

NJ FACE INVESTIGATION REPORT



Fatality Assessment & Control Evaluation Project

FACE 03-NJ-100

Released: February 15, 2005
Corrected: September 19, 2005

DPW Employee Dies After Falling Off The Trailer Hitch of a Leaf Vacuum

On November 25, 2003, a 38-year-old municipal Department of Public Works (DPW) employee was killed when he fell from a trailer hitch while riding a leaf vacuum that was being towed down a residential street. The victim and his co-worker were assigned to vacuum piles of loose leaves left by the side of the road by the residents of the town. The vacuum was a large, diesel-powered machine mounted on a trailer and towed by a DPW dump truck. The trailer hitch had been modified with a small, diamond-plate “seat” for the vacuum operator while moving between the leaf piles. The victim was sitting on this seat as the truck turned down a street and alongside cars that were parked on the side of the road. The large rubber vacuum hose that hung from the machine struck and damaged several of the cars. During the collision, the victim fell from the trailer, possibly while trying to hold or grab the loose hose. He fell to the roadway and was run over by the trailer. NJ FACE investigators recommend following these safety guidelines to prevent similar incidents:

- **Employers should follow the recommendations in the attached *NIOSH Alert, Preventing Worker Injuries and Deaths From Moving Refuse Collection Vehicles.***
- **Employers should ensure that all required safety, health, and maintenance procedures are followed.**
- **Employers and employees should not modify machines unless a qualified engineer and/or machine manufacturer reviews and certifies the safety of the modification.**
- **Employers should conduct a job hazard analysis of all work activities with the participation of the workers.**



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INTRODUCTION

On November 26, 2003, a compliance officer from the NJ Department of Labor and Workforce Development (NJDLWD) Office of Public Employees Safety notified NJ FACE staff of a worker who was killed in a motor vehicle accident involving an industrial leaf vacuum. A FACE investigator contacted the employer and arranged to conduct a concurrent investigation with the NJDLWD investigator, which took place on December 3, 2003. During the visit, the FACE investigator discussed the case with NJDLWD compliance officers, interviewed the DPW representatives, and photographed a leaf vacuum almost identical to the one involved in the incident. The incident site was also examined and photographed. Additional information was obtained from the police report, the medical examiner's report, and the NJDLWD investigation file.

The victim's employer was the municipal Department of Public Works (DPW) for a New Jersey town with an approximate population of 10,700 residents. The DPW was responsible for the maintenance of town properties, sanitation, and leaf collection and composting. The town employed 90 employees, 11 of whom worked for the DPW. Most of the employees were unionized. The DPW's training program was on-the-job, with new employees trained by a supervisor or an experienced employee. Safety practices included regular safety meetings.

The victim was a 38-year-old white male who had worked for the DPW for four months as a Public Works Repairer. He had 14 years of experience with municipal sewage utilities before applying for this job through New Jersey civil service. He held a NJ commercial driver's license, which allowed him to operate larger trucks and equipment. The employer stated that the victim worked a second job as a nighttime attendant at a gas station. The victim was a union member.

INVESTIGATION

The incident occurred in a suburban town of 17 square miles. During leaf season, a period from October through December, residents of the town were instructed to rake loose piles of fallen leaves to the curbsides in front of their homes for collection. The DPW owned two self-contained leaf collectors (leaf vacuums) to pick up the leaves, which would later be dumped and composted.



Photo 1
**Leaf vacuum identical to unit involved
in the incident**

The leaf vacuums were large, trailer-mounted machines that were towed by a township dump truck. The vacuum consisted of a large, box-like metal container to hold the leaves, a diesel engine attached to a vacuum impeller (rotor blade that creates the vacuum), and a large rubber hose used to vacuum the leaves. The model involved in the incident was rated to hold 14 cubic yards of leaves and had listed dimensions of 9.9 feet high, 8.4 feet wide, and 15.8 feet long.

