ADMINISTRATIVE REPORT **DATE: March 29, 1996**
PUBLIC HEALTH SERVICE/CDC/NIOSH/DSR
FACE-96-06

TO: **Director, National Institute for Occupational Safety and Health**

FROM: **Division of Safety Research, NIOSH**

SUBJECT: **Area Operator Falls 60 Feet From Manlift--North Carolina**

SUMMARY

A 47-year-old female area operator (the victim) at a food-additive manufacturing plant died after falling 60 feet from a continuous-motion belt manlift. The victim was last seen approaching the manlift on the second floor shortly before the end of her shift. The victim was presumably taking the manlift to the fifth floor to make last-minute checks on gauges in another section of the plant. The victim was found on the concrete floor of the second floor at the base of the operating manlift some 20 minutes later. The company emergency medical technician (EMT) was summoned along with the emergency medical service (EMS). Cardiopulmonary resuscitation (CPR) was not initiated due to the extent of the victim's injuries. The victim was pronounced dead at the scene by EMS personnel. NIOSH investigators concluded that, to prevent similar occurrences, employers should:

- *instruct employees to exercise extreme caution when utilizing equipment that exposes employees to potential fall hazards*
- *instruct employees to adhere to established safe work procedures.*

INTRODUCTION

On December 1, 1995, a 47-year-old female area operator (the victim) died after falling 60 feet from a continuous-motion belt manlift. On December 5, 1995, officials of the North Carolina Occupational Safety and Health Administration (NCOSHA) notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On December 12, 1995, a DSR safety specialist conducted an investigation of this incident. The incident was reviewed with the employer and the NCOSHA compliance officer assigned to the case. The incident site was photographed during the investigation and photographs taken

immediately following the incident were reviewed. The medical examiner's report and photographs were requested during the investigation.

The employer in this incident was a food-additive manufacturer that employed 156 workers and had been in operation under the present management since December 1990. The employer had a written safety policy and a comprehensive written safety program. Written safe-operating procedures were in place for each particular section of the plant and for all jobs performed in the plant. A joint labor/management safety committee met monthly and the safety department met every other month. On odd months the safety department met with the various plant departments on issues of concern. Documented training was accomplished on the job and in the classroom. Training received by all employees included, but was not limited to, confined space entry, lockout/tagout, bloodborne pathogens, safety awareness, and proper use of PPE. Plant personnel included 13 certified emergency medical technicians. The victim had worked at the plant for 17 years. This was the first fatality experienced by the present management.

INVESTIGATION

Operations in the monosodium glutamate (MSG) and citric acid department of the food-additive manufacturing plant were distributed across five floors of the plant.

Department personnel accessed different floors by using a continuous-motion belt manlift. The manlift traveled from floor to floor through 36-inch diameter openings that allowed for a 24-inch space between the manlift belt and the edge of the floor opening (Figure). To mount and dismount the manlift, employees had to step over this opening, and onto and off a 14-inch by 17-inch steel platform. Fall protection was not used or required for the manlift. Across the top of the manlift on the fifth floor was an emergency stop bar. The bar ran 10 inches above, and parallel to, the top of the manlift belt (Figure 2). A split-rail weight-limit switch, 6 inches above the floor opening on the fifth floor, would automatically shut down the manlift if a weight of 50 pounds was present on the steel platform. A second switch, located 6 inches above the first, had the same function.

The plant operated continuously, with two 12-hour shifts beginning at 7 a.m. and 7 p.m.

On Friday December 12, 1995, the day of the incident, the victim, a MSG/citric acid area operator, was performing her regular duties, which were to monitor operations and gauge readings on different floors of the area. Because it was Friday

evening, only a skeleton crew was present in the area, mostly in the second floor control room. Samples of the finished product taken from the sifters were checked to assure that customer specifications for particle size of the product were being met. Particle size was controlled by using different size wire-mesh screens on the sifters. These samples were taken at prescribed times during each shift (usually twice per shift) and were determined by the particle size required by the customer. The operator also checked for leaks on the boots around the sifter arms. If a leak was discovered, the operation was shut down until the leak was fixed.

