NIOSH

FACE

Fatality Assessment and Control Evaluation Program

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Hispanic Painter Electrocuted When the Aluminum Extension Ladder He was Positioning Contacted an Overhead Powerline - South Carolina

SUMMARY

On March 25, 2003, a Hispanic painter/caulker (the victim) was electrocuted when the aluminum 40-foot extension ladder he was attempting to re-position contacted a 13.8 kilovolt overhead powerline. The victim was a member of a five-man crew that had been subcontracted to paint and caulk windows and siding on a newly constructed three-story private residence. He had positioned his ladder between the side of the residence and a seven-foot-high wooden fence frame located seven feet, four inches from the side of the residence. A 13.8 kilovolt powerline was located approximately ten feet from the side of the residence, and 24 feet above ground level. The victim was working in an area approximately 26 feet above ground caulking windows and siding. He climbed down the ladder and began to re-position it on the side of the residence. One of the other crew members heard the victim yell and turned to see the victim trying to hold the ladder as it fell backward. As the ladder fell, it contacted the powerline. The victim was holding onto the ladder and was electrocuted. A worker for another contractor on site called 911 from a cell phone, then initiated cardiopulmonary resuscitation (CPR). Emergency rescue personnel transported the victim to a local hospital where he was pronounced dead by the attending physician. NIOSH investigators concluded that, to help prevent similar occurrences, employers should

- ***eliminate the use of conductive ladders in proximity to energized overhead powerlines***
- ***conduct a jobsite survey during the planning phases of any construction project to identify potential hazards, and to develop and implement appropriate control measures for these hazards***
- ***develop, implement and enforce a comprehensive safety and health training program in language(s) and literacy level(s) of workers, which includes training in hazard recognition and the avoidance of unsafe conditions***

Fatality Assessment and Control Evaluation (FACE) Program

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatality Assessment and Control Evaluation (FACE) investigations when notified by participating states (North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia); by the Wage and Hour Division, Department of Labor; or when a request for technical assistance is received from NIOSH-funded state-level FACE programs in Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin. The goal of FACE is to prevent fatal work injuries by studying the work 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. FACE investigators evaluate information from multiple sources that may include: interviews of employers, workers, and other investigators; examination and measurement of the fatality site, and related equipment; and review of records such as OSHA, police, medical examiner reports, and employer safety procedures and training records. The FACE program does not seek to determine fault or place blame on companies or individual workers. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future. For further information visit the FACE website at **www.cdc.gov/niosh/face/faceweb.html** or call toll free 1-800-35-NIOSH.

Additionally, prime contractors should

- ***ensure through contract language that all subcontractors implement appropriate safety and health programs and training specific to the work to be performed***

Additionally, ladder manufacturers should

- ***consider affixing dual-language labels with graphics to provide hazard warnings and instructions for safe use of ladders***

INTRODUCTION

On March 25, 2003, a Hispanic painter/caulker (the victim) was electrocuted when the aluminum 40-foot extension ladder he was attempting to reposition contacted a 13.8 kilovolt overhead powerline. On April 8, 2003, officials of the South Carolina Occupational Safety and Health Administration (SCOSHA) notified the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), of the incident. On June 19, 2003, a DSR senior investigator and a safety and occupational health specialist conducted an investigation of the incident. The incident was reviewed with the SCOSHA compliance officer assigned to the case. Diagrams and photographs of the incident site taken by SCOSHA shortly after the incident were reviewed. No site visit was conducted because the project had been completed. The victim's employer and the other three painter/caulkers returned to Mexico immediately following the incident and could not be interviewed. The prime contractor and the subcontractor who contracted with the victim's employer were interviewed by telephone, and the coroner and police reports were reviewed.

According to SCOSHA and the subcontractor, the victim's employer had entered the United States from Mexico approximately eight months prior to the incident with his four-man crew. OSHA records indicate no evidence of any safety and health training programs. The victim's employer could speak very limited English. The other four workers could not speak or understand English. No other company information could be obtained. The subcontractor who had contracted the victim's employer said that the employer had worked for him on two other jobs. No written contracts existed for any of these jobs. The prime contractor and the hiring contractor had safety and health programs written in English. No training was provided to the employer by either.