An 85-horsepower, water-cooled, diesel engine drove a six-blade, 32-inch diameter impeller that moved 22,000 cubic feet of air per minute. A 16-inch-diameter, 8.3-foot-long reinforced rubber suction hose was mounted on a swinging boom, which supported the weight of the hose to make it easier for the operator to position. The trailer was hitched to the tow vehicle with an approximately 8-foot-long towing hitch (tounge). A hydraulic lift at the base of the machine tipped the container backward for dumping.



Photo 2
Identical leaf vacuum and pickup truck

The victim arrived for work at 7:00 a.m. on Tuesday, November 25, 2003, the day of the incident. He had not worked at his second job the night before. After arriving, the victim and his coworker were assigned to collect leaves in a nearby neighborhood, and the crew

left the DPW garage at approximately 8:00 a.m. The morning passed uneventfully, and the crew emptied the truck before returning to the garage for lunch at noon. They returned to collecting leaves at around 12:30 p.m., with the victim operating the vacuum and the coworker driving the

dump truck. The weather was clear as the crew continued work, filling about one quarter of the vacuum with leaves. At approximately 2:20 p.m., the crew had just picked up a pile of leaves when the driver noticed another pile on a nearby street. The victim, who weighed 242 pounds, was riding on the trailer hitch and holding the vacuum hose, which was not secured to the truck. A small piece of diamond-plate steel had been welded to the trailer hitch, providing a seat for a worker to sit on when traveling between piles of leaves. The driver needed to make several turns to get to the next pile of leaves, and made a left turn down a road with cars parked alongside the curb. As he drove past the parked cars, the vacuum hose swung away from the machine and struck the cars. The driver reported feeling a vibration in the truck, stopped, and got out. He found the victim lying on the street, behind the trailer that had run him over.

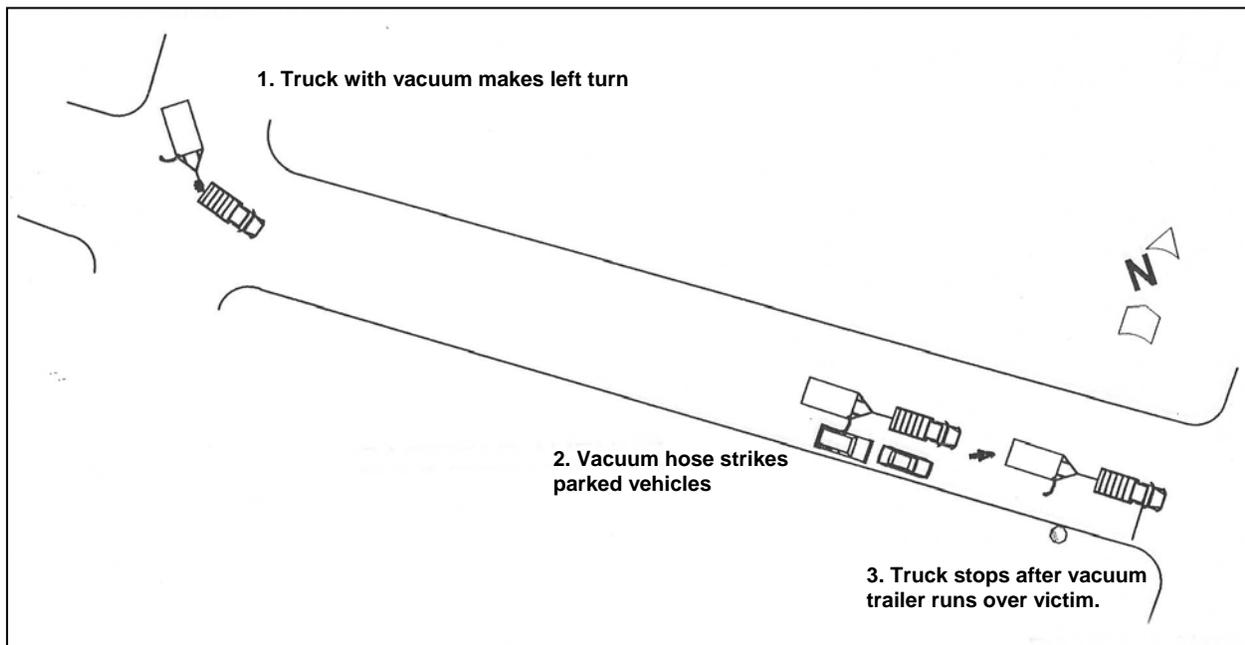


Diagram 1
Police graphic illustration of incident
(descriptive comments added)

