

NJ FACE INVESTIGATION REPORT



Fatality Assessment & Control Evaluation Project

FACE 04-NJ-013-01

March 3, 2005

20-Year-Old Man Killed When Struck By Tree Falling from Tree-Cutting Machine

On February 9, 2004, a 20-year-old male landscaping worker was killed when he was struck by a falling tree. The victim worked for his father, the owner of a small landscaping business in New Jersey. On the day of the incident, the victim and several other workers were assigned to clear a plot of land that included many large pine trees. The victim's job was to mark and clean already felled trees, which included cutting branches and reducing the size of the logs (bucking). While the victim was cutting the branches with a chainsaw, a tree-cutting machine was being used approximately 60 feet away to cut and clear the standing trees on the plot. This tree-cutting machine, similar to a front-end loader, was fitted with a specialized attachment referred to as a feller-buncher. The feller-buncher clasps the tree in hydraulic jaws, cuts the tree at its base, and enables the cut tree to then be transported. The fatal injury occurred when a cut pine tree came loose from the tree-cutting machine and fell, striking the victim. NJ FACE investigators recommend following these safety guidelines to prevent similar incidents:

- **All ground crew should always maintain a safe distance of at least twice the height of the felled tree from its cut point. If this is not feasible, consider staggering job shifts.**
- **All machines used at the worksite should be maintained in serviceable condition.**
- **A safety and health plan based on job hazard analysis should be developed and followed.**



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INTRODUCTION

On February 9, 2004, a federal OSHA compliance officer notified NJ FACE staff of a 20-year-old man who was killed in a tree-clearing accident. A FACE investigator conferred with the compliance officer and arranged to conduct a concurrent investigation, which took place on March 9, 2004. During the visit, FACE investigators were permitted to participate in the OSHA witness interviews and to examine both the tree-cutting machine and the scene of the accident (which had been cleared of all equipment and tree remnants). The area was photographed. Additional information was obtained from the police report, the medical examiner's report, the OSHA investigation file, and the Arborist Association.

The victim's employer is a family-owned landscaping and excavating business for which the victim worked at for several years. The victim, the owner's son, was to soon take over several aspects of the business. The company employed ten workers, and five were present at the time of the incident, including the owner. Employee training was entirely on-the-job.

INVESTIGATION

The incident occurred at a wooded site in a rural area in New Jersey. The site was a 100 foot x 100 foot plot of land (see Figure 1), that was to be clear-cut by the family-owned landscaping business. A construction company purchased the plot in April 2003, and hired the landscaping company to clear the trees to prepare the area for development. The landscaping company was to clear all trees within the 1000-square-foot area that was demarcated with yellow stakes. According to the owner, it was to take approximately two days to clear the lot. The majority of the clear cutting would take place on the first day. Work on the second day would entail using a chainsaw to cut the felled trees into approximately 17 foot logs and removing all branches, which would be chipped onsite.

The tree-cutting machine was a four-wheeled, diesel-powered tractor, similar to a front-end loader, with a specialized tree-cutting device, a feller-buncher, mounted on the front (see Figures 2 and 3). The specialized device, which was hydraulically operated, consisted of a large, rotating circular saw at the base (see Figure 4). Directly above the saw was a series of interlocking arms that could be opened and closed (see Figure 5). The tree-cutting machine was operated as

follows: the operator positioned the feller-buncher at the tree, the saw blade was engaged, and the tree was cut and collected by the interlocking arms. The cutting and grasping were essentially two simultaneous actions. The feller-buncher was also fitted with a thick, forked extension (see Figure 6) above the interlocking arms that served to maintain a cut tree in an upright position and acted to prevent a cut tree from falling directly backward onto the cab.



Figure 1. Cleared lot. Arrow indicates approximate lot location where tree struck victim.



