MIFACE Investigation #05MI078

Subject: Forklift Operator Dies When Head Caught in Lowering Mast

Summary:

On July 28, 2005, at approximately 11:35 p.m., a 25-year-old male forklift operator was injured when his head was caught in the lowering mast of the forklift he was operating. He subsequently died as a result of these injuries on August 9, 2005. The decedent was working on the shipping dock operating a Toyota Model #7FGCU25 industrial forklift (Figure 1). He was assisting two coworkers and a dock supervisor in unloading pallets from a tractor-trailer parked in shipping bay #6. As he backed from the trailer with two pallets on the forks, one of the employees noticed that there was no shipping paperwork on top of the upper pallet. The decedent lowered the load, then backed up and lifted the top pallet approximately three to four feet above the lower pallet. The shipping paperwork was on the top of the lower pallet. The decedent could not see the shipping label from a seated position. He placed his left foot on the brake, stood up, and leaned forward, placing his head through the mast of the forklift to read the label. As he leaned forward, his right leg pressed the mast up/down control lever forward. This caused the mast to lower, pinning his head and neck in the mast. All three coworkers ran to the dispatcher's office to call 911. During this time the victim remained pinned in the mast. Another employee who was in the dispatch office ran to the forklift and lifted the mast from the decedent's neck, but did not move him. Another coworker placed him in the forklift seat. Approximately three to four minutes later, the local police arrived. At no time from the time of the incident to police arrival had any life saving procedures or CPR been performed. EMS arrived a few minutes after the police and began life saving procedures. The victim was taken to a local hospital, stabilized, and then airlifted to a second hospital. He died 12 days later.

Figure 1. Forklift driven by decedent on dock

RECOMMENDATIONS

- Employers should instruct forklift operators never to stand inside the cage of the forklift nor place any part of their body through the mast while it is in operation.

Key Words: Machine, Forklift, CPR/First Aid

- Employers should ensure forklift operators follow the procedures for which they have been trained, such as wearing the seat belt, never standing inside the forklift cage, and prohibiting the placement of any part of their body through the mast while in operation.
- Employers should periodically reinforce safety training of supervisors and workers regarding the hazards associated with specific work assignments and safe work practices.
- Employers should ensure that at least one person on each shift is certified in First Aid/CPR, should strongly consider having an individual certified as a Medical First Responder or Emergency Medical Technician (EMT), and hold at least semi-annual workplace First Aid/rescue practices.

INTRODUCTION

On July 28, 2005, at approximately 11:35 p.m., a 25-year-old male forklift operator was injured when his head was caught in the lowering mast of the forklift he was operating. He subsequently died as a result of these injuries on August 9, 2005. On August 9, 2005, MIFACE was notified by the Michigan Occupational Safety and Health Act (MIOSHA) personnel on the MIOSHA 24-hour-a-day hotline that a work-related incident occurred on July 28, 2005, and that the individual died from the July 28, 2005 injuries on August 9, 2005. MIFACE contacted the employer and a MIFACE site visit was performed on February 22, 2006. MIFACE interviewed the firm's Vice President of Operations and the terminal manager where the incident occurred. The police report, hospital record, the MIOSHA file and MIOSHA citations were reviewed in preparation of this report. Figure 1 is courtesy of the MIOSHA compliance officer. Figure 2 was taken by the MIFACE researcher at the time of the site visit.

The company for whom the victim worked was an over-the-road trucking firm with terminals in multiple states. The firm employed approximately 55 people, and had been in business for 30 years. The decedent was classified as a dockworker. There were 11 employees with the same job classification. He was an hourly worker and worked full time on second shift (2:30 p.m. – 11:00 p.m.) at the firm. He worked both on the dock and in the office. For the past few years, the decedent had worked during the summers only. He had been driving forklifts for seven years. The decedent had last attended forklift training on June 14, 2005. The training lasted about an hour, and included a video, lecture, written test, and a performance evaluation. The company had no record of providing forklift training to the decedent, but the decedent had a valid permit.

The company had a Director of Safety with over 35 years of safety experience who provided technical as well as health and safety support. He managed the overall safety program. His office was located in another state, but he visited the incident facility once a month. He developed programs specific to the company operations. The health and safety responsibilities had been delegated to each terminal manager to ensure all employees received the required training. Terminal managers were also responsible for managing training records. They were given a monthly safety topic on which to train terminal employees. The terminal manager the MIFACE researcher spoke with estimated

that he spent 10 to 15% of his time devoted to safety matters. The firm had a written safety program and had specific procedures for unloading trucks. The safety program had a discipline procedure, but there was no record of disciplinary steps being issued against any employee.

