The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Printing Machine Operator Electrocuted in Indiana

FACE 86-16

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. By scientifically collecting data from a sample of fatal accidents, it will be possible to identify and rank factors that influence the risk of fatal injuries for selected employees.

On January 15, 1986, a 32-year-old gilter operator was electrocuted when he entered the electrical panelboard, supplying his machine, to reset a circuit breaker. A gilter is a conveyor process that sands and gilts (lays gold) on book edges.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the State of Indiana notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. A safety specialist and a medical officer met with the state compliance officer, company officials, and co-workers of the victim.

Background/Overview of Employer's Safety Program:

The employer is a large printing company that employs over 17,000 persons nationwide and approximately 2300 at the fatality site. The company was established in 1921 and has maintained an excellent safety record since that time. The company employs a corporate safety director who oversees the safety efforts of all the plants. In addition, the plant employs a full-time safety officer who is responsible for implementation of the site specific safety program. The company has a written safety policy and safety program.

Synopsis of Events:

On January 15, 1986, the gilter operator stopped his machine to change the sanding belts, a routine procedure. When the operator completed the belt change, he began "inching" the conveyor to evaluate the sanding and gilting process. The conveyor stopped, and the operator could not get it to restart.

The operator left his machine and approached the 480 volt electrical panelboard (approximately 30 feet from his normal work location), and opened the unlocked right hand door. With his right hand the operator attempted to reach behind the closed left door in an apparent effort to release the safety lock on the inside of the door. This method was used to keep the power to other circuits supplied by this panel while he looked for a circuit breaker he thought had tripped. The left door of the panelboard is designed to permit entry only after the power handle on the face of the door is turned to the "off" position, simultaneously releasing the locking mechanism. This insures that the panelboard is de-energized before entry. As the operator reached behind the closed door, his right hand came in contact with an energized 480 volt conductor. The victim provided a path to ground across his chest and through his left hand, which was in contact with the metal door handle of the left door.

A co-worker working approximately 25 feet away witnessed the incident and responded by turning the power handle to the "off" position; two co-workers then administered CPR to the victim. Emergency medical technicians responded to the accident scene within 10 minutes and transported the victim to the local hospital where he was pronounced dead after resuscitation efforts failed.

Cause of Death:

The coroner reported the cause of death to be cardiopulmonary arrest due to electrocution.

Recommendations/Discussion:

Recommendation #1: The doors of electrical panelboards should be locked and keys supplied only to qualified electrical maintenance personnel.

Discussion: All plant personnel had access to the 480 volt panelboard and to the electrical hazards associated with the energized system. While locks were present in the door handles of both doors, keys were apparently not available and the doors were not kept locked. The planned addition of padlocks to the doors should rectify this problem, if they are kept locked and keys supplied only to authorized personnel. Additionally, the company has decided to post warning signs.

Recommendation #2: The doors of electrical panelboards should be interlocked so neither door can be opened without disabling the panel.

Discussion: This panelboard is more than fifteen years old and the design is out of date. The ability to open the right door exposed the worker to hazardous electrical energy; it allowed him to reach behind the left door and attempt to release the safety lock and open the door without turning the power handle to "off." A minor modification to the doors would resolve this problem and would prevent either door from being opened while the power switch was "on."

Recommendation #3: Existing company safety rules should be communicated and enforced.

Discussion: The company has safety rules that prohibit the employees from attempting to make electrical repairs themselves; however, the machine operator did not hesitate to attempt electrical repairs and apparently had done so in the past. All maintenance, whether electrical or mechanical, should be the sole responsibility of those persons designated as maintenance personnel. The breakdown of the gilter was later determined to have been the result of a mechanical failure and not an electrical problem. All safety rules should be periodically discussed with employees and strictly enforced.

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