OREGON FATALITY ASSESSMENT AND CONTROL EVALUATION

www.ohsu.edu/croet/face

Center for Research on Occupational and Environmental Toxicology

OREGON HEALTH & SCIENCE UNIVERSITY

Fatality Investigation Report

OR 2011-50-1

SPECIAL ALERT – hung limbs and snags in trees are a recurring contributing factor to occupational fatalities among tree fallers in Oregon.

Timber faller killed while working under a hung tree limb

SUMMARY

On December 29, 2011, a 41-year-old Hispanic male was killed while working as a timber faller. The incident occurred at about 1pm on a workday. The victim, working as a lone faller, was attempting to fell a tree that had an alder limb hung up in it. The alder limb was approximately 34 feet in length and 11 inches in diameter. The victim's cutting partner was working on a separate strip of timber approximately 400 to 500 feet away. Witness accounts state that they had observed the hung alder limb in the victim's cutting strip about two hours prior to the incident (see Figure at right). The victim was found underneath the alder limb and was pronounced dead at the scene.

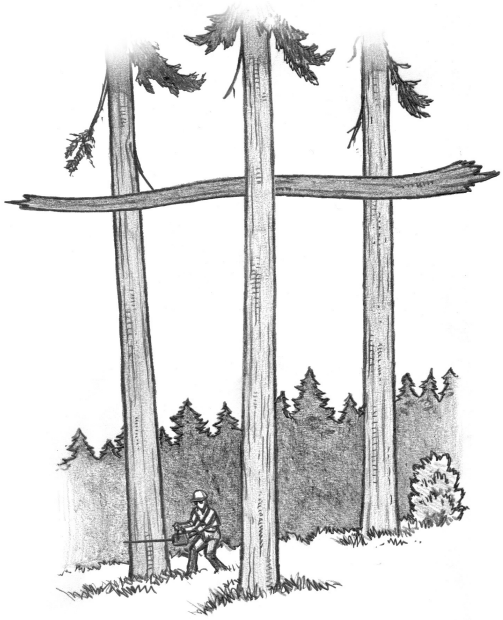

Illustration of the victim working under an alder tree limb hung up in Douglas-fir trees (based on witness descriptions of the scene).

RECOMMENDATIONS

- **Workers should scan for hung or snagged trees and limbs in their own and in others' cutting strips, and communicate with each other about these hazards.**
- **When faced with a hazardous situation, workers should stop work and seek assistance from a supervisor, a cutting partner, or a more experienced worker.**
- **If a snag or hung tree is identified, after seeking assistance, workers can work with their partner to use another adjacent tree to knock down the hazardous hung limb or to cripple one of the hung trees to eliminate the hazard.**
- **Employers should ensure that workers are trained and understand how to safely respond to snagged or hung limbs and other hazardous logging conditions.**

Keywords: Logging, Hispanic Worker [NAICS=113310]
Publication Date: July 16, 2013

- **Employers should be aware of cultural differences that may place a worker at greater risk of working under hazardous conditions, and implement extra coaching, training, or supervision to promote the value of safety over productivity or independent efficiency.**

OR-FACE supports the prioritization of safety interventions using a hierarchy of safety controls, where top priorities are hazard elimination or substitution, followed by engineering controls, administrative controls (including training and work practices), and personal protective equipment.

INTRODUCTION

On the day of the incident, the victim was working as a timber faller and was killed when a hung limb fell and struck him. While witnesses had observed the hung limb in the worker's cutting strip, no coworkers witnessed the fatal incident directly. OR-FACE became aware of the event after notification from OR-OSHA. This report is based on information contained in the OR-OSHA investigation as well as an OR-FACE interview with the owner of the company who was present at the worksite on the day of the incident.

The victim's employer was a small logging contractor that provides timber falling and logging services. The company employs 10 to 12 full time workers on a year round basis. The victim had 15 years of logging experience working for this employer. The victim started out as a choker setter, working up to fell small areas of trees and then on to be a timber faller. The victim had worked for 2 years as a timber faller with the first year working side by side with an experienced timber faller. The victim was considered an extremely hard worker and a good employee of the company. He was originally from Mexico and spoke Spanish as his native language. Coworkers believed that the victim's limited English speaking abilities in the past had prevented the victim from becoming a timber faller sooner in his career. The training received by the victim was given in English. The company owner felt that his understanding of the English language was adequate for the training being provided.

The employer conducted regular safety meetings with the crew, with the most recent pre-job safety meeting occurring two weeks prior to this incident. In prior safety meetings the employer had discussed the hazards of working under hang-ups and the company policy not to work under hang-ups. It was company policy that in such hazardous situations, employees should seek the assistance of their cutting partners before commencing work to alleviate the hazard. Just one day prior to the incident the victim's cutting partner had modeled this practice by requesting assistance from the victim with a hazardous situation. Prior to the commencement of cutting the unit involved in the incident, the company had conducted a pre-job site inspection and no hung trees or hung limbs were identified. The company also conducted random safety inspections, and had conducted one 2 days prior to the incident.

INVESTIGATION

The area where the fatal incident occurred was gentle in slope (approximately 35 to 40% grade), with Douglas-fir as the predominant species intermixed with clumps of Maple trees and other less prevalent species, including alder. The Douglas-firs averaged 20 inches in diameter on the stump and 2.5 logs per tree. The 60-acre unit was to be felled and bucked while leaving the top of each tree attached. The incident occurred during the second week the victim was working at this logging site.

