



SUBJECT: Hispanic youth laborer died after being struck by lightning.

SUMMARY

A 16-year-old Hispanic general laborer for a landscaping company was struck by lightning on July 2, 2004. The work crew was manually moving several pallets of rocks from the bed of a dump truck into a front-end loader, which was positioned at the back of the truck. The victim was standing in the bed of the dump truck along with two other workers. Another worker was operating the loader, and the dump truck driver was standing on the ground beside the loader. A storm was approaching and there was light rain in the area at the time of the incident. The lightning strike injured the three workers in the back of the truck, and the truck driver was thrown at least 10 feet from the work area. Witnesses and volunteers from a nearby building responded quickly by calling 911 and rendering first aid. The three laborers were transported to a local hospital; the victim died from his injuries 11 days later on July 13, 2004.

Oklahoma Fatality Assessment and Control Evaluation (OKFACE) investigators concluded that to help prevent similar occurrences, employers should:

- Develop, implement, and enforce a comprehensive written safety and health program, including procedures for inclement weather.
- Ensure that all workers receive formal documented training on inclement weather policies and procedures in appropriate languages and literacy levels.
- Ensure that a competent person evaluates the site before work begins and re-evaluates the site during the workday, in order to provide a safe working environment free of hazards to employees.

INTRODUCTION

On July 13, 2004, a 16-year-old Hispanic landscape laborer died after being struck by lightning while loading rocks into the bucket of a front-end loader 11 days earlier. OKFACE investigators were notified of the incident and an interview with company officials was conducted on August 25, 2004. OKFACE investigators reviewed the death certificate, Medical Examiner's report, investigating officer's summary, and witness statements.

Employer: The victim was employed by a landscape contracting company. The company had been in business for 19 years, and employed two full-time workers and three temporary workers when the incident occurred. The company did not have a comprehensive written safety and health program. There were no written task-specific safe work procedures, nor was there an official safety officer for the company. There were no regular safety meetings, no regular safety inspections performed, and no formal safety trainings offered to employees. The company hired general laborers through temporary agencies or among people showing



up at the site wanting to work.

Victim: The 16-year-old Hispanic male victim had worked for the landscaping business for three weeks at the time of the incident. He came to the incident site the first day the company was working there and asked if any help was needed. Since additional laborers were required for the project, the employer hired the victim immediately without verifying his qualifications for employment. His primary language was Spanish; he could not read and spoke very little English. One of the decedent's co-workers also spoke Spanish and was able to provide translations as necessary. The victim was working 40-hour weeks, with a usual shift being 8 to 10 hours.

Training: No formal instruction was available to employees, but the owner or a bilingual employee conducted training informally on-the-job. The company provided no written documentation of any training; although, the decedent reportedly received on-the-job training in Spanish from a co-worker.

Incident Scene: The incident occurred on federal property where the crew was doing contract work. The company had been working at the site for 21 days; a five-person crew was working onsite at the time of the incident. Landscaping rocks, which were located on pallets in the bed of a dump truck, were being lifted into a front-end loader. The incident occurred at 9:07 a.m., two hours after the crew had begun working for the day.

Weather: On the day of the incident, the weather conditions were wet and rainy with approaching thunderstorms. Light rain had been falling, and a severe storm had moved through earlier in the morning. The ground surface, dump truck, front-end loader, and all employees were wet from the rainy conditions.

INVESTIGATION

On the day of the incident, the victim and four other workers were transferring a load of rocks. Three of the men, the decedent and two other Hispanic general laborers, were standing in the bed of a dump truck loaded with pallets of rocks. A fourth crew member was operating the front-end loader and was in the operator's seat at the time of the incident. He had positioned the loader directly behind the dump truck with the bucket elevated to minimize lifting. The fifth worker, the dump truck driver, was standing on the ground beside the loader. His hand was resting on the frame of the loader carriage, as he was preparing to use the loader as a step to climb into the truck when the incident occurred. Their supervisor (company owner) had just left the site in his truck and was less than one-quarter mile away when the incident occurred.

A thunderstorm was noted to be approaching, but it did not appear to be any different than other storms the crew had worked through, so they continued to work. Just after 9:00 a.m., a lightning bolt struck, injuring the three workers in the back of the dump truck, as they were the highest points in the truck. The decedent was knocked unconscious as the lightning entered his left shoulder and exited his right ankle. The truck's antenna was melted, the driver's side mirror shattered, and burn marks were left on the concrete surrounding all the tires. After hearing a loud clap of thunder and seeing the flash of lightning, the owner returned to the worksite. The truck driver was thrown at least 10 feet from the area, but was uninjured. The front-end loader operator, also uninjured, witnessed the incident as did at least two others from a building a few yards away. Volunteers from inside the building called 911, ran to the



workers' aid, and moved them to shelter under the building's awning. Two witnesses began cardiopulmonary resuscitation (CPR) on the decedent immediately. Emergency medical services (EMS) arrived in less than five minutes and transported the three victims to a local hospital. The decedent was transferred to a trauma center where his condition declined and he died 11 days later.