At the conclusion of their investigation, MIOSHA issued to the company one Serious citation of the MIOSHA General Industry Safety Powered Industrial Truck, Part 21 standard with three items. Item 1- Rule 2138(c): Ensure that a load handling control on a truck is clearly and durably identified to indicate function and direction of motion of load or equipment. Item 2 – Rule 2173(a): Ensure that an employee does not place his or her arms or legs between the uprights of the mast. Item 3- Rule 2154(1): Provide valid operator permits for all powered industrial truck operators.

INVESTIGATION

On the day of the incident, the decedent was operating was a Toyota Model #7FGCU25 forklift. According to the MIOSHA file, the forklift was in good operating condition, however the control labels had been worn off and the brake pedal was missing the rubber cover. The employer stated that pre-shift inspections were to be conducted, but, according to documents in the MIOSHA file, the firm's forklift mechanic stated pre-shift inspections were rarely performed or inspection documentation turned in. The last inspection for this forklift that was returned to the forklift mechanic was turned in over four weeks prior to the incident.

One supervisor and four forklift operators were assigned per shift. The forklift operators handled palletized loads. The supervisor assigned the work after receiving information on incoming and outgoing loads from the terminal office. The shipping area was well lighted and traffic markings were appropriate.

The decedent's shift ended at 11:00 p.m. He was dismissed for the day but returned to the dock at approximately 11:20 p.m. to assist fellow workers so they could finish for the evening and go home. More freight was coming in that night, and the dock space was needed. Third shift had not yet started (12:00 a.m.), so they were finishing unloading the trailer located in dock #6. The firm had an increase in summer business, and the victim had worked numerous hours of overtime. The preceding day he had worked from 2:00 p.m. to 3:00 a.m. He started work on the day of the incident at 2:00 p.m.

The decedent was working with two new employees. One coworker was doing paperwork and one coworker was in the trailer staking freight. The decedent drove the forklift into the trailer, picked up two pallets loaded with four rolls of caution tape, and backed out of the trailer. The load had been shrink-wrapped but had fallen apart. The shrink-wrap was torn and hanging. As he backed from the trailer, one of the employees noticed that there was no shipping paperwork on the top pallet.

After exiting the trailer, the decedent lowered the load, backed up, and lifted the top pallet approximately three to four feet above the lower pallet so his coworkers could look for the shipping label or other type of billing information. The shipping paperwork was located on the shrink-wrap on the top of the lower pallet. The two coworkers were reading the label. Instead of dismounting to see the label, the decedent placed his left foot on the brake, stood up, leaned forward and placed his head through the mast above the cross member of the forklift. It was during this action that his right leg contacted the mast up/down control lever on the right side of the steering wheel (Figure 2). His thigh pushed the lever forward and the mast lowered. His head and neck were caught by the crossbar of the lowering mast.

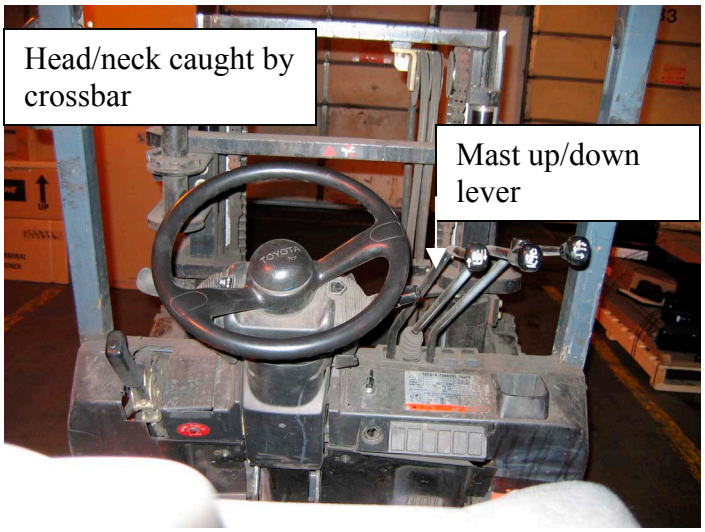

Figure 2. View of forklift controls from operator's seat

The dock supervisor noticed that the decedent was not moving and yelled at him to "stop screwing around". When the decedent did not respond, he and the coworkers looked closer and saw blood coming from the decedent's nose and ears. All three employees ran to the dispatcher's office to call 911. During this time the decedent remained pinned in the mast; none of the three men working with him lifted the load and removed his head and neck from the mast. As the three were speaking with the 911 dispatcher, they were asked if anyone checked for a pulse or removed him from the forklift.

