

CDC

CENTERS FOR DISEASE CONTROL
AND PREVENTION

NIOSH

ALERT

DECEMBER 1994

REQUEST FOR ASSISTANCE IN

Preventing Injuries and Deaths of Loggers



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

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Request for Assistance in

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WARNING!

Workers in the logging industry are at high risk of injury and death if proper safety procedures and equipment are not used.

The National Institute for Occupational Safety and Health (NIOSH) requests assistance in preventing worker injuries and deaths during logging operations. Recent NIOSH investigations indicate that many workers and employers in the logging industry are unaware of the risks associated with logging and are not following the procedures in the Occupational Safety and Health Administration (OSHA) standards for preventing injuries and fatalities among loggers. This Alert describes six incidents resulting in the deaths of six workers who were performing logging operations. In each incident, the death could have been prevented by using proper safety procedures and equipment and by following the provisions of the OSHA standards.

NIOSH requests that editors of trade journals, safety and health officials, industry associations, unions, and employers in the logging industry bring the recommendations in this Alert to the attention of all workers who are at risk.

BACKGROUND

Fatality Rates

The National Traumatic Occupational Fatalities (NTOF) Surveillance System indicates that during the period 1980–89, nearly 6,400 U.S. workers died each year from traumatic injuries suffered in the workplace [NIOSH 1993a]. Over this 10-year period, an estimated 1,492 of these deaths occurred in the logging industry, where the average annual fatality rate is more than 23 times that for all U.S. workers (164 deaths per 100,000 workers compared with 7 per 100,000). Most of these logging deaths occurred in four occupational groups: logging occupations (for example, fellers, limbers, buckers, and choker setters), truck drivers, general laborers, and material machine operators. The actual number of loggers who died is higher than reported by NTOF because methods for collecting and reporting data tend to underestimate the total number of deaths [NIOSH 1993b].

NTOF data also indicate that 59% of all logging-related deaths occurred when workers were struck by falling or flying objects or were caught in or between objects. Approximately 90% of these fatalities involved trees, logs, snags, or limbs.

In addition, the NIOSH Alaska Activity has identified helicopter logging (long-line logging) as extremely hazardous. This Alert does not address helicopter logging, but information about this topic is available in a recently released report [CDC 1994].

Injury Rates

In 1992, the Bureau of Labor Statistics reported that logging had a workplace injury rate of more than 14,000 injuries per 100,000 full-time workers compared with 8,000 per 100,000 for the total private sector [BLS 1994]. Workers' compensation data showed that injury events causing lost workdays were very similar to those that caused fatal logging injuries [Myers and Fosbroke 1994; Myers and Fosbroke, in preparation]. The four occupational groups that accounted for the most logging fatalities also accounted for the most workers' compensation claims (79%).

CURRENT STANDARDS

OSHA

OSHA has recently revised and expanded its regulations to address all types of logging operations [29 CFR* 1910.266], regardless of the end use of the forest products (such as saw logs, veneer bolts, pulpwood, and chips). Employers must be in compliance with all the requirements of this final standard by February 9, 1995.

*Code of Federal Regulations. See CFR in references.

The revised regulations are notably different from the previous ones and provide for the following:

1. Additional job and first-aid training for workers
2. Expanded uses and types of personal protective equipment
3. More stringent requirements for the use of rollover and falling-object protective structures
4. Comprehensive manual felling procedures (including proper techniques for undercuts and backcuts to prevent trees from prematurely twisting off the stump)

NIOSH

In 1976, NIOSH published *NIOSH Criteria for a Recommended Standard: Logging from Felling to First Haul* [NIOSH 1976]. This document recommended safe work practices, personal protective equipment, and medical examinations for loggers.

CASE REPORTS

Between October 1991 and May 1993, the NIOSH Fatality Assessment and Control Evaluation (FACE) program investigated 13 fatal incidents (1 fatality each) that involved workers in the logging industry. The following case reports summarize six of these investigations.

Case No. 1

On October 9, 1992, a 33-year-old male tree feller was killed while operating a chain saw. Using a 4-horsepower, 16-inch, bow-bar chain saw, the victim felled a 40-foot pine

tree. He then used the bow-bar chain saw to cut the limbs from the felled tree. As the victim cut through a spring pole,[†] the chain saw recoiled and kicked back, fatally striking him in the throat [NIOSH 1993c].

