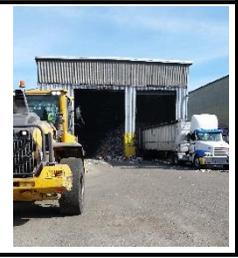


NJ FOIS INVESTIGATION REPORT



Fatal Occupational Injuries Surveillance Project

FOIS 16-NJ-08

June 5, 2017

Forklift Operator Struck and Killed by Front-End Wheel Loader

A 54-year-old laborer/forklift operator was killed after he was struck by a front-end wheel loader and pinned against the dumpster he was unloading. The incident occurred at a waste recycling facility in southern NJ. On the day of the incident, the victim, who worked for a metals processing facility directly adjacent to the recycling establishment, was using a forklift to transport a dumpster full of debris to the recycling plant. He pulled up next to the pile, exited the forklift, and began to prepare the dumpster to be emptied. A large, front-end wheel loader was also in the facility and was picking up and moving trash. The front-end wheel loader was backing into the area to get into position to pick up another load when it struck the victim, pinning him against the dumpster (which was still on the forks). The victim suffered blunt force injuries and died three days later.

Contributing Factors

- No communication between front-end wheel loader operator and victim
- No personal protective equipment
- No backup alarm on front-end wheel loader

NJ FOIS investigators recommend that these safety guidelines be followed to prevent similar incidents:

- **A safety and health plan based on a job hazard analysis should be developed by the employer and followed where workers are assigned tasks.**
- **Communication with any operator of heavy equipment is critical to a safe work environment.**
- **All front-end wheel loaders should be equipped with an audio backup alarm and reverse warning lights.**
- **Personal protective equipment such as high-visibility vests should always be worn when working near front-end wheel loaders.**



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INTRODUCTION

In winter 2016, NJ FOIS staff was notified of the death of a 54-year-old male forklift operator who was killed after being struck by a front-end wheel loader and pinned against a dumpster. The incident occurred in the tipping floor of a recycling facility in southern NJ. The victim worked for a metals processing facility directly adjacent to the recycling facility. At least once per day, the victim would transport and unload a small dumpster of waste from the metals processing plant to the recycling facility. Training for the victim was verbal and done by his employer. The wheel loader operator received training by his employer, which included a loader operator training course. No personal protective equipment was worn by the victim.

A NJ FOIS investigator received notification from the OSHA Area Office, and conducted a concurrent investigation. Additional information was obtained from the death certificate and the news media.

INVESTIGATION

The incident occurred on the tipping floor located inside of a paper and plastic recycling facility (Figure 1). The facility has two bay doors for access to the front of the building. Large trash/roll-off trucks would utilize the right bay door by backing inside and unloading recyclable waste onto a large pile. The left side door was used for smaller loads. An in-feed conveyor at the back of the tipping floor was used to transport the waste to the recycling part of the plant. In order to feed the trash onto the conveyor belt, a front-end wheel loader was used. The loader would pick up material from the large pile in the front bucket, then transport the material to the conveyor belt.

A metals processing plant, located adjacent to the recycling facility, also dumped waste on the tipping floor. The victim, an employee of the metals processing plant, was responsible for emptying approximately 20 dumpsters located throughout the plant. Once a dumpster was full, the victim would use a forklift to transport the dumpster to the recycling facility. This process was repeated throughout the day depending on how much waste was generated at the metals processing plant.

On the day of the incident, at approximately 6:40am. It was still fairly dark outside (sunrise was 6:54am), but the facility was well lit inside. The victim was transporting the first dumpster of the day. When the victim arrived with the forklift at the recycling facility, there was already a large truck dumping waste on the right side of the tipping floor. The victim drove to the left side, stopped at the location where he was going to empty the dumpster, raised the forks, and exited the forklift. Emptying

the dumpster was done manually; he walked to the front of the forklift and unhooked a latch to open the dumpster.

