



The National Institute for Occupational Safety and Health (NIOSH)

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50-Year-Old Utility Worker Electrocuted in Ohio

FACE 86-26

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 March 24, 1986, a utility worker for a small municipality in Ohio was electrocuted when he elevated his aerial bucket into a 7200 volt 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 May 28, 1986, members of the DSR research team met with the superintendent of the utility company and co-workers of the victim. The accident site was visited and photographs were taken. A surrogate interview was conducted to obtain personal characteristics of the victim.

Background/Overview of Employer's Safety Program:

The victim worked as a lineman for a utility company that employs nine people. There is no designated safety officer or formal safety program. Insulated rubber electrical gloves (rated to 20,000 volts) are tested on a monthly basis.

Synopsis of Events:

On March 24, 1986, the victim and a co-worker were sent to disconnect the electrical service at a house scheduled to be demolished. After parking the aerial bucket truck beside the pole supplying that service, the victim went up in the insulated aerial bucket and cut the 240 volt line leading to the house. Instead of letting the line fall, he held it in his left hand and began moving the aerial bucket in an effort to drop the line clear of a metal building between the pole and the house. In an apparent attempt to swing over a cable TV line, he elevated the bucket and contacted the 7200 volt line on the crossbar of the pole. The victim completed a path-to-ground through the line that led to the house.

The victim's co-worker (a groundman) realized what had happened, ran to call for an ambulance, and notified the utility company to de-energize the line in accordance with the municipality's established emergency procedures. As the groundman left the scene, two telephone workers arrived. These two workers tried to lower the aerial bucket, but they were not familiar with the controls and therefore were unable to lower it. Then they tried to drive the truck away from the power line; however, the aerial bucket was caught in the high voltage line and they were unable to pull forward more than a few feet.

The utility supervisor arrived within five minutes and sent a utility foreman to cut the power to the line. After he was notified by radio that the power was disconnected, he mounted the truck to lower the bucket. He was unable to lower it at first because the telephone worker had not placed the truck transmission in neutral. After this was corrected, the utility supervisor was able to lower the aerial bucket to the ground (approximately ten minutes after the accident). The victim's polyester clothing was on fire, and a fire extinguisher was used to extinguish the fire in the bucket prior to lifting the worker out.

The victim was conscious after the accident, but was burned severely over 65 percent of his body. He was taken by ambulance ten miles to the local hospital and transferred immediately to the regional burn center.

Cause of Death:

The victim died one week after the accident from complications of thermal burns resulting from contact with electrical energy.

Recommendations/Discussion:

Recommendation #1: All workers who work on or around electrical energy must be familiar with the proper procedures to follow in an emergency.

Discussion: The victim's co-worker had been trained not to touch the truck if a power line was contacted, and he reacted appropriately. The supervisor also used caution by having the power line de-energized before mounting the truck. However, the two telephone workers were apparently not aware of the hazard. They were not injured because the insulated aerial bucket contacted the high voltage line. If the power line had contacted the uninsulated boom instead, the truck would have been energized and there could have been two additional fatalities.

Recommendation #2: When working on or around "hot" electrical wires, electrical workers should wear insulated rubber gloves.

Discussion: The victim was wearing leather gloves which the utility company used for lower voltage work (less than 400 volts). These gloves protected him when he cut the 240 volt line, but when he contacted the 7200 volt line the leather gloves were inadequate. He was holding the line leading to the house, which was grounded through the neutral wire, when he contacted the high voltage line. If he had been wearing his insulated rubber gloves (rated to 20,000 volts), there would have been no path-to-ground and he could have avoided injury.

Recommendation #3: The utility company should initiate a safety program that identifies hazards, promotes hazard awareness, addresses specific tasks, and stresses safety training.

Discussion: The utility company has begun sending all electrical workers to the monthly safety meetings of a larger power company. This should be supplemented by local hazard identification and written procedures that minimize or eliminate hazards.

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