Case No. 2

On October 10, 1992, a 53-year-old male tree feller was fatally crushed by a tree that had fallen against another tree and had suddenly become dislodged. The victim had felled a 70-foot yellow pine tree that was lodged against another yellow pine of similar size about 15 feet away. The victim presumably decided to clear the lodged tree by felling the support tree. As he began cutting the support tree, the vibration of the chain saw apparently jarred the lodged tree loose. The lodged tree fell along the support tree onto the victim, crushing him [NIOSH 1993d].

Case No. 3

On November 17, 1992, a 58-year-old male tree feller was killed when a tree limb struck him on the head. The victim had been felling trees on a mountainside with a 40-percent slope. When he cut a 100-foot white oak, the tree fell downhill, striking a beech tree 20 feet below and breaking off a 40-foot beech limb that extended uphill over the victim. The limb fell 35 feet, fatally striking the victim on the head [NIOSH 1993e].

Case No. 4

On December 3, 1992, a 24-year-old male timber cutter was fatally struck on the head while felling an 80- to 90-foot poplar tree. As the poplar fell, one of its limbs struck a 35-foot

snag[‡]. The snag broke off about 4 feet above the ground, fell back toward the victim (who was looking in the opposite direction), and struck him on the head. Although the victim was wearing approved head protection, the blow was immediately fatal, as it fractured the first vertebra in his neck [NIOSH 1993f].

Case No. 5

On March 22, 1993, a 51-year-old male foreman and skidder operator was fatally struck on the head by a falling tree while he was cutting another tree into logs (bucking). A coworker was felling a 58-foot poplar tree about 50 feet away from the victim. As the tree fell toward the victim, the timber cutter and another worker shouted warnings. However, the victim (who was wearing a protective helmet and ear plugs) apparently did not hear them. He was struck on the head and died instantly [NIOSH 1993g].

Case No. 6

On April 8, 1993, a 28-year-old male equipment operator was killed when he was struck and run over by the skidder machine he was operating. The victim pulled into a landing area (which had a slope of less than 5 percent), stopped the skidder, and unhooked a number of logs that were being dragged. The victim remounted the skidder and drove it around an idled log-loader. As he did so, the skidder ran over two logs lying on the ground—one 6 inches in diameter and the other about 14 inches in diameter. When the skidder ran over the logs, the victim apparently lost his balance, fell or jumped from the skidder cab, and was run over by the left rear

[†]A spring pole is a tree, segment of a tree, limb, or sapling that is under stress or tension from the pressure or weight of another object.

[‡]A snag is any standing dead tree or portion thereof.

tire. The victim sustained multiple traumas to the head and torso and died at the scene [NIOSH 1993h].

CONCLUSIONS

These FACE investigations and national fatality data indicate that many workers and employers in the logging industry are unaware of the risks associated with logging and are not following the procedures in the OSHA standards for preventing injuries and fatalities among loggers. In each of these incidents investigated by NIOSH, following the OSHA safety procedures would have saved the logger's life.

RECOMMENDATIONS

NIOSH recommends that workers and employers take the following steps to prevent logging-related deaths and injuries:

1. Follow the safety procedures in the OSHA regulations that apply to logging operations [29 CFR 1910.266]:

- Before beginning logging operations, carefully check for signs of loose bark, broken limbs, or other damage before trees are felled or removed [29 CFR 1910.266(h)(1)(vii)].
- Assign work areas so that no tree can fall into an adjacent, occupied work area. The distance between adjacent, occupied work areas must be at least two tree lengths of the trees being felled [29 CFR 1910.266(d)(6)(ii)].
- If a tree is lodged against another tree, remove it before work begins in the area

by using mechanical means or other techniques that minimize worker exposures [29 CFR 1910.266(h)(1)(vi)].

