



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces  
through safety and health research



# Television Cable Installer Electrocuted

FACE 89-42

## 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 June 21, 1989, a 24-year-old male television (TV) cable installer was electrocuted when he came in contact with a 7280-volt powerline running 5 feet above the roof of a house.

## Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. DSR personnel discussed this case with state compliance personnel. On July 19, 1989, a safety engineer from DSR conducted an investigation, reviewed the case with company officials, visited and photographed the incident site, and met with responding emergency medical service (EMS) personnel to obtain information about the sequence of events surrounding this incident.

## Overview of Employer's Safety Program:

The employer in this incident is an electrical contractor with 90 employees who has been in business for 12 years. The company president serves as the safety officer and each supervisor is responsible for the safety and training of his crew. The company does powerline work, TV cable installation, and other electrical contracting. Safety information is primarily conveyed via on-the-job training, which is supplemented with safety materials provided by the utility companies for whom the contractor works. The company does not have a formal safety program.

The victim had started working for the company just 2 days before the incident as part of a crew of 10 employees. None of the crew members had been with the company for more than a few weeks.

## Synopsis of Events:

The employer had a contract to install TV cable in a semirural area. Existing power poles were being utilized to secure the TV cable. The employer stated that two safety evaluations of the installation project had been conducted. The power company whose poles were being used conducted one of these evaluations, and did not identify any serious hazards. Power company officials had informed the employer of these findings prior to initiation of the installation work. The second evaluation was conducted by a private concern.

The victim, who had a ground job, was working as part of the 10-person crew installing the cable. The crew was divided into four, two-man teams of cable installers or groundmen. The groundmen on these teams were responsible for controlling the cable reel, pulling the cable into position along the route, and keeping the cable clear of obstacles. Additionally, two polemen with the crew were responsible for any pole work that might be required, and a single supervisor was present to oversee the entire job.

A hanger wire had been installed on the power poles to facilitate installation of the TV cable. A cable dolly (a device that rides on the hanger wire, and to which the cable is attached) was being used to pull the TV cable into position. While the cable dolly was being pulled along the hanger wire, it fell off onto the roof of a house which was under the path of both the TV cable and the powerline. A co-worker boosted the victim onto the roof of the single-story house so that he could place the cable dolly back on the hanger wire line. While the victim was on the roof, his head contacted a 7280-volt powerline that was approximately 5 feet above the roof. The victim had his hands on the hanger wire at the same time his head contacted the powerline, providing a path to ground through his body and the hanger wire. The victim then fell approximately 15 feet from the roof onto a concrete surface.

Initially, the victim was conscious and was attended to by co-workers. By the time the EMS arrived 10 minutes later, the victim had lost consciousness. The victim was treated by EMS personnel, who initiated cardiopulmonary resuscitation (CPR). Although they were initially able to detect a pulse, the EMS personnel could not obtain a blood pressure reading. The victim was transported to the local hospital where he died approximately an hour after the incident occurred. The victim had burns on the top of his head and on both hands.

## Cause of Death:

The coroner's report stated that the cause of death was electrocution.

## Recommendations/Discussion:

**Recommendation #1: Code violations should be corrected within a reasonable time period to ensure the safety of all individuals who might encounter the hazards created by these violations.**

**Discussion:** The powerlines involved in this incident were already in place when the house was built 12 years earlier. The state laws in this jurisdiction require that powerlines be at least 6 feet (horizontally) away from, and 12 feet above, the rooftops of buildings. The power company had notified the house owner approximately 6 months prior to the incident that they would be moving the powerlines. The state or local government body that establishes a code should establish a specified period of time for code violations to be corrected, and enforce compliance. In this case, a house was built within 5 feet of an energized line. It is not known if special precautions were taken at the time the house was built. Extended time delays in correcting these types of violations may result in injury or death as this case clearly demonstrates.

**Recommendation #2: Safety training should be a part of new employee orientation.**

**Discussion:** New employees need to be made aware of all the potential hazards that they could encounter in performing their job tasks. In companies that primarily use on-the-job training, new employees might encounter a hazardous situation before he or she can be trained to recognize and avoid such situations. It is a challenging task for small companies to inform new employees about hazards that they will typically encounter, as well as hazards they may rarely encounter. Untrained employees may not recognize even the routine hazards that they will typically face every day. The employer is responsible

for informing employees of the hazards they might encounter in a realistic and informative manner. This training is needed to ensure that employees understand the hazards and corrective actions that can be taken to control or eliminate the hazards. In this case, a man who was expected to work on the ground, got onto a roof and contacted an energized line. Strict enforcement of a requirement that ground workers not work on elevated structures without supervision might have prevented this incident. When on-the-job training is used to provide safety instruction, experienced workers with safe work habits should be assigned to work with new employees. This should help to train the new workers in safe, effective work practices while they learn how to do the work.

**Recommendation #3: Safety evaluations should address all potential hazards.**

**Discussion:** Although two safety evaluations were made to identify potential hazards prior to the initiation of any cable installation, the powerline/roof hazard was not identified. The individuals preparing the safety evaluations either did not realize the proximity of the powerline to the roof, or did not consider the possibility of contact as a significant hazard. A neutral line was located a few feet above the energized line. Today, energized lines are commonly installed in the upper position, above the neutral lines. The safety evaluators, the victim, and the co-workers may not have realized that the lower line was energized. After this incident, the power company de-energized the powerline, and had the contractor remove the TV cable from the power poles. The power company then installed two new poles and rerouted the powerlines, bringing them into compliance with state code. The old poles and powerlines were still in place, but de-energized at the time of the investigation. The reliability of any safety evaluation depends upon the reliability of the information supplied to the individuals doing the evaluation. Whether they were aware of the hazard presented by the powerline location with respect to the roof is unknown.

**Recommendation #4: If TV cable lines are installed on power poles, procedures should be taken to protect the cable installers from the energized lines.**

**Discussion:** Cable lines should be installed on separate poles if practical. This eliminates the hazards associated with working below high voltage lines. If this is not feasible, then the powerlines should be de-energized or covered with protective sleeves to prevent contact while the cable lines are being installed or maintained. The company should ensure that any work performed in proximity to powerlines be performed by the pole men who are trained to do such work. Cable lines should be located at least 40 inches below powerlines per American National Standard C2-1984, Table 235-5.

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