



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Sign Serviceman Working Off of a Truck Mounted Platform Ladder Electrocuted in Ohio

FACE 85-30

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 June 27, 1985, a sign serviceman, working off of an aerial ladder truck, was electrocuted when he contacted a 7.2 kV power line.

Contacts/Activities:

Officials of the Industrial Commission of Ohio notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On August 21, 1985, the DSR research team (a fire protection engineer and two safety specialists) interviewed comparison workers and witnesses present at the incident site, discussed the incident with the OSHA Compliance Officer, and photographed the accident site and the aerial ladder truck involved in the incident.

Overview of Facility's Safety Program:

The victim was employed at a branch office of a lighting systems company that provides maintenance service for outdoor and indoor lighting systems and illuminated signs. This branch office had been in operation since 1978. The branch manager is responsible for safety on a collateral-duty basis. A contact for safety-related issues is provided at corporate headquarters. The company has a written safety policy that outlines procedures to be followed when working in proximity of power lines. These procedures state that local electric authorities should be contacted to de-energize power lines located within ten feet of a work area. Periodic safety meetings are utilized to promote safety. Personnel protective equipment (i.e., safety lanyards and safety glasses) is provided by the company. Disciplinary action, including suspension, is initiated by the company, if employees do not wear this personal protective equipment. Each new employee is trained on the job by a senior sign technician. New employees do not undergo any outlined safety training.

Synopsis of Events:

Maintenance of an illuminated sign consists of an inspection of the internal electrical connections, the repair of those connections determined to be faulty, and the painting of the sign's exterior framework. Occasionally, completion of this task requires more than one day. Because this sign was approximately 33 feet above ground, the service work was performed from an aerial ladder truck. The controls for the ladder were located at the base of the ladder on the back of the truck and on the collapsible platform from which the serviceman works at the top of the ladder. The truck was parked parallel to the front of the sign. A three-phase, 7.2 kV power line was located approximately seven feet perpendicular to the side of the illuminated sign. The power line involved in the incident was 34 feet above ground level.

During his first day at the accident site, the victim completed the internal cleaning and service work on the sign. On the morning of the second day, the victim painted the framework of the sign. He then lowered the ladder to the truck where he obtained a camera. The company requires each serviceman to photograph the top and one side of a sign, upon completion of the service work. The victim then began to extend the aerial ladder up and away from the sign and toward the power line in order to properly position himself to take the photograph. (During co-worker interviews, one of the servicemen stated that due to the electrocution hazard, he photographed the side opposite the power lines, when he serviced the sign involved in the incident. Electrocution hazard warning stickers were affixed to the base of the ladder in clear view.) The victim extended the aerial ladder to a point where the back of his neck and shoulders contacted the power line. The current passed through his body and down the ladder, causing the left front tire to explode and burn. A witness stated that the victim remained in contact with the power line until the heat generated by the resistance of the victim's body to the electric current melted the power line in two. The heat also caused the victim's clothes to catch on fire. The lanyard hooked to the victim's safety belt and the collapsible platform burned and the victim fell to the ground. A rescue squad was called by witnesses from a nearby business. The victim was transported to a local hospital where he was pronounced dead by the attending physician.

Cause of Death:

The official cause of death had not been received by DSR at the time this report was finalized.

Recommendations/Discussion:

Recommendation #1: Employers should identify all safety hazards at the work site.

Discussion: A job site survey, which would identify any safety hazards present at a given job site should be performed on all company-serviced lighting systems and illuminated signs. This job site survey should minimally include the identification of hazards such as: a) high voltage power lines close to an illuminated sign, b) terrain around an illuminated sign that would cause the serviceman to position an aerial ladder truck in an unsafe place or manner, c) traffic, d) illuminated sign conditions, and e) any other special conditions that may impact safety. A record of these hazards should be maintained and servicemen should be made aware of any hazards they might encounter on an illuminated sign or lighting system they are to service that day. Once these hazards are identified, they can be controlled.

Recommendation #2: Employers should assure that personnel assigned to perform a specific task are thoroughly trained in the performance of this task, are trained to recognize any associated hazards, and are periodically evaluated to assure compliance with proper safety procedures.

Discussion: The serviceman assigned to perform maintenance on the illuminated sign was trained in the proper procedures of sign maintenance; however, precautions noted in the safety policy were not implemented (i.e., contacting the utility company to de-energize power lines). Servicemen do not receive extensive training concerned with working near power lines or the recognition of electrical hazards generally associated with these tasks. (A serviceman stated during a co-worker interview that he "had no idea contact with a power line could kill you.") Servicemen working near or around power lines should receive training, so that they would be able to recognize and control the hazards present.

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Yes

Partly

No