Another employee who was in the dispatch office ran to the forklift and lifted the mast from the decedent's neck but did not move the decedent. It is estimated that approximately three to four minutes had passed by this time. The dock supervisor returned to the scene and saw that the victim was still slumped over the mast. He moved the decedent to the seat of the forklift. By moving the decedent back into the seat, the decedent's foot on the brake was moved and because the forklift was still running, it began to move in reverse. The dock supervisor lunged and grabbed the emergency brake to stop the truck. He then turned the engine off.

Approximately three to four minutes after the call to 911, the local police arrived on the scene. Upon police arrival, the forklift was not running, the gearshift was in reverse, and the parking brake was engaged. Police found the decedent seated and unconscious in the forklift seat. Police lifted the decedent from the forklift and lowered him to the ground. At no time from the time of the incident to police arrival had any life saving procedures or CPR been performed. Responding police performed an initial assessment and determined that the decedent was not breathing although he did appear to have a pulse.

Police performed rescue breathing using a CPR mask until EMS arrived a few minutes later. EMS determined that there was a possible neck injury. They established an airway and the decedent was transported to a local hospital. After he was stabilized, the decedent was airlifted to another hospital for further treatment. It is estimated that from the time of the incident to the time EMS began life saving procedures on the victim, approximately eight to nine minutes had passed. He died 12 days after the date of the injury.

It is unknown if he had any medical condition that could subject him to fatigue at an accelerated pace or if the amount of overtime worked played a role in his death.

At the time of the MIFACE site visit, the company was developing and instituting an internal safety awareness and safety issue abatement program named Get Out And Look (GOAL). This program will encompass quarterly safety and health audits and action plans developed to abate identified safety deficiencies.

CAUSE OF DEATH

The cause of death as stated on the death certificate was massive head injury. Medical records indicate that cervical vertebrae 3-5 were fractured and that spinal cord injury had occurred. Toxicological tests were not performed.

RECOMMENDATIONS/DISCUSSION

- Employers should instruct forklift operators never to stand inside the cage of the forklift nor place any part of their body through the mast while it is in operation.

Workers should not attempt to perform tasks outside the protective cage of a forklift unless the forklift is completely and properly shut down. Employers should instruct forklift operators that prior to dismounting the forklift, the forklift forks should be lowered to the ground, the forklift engine turned off, the parking brake set, and the controls neutralized. Employees should never attempt to adjust or otherwise access loads until the forklift is properly shut down. Loads should then be adjusted from outside the protective operator's cage. This would eliminate reaching through the front of the protective cage, inadvertent contact with machine controls resulting in the machine or machine components striking or pinning a worker, and would also eliminate the hazard of a worker on foot being struck by the machine.

- Employers should ensure forklift operators follow the procedures for which they have been trained, such as wearing the seat belt, never standing inside the forklift cage, and prohibiting the placement of any part of their body through the mast while in operation.

Although the company had a written disciplinary procedure, there was no record of disciplinary steps being issued against any employee. The company issued verbal reminders to address unsafe work practices by employees. MIFACE did not look at the disciplinary procedure; therefore, it is unknown if the procedure had an option for verbal

reminders. Verbal reminders should be documented, and if an employee continues to act or perform work in an unsafe manner and/or does not follow the established health and safety policy procedures, management should perform timely disciplinary action. Management representatives on-site should have a thorough understanding of all aspects of the health and safety policies and ensure that compliance with these policies occurs during task performance. The disciplinary policy should ensure that the employee knows what the problem is as well as understand what a supervisor's expectations are in order for him/her to correct the unsafe action. The policy should also provide appropriate disciplinary action and consequences for unsafe work behavior/conduct and provide a record of corrective action taken.

- Employers should periodically reinforce safety training of supervisors and workers regarding the hazards associated with specific work assignments and safe work practices.

