

MIFACE INVESTIGATION #01MI094

SUBJECT: Bridge Painter Dies When He Falls Out of an Unsecured Rough Terrain Forklift Scaffold Platform

Summary

On October 19, 2001, a 31-year old male died from injuries sustained when he fell out of an unsecured telescoping rough terrain forklift scaffold platform (See Figure 1). The victim was painting a bridge as part of a highway construction project. The scaffold platform was raised to approximately 12 feet. The scaffold was not secured to the forks of the forklift; the forklift tines were not in the platform sleeves and the platform was not secured to the back of the forks. The victim was not tied off to the platform. As the victim walked sideways on the work platform, it began to tip to the side, and the victim fell out of the platform onto the packed dirt under the bridge. The platform fell off the forklift, hit the ground, and rolled onto the victim. Emergency personnel were called, and the victim was taken to a local hospital where he died.



Figure 1. Rough Terrain Forklift

RECOMMENDATIONS

- Employees must be trained in the procedures to safely perform a personnel lift using approved platforms and equipment specifically designed to support a scaffold platform.
- Prior to each personnel lift with a rough terrain forklift, employers should ensure that a pre-lift meeting occurs to review appropriate requirements and procedures for safe work operation.
- Employers should provide employees with a 100% fall protection system compatible with the work being performed, instruct employees in the proper use of the system and equipment, and ensure its use.
- Employers should provide forklift operator training that complies with MIOSHA powered industrial truck (PIT) regulations, ensure that employees do not operate a PIT without supervision until the required training and evaluation has been successfully completed, and have a valid permit to operate a rough terrain forklift. MIOSHA has specific training requirements for operators of a rough terrain forklift being used to elevate employees.
- Employers should design, develop, and implement a comprehensive safety program health and safety plan
- Employers should educate employees about the dangers of drug use and that working while under the drug's influence may impair their ability to recognize and respond appropriately to hazardous situations.

INTRODUCTION

On October 19, 2001, a 31-year old male died from injuries sustained when he fell out of an unsecured rough terrain forklift scaffold platform. MIFACE investigators were notified of the work-related construction fatality by the Michigan Occupational Safety and Health Administration (MIOSHA) 24-hour fatality report system that a work-related fatal injury occurred on October 19, 2001. The company did not return MIFACE phone calls to discuss the fatality. On October 30, 2001 MIFACE accompanied a MIOSHA inspector to view the incident site because the incident occurred on public property. The death certificate, autopsy results, police report (including photographs of the scaffold platform and lift), and the MIOSHA narrative were obtained during the course of the investigation. All figures are police photographs taken during the police investigation.

This investigation report is based upon the police and MIOSHA compliance officer reports of the incident.

MIOSHA issued 8 citations to the company. Five citations were violations of MIOSHA Part 12, Scaffolds and Scaffold Platforms, one citation was failure to report the fatality to MIOSHA, one was the lack of a company accident prevention program, and one citation was the lack of first aid supplies and employees trained in first aid at the site. The Part 12 citations included no pre-lift meeting was conducted, the platform was not attached and secured to the forks, a personal fall arrest system was not worn, lack of employee training before elevating employees, and the driver of the Sky Trak did not have a valid operator permit for the forklift.

INVESTIGATION

The company employed approximately 25 people; two company employees were working at the job site on the day of the fatality. The company is a special trade contractor that does varied work, such as painting, masonry and is also a general contractor for road and building construction. The company had been in business for at least 13 years at the time of the incident. The decedent had been working for the company for 2 days. There was a corporate safety program, but the company did not implement their program at the job site.

The telescopic rough terrain forklift elevating the victim was a model 8042 Sky Trak. The maximum lift capacity was 8,000 pounds. The forks attached to the boom were 48 inches long. This type of forklift is considered a rough terrain powered industrial truck for purposes of forklift operator training.

MIOSHA Construction Safety Standard Part 12, Scaffolds and Scaffold Platforms defines a scaffold as a temporary elevated platform which is supported or suspended, including its supporting system and points of anchorage, and which is used for supporting an employee or materials or both. The basket used to elevate the employee is regarded by MIOSHA as a scaffold platform. The scaffold platform used to elevate the victim was 8 feet long, 4 feet wide and 44 inches high. The basket was equipped with a tie-off chain with shackle pins and forklift sleeves at its base.

Another company owned the Sky Trak and had used the Sky Track earlier in the day to move pallets from one area at the site to a staging area at another location at the site.

This company had previously allowed other employees of the victim's company to borrow the Sky Trak to perform work. The Sky Trak forks were set to accommodate the pallet fork sleeves. The Sky Trak driver borrowed the forklift from another location on the work site so he could elevate the victim. The victim was assigned to paint the underside of the bridge.

