



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Journeyman Electrician Electrocuted by Touching Energized Light Socket

FACE 88-41

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology (FACE) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying: the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

On August 10, 1988, a 49-year-old male journeyman electrician contacted an energized light socket containing a broken light bulb and was electrocuted.

Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. On September 8, 1988, a research safety specialist contacted state and local officials, met with company representatives, and photographed the incident site.

Overview of Employer's Safety Program:

The employer is a multi-state tobacco manufacturing and production corporation. The facility where the incident took place has been in operation for 68 years. The company employs 197 people at this site; the victim and one co-worker were the only two electricians. The victim had worked for the company for the past 31 years, serving as plant electrician for the last 12 years. The company has a formal occupational safety and health program with written policies and procedures. Safety training programs are periodically presented to employees. The victim had received both formal and on-the-job training in electrical work.

Synopsis of Events:

On the day of the event the victim was tracing electrical conduit in a 5-foot-high "crawl space" between the first and second floors of one of the older buildings in the facility. The lighting within the crawl space was provided by unguarded light bulbs in ceramic sockets hanging from the ceiling.

Access to the crawlspace was obtained by climbing a 15-foot portable ladder and stepping from the ladder through a 4-foot-high access panel. At the foot of the ladder was a doorway leading to the facility's dispensary and the company nurse's office. A male co-worker, standing on the ladder, was looking into the crawlspace and speaking with the victim.

At the time of the incident the victim had been working in the crawlspace for several hours and was on his way out. When he was about 12 feet from the entrance, he appeared to straighten up slightly and stretch. His left shoulder contacted a broken light bulb in one of the ceiling-mounted light sockets and the top of his head contacted a steel water pipe. The victim immediately collapsed.

The co-worker called out for help and entered the crawlspace to aid the victim. The co-worker, trained in cardiopulmonary resuscitation (CPR), promptly began to perform CPR on the victim. The company nurse, a CPR instructor, heard the co-worker call for help, and assisted in performing CPR. She was unable to detect any vital signs.

Emergency medical service personnel arrived on the scene approximately 4 minutes after the incident. They were also unable to detect any signs of life. The coroner pronounced the victim dead at the scene 45 minutes after the incident. Examination of the victim's body revealed a burn mark on the left shoulder and a 4-inch burn on the top of the head.

Cause of Death:

The coroner gave the cause of death as accidental electrocution.

Recommendations/Discussion

Recommendation #1: Periodic inspection of all work areas should be performed to identify hazards. These hazards should be corrected immediately.

Discussion: The damaged light which caused the electrocution was located in the center of a walkway near the entrance to the crawlspace. An inspection of this area would have revealed this hazard, allowing it to be corrected before an injury occurred.

Recommendation #2: Guarding should be installed around light fixtures in service areas which are susceptible to damage.

Discussion: A metal basket guard around the light fixtures in the crawlspace would have prevented the damage to the light bulb, thus preventing this incident. This would provide passive protection of workers in this vicinity.

Recommendation #3: Employers should strive to make employees aware of the need to immediately correct damage to electrical devices that might expose an employee to an electrical hazard.

Discussion: The light bulb which was involved in this incident had been damaged at an unknown time in the past. The victim and other employees had walked past this unit many times in order to gain access to the interior of the crawlspace. If the individual who broke the bulb, or another worker, had replaced the damaged unit this fatality might have been prevented.

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Partly

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