The decedent possessed a valid forklift operator's permit but did not have a training record indicating he had received the required training. The safety information provided may have been forgotten or ignored for lack of regular reinforcement. Supervisors have daily interactions with employees and should constantly encourage safety awareness. Workers can become complacent and develop a pattern of unsafe behavior that unless noted and addressed by management, becomes routine unsafe behavior. Workers' attitudes and motivations impact their work practices as well as their knowledge of how to do the work. Workers knowing the safe and correct way to work plus them knowing that the employer expects that the work will be conducted safely and correctly should be emphasized in worker training. Reinforcement of the importance of safe work procedures and the expectation that they would be followed is an important element the prevention of injuries.

The company was developing and instituting an internal safety awareness and safety issue abatement program named Get Out And Look (GOAL). This program will encompass quarterly safety and health audits and action plans developed to abate identified safety deficiencies. This program should assist the terminal manager, dock supervisors and employees to develop greater safety hazard awareness and provide needed safety practice and procedure reinforcement.

- Employers should ensure that at least one person on each shift is certified in First Aid/CPR, should strongly consider having an individual certified as a Medical First Responder or Emergency Medical Technician (EMT), and hold at least semi-annual workplace First Aid/rescue practices.

Emergencies can and do happen, including personal injuries, sudden illnesses (such as a heart attack), fires, natural disasters (such as tornadoes and floods), and violent acts. Emergency situations require a designated person to be in charge of managing the emergency. This person ought not to be the First Aid/CPR or medical first responder, because his/her attention should be solely devoted to stabilizing the victim of an injury/illness situation.

CPR/First Aid is defined by the American Red Cross as recognizing and caring for breathing, cardiac, and life-threatening emergencies, such as severe bleeding and sudden illness, are the first steps in knowing what action to take if an emergency does arise. One of the issues that arise is that CPR/First Aid training does not address a "rescue" situation, such as what was experienced in this incident.

A certified medical first responder is a person who has completed forty to sixty hours of training in providing care for medical emergencies, such as an injury or illness that poses an immediate threat to a person's health or life which requires help from a doctor or hospital. A certified first responder has more skill than someone who is trained in First Aid/CPR but a first responder is not an emergency medical technician (EMT).

In this incident, the employer did not have a trained a medical first responder (nor a certified First Aid/CPR responder) on the premises, therefore valuable time was lost in providing assistance to the decedent. Fellow employees were unsure what actions to take, such as checking for a pulse, raising the mast, moving the decedent from the forklift, etc. The American Red Cross professional rescuer courses are designed for people with job-related duties in emergency preparedness and response, including industry response teams who must take action in emergency situations. The American Red Cross Emergency Response course is a comprehensive course designed for training first responders. The course follows the 1995 US DOT First Responder National Standard Curriculum The medical first responder course is also taught in many community colleges. MIFACE encourages employers to contact these providers to provide First Aid/CPR and medical responder training to their employees. To ensure readiness in the case of a serious workplace injury, the employer should hold at least semi-annual workplace First Aid/rescue practices.

RESOURCES

MIOSHA standards cited in this report may be found at and downloaded from the MIOSHA, Michigan Department of Labor and Economic Growth (DLEG) website at: www.michigan.gov/mioshastandards. MIOSHA standards are available for a fee by writing to: Michigan Department of Labor and Economic Growth, MIOSHA Standards Section, P.O. Box 30643, Lansing, Michigan 48909-8143 or calling (517) 322-1845.

- MIOSHA General Industry Safety, Part 21, Powered Industrial Trucks.
- NIOSH [2001]. NIOSH Alert: Preventing injuries and deaths of workers who operate or work near forklifts. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2001-109.
- Government Institutes [1999]. Forklift Safety-A practical guide to preventing powered industrial truck incidents and injuries (Second edition), Rockville, Maryland: Government Institutes, a division of ABS Group Inc.

- First Responder: National Standard Curriculum, National Highway Traffic Safety Administration. Internet Address: www.nhtsa.dot.gov/people/injury/ems/pub/frnsc.pdf
- American Red Cross, Preparing Professional Rescuers. Internet address: www.redcross.org/services/hss/courses/professional.html

MIFACE
Investigation Report # 05 MI 078
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Please rate the report using a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

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1	2	3	4

Was the report…	**Excellent**	**Good**	**Fair**	**Poor**
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