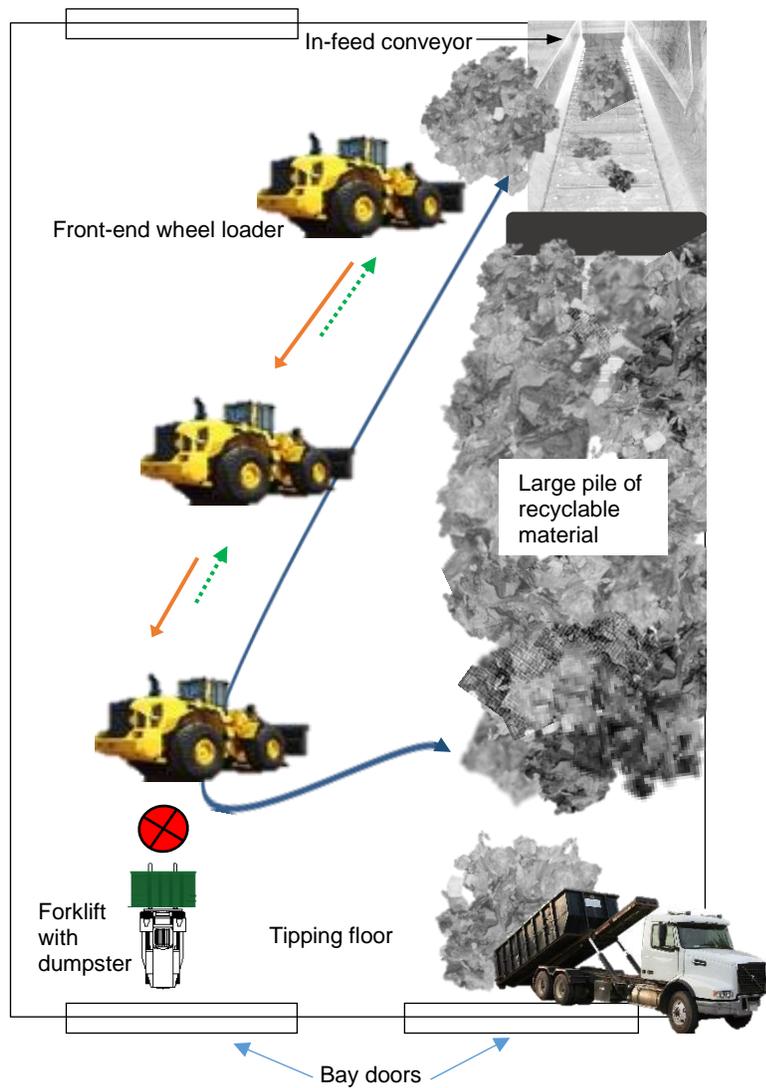
Meanwhile, the operator of the front-end wheel loader had already begun his shift and was in the process of moving waste to the area near the in-feed conveyor. From the large pile at the front of the tipping floor, the operator would back up in a “V” pattern and head towards the conveyor (Figure 2). The front-end wheel loader did not have a backup alarm (not installed by the manufacturer on that model), but did have backup lights. It also had a backup camera with a screen that was mounted on the upper right section of cab. However, when the operator looked backwards while in reverse, the screen was not in view.

As the operator began to back away from the conveyor and head towards the large pile, he was not aware that the victim had entered the facility to empty a dumpster. The operator stated that he was looking backwards as the loader was in reverse, and did not see the victim. He struck the victim pinning him between the front-end wheel loader and the dumpster on the forklift. He heard a scream, pulled forward and exited the loader. A call was made to 9-1-1, and the victim was transported to the hospital where he died three days later from multiple blunt traumatic injuries.

FIGURE 1. Incident site: a paper and plastic recycling facility.



FIGURE 2. Recreation of incident (not to scale): Transfer of waste from pile to conveyor. Front-end wheel loader picks up waste material from large pile and carries load to in-feed conveyor. Victim was struck when wheel loader was backing up to return to pile for another load.



Legend

-  Total path of front-end wheel loader
-  Direction of front-end wheel loader at time of incident
-  Direction of front-end wheel loader prior to incident
-  Point where the victim was struck

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: A safety and health plan based on a job hazard analysis should be developed by the employer and followed where workers are assigned tasks.

Discussion: Employers should conduct a job hazard analysis, with the participation of employees, of all work areas and job tasks. A job hazard analysis should begin by reviewing the work activities for which the employee is responsible and the equipment that is needed. Each task is further examined for mechanical, electrical, chemical, or any other hazard the worker may encounter. A source of information on conducting a job hazard analysis can be obtained from the US Department of Labor.¹

Recommendation #2: Communication with any operator of heavy equipment is critical to a safe work environment.

Discussion: When workers are conducting separate tasks in the same work zone or work area, a confirmed communication system should be established. This could take the form of verbal, hand signal, radio, etc. The communication should have a confirmation element, that is, there is confirmation from both or all parties. In this case, the driver of the front-end wheel loader did not know the victim was in the bay unloading the dumpster.

In addition, NJFOIS recommends communication between companies. Prior to an employee working between two separate companies, there should be an agreement regarding protocols and policies dealing with any health and safety hazards that may be present.

Recommendation #3: All front-end wheel loaders should be equipped with an audio backup alarm and reverse warning lights.

Discussion: Manufacturers should consider installing audio backup alarms and lights on any and all front-end wheel loaders. Although it is not certain if this could have prevented the fatality in this case, the particular front-end wheel loader involved was not equipped with an audio alarm by the manufacturer. NJ FOIS recommends that audible horns or beeps should be at a decibel (dB) level of 97 to 112 dB, and should automatically activate when the vehicle is in reverse. The front-end wheel loader was equipped with reverse lights, however, these activated whenever the lift was in use. NJ FOIS recommends that all front-end wheel loaders should be equipped with reverse warning lights/strobe lighting, and these lights only activate when the vehicle is backing up.

