SUBJECT: An elevator operator was killed when he fell from a manlift.

SUMMARY

On August 30, 2004, a 57-year-old elevator operator for a milling company was killed when he fell from the manlift he was riding. A manlift is a device used to transport a person vertically from floor to floor inside a building. The lift is an endless power-driven belt with steps and handholds that moves in one direction. The decedent used the manlift at the beginning of the day to turn on equipment in the mill. The incident was not witnessed, but occurred as the decedent was going down, either while he was boarding or riding the manlift. The decedent fell between 30 and 60 feet and landed on a concrete floor where he was found by co-workers. Emergency medical services arrived within five minutes, but the victim was pronounced dead at the scene.

Oklahoma Fatality Assessment and Control Evaluation (OKFACE) investigators concluded that to help prevent similar occurrences, employers should:

- Consider measures that contribute to a drug-free work environment, including the development and implementation of an alcohol- and drug-free workplace program, particularly for jobs related to machine operation.
- Ensure that manlift users and equipment operators are physically able to perform the procedures required to safely utilize the equipment.
- Ensure that all manlift users receive formal training and are regularly retrained on safety procedures associated with working on and around manlifts.
- Ensure that attempts have been made to update equipment to meet current safety standards and requirements and that workers are protected from hazards and potential hazards.

INTRODUCTION

On August 30, 2004, a 57-year-old worker for a grain elevator and milling company was killed when he fell from the manlift he was using. OKFACE investigators were notified of the incident and an interview with company officials was conducted on October 12, 2004. OKFACE investigators reviewed the death certificate and reports from the Medical Examiner, the investigating officer, and the Occupational Safety and Health Administration (OSHA).

Figure 1. Manlift -- Ascending Side

Employer: The victim was employed by a grain and milling company, which had been in business for nearly 100 years. At the time of the incident, the company employed approximately 170 workers, 12 of whom were working in the grain elevator where the incident occurred. The company had an active comprehensive written safety and health program, which included a labor/management safety committee and a management safety and health committee. There were written task-specific safe work procedures and machine-specific operating procedures for all equipment. The company maintained and kept on file documentation of all training, safety meetings, and operator certifications. The company did not have a drug and alcohol policy and did not perform random drug testing.

Victim: The 57-year-old male victim had been employed by the company for 35 years and had 30 years of experience in the operations he was performing at the time of his death. The decedent's first work duty of the day was to go up the manlift and turn on the equipment. He was working in his usual work area, and had been trained in the safe work procedures for this type of operation.

Training: The company conducted regularly scheduled monthly safety meetings. Training was conducted by company officials and outside safety professionals for all tasks. Machine-specific training was provided to all operators using on-the-job, hands-on training. Operators were tested for proficiency and were required to be certified and licensed. Training was measured with testing and demonstration. The company did have training specifically for the manlift.

Incident Scene: The incident occurred in a very large grain elevator complex with a manlift that ran through round openings in the floor levels. The manlift, a continuous slow moving belt with evenly spaced handholds and steps attached, ran straight up to the top level of the elevator from the bottom level. Using the step and handhold, a worker could ride from one level to the other. The belt was continuous and ran up on one side and down on the other. The workers could step on and off at different levels while the belt continually ran.

Figure 2. Manlift -- Descending Side

Weather Conditions: The weather conditions were not a factor since the incident took place inside a climate-controlled facility. The air was dusty inside the elevator, but noise levels were low.

INVESTIGATION

On the day of the incident, the decedent was working in a grain elevator with 11 other workers who were part of a maintenance and cleanup crew.

The decedent arrived to work at 7:00 a.m., his first day back from a vacation. His first duty of the day was to ride up the manlift and turn on the equipment (Figure 1). The decedent was working alone and was using the manlift to come back down when the incident occurred (Figure 2). A co-worker reported using the same manlift two minutes prior to the victim and noted all safety devices to be functioning properly. He stated that the safety stop ropes, which could be used by the rider to cut off power, apply the brake, and stop the manlift, were working because he used them on the way down. The manlift was the only way to get around in the elevator area and was one of three in the mill area.

To use the manlift properly, a worker stepped onto one of the step platforms that were 14 to 16 inches wide and 12 to 14 inches deep, and were attached to the belt at a 90-degree angle from the belt surface. At the same time, the worker grasped the handhold, which was located 48 to 54 inches above the step. The worker then rode the manlift up or down, depending on which side of the lift he had mounted, until arriving at the floor level needed. When the step met the appropriate floor level, the worker then stepped off the manlift onto the concrete floor surface. The manlift belt ran continuously straight up from the bottom level to the top level through 28- to 38-inch holes in the different floor levels. The belt then turned over the top pulley and returned to the bottom through a second set of holes in each floor level. The speed at which the belt moved did not exceed 80 feet per minute. The manlift involved in the incident was equipped with an emergency safety stop rope, which ran along the side of the lift. To stop the lift in an emergency, the operator would grab and pull the stop rope, automatically halting all movement of the lift. There was also a safety stop switch at the top of the manlift. The manlift was installed in the late 1940s and was exempt from current standards, which only apply to manlifts installed on or after August 1971. For instance, it did not have two safety switches nor the funnel shaped (conical) guards used to protect workers during ascent, as required on later models. On the descending side, there was a lack of proper guarding, staggered railing or self-closing gates, but it is unknown if this deficiency was a factor in the incident.

