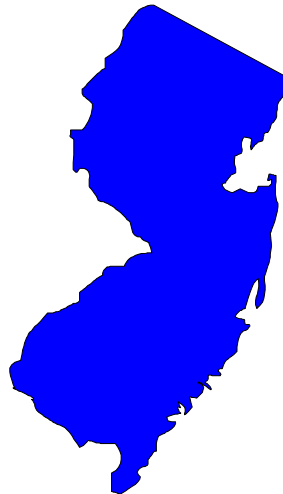


F.A.C.E. INVESTIGATION REPORT

Fatality Assessment and Control Evaluation Project

FACE #94-NJ-066-01
Tree Trimmer Electrocuted While Trimming a Tree



New Jersey Department of Health and Senior Services
Occupational Disease and Injury Services
P.O. Box 360
Trenton, New Jersey 08625-0360
(609) 984-1863

TO: Division of Safety Research
National Institute for Occupational Safety and Health
Morgantown, West Virginia

FROM: Fatality Assessment and Control Evaluation (FACE) Project
New Jersey Department of Health (NJDOH)

SUBJECT: FACE 94 NJ 066-01
Tree Trimmer Electrocuted While Trimming a Dead Tree

DATE: November 30, 1994

SUMMARY

On May 6, 1994, a 22 year-old male tree trimmer died when he contacted a 220 volt power line while trimming a tree. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- o Hazard assessments should be conducted for each tree-trimming job;
- o A minimum clearance of ten feet must be maintained between the worker, equipment, and energized powerlines to prevent inadvertent contact.
- o Trees should not be climbed when wet.
- o Employers should develop a written employee training program in safe tree trimming and hazard recognition. Their standard operating procedures should be in writing.

INTRODUCTION

On May 6, 1994, NJDOH FACE personnel learned about this work-related fatality from the county medical examiner's investigator. A site visit was conducted on May 19, 1994. Information for this report was derived from the OSHA file, medical examiner's report, police report and interviews of the deceased worker's employer and co-worker.

The victim's employer was a tree trimming company that had been in business for approximately 7 years and employed five people at the time of the incident. The employer was a member of the National Arborist Association. The victim, a 22 year-old tree trimmer, was employed for three years by the company. He was a tree climber and crew supervisor. The company required a worker to have three years of employment with the company to climb trees. Workers with less experience functioned as groundmen.

INVESTIGATION

The incident site was the back yard of a house in a large city. The company contracted with the home owner to remove a dead 45-foot tree at the edge of the property line. Less than two weeks prior to the incident, a company representative visited the site in order to estimate the cost of the job.

He gave the homeowner an estimate of the cost without explaining how the tree would be taken down.

On the day of the incident, work started at 8 a.m.. The victim and his co-worker, a groundman with four years experience and 1 1/2 years with the company, received their written assignments for the day. Apparently, the victim received verbal directions also. They went to the house where they were to remove the dead 45-foot tree. The two men inspected the tree and noted power lines running between the branches. The co-worker stated that the victim was wearing a climbing saddle, boots, spikes, hard hat with ear muffs for hearing protection, cotton gloves, and rain gear because it was drizzling rain. He climbed the tree with a chain saw (weight of saw unknown) and used a new rope to "crotch" (tie himself into) the tree. The groundman prepared the saws and his equipment for chipping branches. According to the co-worker, the climber planned to trim the branches on the side of the tree near the wires with the chain saw and, after the wires were free, to cut down the tree at the trunk. The lines were about three feet from the three-foot diameter

tree trunk.

The victim cut two tree branches and the groundman took them to the chipper. As he worked, around 9:30 a.m., the groundman became aware that the chain saw was silent. He heard a buzzing sound coming from the power line and reports seeing the victim holding the power line with two hands, his back to the tree. The victim had contacted a single phase secondary powerline that carried 220 volts of electricity.

