



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



General Laborer Electrocuted in North Carolina

FACE 86-32

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. The purpose of the FACE program is to identify and rank factors that influence the risk of fatal injuries for selected employees.

On July 2, 1986, a 17-year-old general laborer at a plant that produces pickles was electrocuted when he contacted a faulty splice on a 440 volt power cord.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the State of North Carolina notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On July 15, 1986, the DSR research team (consisting of a statistician and a safety specialist) conducted a site visit, met with employer representatives, interviewed witnesses and comparison workers, interviewed the next-of-kin, discussed the incident with the OSHA Compliance Officer, and photographed the accident site.

Overview of Employer's Safety Program:

The victim was employed as a seasonal general laborer at a plant that produces pickles. The plant employs 230 permanent workers. During the growing season as many as 900 people may be employed at the plant.

The safety function at the plant is managed by the operations manager on a collateral-duty basis. An employee work manual is given to all permanent workers. When seasonal help is hired they are read basic safety rules and are trained on the job by another worker. A safety committee comprised of supervisory personnel meets weekly to discuss plant safety and discuss any accidents that may have occurred that week. This has been the second fatality at the plant in its 64 year existence.

Synopsis of Events:

On the day of the incident the victim and another seasonal general laborer were assigned by their crew chief to fill a wooden tank with pickling brine (45% salinity) using a two inch hose. The tank was eight feet high and twelve feet in diameter. One thousand of these tanks are utilized during the processing operation. The tanks are accessed by above ground wooden platforms with approximately three and one-half feet of the tank rising above the floor of the platform.

The co-worker turned on a valve located approximately 20 feet away and the victim proceeded to fill the tank with brine. When the tank had been filled the victim called to the co-worker to turn the valve off. The victim dropped the two inch hose to the platform after the valve had been closed, allowing the brine in the hose to drain out onto the platform. A portable pump and its power cord were on the platform in the vicinity of the tank. The pump was not turned on, but was plugged into a pole-mounted power box approximately 45 feet away. The power cord supplied 440 volts of electricity to the pump. After the victim dropped the two inch hose he stepped away from the tank and onto the 440 volt power cord. The victim immediately shouted and leaned back against the tank remaining in an upright position. The co-worker moved towards the victim, but as he approached the area of the platform saturated with brine he felt electric current running into his foot and leg from the platform boards. The co-worker jumped back and yelled to a second co-worker to turn off the electricity. The second co-worker could not find the switch box so he went to the crew chief and explained what was happening. The crew chief ran to the accident site, observed what was happening, ran across the aisle between the platforms, crossed the next platform, and turned the electricity off. The crew chief then returned to the accident site and along with the second co-worker began to administer CPR to the victim.

A rescue squad was called and arrived at the scene within three minutes. The crew included a medical doctor. CPR was continued for a short period, then the victim was pronounced dead at the scene.

Upon examination a faulty splice was found in the 440 volt power cord of the pump. Two of the leads of the power cord were bare and exposed. These exposed leads allowed the area of the splice to become energized along with the brine saturated portion of the platform. Additionally, the canvas deck shoes and lower portion of the victim's pants were saturated with the brine solution. The 45% salinity of the brine solution increased the conductivity of the entire area due to the conductive traits of the salt.

Cause of Death:

The coroner listed electrocution as the cause of death.

Recommendations/Discussion:

Recommendation #1: The employer should assure that existing preventive maintenance programs assure that equipment is in safe operating condition.

Discussion: Guidelines for reporting and correcting dangerous or unsafe conditions exist at the plant. Apparently they are not being followed. Periodic inspections should be performed on all plant maintenance and production equipment. These inspections should identify any hazards present and management should take appropriate corrective action. These inspections should be complemented by daily inspections of equipment by qualified personnel before the equipment is put into use. These daily inspections should include the identification of such hazards as cuts or abrasions on conductive cords, equipment cord and plug connections, improper splices, or any other unsafe conditions. Had the preventive maintenance program been utilized at the plant, it is unlikely the faulty splice would have existed. Since the incident all spliced power cords have been replaced with new cords. Additionally, if portable equipment such as the pump is not in use it should be de-energized and its power cord should be wound up and placed on the pump in an orderly fashion.

Recommendation #2: Employers should alert employees of hazards that they may encounter while performing their work tasks and how to control these hazards.

Discussion: The seasonal employees are read basic safety rules when they start work. However, they are not trained in hazard awareness and recognition or how to control these hazards if encountered. Valuable time was lost before de-energization of the pump because the co-worker did not know the location of the power switch and had to summon the crew chief. Persons working with or around electricity should be made aware of the location of switches or breakers that would de-energize their work area.

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