

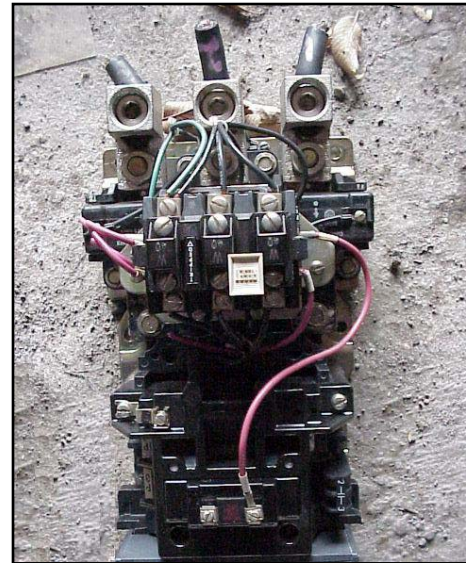
Fatality Investigation Report

OR 2004-05-1

Machine operator electrocuted while shoveling pellets

SUMMARY

On January 28, 2004, a 34-year-old machine operator was electrocuted while cleaning up wood pellets from beneath a Hamer Wood Pellet Bag Sealer and its conveyor system. The operator was using a long-handled scoop shovel to push spilled wood pellets into a central pile. He grasped a metal guard on the bagging machine with his left hand and leaned forward with the shovel in his right hand. While using the shovel, the back of his right wrist came into contact with exposed electrical controls on the wall near the bagging machine. The victim collapsed and was later discovered deceased by a co-worker.



CAUSE OF DEATH: Electrocution

RECOMMENDATIONS

- **Live electrical switchboards or motor control panels should be guarded against accidental contact by enclosures and other approved safeguards.**
- **All electrical equipment should be regularly inspected and maintained to ensure employees are adequately protected from accidental contact with live parts.**



INTRODUCTION

On January 28, 2004, a 34-year-old machine operator was electrocuted while cleaning up spilled wood pellets from beneath a Hamer Wood Pellet Bag Sealer and its conveyor system. The incident occurred about 6:00 p.m. OR-FACE received notification of the incident on February 12, 2004, from the employer. This report is based on the employer interview, plus sheriff and medical examiner reports.

The employer manufactures wood pellets for pellet stoves, fireplace logs, and products for enhancing flavor of smoked meats. The company employs 20 employees at this location. Employees are trained in a combination of on-the-job training with experienced operators and formal classroom training.

The victim was an experienced machine operator and was considered competent in running and maintaining the pellet line and related equipment. He had worked for this employer for 18 years, with the last 6 years working in the pellet packaging line.

INVESTIGATION

On the morning of the incident, a plant millwright found the enclosure for the bagging machine's electrical control uncovered and put the cover back on. The electrical control (Allen Bradley electrical starter, 600 volt, 3 phase, 15 amp) was located on a nearby wall, 13 in. from the protective cage for the conveyor of the bagging machine.

The cover did not stay attached through the day. The bottom of the metal box cover was slightly deformed and would not easily go on or remain attached to the enclosure. Sawdust and wood pellets were found inside the box, indicating the lid had been off during the day. A coworker assisting in cleanup noticed the box uncovered about 15 minutes prior to the incident. The cover was later found sitting on top of the main breaker panel. This allowed the electrical controls of the bagging machine to protrude about 1½ in. outside of the box.

Cleaning up pellets from around the bagging machine is a required daily task. The operator was pushing spilled fuel pellets into a central pile using a long-handled scoop shovel in his right hand. He grasped the protective metal cage of the conveyor belt with his left hand in order to lean forward and reach an area behind the conveyor. As he stepped forward to push wood pellets with the shovel, the back of his right wrist contacted the live electrical conductors, exposed from the uncovered control box.

High-voltage electricity arced from the victim's right wrist, through his chest, to where his left hand grasped the metal cage on the bagging machine. He was later found slumped at the base of the protective cage with his right leg extended out in front of him. The shovel was found just beyond his hand in the narrow space between the cage and the wall of the plant. A coworker discovered the victim shortly afterward, deceased.

The victim was originally thought to have died due to a heart attack, but investigation by the Sheriff's and Medical Examiner's Offices discovered burn marks on the victim's hands. Further investigation located the electrical panel with the missing cover at the worksite, and the victim's burn marks were matched to the two exposed prongs of the electrical conductors.

RECOMMENDATIONS/DISCUSSION

Recommendation #1. Live electrical switchboards or motor control panels should be guarded against accidental contact by enclosures and other approved safeguards.

Live parts of electrical equipment of 50 volts or more, even when enclosed in a box, must also be guarded against accidental contact by any of the following means (OSHA 29 CFR 1910.303): (a) an approved cabinet, (b) location in a separate room or vault accessible only to qualified persons, (c) a permanent, substantial screen arranged so only qualified persons may access and reach the equipment, or (d) by location on a balcony, gallery, or elevation 8 ft above the floor, inaccessible to unqualified persons. Enclosures and guards must be strong enough to withstand potential physical damage, and must display conspicuous warning labels.

The minimum clearance for work areas around live electrical equipment operating at 600 volts or less, and likely to require examination, adjustment, servicing, or maintenance while live, is 30 in. wide and 36 in. deep. The work area must also be illuminated if installed indoors, and provide minimum headroom of 6 ft 3 in. Clearance is intended to provide unobstructed access for working on the equipment, and the area may not be used for storage.

Recommendation #2. All electrical equipment should be regularly inspected and maintained to ensure employees are adequately protected from accidental contact with live parts.

The employer should have a qualified employee or an electrician inspect all electrical equipment for damage, wear, or unsafe conditions on a regular basis. Supervisors and safety committees should also perform safety checks of the employee working area to identify unsafe conditions. Equipment condition should be documented, and repairs or replacement of unsafe components should be undertaken immediately. Enclosures and guards should be inspected and maintained to prevent access by unqualified persons, particularly when situated in common work areas.

REFERENCES

National Institute for Occupational Safety and Health. (n.d.). *NIOSH FACE investigations of fatal electrical incidents*. Online resource: www.cdc.gov/niosh/injury/traumaelface.html

Oregon Occupational Safety & Health Division. (1994). *Oregon Occupational Safety & Health Code: Subdivision S: Electrical (1910.301-1910-399)*. Available online: www.cbs.state.or.us/osha/pdf/rules/division_2/div2_s.pdf

FOR MORE INFORMATION

Oregon Fatality Assessment and Control Evaluation (OR-FACE)
Center for Research on Occupational and Environmental Toxicology (CROET)
Oregon Health & Science University (OHSU)
3181 SW Sam Jackson Park, L606
Portland OR 97239-3098

Phone 503-494-2281

Email: orface@ohsu.edu

Website: www.ohsu.edu/croet/face/

CROET at OHSU performs OR-FACE investigations through a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research. The goal of these evaluations is to prevent fatal work injuries in the future by studying the work environment, the worker, the task, the tools, the fatal energy exchange, and the role of management in controlling how these factors interact.

Oregon FACE reports are for information, research, or occupational injury control only. Safety and health practices may have changed since the investigation was conducted and the report was completed. Persons needing regulatory compliance information should consult the appropriate regulatory agency.