



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



School Maintenance Worker Electrocuted in Ohio

FACE 86-05

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 October 11, 1985, a school maintenance worker was removing obsolete wiring from a room beneath the football field grandstand. A 15-foot section had been cut out and removed. A small section behind a 2400-volt transformer remained. In the process of removing this section, the maintenance worker apparently contacted one of the wires to the transformer. The victim walked approximately 10 feet to a room that a co-worker was cleaning, said "I got electricity," and fell on his face.

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 October 16, 1985, the DSR research occupational health nurse met with the district superintendent of schools. The accident site was visited and photographed; however, significant changes had been made since the accident occurred. Since there was no comparison worker in the school district, this aspect of the study was precluded.

Overview of Employer's Safety Program:

The employer is a school district that employs approximately 100 people, 77 of which are professionals. There are six custodians. One of these, the victim, also served as the maintenance advisor to the superintendent. The victim informed the superintendent of any maintenance problems. Major maintenance is contracted out.

There is no formal safety program in the school district. There is "safety awareness," as is demonstrated by locked doors to hazardous areas, warning signs, and safe work procedures.

Synopsis of Events:

Several years prior to the accident, a light pole at the stadium had been replaced. In the process of changing the light system, a large cable was disconnected from the system, but left in place. It is not known why the victim decided to remove this cable on the day of the accident; however, the victim and the stadium maintenance man proceeded to cut the 3-inch cable with a hacksaw. They removed a 15-foot section and carried it outside. The victim then stated that he wanted to remove the remaining piece of cable. The stadium maintenance man commented that it was just a small piece and suggested that he let it go. The victim re-entered the transformer room by himself.

Because there were entrance/exit wounds on the bottom of the left upper arm and both hands, it is assumed that the victim had taken the cable in both hands and, while attempting to remove it from behind the transformer, inadvertently contacted one or more of the wires to the transformer. After being shocked, the victim walked out of the transformer room and into the equipment room (approximately 10 feet). He told the stadium maintenance man that he had "got electricity" and then fell to the floor on his face. The maintenance man turned him over and immediately called the principal of the nearest school.

The school nurse was sent to the stadium and began CPR within five minutes of the accident. The "first response" ambulance arrived and took over CPR until the paramedic ambulance arrived. The victim was given IV medications, an esophageal airway, and electrical shock at the site. Treatment continued enroute to the hospital and in the emergency room. The maintenance worker was pronounced dead without regaining consciousness.

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: Maintenance on or in close proximity to high-voltage transformers should not be performed unless the power supply of the transformer has been completely disconnected and locked out.

Discussion: The victim, an employee of the school system for 23 years, was aware of the hazardous energy sources in the transformer room; however, he elected to work in close proximity to the hazard. Any loss of balance or footing or inattentiveness to the task could cause direct contact with the hazard. Because avoidance of the hazard is the most efficient means of preventing an accident, the importance of having the power to the transformer completely disconnected and locked out must be continuously reinforced.

Recommendation #2: All hazardous energy sources should be guarded to prevent inadvertent exposure to the hazard.

Discussion: The transformers were in a locked room that was accessible only to a minimal number of employees; however, the power source itself (the transformer cables) were not guarded in any way. Inadvertent exposure to this source can only be prevented by a guard.

Recommendation #3: A safety program designed to recognize and correct hazards and to enforce procedures designed to prevent accidental injuries and illnesses should be developed.

Discussion: Although several high risk procedures have been identified and appropriate control procedures have been developed, the school district does not routinely identify hazards, provide training in hazard recognition and awareness, or enforce safe work procedures. A comprehensive safety program should be developed.

[Return to In-house FACE reports](#)

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