



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
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Utility Person Electrocuted in Virginia

FACE 87-56

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. The purpose of the FACE program is to identify and rank factors that influence the risk of fatal injuries for selected employees.

On July 6, 1987, a 21-year-old utility man was disconnecting the power source to a knitting machine motor when he inadvertently touched an energized prong of the plug and was electrocuted.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the Commonwealth of Virginia notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On July 15, 1987, a safety specialist met with representatives of the employer, conducted a site visit, interviewed comparison workers, and photographed the accident site.

Overview of Employer's Safety Program:

The victim was employed by a company that dyes and prints synthetic yarns. The company employs 350 full-time people and has a written safety program. Safety rules, in the form of handouts, are given to employees at the time of employment. The personnel manager is responsible for safety and safety inspections of the plant are conducted on a bimonthly basis.

Synopsis of Events:

As there were no eyewitnesses to this incident the following scenario was developed from interviews conducted with representatives of the employer, co-workers of the victim, the state OSHA compliance officer, and an investigation of the accident site.

On July 6, 1987, a utility man (the victim) had been performing his regular duties. That afternoon the victim observed that four knitting heads on a knitting machine had stopped operating. The knitting machine was equipped with twelve knitting heads (three groups of four heads, each group powered by a separate motor). Upon further inspection of the knitting machine the victim found that a drive belt from the motor to the knitting heads had come off the pulley. The motor is rated

at one h.p. and is supplied by a three-phase, 575 VAC, 60Hz power source. The motor is connected to the power source by a flexible cord and a three-prong “twist lock” plug and receptacle. The motor, plug, receptacle, and breaker box for the power source are all located underneath the frame of the knitting machine.

Apparently, the victim decided to reinstall the drive belt even though it was not one of his regular duties. He knelt down and leaned against the supports of the frame of the knitting machine while attempting to disconnect power to the motor. The victim held the twist lock device in both hands (plug in one hand, receptacle in the other hand), twisted the device, and tried to pull apart the plug and receptacle. When a part of the victim’s hand contacted an energized prong, he provided a path to ground and was electrocuted. The victim was perspiring heavily at the time of the accident.

Cause of Death:

The coroner’s report stated cause of death was electrocution.

Recommendations/Discussion

Recommendation #1: Employers should implement lockout/tag-out procedures into their safety program.

Discussion: The employer does not include lockout/tag-out procedures as part of their safety program. Lockout is normally done with an ordinary padlock placed on the breaker box or switch disconnect. Only the worker who performs the lockout procedure has a key to the lock. The worker “locks out” the power before performing any function that would bring a person into contact with hazardous energy. A less effective method of warning people about the presence of hazardous energy is the danger-tag or tag-out procedure. This method requires placing a tag at the breaker box or disconnect switch warning that the power should not be turned on. This procedure is adequate when the worker can see the disconnect source. However, lockout procedures provide a more substantial level of protection.

Recommendation #2: A comprehensive safety program should include work procedures for disconnecting a power source and training for employees in the recognition of hazards associated with electrical energy.

Discussion: The victim apparently did not recognize the hazard associated with pulling the “twistlock” plug apart without first de-energizing the 575 VAC system. A comprehensive safety program should include training that addresses recognition of electrical hazards and safe work procedures. For example:

Work Procedure for Disconnecting 575 VAC System

1. De-energize with local disconnect
2. Lockout or tag-out local disconnect
3. Mechanically separate “twist lock” plug.

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