The driver saw a pedestrian on the street and asked her to call the police. He then called the DPW garage with the truck radio. DPW supervisors responded to the scene, followed by the police and EMS. They found the victim unresponsive with injuries to his head and chest. He was transported to the local hospital emergency room, where efforts to resuscitate him were unsuccessful. He was pronounced dead in the emergency room at 2:55 p.m.

This incident was investigated by the local police, the regional Serious Accident Response Team, the NJDLWD, and the Medical Examiner's office. These investigations found a number of factors that may have contributed to this incident, including the following:

- The driver involved in the incident was driving with an expired license. (Police)
- The leaf vacuum was not registered with the NJ Department of Motor Vehicles. (Police)
- The leaf vacuum trailer had a number of maintenance defects, including inoperative brakes, an inoperative trailer break-away device (which activates the brakes if the trailer detaches), under-inflated and flat tires, and burned-out signal lights. (Police)
- An unauthorized retrofit was made by welding a piece of steel diamond-plate onto the trailer hitch as a seat. A manufacturer's warning label stating not to ride on the tongue had been removed. (NJDLWD)



Photo 3
Warning labels on identical trailer

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Employers should follow the recommendations in the attached *NIOSH Alert, Preventing Worker Injuries and Deaths From Moving Refuse Collection Vehicles*.

Discussion: After analyzing a number of deaths involving sanitation workers, NIOSH published an alert warning of the hazards of working on and around refuse collection vehicles. Although

this incident did not involve a garbage truck, many of the NIOSH recommendations apply to this situation. These recommendations include developing a procedure for safely riding and backing the vehicles, only moving the vehicle when the workers are in sight, and developing a signaling system for communicating. It was noted that the DPW already followed some of these procedures.

Recommendation #2: Employers should ensure that all required safety, health, and maintenance procedures are followed.

Discussion: In this case, investigators from various agencies found a number of deficiencies in the maintenance, safety, and licensing procedures in the operation of the leaf vacuum. This included poor machine maintenance, no follow-up on driver's licenses and registrations, and improper modifications to the machine. To prevent this, NJ FACE FACE recommends that the employer develop and implement a comprehensive safety program that includes procedures that address these issues. As this small DPW is part of a larger town bureaucracy, it may be beneficial for the different agencies in the town to jointly develop this safety program so that all town employees may be covered.

Recommendation #3: Employers and employees should not modify machines unless a qualified engineer and/or machine manufacturer reviews and certifies the safety of the modification.

Discussion: The leaf vacuum in this incident was improperly modified by welding a piece of steel diamond-plate to the trailer tongue, providing a seat for the operator. Following their investigation of this incident, the NJDLWD Office of Public Employees Safety conducted a survey of all the municipal DPWs in New Jersey State. They found 83 instances of missing warning labels, issued 36 citations for lack of training, and found two similar modifications to other leaf vacuums. This indicates a widespread hazard. The NJDLWD ordered these problems corrected. NJ FACE strongly recommends against modifying any machine without first consulting with a qualified engineer and the machine's manufacturer. This will help prevent damage, injury, legal liability, and death from improper or poorly designed modifications.

Recommendation #4: Employers should conduct a job hazard analysis of all work activities with the participation of the workers.