- Instruct fellers to (1) evaluate each new situation for snow and ice accumulation, wind, lean of the tree, dead limbs, and location of other trees, and (2) take appropriate steps to avoid creating hazards for workers [29 CFR 1910.266(h)(2)(ii)].
- When cutting a spring pole or other tree under stress, permit no one but the feller to be closer than two tree lengths when the stress is released [29 CFR 1910.266(h)(2)(iv)].
- Assure that seat belts are used for each vehicle or machine that is equipped with rollover or falling-object protective guards. This precaution includes any vehicle or machine provided by either employers or workers [29 CFR 1910.266(d)(3)].
- Provide workers with appropriate personal protective equipment, including hand, leg, head, eye, and face protection. Instruct workers in the proper use, maintenance, inspection, repair, and replacement of this equipment and enforce its use. Assure that each worker wears appropriate foot protection [29 CFR 1910.266(d)(1)(i-vii)].
- Provide first-aid kits at each worksite where trees are being felled, at each landing, and on each worker transport vehicle. The number and contents of the first-aid kits must reflect the degree of isolation of the worksite, the number of workers, and the hazards reasonably anticipated at the worksite [29 CFR 1910.266(d)(2)(i)].

2. Develop, implement, and enforce a comprehensive written safety program that includes safe work procedures for all tasks performed. This safety program should include but not be limited to the following elements:

- Training workers to evaluate the timber-felling area so that hazards can be identified and controlled
- Instructing workers to plan and clear retreat paths as necessary before beginning any cuts
- Training workers in proper felling techniques (for example, the proper undercut, backcut, and amount of hinge wood to leave)

3. Before beginning work, conduct an initial and daily jobsite survey to identify hazards and implement appropriate controls.

4. Designate a competent person[§] to conduct periodic safety inspections to ensure that workers are performing their assigned tasks according to established safe work procedures. Immediately correct any identified hazards or improper work practices.

5. Oversee the selection and use of chain saws:

- Ensure that the appropriate chain saw and components are selected for the type of work to be performed.

- Purchase chain saws with safety features such as chain brakes, antikick-back chain designs, trigger safety switches, and vibration-dampened components.
- Ensure that chain saws are operated, adjusted, and maintained according to the manufacturer's instructions.

ACKNOWLEDGMENTS

The principal contributor to this Alert was Richard W. Braddee, Division of Safety Research, NIOSH. Please direct comments, questions, or requests for additional information to the following:

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1-800-35-NIOSH (1-800-356-4674).

We greatly appreciate your assistance in protecting the lives of U.S. workers.



Linda Rosenstock, M.D., M.P.H.
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and Prevention

[§]A competent person is one who can identify hazards or unsanitary conditions at the worksite and who has the authority to take prompt corrective action.

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NIOSH ALERT

Preventing Injuries and Deaths of Loggers

WARNING!

Workers in the logging industry are at high risk of injury and death if proper safety procedures and equipment are not used.

Take the following steps to protect yourself during logging operations:

1. Follow all of the safe work procedures outlined in the written safety program provided by your employer.
2. Use appropriate personal protective equipment for the work being performed: safety helmets and boots, eye protection, face protection, protective clothing, hearing protection, dust masks, chaps, guards, etc.
3. Evaluate each new situation for snow and ice accumulation, wind, lean of the tree, dead limbs, and location of other trees or hazards. Take proper precautions *before starting a cut*.
4. Make sure that the distance between workers is at least twice the height of the trees being felled.
5. Remove dead, broken, or rotted limbs, loose bark, and trees that are a hazard before beginning logging operations.
6. Do not work under a tree that is lodged against another tree. Before work begins in the area, fell or remove the tree using mechanical means or other techniques that minimize worker exposures.
7. When cutting a spring pole or other tree under stress, permit no one but the feller to be closer than two tree lengths when the stress is released. Cut spring poles under the bend so that they will not strike workers when the tension is released.
8. Select the appropriate chain saw and components for the type of work to be performed. Use and maintain chain saws according to the manufacturer's instructions.
9. Use seat belts on all appropriate mobile equipment.

For additional information, see *NIOSH Alert: Request for Assistance in Preventing Injuries and Deaths of Loggers* [DHHS (NIOSH) 95-101], or call 1-800-35-NIOSH (1-800-356-4674). Single copies are available free from the following:

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