

ADMINISTRATIVE REPORT
PUBLIC HEALTH SERVICE/CDC/NIOSH/DSR
FACE-96-24

DATE: November 26, 1996

TO: Director, National Institute for Occupational Safety
and Health

FROM: Division of Safety Research, NIOSH

SUBJECT: Steel Rack Installer Dies After Being Struck By 3,000
Pound Bundle of Rack End Pieces--South Carolina

SUMMARY

A 35-year-old male steel rack installer (the victim) died after being struck by a 3,000 pound bundle of rack ends. The victim and two co-workers had pushed a bundle of rack ends on a dolly from a storage to a warehouse area where the racks were being installed. The rack ends came in bundles of 10 and were secured by 3 steel bands at the top and bottom of the bundles. When the men reached the installation area, they cut the bands and removed one end. They then put a single steel band around the entire periphery of the bundle and began to push the bundle back to the storage area. One worker was at each end of the bundle, while the victim walked to the side. As the men pushed the bundle it became unstable and tipped over, striking the victim and pinning him to the concrete floor. The co-workers summoned their foreman, who was operating a forklift, to lift the bundle off the victim with the machine. The victim was transported to a local hospital by EMS personnel. He died 16 days later of complications due to his injuries. NIOSH investigators concluded that, to prevent similar occurrences, employers should:

- o *evaluate material handling practices to ensure the safest possible work environment*
- o *train employees in the recognition of hazards, and methods to control such hazards*
- o *develop, implement, and enforce a comprehensive written safety program.*

INTRODUCTION

On July 25, 1996, a 35-year-old male steel rack installer died of injuries he sustained when a 3,000-pound bundle of steel rack ends tipped over on him on July 9, 1996. On September 11, 1996,

officials of the South Carolina Occupational Safety and Health Administration (SCOSHA) notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On September 19, 1996, a DSR safety specialist conducted an investigation of the incident. The incident was reviewed with employer representatives, the SCOSHA compliance officer, and the county coroner.

The employer in this instance was a contractor that specialized in the installation of steel warehouse racks. The employer had been in business for 11 years and employed 15 workers. The employer had basic written safety rules and a written safety policy. Training was accomplished on the job. This was the first fatality experienced by the employer.

INVESTIGATION

The employer had been subcontracted to install steel racks to be used as open shelving space in a warehouse under construction. The racks were 28 feet high and 5 feet deep and varied in width. A crew of three installers (including the victim) and a foreman were performing the work.

The rack ends arrived at the site on a flatbed truck in bundles of 10. The rack ends were secured by steel straps at both ends and at the midpoint of the bundles on both the top and bottom (a total of six bands). When needed, the bundles were loaded onto a four-wheeled dolly measuring 5 feet long by 2 feet wide by 10 inches high by a forklift (operated by the foreman). Each rack end weighed approximately 300 pounds and was 28 feet long, 5 feet high, and 3 inches wide, and resembled steel roof joists. The 30-inch-wide bundles had to be placed carefully on the dolly to be stable enough to transport. The bundles were then pushed by the forklift while being guided by the three installers to the area where they were to be installed. When there was insufficient clearance for the forklift, a worker would position himself at each end of the bundle while a third worker stood near the center of the bundle and guided the bundle into position.

At the time of the incident, the men needed a single rack end to complete a section of shelving. The men pushed the dolly to a supply area approximately 75 feet from their work area and the foreman loaded a bundle onto the dolly. The men then pushed and pulled the bundle into position, cut the six steel straps, and unloaded a single rack end. They secured the nine remaining pieces by placing a single steel strap around the entire bundle at each end and began to push and pull the bundle back to the storage area.

The victim was positioned at the side of the bundle while the other installers were at the ends. As the men were moving the bundle back to the storage area, it became unstable and tipped over, striking the victim and pinning him to the concrete floor. The installers called to the foreman, who lifted the bundle off the victim using the forklift. The emergency medical service (EMS) was summoned by phone from the warehouse office while the in-plant medical response team tended to the victim. The EMS transported the victim to the hospital where he died from his injuries 16 days later.

CAUSE OF DEATH

The death certificate listed the cause of death as crushing injuries to the trunk.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should evaluate material handling practices to ensure the safest possible work environment.

Discussion: A single dolly was placed under the midpoint of the steel-rack bundles to move the material to different areas of the warehouse. If the bundles were not correctly placed on the 5-foot long by 2-foot wide dolly, the load could easily become unstable. Since the incident, the employer uses a dolly at each end of the bundle, which helps stabilize the load. A single steel band placed around the the bundle at each end did not secure the rack ends tightly, allowing the load to shift and become unstable. The bundles should be banded tightly top and bottom as they were for shipment, which would help stabilize the load. Additionally, the men could have removed the single rack end they needed from the bundle in the storage area and transported the single piece to the work area.

Recommendation #2: Employers should train employees in the recognition of hazards and methods to control such hazards.

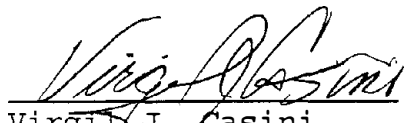
Discussion: Employers are required by 29 CFR 1926.21 (b)(2) to instruct each employee in the recognition and avoidance of unsafe conditions, and to control or eliminate any hazards or other exposures to illness or injury. Employers need to provide training that ensures that employees understand existing hazards and how to properly control these hazards and protect themselves. In this instance, the men could have recognized the hazard of the unstable load, stabilized the load before moving it, and positioned themselves in a manner so as to eliminate the hazard of being struck by the load.

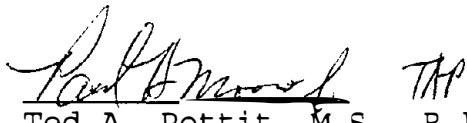
Recommendation #3: Employers should develop, implement, and enforce a comprehensive written safety program.

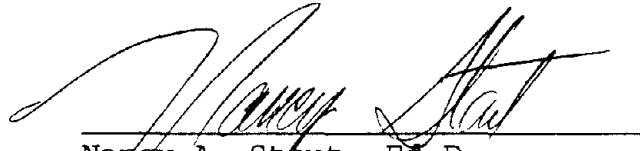
Discussion: The development, implementation, and enforcement of a comprehensive written safety program should identify, and reduce or eliminate, worker exposures to hazardous situations. The safety program should include worksite hazard assessments to enable the recognition and avoidance of hazardous situations and provide employees with appropriate equipment to accomplish their assigned tasks in the safest possible manner.

REFERENCES

29 CFR 1926.21 (b)(2) Code of Federal Regulations, Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.


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Fatality Assessment and Control Evaluation (FACE) Project

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatality Assessment and Control Evaluation (FACE) investigations when a participating State reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

States participating in this study: North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia.

Additional information regarding this report is available from:

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FACE 96-24