

Colorado FACE Investigation 92C0039

SUBJECT:

Maintenance electrician dies from burns received when electrical panel is shorted.

SUMMARY:

A 38-year old employee of a process equipment manufacturer was severely burned while attempting to test an electrical power circuit. On the day of the incident the maintenance electrician was asked by a co-worker to determine why an 85 horsepower electric motor was not functioning. The deceased used a multi-meter rated at 600 volts to check out the power supply source to the motor. The motor was connected to the electrical circuit inside a 14,400 volt, 600 amp metal electrical switch box. When he attempted to check the fuse on this circuit an electrical arc ionized the air in the cabinet and a flash fire occurred. The injured worker was burned over 50% of his body and died 18 days later. The Colorado Department of Health (CDH) investigator concluded that to prevent future similar occurrences, employers should:

- Ensure that high voltage electrical circuits are properly labeled.
- Ensure that only qualified personnel are authorized to work on high voltage circuits.
- Conduct a job-site survey on a regular basis to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees that specifically addresses all identified hazards.

INVESTIGATIVE AUTHORITY:

The Colorado Department of Health (CDH) performs investigations of occupational fatalities under the authority of the Colorado Revised Statutes and Board of Health Regulations. CDH is required to establish and operate a program to monitor and investigate those conditions which affect public health and are preventable.

The goal of the workplace investigation is to prevent work-related injuries in the future by study of the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

This report is generated and distributed to fulfill the Department's duty to provide relevant education to the community on methods to prevent severe occupational injuries.

INVESTIGATION:

The investigation of this work-related fatality was prompted by a report from the Occupational Safety and Health Administration (OSHA) Area Office and a joint investigation was initiated. The investigation included interviews with the company safety director and co-worker's. The incident site and equipment were photographed and reports were obtained from the county coroner and the responding ambulance team and medical records were obtained from the treating hospital. Representatives of an independent engineering laboratory contracted by the insurance company to analyze the multi-meter used were also interviewed.

The company employs two hundred people. The company had a full time safety officer and a written safety program. The company had been in business for ninety years. The deceased had worked at the company eighteen months and was not authorized to work on voltage over 440 volts. The company conducted on-the-job training but effects of the training were not measured.

CAUSE OF DEATH:

The cause of death as determined by autopsy and listed on the death certificate was thermal burns as a consequence of an electrical flash fire.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Ensure that high voltage electrical circuits are properly labeled.

Discussion: In this incident the voltage rating electrical switch box was not clearly marked.

Recommendation #2: Ensure that only qualified personnel are authorized to work on high voltage circuits.

Discussion: In this case, the deceased attempted to work on a circuit that was above his level of authorization. The employer should ensure that all maintenance personnel are informed of their level of authorization and enforce this policy.

Recommendation #3: Conduct a job-site survey on a regular basis to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees that specifically addresses all identified hazards.

Discussion: According to 29 CFR 1926.21(b)(2), employers are required to instruct each employee in the recognition and avoidance of unsafe conditions, and to control or eliminate any hazards or other exposure to illness or injury. In this and similar situations the employer may need to provide additional training to ensure that these employees understand the hazards and how to properly use safety equipment to protect themselves.

Lyle E. McKenzie
Chief Investigator/Industrial Hygienist
Environmental Epidemiology Division
Occupational Epidemiology Program

Jane B. McCammon, M.S., CIH
Manager
Occupational Epidemiology Program

Richard E. Hoffman, M.D., MPH
State Epidemiologist
Colorado Department of Health

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