INVESTIGATION

The victim's employer had been contracted to paint and caulk the windows and siding joints of the prime contractor's newly constructed three-story private residence. The employer and four other painter/caulkers were performing the work and had been on site for approximately two weeks. The subcontractor who had contracted the employer had supplied the employer with five, 40-foot Type 1, Heavy Duty/Industrial Type, 250-pound capacity, aluminum extension ladders. Each ladder weighed approximately 85.5 pounds. Their highest rated working length was 35 feet and their highest rated standing level was 30 feet six inches. The ladder the victim was using had no warning labels and was heavily paint spattered.

Work on the day of the incident began at 7:00 am. The victim was working at a height of approximately 26 feet. He had positioned the extension ladder against the side of the house, between the house and a seven-foot-high wooden board fence frame located seven feet, four inches from the exterior side of the residence (Diagram). An eight-foot-high chain link fence was located behind the wooden fence, eight feet, seven

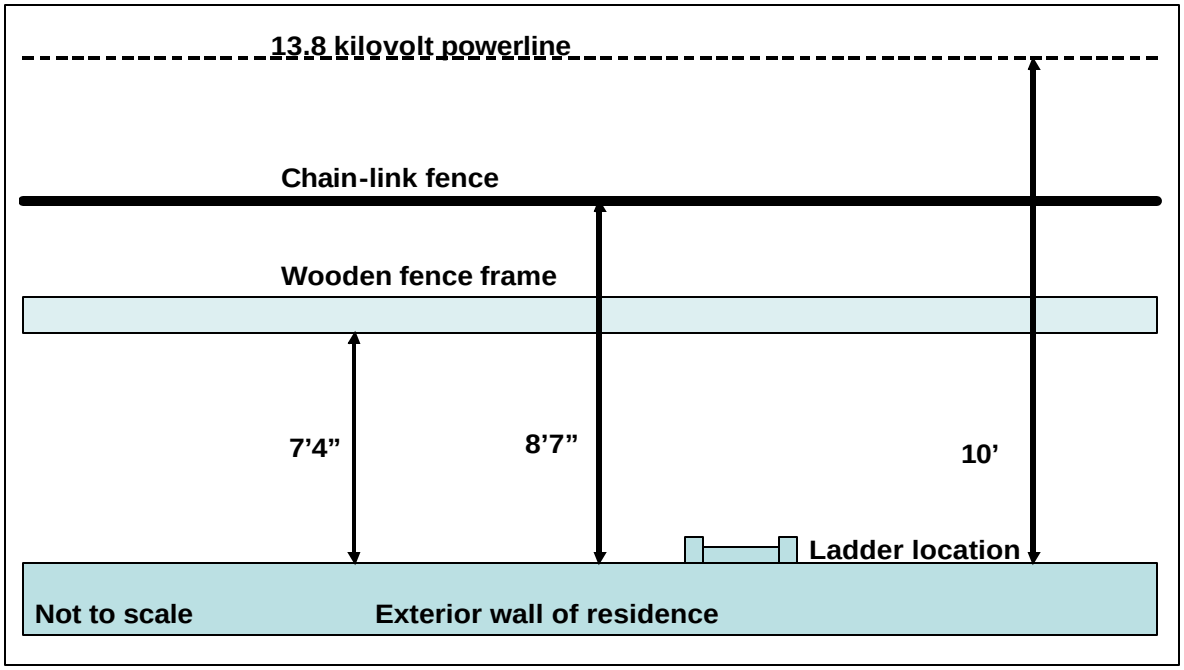

Diagram. Overhead view of incident site

inches away from the edge of the house. A 13.8 kilovolt powerline, 24 feet above ground level, was located approximately ten feet from the exterior side of the residence. The ladder was extended to a height of 31.5 feet.

After the victim was finished in the area in which he was working, he descended the ladder in order to reposition it at the next window. As the victim began to move the ladder, a co-worker heard him yell and turned to see the ladder falling backward while the victim tried to hold it upright. The ladder contacted the powerline and the victim fell to the ground. The ladder fell away from the powerline. A worker working nearby for another contractor on site called 911 from a cell phone, then initiated cardiopulmonary resuscitation (CPR). Emergency rescue personnel transported the victim to a local hospital where he was pronounced dead by the attending physician.

