The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Laborer Electrocuted After Contacting Crane Touching Power Line

FACE 88-40

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 August 22, 1988, a 56-year-old male construction laborer was electrocuted when he touched the hoist cable of a crane in contact with an energized overhead power line.

Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. On September 7, 1988, a research safety specialist met with company officials, photographed the incident site, and met with local emergency medical personnel.

Overview of Employer's Safety Program:

The employer is a multi-state construction company employing 500 workers, including about 175 laborers. The company has been in business for the past 35 years and has been under the present management for the last 5 years. There is a formal written safety program and a designated safety officer. Periodic safety training programs are presented to all employees. The victim had been employed by the company during the past 5 years.

Synopsis of Events:

The victim was a member of a construction crew building an elevated highway entrance ramp. He was removing forms from a concrete retaining wall which had been poured several days previously. As he removed the forms they were placed on a "choker" (a short length of cable with eyes spliced into both ends, which is wrapped around a load, threaded through itself, and hooked to a crane). This worksite was directly beneath an overhead power line.

A co-worker was operating a rough terrain crane with a 65-foot boom in the immediate area. When the victim had finished piling the form material on the choker, he signaled the crane operator to extend the boom to the area where the materials were lying. These materials would then be moved by the crane to another worksite.

The crane operator extended the boom to the desired location and lowered the hoist cable. Both the victim and the crane operator failed to observe that the crane's boom had made contact with an energized 2400-volt overhead power line. The victim looked up, and then reached down to connect the choker to the hoist cable. Immediately after making this connection, he collapsed. When the crane operator observed the victim fall to the ground, he jumped from the crane and approached the victim as he called for help to other employees in the area. The victim's co-workers immediately began cardiopulmonary resuscitation (CPR) . The local fire department rescue squad was summoned and arrived on the scene approximately 4 minutes after the incident occurred. They were unable to obtain any vital signs and noted no visible burns. The victim was transported to a local hospital, where he was pronounced dead on arrival.

Five of the victim's co-workers reported receiving mild electrical shocks while attempting to aid the victim. Only after the arrival of the rescue squad did anyone on the scene realize that the crane was in contact with the overhead power line. All those present had assumed the victim had suffered a heart attack. After the incident the utility company was contacted to disconnect the power prior to moving the crane.

Cause of Death:

The coroner's office gave the cause of death as accidental electrocution.

Recommendations/Discussion

Recommendation #1: Cranes and other boomed vehicles should not be operated in the vicinity of overhead power lines.

Discussion: operation of a crane within 10 feet of an energized power line is specifically prohibited by 29 CFR 1926.550 (a)(15)(i). If this standard had been observed, this death could have been prevented. This incident could have resulted in multiple fatalities if co-workers had contacted the crane.

Recommendation #2: If it is necessary to work in the vicinity of overhead power lines, employers should verify that adequate clearances will be maintained between equipment and any lines in the area. If adequate clearances cannot be guaranteed, the employer should contact the local utility company and request that the lines be de-energized and grounded as specified in 29 CFR 1926.550(a)(15). Employers should verify that lines have been de-energized prior to the start of work.

Discussion: The retaining wall from which the form materials were removed was adjacent to the overhead lines. While the materials could have been placed in an area farther from the overhead lines, the victim placed them directly below a power line. The employer should ensure that the work environment is free from hazards by conducting an inspection of the area prior to the start of work.

Recommendation #3: Employers should ensure that their employees receive training which addresses the hazards to which they are exposed, and that they understand the danger posed by these hazards.

Discussion: In this case it appears that the employee may have been aware of the power lines (since he looked up prior to connecting the choker to the crane) but did not recognize the danger posed by this hazard. Training which increases the understanding of the danger of working in the vicinity of power lines could have prevented this death.

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