The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Truck Driver Electrocuted after Contacting an Energized Dump Truck in South Carolina

FACE 91-08

SUMMARY

A 62-year-old male truck driver (victim) was electrocuted while touching a dump truck that became energized. The victim had been instructed to pick up and transport a load of gravel to a location in a rural section of the state, where a septic system was being installed. The victim picked up the gravel at a limestone quarry and drove a tractor-trailer dump truck to the incident site to unload it. The victim drove the truck off the paved road onto a grassy field where the drain field for the septic system was located. He then backed the tractor-trailer into a position directly beneath one phase of a 7,200 volt, 3-phase powerline located about 20 feet above ground level. The victim set the air brakes, exited the cab of the truck to engage the lever opening the trailer's tailgate, re-entered the truck cab to engage the power takeoff system, and again exited the truck cab. While standing on the ground, the victim engaged the lever that raised the bed of the truck into inadvertent contact with the powerline phase. Contact between the truck bed and powerline allowed current to flow through the truck to the ground. The victim, who was in contact with the lever on the truck, provided an alternate path to ground for the electrical current and was electrocuted. NIOSH investigators concluded that, in order to prevent future similar occurrences, employers should:

- **conduct a jobsite survey before starting any work to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees specific to all identified site hazards**
- **contact the local utility company to de-energize or insulate the powerlines when circumstances require operating a dump truck in close proximity to a powerline**
- **develop, or revise when applicable, safety rules and procedures that address working in close proximity to energized overhead powerlines**
- **conduct safety meetings/contacts at frequent intervals.**

In addition, business owners and contractors should:

- **consider the placement of facilities (e.g., septic systems) in relation to known physical hazards (e.g., energized overhead powerlines) that could be hazardous to workers during installation or subsequent maintenance of the facilities.**

INTRODUCTION

On August 7, 1989, a 62-year-old male truck driver (victim) was electrocuted while touching a dump truck that became energized. On November 14, 1990, officials of the South Carolina Occupational Safety and Health Administration notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On December 4, 1990, two safety

specialists from DSR conducted an investigation of this incident. The investigators reviewed the incident with the company owner, the victim's co-worker, and the OSHA compliance officer assigned to the case. Photographs of the incident site and equipment, and the corresponding coroner and police reports were obtained during the investigation.

The employer in this incident is a manufacturer of ready-mix concrete and septic tanks. The company has been in operation for 40 years and employs 14 workers, including 10 truck drivers. The company has written safety rules and procedures which are provided by the company's insurance carrier, and administered by the company owner. The company provides on-the-job training to the employees and conducts quarterly safety meetings. The victim worked for this employer for 14 years prior to this incident.

INVESTIGATION

The company had been contracted to provide a 1,000-gallon septic tank and the gravel necessary for the drain field for the septic system to be installed behind a small shopping plaza in a rural section of the state. At the time of the incident, a septic tank had been installed and gravel was being transported to the site for the drain field.

On the day of the incident, the victim arrived at work and received instructions to drive a tractor-trailer with a 20-foot-long dump bed to the local limestone quarry, pick up a load of gravel, and deliver it to a site behind the shopping plaza. The victim drove to the quarry and had the trailer loaded with 26.5 tons of gravel. Upon arrival at the incident site, he pulled the tractor-trailer off the paved roadway onto a grassy field where the drain field for the septic system was located. Directly above the drain field was a 7,200-volt, 3-phase powerline, approximately 20 feet above ground level. The truck was parked in a position directly beneath and parallel to one phase of the powerline.

The victim exited the cab of the truck, operated a lever to open the tailgate on the bed of the trailer, returned to the truck cab to engage the power takeoff system, and again exited the cab of the truck. While standing on the ground, the victim operated the lever raising the 20-foot long bed to its maximum height and inadvertently into contact with the powerline. Contact between the truck bed and powerline allowed current to flow through the truck to the ground. The victim, who was in contact with the lever on the truck, provided an alternate path to ground for the electrical current. The victim was electrocuted and fell to the ground, but remained in contact with the electrical current arcing from one of the tire rims.

Two workers from the contractor installing the septic system saw the disturbance, and ran to a nearby store and telephoned the local police. After the police arrived, they summoned the local fire department and gas/electric company. The gas/electric company arrived and de-energized the powerline. The coroner arrived shortly thereafter and pronounced the victim dead at the scene.

CAUSE OF DEATH

The coroner's report listed the cause of death as electrocution. An autopsy was not performed.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Employers should conduct a jobsite survey before starting any work to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees specific to all identified site hazards.

Discussion: A jobsite evaluation, conducted before employees arrive to perform work, serves to identify potential hazards, so that appropriate control measures can be implemented and corresponding employee training provided (e.g., employee could have been instructed to avoid positioning the trailer beneath the powerline). The jobsite contained at least three identifiable hazards: a) uninsulated overhead powerlines approximately 20 feet from ground level, b) work to be performed beneath and in close proximity to the powerlines, and c) an uninsulated tractor-trailer with a 20-foot-long trailer.

Recommendation #2: When circumstances offer no alternative to operating a dump truck (or boomed vehicle) close to a powerline, the employer should contact the local utility company to de-energize or insulate the powerline before the start of work.

Discussion: De-energizing powerlines in work areas will provide protection as long as clear communication between the utility company, the employer, and workers is maintained. All parties involved must be aware of when the powerlines will be de-energized, the period of time the powerlines will be de-energized, and the exact time power will be restored so that no activities expose any workers to energized conductors. Insulating powerlines by installing line sleeves, or hoses, will provide a measure of protection, but should not be the only means utilized to avoid contact with overhead powerlines. When there is no alternative to operating a dump truck or boomed vehicle near a powerline, these procedures may provide viable options.

Recommendation #3: Employers should develop, or revise when applicable, safety rules and procedures that address working in close proximity to energized overhead powerlines.

Discussion: Employers should ensure that written safety rules and procedures, address all potential worker hazards, including working in close proximity to an overhead powerline. Such rules and procedures should cover, but not be limited to:

- recognizing the hazards associated with loading and unloading materials in close proximity to overhead powerlines
- selecting loading and unloading sites (i.e., permanent and/or temporary) away from powerlines
- establishing procedures for emergency situations (e.g., in the event of contact with an electrical powerline, never contact a vehicle or allow anyone else to contact the vehicle, and keep all unauthorized personnel away from the area)
- training personnel in cardiopulmonary resuscitation (CPR)
- designating a competent person to observe the clearance between the vehicle and powerline when work must be performed in proximity to powerlines.

Recommendation #4: Employers should conduct safety meetings/contacts at frequent intervals.

Discussion: The length of time that individuals retain information from such meetings/contacts varies considerably. Safety meetings/contacts conducted at frequent intervals (e.g., weekly or bi-weekly) should help ensure that more workers retain important safety information and are provided this opportunity to discuss safety issues.

Recommendation #5: Business owners and contractors should carefully consider the placement of facilities (e.g., septic systems) in relation to known physical hazards (e.g., energized overhead powerlines) that could be hazardous to workers during installation or subsequent maintenance of the facilities.

Discussion: The septic system drain field was located beneath a 7,200-volt powerline. Any activity in the working area (e.g., loading/unloading of materials, excavation, etc.), would provide a potential for worker contact between equipment and the overhead powerline. Business owners and contractors should give consideration to the hazards that may be encountered

before the installation of such facilities. In this incident, the drain field may have been installed at a different location away from the powerline.

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