



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Part-time Laborer Electrocuted in Ohio

FACE 86-27

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 April 19, 1986, a part-time laborer assigned to the clean-up department of a manufacturing company was electrocuted when a metal pole he was carrying contacted a 7200 volt power line. A co-worker, apparently trying to rescue the victim, was seriously injured.

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 27, 1986, a physician and a safety engineer met with an official of the Industrial Commission of Ohio and a representative of the employer. Co-worker and next-of-kin interviews were precluded in this case.

Overview of Employer's Safety Program:

The employer is a manufacturing company that employs approximately 200 people. The personnel manager is assigned responsibility for the company safety program on a collateral-duty basis. Written employee guidance has been developed that includes safety topics of a general nature. The company promotes safety through the use of contests, monetary incentives, and the activities of a safety committee that meets periodically. Additionally, officials of the Industrial Commission of Ohio have served as consultants to the company for safety-related matters during the past several years.

Synopsis of Events:

Two part-time employees (17 and 18 years old), members of the facility clean-up crew, were assigned to remove the accumulation of soot that had built-up inside the smoke stacks of the facility. These smoke stacks were located on the flat roof of the two-story facility. This task is performed semi-annually and had been previously completed by these employees. The two workers were assigned this task by the lead person (supervisor) responsible for the clean-up crew and were given a metal scraper (approximately 49" long with a moon shaped spade on the end) and a steam sprayer to loosen the soot.

The two workers had cleaned three smoke stacks that morning and were preparing to clean a fourth one. Apparently in an effort to clean the smoke stacks more thoroughly, the employees decided to add an extension to the scraper. They left the roof and got a nine foot piece of electrical conduit and a coupling from another section of the facility to be used to extend the scraper. The length of the extended scraper was 13 feet.

At approximately 7:30 a.m. the employees returned to the roof to continue cleaning the smoke stacks. The victim apparently was carrying the scraper and the attached extension over his left shoulder, as a soldier would carry a rifle. As the employees walked from the stairs that provided access to the roof towards the smoke stack to be cleaned, the metal pole contacted a 7200 volt power line that crossed the roof of the facility. The power line was approximately 13 feet 3 inches above the walking surface of the roof. The victim provided a path to ground for the current being carried by this conductor. The second employee apparently was injured when he went to the aid of the victim. The circuit protection located on the pole providing electrical service to the facility opened, disconnecting power to the conductor contacted.

The supervisor, who had remained on the lower level, noticed that debris was not falling from the smoke stack. He then went to the roof and found both employees on fire; lying under the overhead power line, one on top of the other. (The time between the accident occurrence and the supervisor going to the roof was estimated by company officials as 30 seconds.) The supervisor could not extinguish the fire. He left the roof to sound the fire alarm and members of the facility fire brigade responded. Using a fire extinguisher these personnel put out the fire and performed first aid on the co-worker who had tried to rescue the victim. The emergency medical service (EMS) was summoned and arrived approximately ten minutes later. The victim was pronounced dead at the scene. The co-worker was severely burned and was transported to a local hospital and then to a burn center. Both of his hands were later amputated and he is currently recovering.

Cause of Death:

The deputy coroner ruled that electrocution was the cause of death.

Recommendations/Discussion

Recommendation #1: Employers (regardless of size) should continually evaluate and update the safety program for their facilities. When an accident such as this occurs the employer and the employees should evaluate their safety program and identify areas that need to be improved.

Discussion: A safety program, no matter how comprehensive, can not eliminate all accidents or fatalities. The employer in this case had been working with the Industrial Commission of Ohio for several years and had improved the safety program considerably during that time period. All employers should continually evaluate and update the safety program for their facilities and should take advantage of consultation programs available through many of the states.

The Industrial Commission was contacted after the accident and personnel familiar to the company were able to provide consultative expertise. Based on this cooperative effort, the company has initiated the following actions in response to this incident:

1. only nonconductive materials will be used on the roof;
2. general safety and electrical safety training will be increased for all employees;
3. all repairs or modifications to equipment must be reported to the appropriate crew chief;
4. part-time employees will be supervised more closely (one full-time employee will be assigned to work with part-time employees).

Recommendation #2: Organizations responsible for enacting regulations that are not retroactive (i.e., that contain grandfather clauses) should consider the costs associated with the potential increase in injuries and/or fatalities that may result from these less stringent requirements.

Discussion: Based on a grandfather clause, regulations applicable for this installation permit power lines to come within eight feet of the roof of this facility; however, the requirement for new construction is 15 feet. Although the power line is 13 feet 3 inches above the roof and in accordance with all regulations, it should be pointed out that compliance with the more stringent regulation may have prevented this fatality. Where grandfather clauses permit a situation (in this case since 1961) that does not assure the same level of safety as afforded by more recently adopted regulations, regulatory organizations should consider the increased costs associated with injuries and/or fatalities that may result. Perhaps a more balanced approach would be to require compliance with the new regulations according to a predetermined schedule. Additionally, signs alerting personnel of these reduced safety conditions should be posted.

Recommendation #3: Employers should prepare job safety analyses for hazardous assignments.

Discussion: Although the employer had prepared job safety analyses for certain tasks performed at the facility, this task was not included. Personal protective equipment (including respiratory protection) should be identified and used. These employees were performing the duties of a chimney sweep and as such should be cognizant of the hazards associated with that activity.

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

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