

Electrical Safety Update: NFPA 70E Standards and OSHA Enforcement Issues

According to the National Fire Protection Association (NFPA), an arc flash is “a dangerous condition associated with the release of energy caused by an electric arc.” An arc flash is an explosion that can cause severe burns, injuries and/or death, depending on the severity.

The Occupational Safety and Health Administration (OSHA) enforcement emphasis on the use of proper electrical safety practices is based on the National Fire Protection Association 70E standard and has focused attention to its requirements. In essence, if OSHA investigates an arc flash incident, they are investigating a company’s adherence to NFPA 70E as a guideline for worker electrical safety. Although only one component of an overall electrical safety program, the majority of enforcement activity has focused on arc flash/shock hazard analyses. NFPA 70E offers the following recommendations on what should be contained in a complete program:

Program Development

The first two elements of the program address the actions needed for the work to be performed, and employee adherence to these practices. Employers must develop a program that “directs activity appropriate for the voltage, energy level, and circuit conditions.” Although the standard does not specifically describe how an employer mandates employee compliance, it does state the need for awareness and self-discipline. This suggests the establishment of a program element addressing behavior modification such as the use of incentive or disciplinary measures.

Controls, Procedures and Hazard Assessment

The next four elements required by the standard are Electrical Safety Program Principles, Electrical Safety Program Controls, Electrical Safety Program Procedures and a Hazard/Risk Evaluation Procedure. The general principles and controls usually go hand in hand. To adhere to a principle, a control must be in place. NFPA’s perspective on procedures is to develop these for the task to be performed. The principles, controls and procedures all reference a hazard analysis of sorts. The Hazard/Risk Evaluation is an additional assessment of the danger associated with work on or near live parts.

As a general principle, all equipment needs to be inspected. The insulation and the integrity of enclosures need to be maintained. Each job must be planned, and written procedures established, whenever it is the first time the task is undertaken. All tasks need to be identified and categorized. General precautions should be established based on the work environment. A hazard analysis and task-specific procedures must be developed. These procedures will be addressed later.

All equipment must be considered energized. Equipment must be de-energized and placed in an “electrically safe condition” before work is performed. This in and of itself must be considered a hazardous task. If work must be done energized or bare handwork is done, these tasks must be performed properly. An Energized Electrical Work Permit must be used to document the activity. The safety manager or other competent company official must approve the permit.

No employee should be allowed to perform electrical work unless they are qualified. Part of any safety program is a description of the training requirements for the task. A properly trained

worker and procedures are “tools.” This concept coincides with ensuring the right tools are used for the job, a principle listed in the NFPA 70E sample Electrical Safety Program.

The Hazard/Risk Evaluation Procedure focuses on working on or near energized lines. The goal is to protect employees from shock, burn, blast and other hazards due to the working environment. Both a shock hazard analysis and arc flash analysis must be part of the evaluation.

The Electrical Safety Program Procedures element refers to task procedures. The sample provided by NFPA offers the following: identify the purpose of the task and the qualifications of and number of employees needed to perform the task. The hazards and scope of the task should be described. Sketches, electrical diagrams, equipment specifications, etc., should be used to explain the task and the safe work practices to be used. Be sure to include approach distances, personal protective equipment needed and insulating materials and tools to be used.

The elements thus far address the establishment of the program. Critical to maintaining the program are those actions that ensure continued employee safety awareness and effectiveness of the program. NFPA 70E requires “Job Briefings” before each task. Briefings must describe to the employee the hazards, procedures, controls and personal protective equipment needed. Generally, the briefings are a short review. However, when the task is complex or extremely hazardous, the program should call for a thorough discussion of the job and the practices to be used. An extensive briefing should also be performed when the hazards may not be apparent to the employee. The NFPA 70E standard provides a checklist of what to cover in a job briefing.

Periodic Program Assessment

The final element is the assessment of the program and the employees. Workers must have the ability to do their job safely. The employer needs to evaluate their skill. The safety program should contain the procedures to be used for this evaluation. The program itself should be audited to determine if the principles used are effective. Improvements should be made as needed. Remember to keep the program up-to-date with OSHA regulations, NFPA standards and other safety guidelines.

Summary

Complying with NFPA 70E does not require a complete reinvention of your electrical safety program. By utilizing the information outlined above, you can simply update your program to include items such as protection equipment assessments and arc flash analysis. For more information on this topic or for links to additional resources, visit the NFPA website at www.nfpa.org or contact the M3 Risk Management Department at risk@mmmins.com or call 608-273-0655.