

NJ FACE INVESTIGATION REPORT



Fatality Assessment & Control Evaluation Project

FACE 98-NJ-082-01

August 31, 1999

Heavy Equipment Operator Killed When Pinned Under a Backhoe Tire

SUMMARY

On September 15, 1998, a 31-year-old heavy equipment operator was killed when he was caught under the wheel of a backhoe that he was servicing. The incident occurred outside a condominium complex where the victim was clearing and grading a drainage retention pond. As he was working, the left front wheel of the backhoe loosened and came off. Before fixing the wheel, the victim and his coworker left the site, reporting the problem to the employer when they met during lunch. The two workers returned to work on the machine. Planning to lift the wheel by digging the backhoe's front bucket down against the ground, the victim stood by the side of the machine and reached in to turn on the ignition. The backhoe was in gear and immediately lurched forward, striking the victim and pulling him under the rear tire. A police chief was also injured during an attempt to move the backhoe. Despite rescue efforts to lift the backhoe with a larger front end loader, the victim was asphyxiated and died at the scene. To prevent similar incidents in the future, NJ FACE recommends the following safety guidelines:

- **Employers should ensure that heavy equipment operators are properly trained before using the machines.**
- **Employers should frequently inspect construction equipment to ensure that all operational controls and safety devices are in good working order.**
- **Employers should become familiar with available resources on safety standards and safe work practices.**

INTRODUCTION

On September 16, 1998, NJ FACE staff received a newspaper article about a work-related fatality involving a backhoe that occurred the day before. A FACE investigator contacted the area OSHA office and arranged to conduct a concurrent investigation with the OSHA compliance officer the next day. FACE investigators were unable to meet the compliance officer who had arrived earlier and completed their investigation. However, FACE investigators photographed the incident site and spoke with two witnesses. The employer did not respond to requests for information and was not interviewed. Most of the information on the incident was gathered from the OSHA files, police report, and the medical examiner's report.

The employer was a small non-residential construction contractor (SIC 1542) who had one paid employee at the time of the incident. The victim was a 31-year-old male construction laborer who had worked for the company for two days. He reportedly worked for the employer in the past and had asked for a job after being laid off while working with a mason's union. The victim had experience with backhoes and had been hired to operate and service the backhoe.

INVESTIGATION

The incident occurred next to a drainage retention pond behind a large condominium complex. The company had been contracted to remove excess vegetation from around the pond, which was designed to catch and hold excess water from the storm drains. They were to grade, level, and reseed the area. Work started Monday, September 14, 1998. Three men were in the work crew, including the company owner and victim. A third laborer was a retired friend of the employer who did unpaid odd jobs around the site to keep himself busy.

Work went uneventfully the first day. The next day, the day of the incident, the crew arrived on site at 7:30 a.m. and worked through the morning without any problems. The victim used the backhoe to clear and grade the sides of the pond. At around 10:00 a.m. the owner left the site and told the workers to page him if they had any problems. They continued working until just before lunch when they had trouble with the backhoe's front left (drivers' side) wheel. The lug nuts holding the wheel on had loosened, causing it to come off. The two men discussed the problem and decided to fix the wheel after lunch. After eating, the two workers went to get some

replacement nuts for the tire and met with the owner, who was told of the problem. He told them he would meet them at the site and went to get a jack and some lug nuts for the repair. The two workers arrived back at the site shortly before 1:00 p.m. and immediately started work on the machine. Because of the soft mud the wheel's lug holes did not line up, so the victim told the co-worker that he was going to raise the machine. He planned to drive the front bucket down against the ground, which would raise the front of the machine and clear the front wheels from the mud (see figure 1). With the wheel raised they could easily line up and replace the lug nuts. Stepping between the front and rear tires, the victim reached into the operator's cab and turned the ignition. The backhoe, which was in gear, lunged forward as the engine started. The spinning rear tire struck the victim and pulled him under the machine. The co-worker quickly stopped the backhoe and ran to call 911.

The police and EMS arrived to find the victim's entire body pinned under the backhoe. He was still alive but gasping for breath under the weight of the machine. The owner also arrived, having been paged as he was driving back to the site. As the police tried to clear mud from around the victim's face to give him oxygen, a police officer reportedly asked the owner if he could lift the backhoe. He said yes and started the machine, causing the rear tires to spin again. This injured a police chief who's hand was caught under the spinning tires as he was trying to help the victim. The backhoe was again shut down and rescue efforts continued. Police officers went to a nearby construction project and asked for help in lifting the machine off the victim. A large front-end loader was driven to the site by a heavy equipment operator and positioned to the side of the backhoe. A chain was fastened from the loader's bucket to the frame of the backhoe, and the backhoe was lifted off the victim. The victim was freed but had died during the rescue due to traumatic asphyxia. He was pronounced dead at the scene at 1:51 p.m.

CAUSE OF DEATH

The county medical examiner determined the cause of death to be from "asphyxia [due to the] combined effects of chest compression by a tractor and obstruction of the external airways by mud."

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Employers should ensure that heavy equipment operators are properly trained before using the machines.

Discussion: The victim was reported to have experience in operating backhoes. However, attempting to start the backhoe while standing outside the machine showed a lack of understanding in the safe operation of this equipment. FACE recommends that employers ensure that equipment operators are properly trained in the safe use of the equipment. Employees must also be trained on each specific machine that they will operate.

Recommendation #2: Employers should frequently inspect construction equipment to ensure that all operational controls and safety devices are in good working order.

