



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
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A Journeyman Electrician Electrocuted in North Carolina

FACE 86-02

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. By scientifically collecting data from a sample of fatal accidents, it will be possible to identify and rank factors that influence the risk of fatal injuries for selected employees.

On September 19, 1985, an electrician was electrocuted while making a connection in a 4-inch junction box at a construction site.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the State of North Carolina notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. A research team (a research industrial hygienist and a physician) visited the site of this fatality in cooperation with North Carolina OSHA officials. A meeting was held with representatives of the company who employed the victim, the victim's foreman, and the North Carolina Occupational Safety and Health Program compliance officer who investigated this case. This meeting was held at the job site. An interview was conducted with the victim's work partner, who witnessed the incident. Interviews were also conducted with two workers with the identical job classification as the victim. A next-of-kin interview was conducted.

Overview of the Employer's Safety Program:

The victim worked for an electrical contractor that employs 110 employees, thirty of whom work at the job site where the accident occurred. These employees, who are classified as either journeymen electricians or electrician apprentices, normally work in pairs. The victim was considered a journeyman electrician. All journeyman electricians are expected to have had extensive training before they are hired; therefore, no safety training is provided by the employer. The foreman at the job site is responsible for job site safety and he conducts weekly safety meetings where various safety issues are discussed.

The job foreman and job manager were not aware of any safety problems in the past. The company apparently did not have a written safety policy.

Synopsis of Events:

The construction site is a large office building in a corporate office park. Interior wiring was being completed by the electrical contractor.

On September 19, 1985, the victim was pulling electrical wire for the 277 volt emergency back-up lighting system. This task required the installation of a 4-inch junction box in the ceiling. At approximately 8:15 a.m., the victim was standing on a wooden ladder preparing to strip a "hot wire." The victim's partner told him the wire was hot; the partner is certain that the victim understood his warning. (Interviews with the foreman and other electricians revealed that making connections while the wires are "hot" is not an unusual practice and may be done fifty percent of the time.) The co-worker walked away from the victim to complete other work. A short time later the partner heard a groan. He ran back, stepped up on the ladder that the victim was using, and attempted to pull him down. The victim appeared to be caught on the metal support bars for the drop ceiling. Unable to pull the victim down, the partner kicked the ladder out from under him. The victim then fell to the floor.

Cardiopulmonary resuscitation was started at the accident site and was continued by emergency medical personnel. The victim was pronounced dead at a local hospital. Burns were noted on the victim's right thumb where he apparently contacted the metal of the stripping tool. Another burn was noted on the left lateral chest wall.

Cause of Death:

The "official" cause of death is not known at this time since the coroner's report has not been received.

Recommendations/Discussion:

Recommendation #1: Wiring should not be done while the lines are energized.

Discussion: The victim was working with an energized wire. It is apparent that this is not an unusual work practice among electricians. Had the system been de-energized, this fatality would not have occurred.

Recommendation #2: The company should develop and implement a comprehensive occupational safety program.

Discussion: Worker safety is a primary responsibility of employers. In order to optimally carry out this responsibility, an employer should: 1) develop a company policy which expresses management's commitment to providing a safe workplace, and 2) develop, document, and enforce the adoption of safe work procedures and practices for all employees.

Recommendation #3: Upon initial hiring and at regular intervals thereafter, all workers and supervisors should receive training in hazard recognition and safe work practices.

Discussion: Workers who perform hazardous tasks, who work at precarious work stations, and/or who work in close proximity to sources of hazardous energy can develop a cavalier attitude over time. Therefore, it is particularly important that not only apprentice workers, but also experienced and highly skilled workers, be trained in hazard identification, safe work practices, and emergency response; this training should be periodically repeated.

Recommendation #4: When hiring personnel, who are expected to perform jobs or tasks which present high risk, experience should be verified and skill level (with particular regard to company safety practices) should be determined.

Discussion: The field evaluation of this incident did not identify this problem area as contributing to this accident; however, several similar accidents have identified employees that were hired to perform hazardous activities that had not been adequately trained and the employers were unaware of this lack of training. It is in the best interest of the employer to determine (i.e., by certification, training, or demonstration) that newly hired employees can safely complete the duties assigned.

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