

Indiana State Department of Health

FACE 94IN04601

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FROM: Richard L. Warren, FACE Investigator

SUBJECT: Laborer Electrocuted While Attempting to Change a
Fuse in a Fuse Box Providing Power to a Fertilizer
Mixer/Loader

SUMMARY:

A 22-year-old male employee of a feed and grain mill was loading dry fertilizer from an electrically powered mixer/loader into a truck when the auger and conveyer belt suddenly stopped. Evidence suggests, he then attempted to change a fuse in a fuse box located on the side of the building directly behind the loader and five feet above the wet and muddy ground. Indications were the 440-volt AC panel was not de-energized and the decedent received a fatal electrical shock.

State Face investigators concluded that, in order to prevent similar occurrences, employers should:

1. Conduct a jobsite survey before starting any work to identify any hazards, implement appropriate control measures, and provide subsequent training to employees specific to all identified hazards.
2. Develop, implement and enforce a comprehensive written safety program.
3. Provided additional electrical safety training to those workers working with or around electrical current, including proper rescue procedures.

Introduction:

On May 3, 1994, a 22-year-old male employee of a feed and grain mill was electrocuted attempting to change a fuse in an unmarked 440-volt AC fuse box. The decedent was transported to a local hospital where he was pronounced dead. Officials of the Indiana Department of Labor (IOSHA) were notified May 4, 1994, and a preliminary investigation was done. Officials of the Indiana State Department of Health FACE Program were notified May 12, 1994. A phone call by the FACE investigator to the employer established that an investigation would be conducted May 13, 1994.

The feed and grain mill where the incident occurred is located in a rural area of Indiana. The employer has been in the business for fourteen years, including the last five years as owner and manager. The decedent was employed at the grain mill for four years (two years part-time followed by two years full-time).

INVESTIGATION:

On the day of the fatal incident, only two employees were on the grain mill premises: the employer and one co-worker (the decedent). The employer was in the office nearby and the decedent was loading dry fertilizer from an electrically powered mixer/loader into a truck when the fatal injury occurred.

The employer stated that on the day of the incident the decedent started work around 8:00 a.m., as usual, and worked in the mill that morning. Around noon, the decedent began the task of loading, delivering, and spreading dry fertilizer on local area farm fields. The decedent had finished three such deliveries before starting to fill the truck for the fourth job.

The usual procedure for this task involved backing the spreader truck under the elevated end of the conveyer belt which transported the fertilizer upward from the base of the mixer. If necessary, the worker would then mix the amount of fertilizer needed for the job. Usually the fertilizer was already mixed and ready to be dispensed from the mixing bin onto the conveyer belt which carried it up into the truck. Before mixing, the fertilizer components were stored in the building directly behind the loader for convenience.

The mixer and conveyer belt were each powered by separate electric motors. The fuse box for the 440-volt AC service to the mixer and loader was located on the outside wall of the fertilizer storage building immediately behind the loader and approximately five feet from the ground. There were no legible markings on the fuse boxes for the fertilizer

blender motor and conveyer belt to indicate which box was for which motor.

The exact chain of events leading to the death remains unclear because there were no witnesses to the injury. Evidence indicates the victim was filling the truck with dry fertilizer for the fourth job when the mixer's discharge chute became clogged with crusted fertilizer causing the auger to stop turning. The time was about 5:30 p.m. This type of problem was known to occur occasionally with this equipment and typically resulted in a blown fuse. Employees replaced fuses as necessary.

Evidence suggests the decedent went to the fuse box to change the fuse but did not open the adjacent switch to shut off the power. His hand(s) probably contacted an energized conductor inside the fuse box and his body completed the circuit to the wet ground upon which he was standing. He was thrown clear of the fuse cabinet by the surge of current. According to the county coroner, the same problem with the fuses occurred earlier the same day without incident.

The employer, who was in the office at the time, realized something was wrong when he did not hear the loader running. He went outside to see what was wrong and observed the decedent lying on the ground between the loader and fertilizer storage building. The employer at that time sought help and within three or four minutes was able to flag down an off duty police officer who lived in the area. The police officer immediately began cardiopulmonary resuscitation (CPR) assisted by the employer. The local volunteer fire department was also called and about 5:45 p.m. The decedent was transported to a local county hospital where he was pronounced dead.

CAUSE OF DEATH:

The cause of death as listed on the certificate of death by the county coroner is asphyxia due to electrocution.

RECOMMENDATION #1:

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

DISCUSSION:

Prior to any work being undertaken, a jobsite evaluation should be performed by a competent person: 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 authority to take prompt corrective measures to eliminate them.

To identify potential hazards -such as the wiring and fuse box in close proximity to the loading of the fertilizer. Once potential hazards are identified, appropriate control measures can be implemented and corresponding employee training provided. For example, the fuse boxes were not properly marked and secured against unauthorized removal and only qualified/designated personnel should have access to the control panel. If the covers had been locked the decedent could not have accessed the energized components of the control panels enclosure. Designated personnel would be more likely to understand the hazards of working inside an energized control panel in tight quarters and more likely to exercise special precautions such as de-energizing the control panel prior to changing the fuse.

RECOMMENDATION #2:

Employers should develop, implement and enforce a comprehensive written safety program.

DISCUSSION:

The employer did not have written safety program. The development, implementation, and enforcement of a comprehensive safety program should reduce and/or eliminate worker exposures to hazardous situations. The safety program should include, but not be limited to, electrical safety training, hand tool safety and training in the identification and control of work-related hazards.

RECOMMENDATION #3:

Employers should provide additional electrical safety training to those workers working with or around electrical current, including proper rescue procedures.

DISCUSSION:

Employees whose duties include working on or near electrical circuits should receive training in electrical theory, identification and control of the hazards associated with electrical energy, and proper rescue procedures in the event of worker contact with electrical energy. In this incident, the decedent unintentionally became part of the electrical circuit and path to ground by grabbing the fuse with out first either de-energizing the circuit or using personal protection equipment.

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What is the FACE Program?

FACE is one of many prevention programs conducted by the Indiana State Department of Health (ISDH). FACE stands for "Fatality Assessment and Control Evaluation." The purpose of FACE is to identify factors that increase the risk of work-related fatal injury. Identification of risk factors will enable more effective interventions to be developed and implemented. The FACE Program does not just count fatalities. It uses information gained from each fatality investigation to develop programs and recommendations aimed at preventing future occupational fatalities.

Who can you contact for additional information?

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