Discussion: The OSHA investigation of this incident found that the neutral start switch on the backhoe was not operating. This switch is designed to prevent the machine from starting unless the operating controls are in the neutral or park position. To ensure that all safety and operational devices are operating properly, FACE recommends that backhoes and other construction equipment are periodically inspected and serviced by a qualified maintenance person. Most equipment manufacturers can provide an inspection checklist and maintenance schedule to help in this. Following this incident, the neutral start switch on the machine was replaced.

Recommendation #3: Employers should become familiar with available resources on safety standards and safe work practices.

Discussion: It is extremely important that employers obtain accurate information on safety and adhering to all OSHA standards. The following sources of information may be helpful:

U.S. Department of Labor, OSHA

On request, OSHA will provide information on safety and health standards. OSHA has several offices in New Jersey that cover the following areas:

Hunterdon, Middlesex, Somerset, Union, and Warren counties.....(732) 750-3270
 Essex, Hudson, Morris, and Sussex counties.....(973) 263-1003
 Bergen and Passaic counties.....(201) 288-1700
 Atlantic, Burlington, Cape May, Camden, Cumberland, Gloucester,
 Mercer, Monmouth, Ocean, and Salem counties.....(856) 757-5181

NJ Public Employees Occupational Safety and Health (PEOSH) Program

The PEOSH act covers all NJ state, county, and municipal employees. The act is administered by two departments; the NJ Department of Labor (NJDOL) which investigates safety hazards, and the NJ Department of Health and Senior Services (NJDHSS) which investigates health hazards. Their telephone numbers are:

NJDOL, Office of Public Employees Safety(609) 633-3896
 NJDHSS, PEOSH Program.....(609) 984-1863

NJDOL Occupational Safety and Health On-Site Consultative Program

Located in the NJ Department of Labor, this program provides free advice to private businesses on improving safety and health in the workplace and complying with OSHA standards. For information regarding a safety consultation, call (609) 292-0404, for a health consultation call (609) 984-0785. Requests may also be faxed to (609) 292-4409.

New Jersey State Safety Council

The NJ Safety Council provides a variety of courses on work-related safety. There is a charge for the seminars. Their address and telephone number is: NJ State Safety Council, 6 Commerce Drive, Cranford, NJ 07016. Telephone (908) 272-7712

Internet Resources

Information and publications on safety and health standards can be easily obtained over the Internet. Some useful sites include:

- www.osha.gov* -The US Department of Labor OSHA website.
- www.cdc.gov/niosh/* - The CDC/NIOSH website.
- www.state.nj.us/health/eoh/peoshweb* -The NJDHSS PEOSH website.

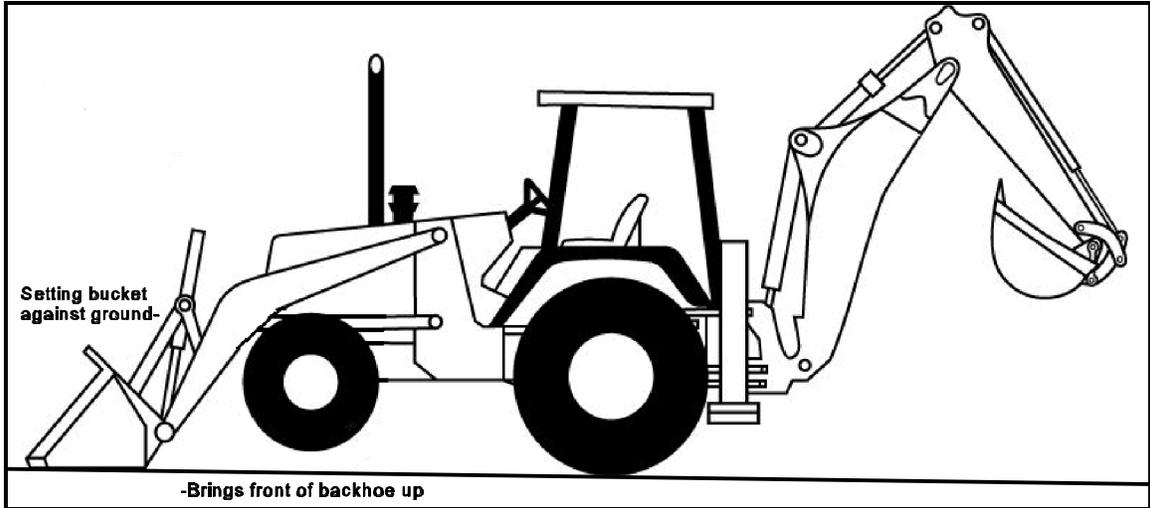


Figure 1

Illustration showing method of raising the front backhoe wheels

DISTRIBUTION LIST

Immediate Distribution

NIOSH

Employer

Incident Site Owner

NJ State Medical Examiner

County Medical Examiner

Local Health Officer

NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

General Distribution

USDOL-OSHA New Jersey Area Offices (4)

NJDOL Office of Public Employees Safety

NJDHSS Public Employees OSHA

NJDOL OSHA Consultative Service

NJ State Safety Council

NJ Institute of Technology

University of Medicine & Dentistry of NJ

Rutgers University

Stevens Institute of Technology

College of NJ

NJ Shade Tree Federation

NJ Utilities Association

NJ School Boards Association

Public Service Electric and Gas Company

Private Consultants (4)

Private Employers (8)

Public Employers (6)

Other Government Agencies (4)

