The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research NIOSH

Laborer Electrocuted when Metal Work Platform Became Energized

FACE 88-34

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 5, 1988, a 19-year-old male laborer was electrocuted when a metal work platform on which he was standing penetrated the covering of an overhead crane 440-volt contact conductor and became energized.

Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. On August 11, 1988, a DSR safety specialist discussed the incident with the OSHA compliance officers, state officials investigating the incident, the employer, and witnesses. A site visit was conducted jointly by the DSR team, a state investigator, the Human Resources Manager of the plant where the incident occurred, and four safety consultants representing the plant.

Overview of Employer's Safety Program:

The victim was employed by a company which installed and serviced security and communication systems. The company employed five workers, three of whom were part-time. The company had no written safety policy or safety program. The victim had been employed for 2 1/2 months and had received only on-the-job training.

Synopsis of Events:

The victim's company had previously installed a security system at the stamping plant where the incident occurred. This same plant recently had an overhead door installed and another door relocated. The security system circuitry had been cut, spliced, and relocated during these structural changes. As a result, the system was inoperable. Personnel from the stamping plant contacted the victim's employer to correct the malfunction.

On the day of the incident, the victim and a co-worker began installing a new wire to correct the problem. Standing on a wooden stepladder, the victim used an electric glue gun and wire ties to fasten the wire to the front wall of the structure. The co-worker fed the wire to the victim from ground level. When they completed the job in the area of the splices, they continued replacing wire in an adjacent area on the front wall of the plant. Though plant personnel stated during interviews only the area of the splices was to be rewired, the employer thought the entire front wall of the structure was to be rewired. After installing approximately 20 feet of wire in this area, they needed to pass the wire over two 24-inch I-beams (serving as the runway for an overhead-traveling crane). These beams were 5 feet apart and perpendicular to the front wall. Three 440-volt energized contact conductors (power source for the 10-ton overhead crane) were anchored to one of the I-beams. There was about a 6-foot clearance between the wall and the end of the contact conductors.

The wooden stepladder was too short to allow the victim to get the wire over the I-beams; he requested and received the plant foreman's permission to have a forklift raise him up to the I-beams. A steel basket 4-feet wide, 5-feet long, with 3-foot-high sides was secured to the forks of the lift. The victim got into the basket and the operator raised it up to the beams. The victim wound the wire into a ball and threw it halfway across the span. The operator then lowered the basket and repositioned the forklift on the opposite side of the beams where the contact conductors were anchored. The operator raised the basket while watching the victim's hand signals. Later, the operator stated that he never watched for clearance between the energized rails and the basket.

As the basket approached the top of the beam the victim signaled the operator to stop. The victim reached over the beam to grasp the ball of wire. Apparently the basket had contacted the energized rail farthest from the I-beam, breaking its anchoring clip and damaging the rail's insulation. When the victim, in contact with the basket, reached out and contacted the I-beam, the current passed across his chest resulting in electrocution. When the operator noticed that the victim was not moving, he lowered the basket. As the basket lowered, the victim fell backwards striking his head on the basket. When the basket reached the ground, the operator and a co-worker observed that the victim wasn't breathing and called for help. A worker at the plant began cardiopulmonary resuscitation until the emergency medical service arrived. Paramedics provided advanced cardiac life support at the plant and then transported the victim to a local hospital where he was pronounced dead on arrival by the attending physician.

Cause of Death:

The medical examiner listed electrocution as the cause of death.

Recommendations/Discussion

Recommendation #1: Methods of identifying potential hazards and appropriate countermeasures should be utilized during the job planning phase.

Discussion: Confusion existed as to what work was to be completed. Plant personnel thought only one area was to be rewired; the employer thought the entire front wall of the structure was to be rewired. If rewiring the entire wall was necessary, the entire area should have been inspected. The energized crane rails would have been recognized as potentially hazardous, and the plant's lockout/tagout procedures would have been used. These actions may have prevented the electrocution.

Recommendation #2: Supervisors should ensure that employees understand and follow safe work procedures.

Discussion: The Human Resources Manager of the plant stated that the forklift operator had recently completed safety training addressing electrical hazards. Nevertheless. the forklift operator ignored established lockout/tagout procedures while working in proximity to the energized rails. Supervisors must continually stress the importance of following established safe work procedures.

Return to In-house FACE reports

Last Reviewed: November 18, 2015