At approximately 6:35 p.m., the victim entered the second floor control room to get her clipboard to take the final gauge readings on the fifth floor. The victim then left the control room and walked toward the manlift. At 6:55 p.m., the workers left the control room on the second floor and were walking past the manlift on their way out of the area when they noticed the victim lying next to the floor opening. The manlift was still running. The plant EMT was summoned along with the emergency medical service (EMS). The victim was unconscious and no vital signs could be detected. Due to the extent of the victim's injuries, area personnel rendered no assistance to the victim. When EMS personnel arrived, they pronounced the victim dead at the scene.

An investigation of the area revealed the victim's hard hat, safety glasses, and clipboard on the fourth floor; her 2-way radio and screwdriver on the third floor; the victim on the second floor, and the microphone for the victim's 2-way radio on the first floor. It was estimated that if the victim fell from the manlift between the fourth and fifth floors, she fell 60 feet.

The investigation also revealed that, although the emergency stop bar at the top of the manlift was dislodged, the conveyor continued to run. The manlift had been certified as in compliance by the State Department of Labor on November 16, 1995. An area operator had also inspected the manlift visually and operationally on November 29, 1995, and found it to be operating properly.

A subsequent investigation revealed that the on/off switch was faulty. When the switch was replaced and the manlift restarted for the first time, all safety features and weight-limit switches worked properly.

CAUSE OF DEATH

The medical examiner listed the cause of death as severe trauma to the head and trunk.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should instruct employees to exercise extreme caution when utilizing equipment that by design exposes employees to potential fall hazards.

Discussion: The manlift in this incident, although in compliance with ANSI standards, and certified as in compliance by the State Department of Labor 16 days before the incident, by its design exposes employees to potential fall hazards. The continuous-motion manlift platform and rider pass through a 36-inch opening between floors. When mounting or dismounting the manlift, employees must step onto and off a 12-inch by 17-inch platform and grasp a handhold at chest level. When this action is taken, employees step over a 24-inch exposed floor opening between the belt and the edge of the floor opening, exposing them to a potential fall hazard. No fall protection is used and none is required under existing regulations. Fall protection, in this instance, could pose even more of a hazard. Although all employees are trained before being permitted to ride the manlift, employers should continually stress proper riding, mounting, and dismounting techniques to employees, and the need to exercise extreme caution when riding, mounting, or dismounting the manlift. Additionally, safety features incorporated into the design of the lift or electronic components could malfunction at any time. Although the manlift was found to be in proper working order by visual and operational inspection 3 days before the incident, the lift continued to operate on the day of the incident even though the safety stop bar was dislodged. Since the incident, all weight-limit switches are checked daily by the area operator's stepping on them. Additionally, the manlift is shut down weekly for a certification inspection performed by plant personnel.

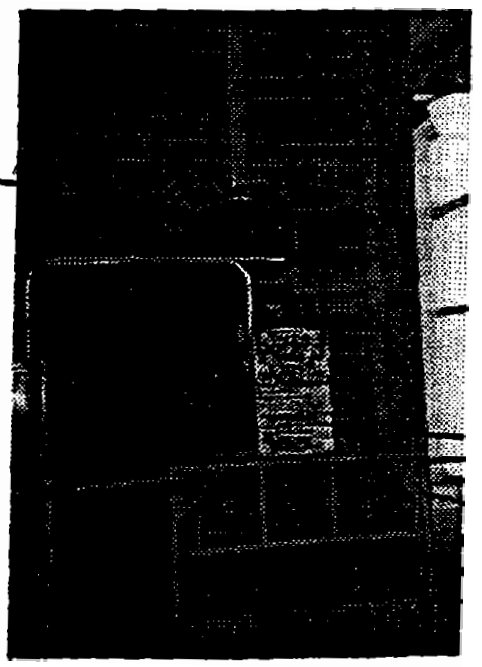
Recommendation #2: Employers should instruct employees to adhere to established safe work procedures.

Discussion: The victim was seen traveling toward the manlift with her clipboard in hand. If she had mounted the manlift carrying the clipboard, she would have violated established safety procedures that prohibited carrying any materials on the manlift. It is not known if the clipboard played any part in the incident; however, employees should be instructed to keep their hands free from all obstructions and/or materials while utilizing the manlift.

Figure

Continuous-motion belt manlift

Figure 2



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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, Virginia, and West Virginia.

Additional information regarding this report is available from:

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