Discussion: To prevent incidents such as this, we recommend that employers conduct a job

hazard analysis of all work areas and job tasks with the participation of the employees. A job hazard analysis should begin by reviewing the work activities that the employee is responsible for and the equipment that is needed. Each task is further examined for mechanical, electrical, chemical, or any other hazard the worker may encounter. The results of the analysis can be used to design or modify the standard operating procedures for the job. Additional information on conducting a job hazard analysis is included in the Appendix.

RECOMMENDED RESOURCES

It is essential that employers obtain accurate information on health, safety, and applicable OSHA standards. NJ FACE 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 will 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) 757-5181
- 🌐 Federal OSHA Website: 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 and Senior Services (NJDHSS) which investigates health hazards. PEOSH has information that may also benefit private employers.

NJDLWD, Office of Public Employees Safety

- ☎ Telephone: (609) 633-3896
- 🌐 Website: www.nj.gov/labor/lsse/lspeosh.html

NJDHSS, Public Employees Occupational Safety & Health Program

☎ Telephone: (609) 984-1863

🌐 Website: www.state.nj.us/health/eoh/peoshweb

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

🌐 Website: www.nj.gov/labor/lsse/lsonsite.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

🌐 Website: www.njsafety.org

Internet Resources

Other useful internet sites for occupational safety and health information:

www.cdc.gov/niosh - The CDC/NIOSH website.

www.dol.gov/elaws -USDOL Employment Laws Assistance for Workers and Small Businesses.

www.nsc.org - National Safety Council.

www.state.nj.us/health/eoh/survweb/face.htm - NJDHSS FACE reports.

www.cdc.gov/niosh/face/faceweb.html - CDC/NIOSH FACE website.

REFERENCES

1. *Job Hazard Analysis*. US Department of Labor Publication # OSHA-3071, 1998 (revised). USDOL, OSHA/OICA Publications, PO Box 37535, Washington DC 20013-7535.

2. *NIOSH Alert: Preventing Worker Injuries and Deaths From Moving Refuse Collection Vehicles*. NIOSH publication # 97-110, NIOSH Publications Dissemination, 4676 Columbia Parkway, Cincinnati OH 45226. Telephone 1-800-356-4674.

DISTRIBUTION LIST

NIOSH

Employer

NJ State Medical Examiner

County Medical Examiner

Local Health Officer

NJDHSS Occupational Health Service Internet Site

NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

Corrections to FACE Report # 03-NJ-100

September 19, 2005

Shortly after releasing this report, NJFACE staff was made aware of some inaccuracies in our reporting of the details of the incident. The FACE investigator who authored this report re-examined the documentation for this investigation and confirmed these errors. In an effort to release the most accurate information possible, we are making the following changes and corrections to the original report:

Leaf vacuum and trailer: The report stated that the trailer that the victim fell from was improperly equipped with a diamond-plate “seat” and was lacking the required warning stickers. This was incorrect. The trailer that the victim was riding on was not equipped with a seat and did have the required warning stickers. The DPW’s second leaf vacuum and trailer had these modifications. This error was due to confusion in reading the serial numbers that identified the two units.

Township size: The town was described in the report as being 17 square miles in size. This is inaccurate, as the town is only 1.08 square miles. This information was obtained from a township directory, which specified the town as having 1.08 square miles of land area and 15.75 square miles of water area, for a total of 16.83 (rounded to 17) square miles.

Fatality Assessment and Control Evaluation (FACE) Project
Investigation # 04-NJ-100

Staff members of the New Jersey Department of Health and Senior Services, Occupational Health Service, perform FACE investigations when there is a report of a targeted work-related fatal injury. The goal of FACE is to prevent fatal work injuries by studying the work environment, the worker, the task and tools the worker was using, the energy exchange resulting in the fatal injury, and the role of management in controlling how these factors interact. FACE 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 FACE 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 FACE reports and other data to protect the confidentiality of those who participate in the program.

NIOSH-funded state-based FACE Programs include: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin. Please visit the NJ FACE website at www.state.nj.us/health/eoh/survweb/face.htm or the CDC/NIOSH FACE website at www.cdc.gov/niosh/face/faceweb.html for more information.

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