Figure 2 (left): Tree-cutting Machine; Figure 3 (right): Feller-buncher

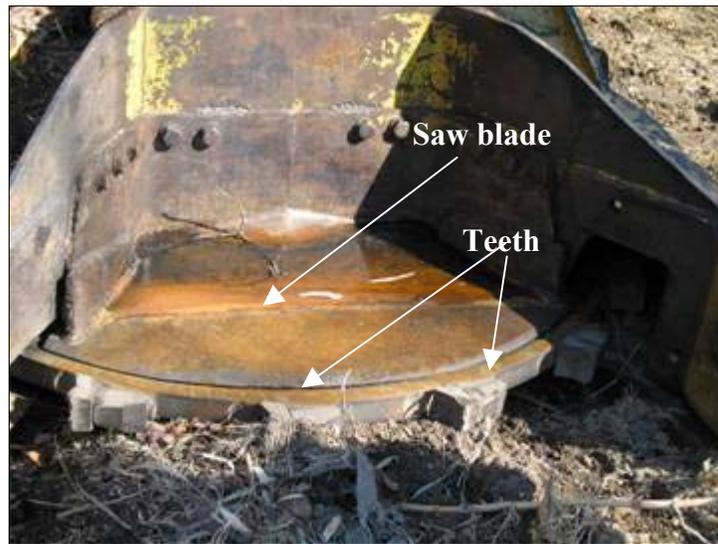


Figure 4. Circular saw plate



Figure 5. Interlocking grasping arms

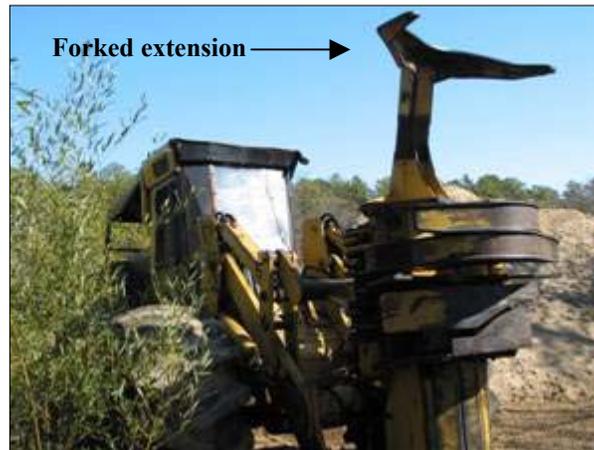


Figure 6. Forked extension to prevent cut tree from falling backwards onto operator's cab

The incident occurred on Monday, February 9, 2004 at about 10:00 AM. It was a mostly clear, cool day with a weather forecast that predicted gusts of wind. The tree-cutting machine operator arrived at the lot and began to cut and stack felled pine trees. The operator was well into the job when the remainder of the crew arrived. Hoping to get a head start on the clearing and cutting of the felled trees, the victim began bucking a felled tree approximately 60 ft from the tree-cutting machine. The machine operator approached a 70-foot tall pine tree with the tree-cutting machine, cut it and attempted to close the “claws” around the tree. However, according to the operator, a gust of wind caught the “twisted” top of the pine, which caused it to become free of the jaws. The cut tree fell uncontrolled at about a 45-degree angle back behind the cab of the machine, striking the victim in the back of the head. The other workers (including the victim's younger brother, also an employee) attempted to provide assistance, and one worker called 911. Police and rescue workers responded. The victim was pronounced dead at the scene by telemetry.

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: All ground crew should always maintain a safe distance of at least twice the height of the felled tree from its cut point. If not feasible, consider staggering job shifts.

Discussion: According to OSHA logging Regulation 29 CFR 1910.266, all ground work should be done at a distance of least two tree lengths of the tallest tree being felled. This is critically important in any logging operation, such as the use of a tree-cutting machine. In this case, since the lot was only 100 feet by 100 feet, and the tree that fell was about 70 feet tall, a safe distance did not exist in the work area. In this case, an alternative solution would be to stagger the job shifts such that all bucking takes place either after all trees are felled, or only while the machine is not running.

Recommendation #2: All machines used at the worksite should be maintained in serviceable condition.

Discussion: As per 29 CFR 1910.266(f), all machines be should be inspected before their initial use during each workshift, and any defects or damage should be repaired. In addition, operating instructions must be available in the area where the machine is being operated or on the machine itself. A well-maintained, serviceable machine is a fundamental element to ensure employee safety. In this case, a wrench was substituted for the throttle control, a log was used to maintain the seat height, half the seatbelt was missing, and several switches were broken (see Figure 7).

Recommendation #3: A safety and health plan based on job hazard analysis should always be developed and followed.

Discussion: To prevent incidents such as this, NJFACE recommends that employers conduct a job hazard analysis with the employees of all work areas and job tasks. 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. For example, since wind was a factor in the ability of an operator to safely grasp a cut tree, the weather report and the problems associated with windy conditions should be included in the hazard evaluation. The results of the analysis can be

used to design or modify a written standard operating procedure. Additional information on conducting a job hazard analysis is included in the Appendix.



Figure 7. Cab interior of tree-cutting machine.

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

U.S. Department of Labor, Mine Safety & Health Administration (MSHA)

Federal MSHA regulates safety and health in metal and non-metal mines. The MSHA website has a great deal of useful safety and health information including detailed reports on fatality investigations. New Jersey mines are under the jurisdiction of the Wyomissing PA field office.

☎ Telephone: (610) 372-2761

🌐 Website: www.msha.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.

DISTRIBUTION LIST

NIOSH

Employer

Decedent's Family

NJ State Medical Examiner

County Medical Examiner

Local Health Officer

NJDHSS Occupational Health Service Internet Site

NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

Fatality Assessment and Control Evaluation (FACE) Project
Investigation # 04-NJ-013

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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