A burn mark on the ladder was located approximately six feet, 4 inches from the top. A second burn mark on the ladder was located approximately one foot, five inches from the top of the ladder. This mark could have been created when the ladder again contacted the powerline as it was falling.

CAUSE OF DEATH

The coroner listed the cause of death as accidental electrocution.

RECOMMENDATIONS /DISCUSSION

Recommendation #1: Employers should eliminate the use of conductive ladders in proximity to energized overhead powerlines.[1]

Discussion: Energized overhead powerlines in proximity to a work area constitute a significant safety hazard. Extra caution must be exercised when working near energized powerlines. Metal ladders should not be used for electrical work or where a possibility of contact with electrical conductors exists. Ladders made of non-conductive materials, such as fiberglass, should be used for work near energized electrical conductors. The powerline in this incident was located approximately ten feet from the wall of the residence.

Recommendation #2. Employers should conduct a jobsite survey during the planning phases of any construction project to identify potential hazards, and to develop and implement appropriate control measures for these hazards.[2]

Discussion: Before beginning work at any site, a competent person[a] should evaluate the site to identify any potential hazards and ensure appropriate control measures are implemented. At this site, a 13.8 kilovolt overhead powerline was located in close proximity to the wall of the residence where the painting and caulking was being performed. A safe distance between powerlines and ladders, tools, and work materials should be maintained at all times. In this incident, control measures may have included using non-conductive ladders made of fiberglass. Employers should also instruct their employees to lower extension ladders before moving them. This would make the ladders more maneuverable and easier to handle. Once hazards are identified, appropriate control measures should be incorporated into each daily work plan and remain in place until the job is completed. All workers on site should be made aware of these control measures.

Recommendation #3: Employers should develop, implement and enforce a comprehensive safety and training program in language(s) and literacy level(s) of workers, which includes training in hazard recognition and the avoidance of unsafe conditions. [1, 3, 4, 5]

Discussion: A comprehensive safety and training program should identify required safety training (e.g., working around electricity and overhead powerlines, work site and ladder safety) and document the training provided to workers. Although the prime contractor and the hiring subcontractor had safety and health programs written in English, no training was provided to the contracted employer or his employees by either in any language. It could not be determined if the workers even knew of the existing hazard of the overhead powerlines. Additional information and recommendations relating to electrical safety can be obtained from the NIOSH Electrical Safety, Safety and Health Electrical Trades Student Manual.

[a] Competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate them.

Prime contractors should ensure through contract language that all subcontractors implement appropriate safety and health programs and training specific to the work to be performed.

Discussion: Prime contractors should ensure through contract language that all subcontractors have safety and health training programs in place that address the tasks their workers are assigned to perform. Contract language should require all subcontractors to identify how they intend to implement a site-specific safety and health program before the start of work. The subcontractors' contract should contain clear and concise language describing which party is responsible for a given safety or health issue. Any differences should be negotiated before work begins. Once the provision for these responsibilities has been established, the respective parties should ensure that the provisions of the contract regarding safety and heath are upheld through regular worksite inspections.

Ladder manufacturers should consider affixing dual language labels with graphics to provide hazard warnings and instructions for safe use of ladders.[6-8]

Discussion: Over the past several years, the United States has seen a dramatic increase in its population of Hispanic, Spanish-speaking citizens who are entering the work force. The Bureau of Labor Statistics estimated 15.4 million employed Hispanics in 2000, making up 10.9% of the U.S. workforce. The Hispanic workforce increased 43% between 1990 and 2000, and is expected to increase another 36% by 2010 to nearly 21 million employed Hispanic workers.

Having employees who speak limited or no English presents unique challenges. It is important for Spanish-speaking employees to be able to interpret instruction and warning labels on work equipment such as ladders. While some equipment is bought or shipped with manufacturers' documentation in at least one language other than English, many instruction and warning labels on the equipment are only in English. A multi-language label with a graphic or picture label could offer an additional warning to workers of potential hazards.

REFERENCES

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INVESTIGATOR INFORMATION

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