Since the decedent was the only one working on that particular floor, no one witnessed the fall, and the factors that initiated the fall could not be determined. It is believed that the victim fell down the manlift shaft while either boarding or riding the manlift. The exact distance of the fall could not be determined, but was estimated to be between 30 and 60 feet. Co-workers found him lying on the concrete floor next to the manlift without a pulse and summoned emergency medical services (EMS) at 7:49 a.m. EMS responded within five minutes and pronounced the victim dead at the scene.

The decedent did not have any recent health complaints, but did have a history of syncopal episodes. A medical release form was on file with the company allowing the decedent to perform his normal work duties. Toxicology tests by the Medical Examiner showed that the decedent had a blood alcohol concentration of 0.13%. This level exceeds the current legal limit in Oklahoma of 0.08%.

CAUSE OF DEATH

The Medical Examiner’s report listed the cause of death as multiple blunt force trauma with ethanol intoxication as a contributory cause.

RECOMMENDATIONS

Recommendation #1: Employers should consider measures that contribute to a drug-free work environment, including the development and implementation of an alcohol- and drug-free workplace program, particularly for jobs related to machine operation.

Discussion: Employers should consider designing and implementing an appropriate alcohol- and drug-free workplace program that matches the needs of their organization. Such programs are often unique to the individual company and include measures that are feasible, applicable, and beneficial to that particular workforce. Generally, the greatest challenge in designing and implementing a drug-free program involves the balance between an individual's rights and the employer's rights, in other words, the right to privacy and the need to know. Employers may find it useful to research how similar businesses and industries in their local area have addressed this issue. Drug testing is only one component of a comprehensive drug-free program and may or may not be appropriate according to applicable federal and state laws and regulations. Other components that are important to consider in a comprehensive program include a clear drug-free workplace policy that specifies prohibited behaviors and consequences, supervisor training, an Employee Assistance Program (EAP), and employee education. OSHA supports the use of measures that contribute to a drug-free work environment and reasonable drug testing, particularly in certain environments, such as machinery operation. Currently, there is not a specific OSHA standard on this issue.

Recommendation #2: Employers should ensure that manlift users and equipment operators are physically able to perform the procedures required to safely utilize the equipment.

Discussion: The National Safety Council recommends that physical examinations be given to employees authorized to use manlifts. Any evidence of poor depth perception or dizziness, for example, would compound the inherent hazards of riding manlifts. Employees with uncorrectable deficits should not be allowed or required to ride manlifts. Manlifts should only be used by trained, authorized users; visitors should not be authorized without first receiving proper instruction. Although the decedent had a medical release form allowing him to perform his normal work duties, his elevated blood alcohol concentration may have reduced his ability to properly perform his job tasks and may have contributed to the incident.

Recommendation #3: Employers should ensure that all manlift users receive formal training and are regularly retrained on safety procedures associated with working on and around manlifts.

Discussion: Employees who operate or work near equipment that could expose them to hazards should be trained on the safe operating procedures of the equipment. This training should include proper operating rules, hazards of the equipment, how to use the safety features, and the limitations of any guards or protective devices. The training should be repeated on a scheduled basis, or if non-compliance with procedures is observed. The employer should maintain records of all training.

Recommendation #4: Employers should ensure that attempts have been made to update equipment to meet current safety standards and requirements and that workers are protected from hazards and potential hazards.

Discussion: The manlift in use at the time of the incident was installed in the late 1940s. At that time, standards did not require the amounts and types of guarding and safety switches that are now required on later models. As of August 1971, the OSHA manlift standards changed, leaving manlifts installed prior to this date exempt, barring any substantial modifications. However, employers should still eliminate newly identified hazards and consider modifying older model manlifts to meet current guidelines in order to provide employees a work environment free from recognized hazards that are likely to cause death or serious physical injury. Manlifts should be inspected at least monthly, with certain components, such as safety mechanisms and limit switches, inspected even more frequently. Any manlift found to be unsafe or to have defects or malfunctions should be taken out of operation until the necessary repairs can be made. The employer should keep written documentation of all inspections on file.

REFERENCES

- National Safety Council. *Manlifts*, Data Sheet I-401-81.
- Occupational Safety and Health Administration. CFR 1910.168, *Manlifts*.
- Occupational Safety and Health Administration. *Standard Interpretations, 05/02/1998-OSHA's position on providing a drug-free workplace*.
- Occupational Safety and Health Administration. CFR 1910.5(a)(1&2), *General Duty Clause*.
- United States Department of Labor, Office of the Assistant Secretary for Policy. *Working Partners for an Alcohol- and Drug-Free Workplace*. http://www.dol.gov/workingpartners/welcome.html.
- The Grain Elevator and Processing Society. http://www.geaps.com
- American Society of Mechanical Engineers (ASME). *A90.1 Safety Standard for Belt Manlifts*.

For more information on fatal work-related injuries, please contact:
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