The worker yelled for help and asked someone to call 911. A neighbor heard him and called for assistance. The worker also ran to his truck and phoned his employer to report the incident. Rescuers arrived quickly but the groundman (who was experienced with another tree trimming company) had already tied a rope around his waist and climbed the tree. He wore no climbing harness and no spikes. He jumped from a fence to the first branch. The victim, at this time, was free from the power line. The co-worker unhooked the victim's chain saw, threw it down to the ground, and planned to use the rope to lower both of them to the ground. Police who arrived on the scene ordered the worker to come down from the tree.

After the power line was deenergized by the utility company, the victim was removed from the tree by rescuers who used the fire department ladder truck. He was taken to the local emergency room where he was pronounced dead.

CAUSE OF DEATH

The medical examiner determined that death was caused by electrocution. The victim had burns on his right arm, left fingers, ankle and foot.

RECOMMENDATIONS/DISCUSSIONS

RECOMMENDATION #1: Hazard assessments should be conducted for each tree-trimming job;

DISCUSSION: Assessment of the tree to be trimmed and potential hazards for the trimmers should be conducted for each job. The assessment should be a two step complementary process. The person who estimates the job should also look for the hazards of cutting and climbing the tree, including the potential for contact with energized power lines. Those potential hazards can

be incorporated in planning for the job and work assignments. The second step in the process involves the tree trimming crew at the site. They should conduct an independent assessment of potential hazards and postpone any job considered hazardous.

RECOMMENDATION #2: A minimum clearance of ten feet must be maintained between the worker, equipment, and energized powerlines to prevent inadvertent contact.

DISCUSSION: The victim contacted the energized powerlines while he was working too closely to the energy source. ANSI Standard Z133.1-1988 requires a minimum clearance of ten feet for persons or equipment from energized power lines, unless that person is a qualified line clearance tree trimmer.

On request, the local utility company will provide free line clearance tree trimmers to trim branches near power lines. After these branches have been removed, tree trimming companies can safely trim the tree or remove the remaining section of a tree.

RECOMMENDATION # 3: Trees should not be climbed when wet.

DISCUSSION: Whether it contributed to this fatal injury is unknown, but wet tree bark may be slippery even in drizzling rain and could cause a climber to lose his balance. Wet branches may also contribute to electrical conduction.

RECOMMENDATION # 4: Employers should develop a written employee training program in safe tree trimming and hazard recognition. Company standard operating procedures should be in writing.

DISCUSSION: It is recommended that a written, on-going training program be developed for safe tree trimming practices. Although employees were encouraged to attend seminars, trade events and meetings and use tapes from training organizations, an organized training program fosters consistency and documents the background and education of employees. Training should include the recognition and avoidance of electrical hazards as required by the ANSI Standard. The company's operating procedures should also be standardized and put in writing.

Sources of information for small tree trimming companies include:

The Committee for the Advancement of Arboriculture. This organization offers courses on basic and advanced tree climbing and other pertinent courses in tree safety and arboriculture. For information, contact David Shaw, Monmouth County Shade Tree Commission, P.O. Box 1255, Freehold, NJ 07728-1255. The telephone number is (908) 431-7903.

Local utility companies offer seminars for tree trimmers in avoiding electrical hazards.

National Arborists' Association offers videos on safety and a manual titled "Tailgate Safety for Tree Care Professionals." The address of the Association is The Meeting Place Mall, Route 101/P.O. Box 1094, Amherst, NH 03031-1094. The telephone number is (603) 673-3311.

NJ Department of Labor Consultative Service will provide free advice for business owners on methods of improving health and safety in the workplace and complying with OSHA standards. The telephone number is (609) 292-3922. REFERENCES

American National Standards Institute, Inc., ANSI Z133.1-1988 American National Standard for Tree Care Operations-Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush-Safety Requirements.

National Safety Council Data Sheet I-244-Rev. 84

ATTACHMENTS

NIOSH [1992]. NIOSH Alert:request for assistance in preventing electrocutions and falls during tree trimming. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No.92-106.

The Committee for the Advancement of Arboriculture: Brochure of courses and seminars offered.