Recommendation #4: Personal protective equipment such as hard hats and high-visibility vests should always be worn when working with front end wheel loaders.

Discussion: NJ FOIS recommends the use of high-visibility safety vests be worn at all times when working with or around forklifts and/or front-end wheel loaders. All high-visibility safety apparel should conform with ANSI/ISEA 107-2010², and are intended to make workers readily visible during daytime (and nighttime usage).³ The use of high-visibility safety apparel allows equipment operators to see workers distinctly, reducing the risk of worker injury or fatality.⁴

APPENDIX

RECOMMENDED RESOURCES

It is essential that employers obtain accurate information on health, safety, and applicable OSHA standards. NJ FOIS recommends the following sources of information which can help both employers and employees:

U.S. Department of Labor, Occupational Safety & Health Administration (OSHA)

Federal OSHA can provide information on safety and health standards on request. OSHA has several offices in New Jersey that cover the following counties:

☎ 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.....	856-596-5200
💻 Web site: www.osha.gov	

New Jersey Public Employees Occupational Safety and Health (PEOSH) Program

The PEOSH Act covers all NJ state, county, and municipal employees. Two state departments administer the Act: the NJ Department of Labor and Workforce Development (NJDLWD), which investigates safety hazards, and the NJ Department of Health (NJDOH), which investigates health hazards. PEOSH has information that may also benefit private employers.

NJDLWD, Office of Public Employees Safety

☎ Telephone: 609-633-3896

💻 Web site: http://lwd.dol.state.nj.us/labor/lsse/employer/Public_Employees_OSH.html

NJDOH, Public Employees Occupational Safety & Health Program

☎ Telephone: 609-984-1863

💻 Web site: <http://www.nj.gov/health/workplacehealthandsafety/peosh/>

On-site Consultation for Public Employers

☎ Telephone: 609-984-1863 (health) or 609-633-2587 (safety)

💻 Web site: <http://www.nj.gov/health/workplacehealthandsafety/peosh/consultation.shtml>

New Jersey Department of Labor and Workforce Development, Occupational Safety and Health On-Site Consultation Program

This program provides free advice to private businesses on improving safety and health in the workplace

and complying with OSHA standards.

☎ Telephone: 609-984-0785

💻 Web site: http://lwd.dol.state.nj.us/labor/lsse/employer/peosh_consultation.html

New Jersey State Safety Council

The New Jersey State Safety Council provides a variety of courses on work-related safety. There is a charge for the seminars.

☎ Telephone: 908-272-7712

💻 Web site: www.njsafety.org

Internet Resources

Other useful Internet sites for occupational safety and health information:

- CDC/NIOSH – www.cdc.gov/niosh
- USDOL Employment Laws Assistance for Workers and Small Businesses – www.dol.gov/elaws
- National Safety Council – www.nsc.org
- NJDOH FOIS reports – http://nj.gov/health/workplacehealthandsafety/occupational-health-surveillance/fatal-injuries/njface_reports.shtml
- CDC/NIOSH FACE – www.cdc.gov/niosh/face/faceweb.html
- OSHA – www.osha.gov
- ANSI – www.ansi.org

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2. The National Work Zone Safety Clearinghouse. High Visibility Apparel in Work Zones. Available at: https://www.workzonesafety.org/fhwa_wz_grant/atssa/atssa_high_visibility_pocket_guide#s5. Accessed February 28, 2016.
3. American National Standards Institute (ANSI); 107-2010; *American National Standard for High-Visibility Safety Apparel*.
4. OSHA Campus Loader Backhoe Student Manual. Developed by HardHatTraining.com. Available at: http://www.oshacampus.com/PDF/Loader_Backhoe/Loader_Backhoe_Student_Manual.pdf . Accessed December 28, 2015. Pg 17-18.

Fatality Assessment and Control Evaluation (FOIS) Project
Investigation # 16-NJ-08

This report was prepared by staff members of the New Jersey Department of Health's Occupational Health Surveillance Unit. The goal of FOIS is to prevent fatal work-related injuries by studying the work environment, the worker, the task, the tools the worker was using, the energy exchange resulting in the fatal injury, and the role of management in controlling how these factors interact. FOIS gathers information from multiple sources that may include interviews of employers, workers, and other investigators; examination of the fatality site and related equipment; and reviewing OSHA, police, and medical examiner reports, employer safety procedures, and training plans. The FOIS program does not determine fault or place blame on employers or individual workers. Findings are summarized in narrative investigation reports that include recommendations for preventing similar events. All names and other identifiers are removed from FOIS reports and other data to protect the confidentiality of those who participate in the project.

Please visit the NJ FOIS website at <http://nj.gov/health/workplacehealthandsafety/occupational-health-surveillance/fatal-injuries> or the CDC/NIOSH FACE website at www.cdc.gov/niosh/face/faceweb.html for more information. The contents of this report are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.



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