Prior to elevating the victim, the forks were not reset to accommodate the width required by the platform's fork sleeves. The driver placed the forks under the basket so the basket rested on the forks; the forks were located between the fork sleeves on the basket. Figure 2 illustrates the location of the forks. The forklift was moved to another location on the site during the rescue operation. It is unknown if, at the time of the lift, the wire mesh screen faced outward or was adjacent to the back of the forklift.

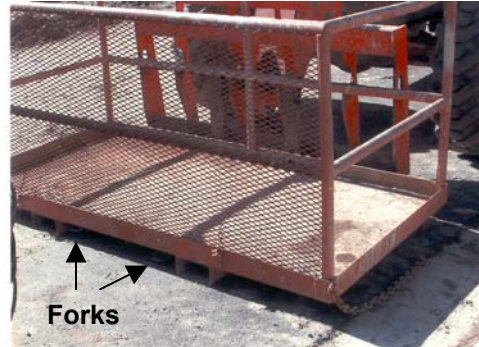


Figure 2-Location of Forklift Forks

It is unknown the content and extent of operator training the Sky Trak driver received before lifting the victim. The Sky Trak driver elevated the victim approximately 16 feet so he could begin to paint the bridge underside. The victim began painting at one end of the bridge, moving a section at a time. It is unknown if the boom was lowered each time the Sky Trak moved to each new painting position. During the painting of the third area of the bridge's underside, the worker shifted his weight to the side of the platform (See Figure 3). The basket began to tilt to the side and the worker fell out. The victim landed on the packed dirt. The platform fell from the forklift, landed on the ground, and rolled on top of the victim. Emergency personnel were called and the victim was transported to a local hospital where he later died.



Figure 3. Painting location

The Sky Track was designed by the manufacturer to elevate personnel scaffold platforms. On the boom was a warning label for carrying personnel. MIOSHA allows for the use of platforms on rough terrain forklifts if the manufacturer designates that the forklift may be used for that purpose.



Figure 4. Sky Track Warning Sign

The American Society of Mechanical Engineers (ASME) takes an opposing view. ASME B56.6-1992, Safety Standard for Rough Terrain Forklift Trucks, specifies that rough terrain forklift trucks may only be used as an elevated work platform if there are no other "practical options" available. Federal OSHA requires that before using a rough terrain forklift truck as a work platform that the employer must investigate other options of elevating the employee. Other options include construction of a scaffold, scissor lifts, aerial lifts or ladders. Only after determining that other options to lift the employee are unfeasible may a rough terrain forklift be used.

The deceased's autopsy report stated there was a detectable level of cannabinoids (i.e., marijuana, hashish or hash oil) in his urine. The victim's cannabinoid level was measured at 507 nanograms/milliliter (ng/ml). This positive result indicates probable prior use but does not correlate well in determining level of intoxication or impairment of the victim. Analysis of a single urine specimen cannot distinguish between very recent use and chronic use. In general, the greater the level of cannabinoid metabolites in urine, the greater the possibility of recent use, but it is impossible to be precise about how "recent" the use has been. Cannabinoids can be detected in urine for an average of 1-2 days or for as long as 7 days after a single cannabinoid inhalation exposure.

CAUSE OF DEATH

The medical examiner recorded the cause of death as multiple blunt force injuries. No alcohol was detected in the victim's blood or urine. Cannabinoids were detected in the victim's urine. No other drugs of abuse were detected in the blood or urine.

RECOMMENDATIONS/DISCUSSION

- Employees must be trained in the procedures to safely perform a personnel lift using equipment specifically designed to support a scaffold platform.

To safely elevate personnel using a rough terrain forklift scaffold, the forks must be placed in the scaffold sleeves, the scaffold secured against the back of the forks with a mechanical device, and the side of the scaffold adjacent to the mast have a solid or mesh guard sufficient to protect the passenger from contact with moving parts of the mast.

When the lift was made, the scaffold platform used with the rough terrain forklift was only resting on the forks; the forks were placed between the scaffold fork channels (See Figure 5). The Sky Trak was moved to each painting position, thus the platform could also move upon the forks. When the victim moved to the side, the center of gravity shift caused the platform to begin to tilt off of the forks, causing the victim to fall out of the scaffold. If the forks were reset to fit into the fork channels and the platform secured to the forks prior to the lift, the platform would likely not have tipped over. At the time of the incident, it is unknown if the platform's mesh screen was facing outward (as in the picture) or adjacent to the mast, since the picture was taken after moving the basket off of the victim. The safety chain and pins are on the mesh side of the platform to enable the platform to be secured to the mast. If the platform used by the victim had the mesh screen facing outward, the safety chain could not have been used to secure the platform to the forks. Properly positioning the basket on the forklift forks and securing the scaffold with the safety chain would have likely prevented this fatality.

