### Electrical safety in the workplace is everyone's business

**By Kenneth Mastrullo,**  
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When heading off to work each day, most of us assume that we will return home healthy and safe. However, facts tell us that this is not always the case. In the United States, 3,600 disabling and 4,000 non-disabling electrical contact injuries occur annually. In addition to these injuries, one person dies from electrocution in the workplace every day, making this the fourth-leading cause of workplace deaths.



These Department of Labor statistics are startling, yet they do not tell the whole story. These data only represent the incidents that must be reported. Other types of injuries, along with near-miss situations, are not reported. A near-miss is an electrical incident in which no one is injured and the electrical equipment is not damaged.

#### **OSHA limitations**

Current OSHA regulations provide a limited level of electrical safety in the workplace. OSHA Subpart S, the federal regulation for electrical safety, was last updated in 1990 and was based on 1984 technology. Since then, significant research has been done on the effects of electrical injuries and advances in the development of personal protective equipment (PPE). This new information has not been incorporated into the OSHA regulation.

OSHA regulations address only one electrical hazard -- electrical shock -- and subsequently ignore electrical flash and electrical blast hazards. This is unfortunate, since the latter two account for many of the serious, debilitating electrical burns and injuries that are caused by

hot molten parts.

The OSHA PPE requirements state that employees working in areas where there are potential electrical hazards must be provided with and use appropriate electrical protective equipment. However, many employers have not analyzed the PPE requirements for the electrical tasks being performed and therefore have not specified the "appropriate" PPE for the job. This PPE evaluation process is critical for the protection of workers. The wrong decision -- or indecision -- could result in a higher chance of injury or increased severity of an injury.

### **NFPA's comprehensive standards**

NFPA 70E, the Standard for Electrical Safety Requirements for Employee Workplaces, was developed 24 years ago by the National Fire Protection Association. It is the basis for all of the OSHA electrical safety requirements and has the same format as OSHA Subpart S. The latest edition of NFPA 70E includes additional requirements for arc blast, arc flash, and maintenance practices, as well as safety requirements for special equipment and a matrix for specifying PPE. This information, based on the latest research and technology, provides more comprehensive safety protection for employees. The NFPA has urged OSHA to adopt NFPA 70E by reference as the electrical safety requirements for employee workplaces, but so far, OSHA has not agreed to do so.

### **Why safety is everyone's business**

An unsafe workplace can be expensive. Costs associated with accidents include incident investigation, maintaining files for legal purposes, increased insurance costs, fines, legal expenses, and medical costs. The legal battles over non-compliance can be hardest on a facility owner, who must bear the costs in terms of money, time, and public opinion. If an electrical accident occurs, the owner is held accountable.

Even though the number of electrical accidents is lower than that of some other occupational injuries, the economic impact is dramatic. Society's perception of workplace safety has a hidden cost that is hard to quantify. An unsafe work environment can damage community relations in several ways. For example, lack of support from a community for a business can increase costs for every civil interaction the business requires. And if a company has a community relations problem, everything that a company does may fall under a higher degree of public scrutiny. Moreover, when a company is perceived as having unsafe working conditions, attracting highly qualified personnel may prove difficult.

### **Electrical safety solutions**

The three factors that cause electrical safety incidents are equipment failure, unsafe conditions, and unsafe acts. Unsafe acts are a result of inappropriate behavior or lack of training and account for two-thirds of all incidents. The way to eliminate these incidents is to implement a comprehensive electrical safety program.

A successful program requires a team approach to formulate and implement a comprehensive plan that addresses the needs of all of the participants. This program should be designed to incorporate proper procedures, behavior modifications for eliminating poor practices, use of existing resources, skills evaluation of workers, accountability for workers' actions, and auditing. All of these ingredients combine to form the safety-related work practices that will result in an electrically safe work environment. An electrical safety program's goal is to create an atmosphere of communication, technical skills, and cooperation where the group works as a team to be self-monitoring and to ensure that the workers' safety is addressed.

Training is a key element of an electrical safety program. The first step in training is to evaluate the workforce's existing knowledge. Once this knowledge has been evaluated, training for comprehensive skills that are job specific can be formulated, developed, and implemented. Good judgment training that is based on real-life incidents should supplement the skills-training portion of the program. The real-life incidents might be taken from the facility or from something in the news. The intent of training is not to expose personal weaknesses of those involved but to emphasize judgment opportunities that could have been handled differently.

Electrical safety affects everyone -- owners, supervisory personnel, workers, families, and communities. Non-compliance with electrical safety has dramatic legal, economic, and sociological impacts on all of us. Employers should be the catalysts for encouraging and promoting an atmosphere of safety. A properly executed electrical safety program is an investment that pays great dividends financially, politically, and socially. ED

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