CAUSE OF DEATH

The Medical Examiner listed the cause of death as anoxic encephalopathy (lack of oxygen to the brain) due to lightning.

RECOMMENDATIONS

Recommendation #1: Employers should develop, implement, and enforce a comprehensive written safety and health program, including procedures for inclement weather.

Discussion: Employers have an obligation to provide a working environment that is free from recognized hazards. A comprehensive written safety program should be established to outline policies and procedures for recognizing and controlling hazards and working under safe operating procedures. Inclement weather precautions should also be included in the program, particularly as they pertain to outdoor workers. In this incident, the employer did not have a safety and health program that included proper severe weather safety measures. Outdoor workers are at greater risk of injury associated with the hazards of severe weather if they underestimate or fail to recognize those hazards. This incident may have been prevented had the crew's work been temporarily suspended and employees been directed to a place of safety.

When utilizing temporary workers, both the placement agency and the temporary employer should be responsible for ensuring the worker's safety. The contract should identify how training responsibilities will be allocated and if one or both groups will provide the necessary general and job-specific safety and health training. Temporary workers have the right to be fully trained and informed of potential jobsite hazards and should be trained in a language they understand.

Recommendation #2: Employers should ensure that all workers receive formal documented training on inclement weather policies and procedures in appropriate languages and literacy levels.

Discussion: Employees should receive specific training on the hazards associated with the types of work they are performing. The training should include formal documented instruction and should be reviewed if there are any changes in hazards or work processes. Employees should be trained in a language they understand and given written policies and procedures that are at an appropriate literacy level.

In the United States, lightning injures an average of 300 people and kills 80 people each year. People are most commonly struck at the beginning or ending of a storm, outside of heavy rain, and in smaller storms, when they have a false sense of security and tend to take more chances. When hired for outdoor work, employees should be trained on the precautions



to take during inclement weather. The injured employees in this incident were the highest objects in the area and were surrounded by a metal dump truck, making them targets for a lightning strike. Rubber-soled shoes and rubber tires do not provide protection from lightning; the best way to ensure one's safety in a thunderstorm is to get inside a home or building. Even if workers cannot reach a safe indoor location, there are a number of steps that can be taken to lessen their chances of being injured. Avoiding open water, metal objects or structures, and natural lightning rods (e.g., tall isolated trees) are some of the precautions that employers should include in their training.

Recommendation #3: Employers should ensure that a competent person evaluates the site before work begins and re-evaluates the site during the workday, in order to provide a safe working environment free of hazards to employees.

Discussion: A competent person is someone who is knowledgeable and experienced in the operations being performed and the equipment and processes used. This person, designated by the employer, should assess the worksite and re-evaluate the conditions as needed. The evaluator must be aware of employee safety requirements, job-specific hazards, and the necessary corrective actions to eliminate or reduce hazards. This person should have the ability and the authority to terminate work processes when unsafe conditions exist or are anticipated to exist in the near future. Monitoring weather conditions should be included in the evaluation; however, one person alone cannot judge dangerous weather conditions. Foremen and supervisors should monitor weather conditions visually and via local radio stations, severe weather radio monitors, or lightning prediction systems. In this incident, the supervisor, the person competent to make an assessment, had just left the site. The remaining crew members, untrained in weather safety, continued to work as assigned.

REFERENCES

- Occupational Safety and Health Act, Section 5(a)(1), General Duty Clause
- Occupational Safety and Health Administration, 29 CFR 1926.32 (f). Definition: Competent Person
- Federal Emergency Management Agency (FEMA), *Are You Ready? An In-depth Guide to Citizen Preparedness*, <http://www.fema.gov/areyouready>.
- National Weather Service Forecast Office. *Medical Aspects of Lightning*, Hastings, Nebraska.
- *NIOSH Young Worker Safety*. <http://www.cdc.gov/niosh/topics/youth>.
- *NIOSH Alert: Preventing Deaths, Injuries and Illnesses of Young Workers*. DHHS (NIOSH) Publication No. 2003-128 (2003).

The Oklahoma Fatality Assessment and Control Evaluation (OKFACE) is an occupational fatality surveillance project to determine the epidemiology of all fatal work-related injuries and identify and recommend prevention strategies. FACE is a research program of the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research.

These fatality investigations serve to prevent fatal work-related injuries in the future by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in injury, and the role of management in controlling how these factors interact.

For more information on fatal work-related injuries, please contact:
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