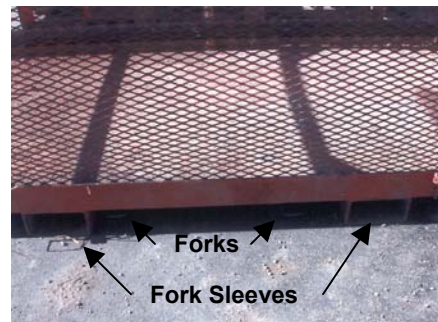


Figure 5. Fork/Sleeve Location

- Prior to each personnel lift, a pre-lift meeting should occur to review appropriate requirements and procedures for safe work operation.

The MIOSHA Scaffold Standard Rule 1243(1) requires that when a rough terrain forklift is used to elevate personnel, a pre-lift meeting must be held. The pre-lift meeting must occur before the employee(s) are elevated and include all persons involved in the lift (i.e., the lift operator, signal person, employee(s) to be lifted and the person responsible for the task to be performed in attendance). The meeting must address the requirements and procedures to be followed so a safe work operation may occur. An initial assessment of the job-at-hand should include identification of the hazards involved.

The personnel involved in the lift did not have a pre-lift meeting to discuss safe work procedures. A pre-lift meeting should have covered the importance of properly securing the platform to the forks as well as other requirements to perform the work.

- Employers should provide employees with a 100% fall protection system compatible with the work being performed, instruct employees in the proper use of the system and equipment, and ensure its use.

Part 12, Rule 1243(9) states that if an employee is elevated in a platform on a variable reach lift truck, a personal fall arrest system, including anchorage required in Part 45, Fall Protection and Part 6, Personal Protective Equipment is required and shall be worn when an employee is elevated.

The employee was elevated approximately 16 feet above a packed dirt surface. If the worker had a correctly attached personal fall arrest system, when the basket began to fall off of the forks, he would not have been on the ground when the basket hit the ground and rolled. He would have been suspended from the elevated boom/fork. The fatal injury may have been prevented if he had been wearing a fall protection system.

- Employers should provide forklift operator training that complies with MIOSHA powered industrial truck (PIT) regulations, ensure that employees do not operate a PIT without supervision until the required training and evaluation has been successfully completed, and have a valid permit to operate a rough terrain forklift.

MIOSHA has two construction safety standards that specifically address forklift operator training. MIOSHA Construction Safety Standard Part 13 Mobil Equipment, Rule 1926.602 – Material Handling Equipment (d) Powered industrial truck operator training details the training requirements for all powered industrial trucks. Part 12, Rule 1245, Operator training details the operator training requirements specific to using a rough terrain forklift to elevate employees. Before being allowed by the employer to operate the forklift independently, the trainee must demonstrate proper operation of the forklift and perform the functions necessary for a particular job. When the employee performance demonstrates effective training and appropriate skill level, the employer must issue a valid operator permit to use the rough terrain forklift to elevate employees.

The employer did not train the forklift driver in accordance with the above referenced standards and the driver did not have a valid operator permit. With appropriate training, the driver should have recognized the unsafe conditions of an unsecured platform

resting on the forks. Operator training would have included the importance of setting fork width to accommodate the task to be performed.

- Employers should design, develop, and implement a comprehensive safety program.

MIOSHA requires under Part 1, General Rules that an employer shall develop, maintain, and coordinate with employees an accident prevention program. An employer must provide instruction and safety training to an employee in the recognition and avoidance of conditions or procedures that are causing or likely to cause serious physical harm or death. A copy of the accident prevention program must be available at the worksite. The company had a comprehensive written program that was not enforced and implemented at the worksite.

- Employers should educate employees about the dangers of drug use and that working while under the drug's influence may impair their ability to recognize and respond appropriately to hazardous situations.

Although it cannot be determined if the deceased was under the influence of cannabis, many studies have concluded that cannabis use reduces coordination, impairs balance, perception, judgment, memory and learning. Cannabis use interferes with the ability to perform simple or complex tasks, and slows a user's reflexes. Many drugs, such as over-the-counter medications, alcohol and other illegal substances may affect an individual's performance, reaction time and judgment. Individuals should not engage in hazardous activities while under the influence or taking medications that may put them at risk of injury.

RESOURCES

MIOSHA Standards cited in this report can be directly accessed from the Consumer and Industry Services, MIOSHA website www.michigan.gov/mioshastandards. The Standards can also be obtained for a fee by writing to the following address: Department of Consumer and Industry Services, MIOSHA Standards Division, P.O. Box 30643, Lansing, MI 48909-8143. MIOSHA phone number is (517) 322-1845.

MIOSHA Construction Safety Standard, Part 1, General Rules

MIOSHA Construction Safety Standard, Part 6, Personal Protective Equipment

MIOSHA Construction Safety Standard, Part 12, Scaffold and Scaffold Platforms

MIOSHA Construction Safety Standard, Part 13, Mobile Equipment

MIOSHA Construction Safety Standard, Part 45, Fall Protection

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1	2	3	4

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