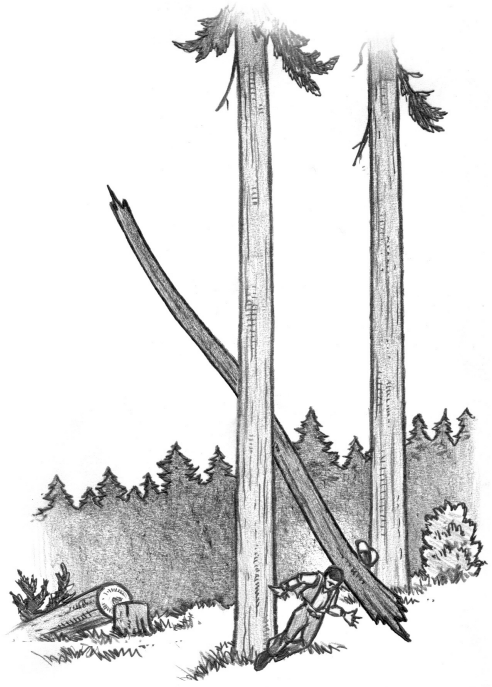

Illustration of the victim struck by the hung alder tree limb he was working under (based on witness descriptions of the scene).

At about 11:00am on the day of the incident, a coworker observed that an alder tree in the victim's strip had been knocked to the point where one of its limbs broke off and had lodged itself 30 feet above ground in some adjacent trees. It was later inferred that the alder limb involved in the incident was hung up between three Douglas-fir trees (see Figure on p. 1). The victim, at that time, was working on the other side of his strip of timber away from the hazard. At about 11:30am, another cutter working the area observed that the victim had started a warming fire and was eating lunch, and also that the hang-up was still present in the strip. The victim's cutting partner, who was working approximately 400 to 500 feet away over a small ridge, took lunch at about 12:15pm and did not hear the victim's chainsaw running. At 12:30pm the cutting partner, prior to going back to work, decided to check in on the victim and found him pinned underneath an alder limb. The partner had to use the victim's saw to cut the limb off of him.

On the day of the incident it is not known whether the victim attempted to communicate with his partner but did not succeed, or if he did not recognize the magnitude of the hazard; however, he ultimately failed to contact his cutting partner to get a second opinion on how to confront the hazardous situation. Evidence from the scene suggests that the victim attempted to fell one of the three trees holding up the alder limb, putting him in position underneath the hung limb. It is probable that pressure from the alder being wedged between the three Douglas-firs placed downward tension or force on the tree the victim was cutting. This tension likely caused the Douglas-fir to fall faster than normal and allow the alder limb to fall and strike the victim before he could get in the clear (see Figure directly above).

It was observed by the OR-OSHA inspector that the victim's cutting area was felled in an orderly fashion and that his stumps showed signs of good cutting practices. He also observed that the victim had created an adequate escape route from the last tree that he felled. However, it was the employer's opinion after inspecting the scene after the incident, that there was an adjacent tree that could have been felled to possibly knock down the hung tree limb in a manner that would have generated less exposure to danger.

CAUSE OF DEATH: Blunt force trauma to the body.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Workers should scan for hung or snagged trees and limbs in their own and in others' cutting strips, and communicate with each other about these hazards.

During a typical day for a timber faller it is not unusual to fell timber in an area of size equal to 1 to 1.5 acres. As fallers move about a work area, they need to scan for potential hazards. If possible, hazards should be eliminated or reduced before cutting timber near or adjacent to such hazards.

- If a worker observes a hazard in a coworker's strip, they should communicate this hazard to their coworker and offer assistance. Workers should not assume that their coworker in danger has the same view of the scene, or that the worker in danger has called - or attempted to call - for appropriate assistance. Workers should be empowered (given the authority, responsibility, or accountability) to stop work when they observe a co-worker in immediate or imminent danger.

Recommendation # 2: When faced with a hazardous situation, workers should stop work and seek assistance from a supervisor, a cutting partner, or a more experienced worker.

- OR-OSHA administrative rules from Division 7 (Forest Activities) related to Manual Falling provide relevant guidance for preventing future fatalities like the current case. Regulations state that "one worker must not fall a tree or danger tree when the assistance of another worker is necessary to minimize the risk of injury caused by overhead hazards, loose bark, loose or interlocked limbs, conditions of the tree, terrain or cutting conditions" [437-007-0810 (8)].
- Every strip of timber to be cut will include hazardous situations, and timber fallers are faced with hazardous conditions on a regular basis. When a timber faller is faced with these conditions they should request assistance of their cutting partner in sizing up these hazardous conditions. This is especially true for fallers who face a hazard that is beyond their knowledge and experience level.
- The victim in this case either did not observe or recognize the magnitude of the hazard, and ultimately did not seek assistance from his cutting partner. Upon examination of the scene by the employer after the incident, it was determined that another adjacent tree likely could have been used to alleviate this hazardous situation in a safer manner.
- Even for an experienced faller, alleviating a hazardous situation alone may not lead to the safest solution. Consulting with a cutting partner is likely to generate the safest possible solutions or approaches. In the current incident, the employer's policy was for all fallers to seek assistance of this type in alleviating hung trees and limbs, and not to work underneath hung limbs.

Recommendation #3: If a snag or hung tree is identified, after seeking assistance, workers can work with their partner to use another adjacent tree to knock down the hazardous hung limb or to cripple one of the hung trees to eliminate the hazard.

- Past incidents have shown that timber fallers working under hung trees is a severe hazard and strict safety guidance is provided in the OR-OSHA Division 7 standards related to Manual Falling. Specifically, "domino falling" is prohibited with an exception for dislodging a hung limb or tree by falling another tree into it. With regard to falling trees to dislodge a hung limb, regulations prohibit working under a lodged tree or cutting a tree that another tree is lodged in [437-007-0810(4a-b)]. In addition, the code states that only qualified workers may fall such danger trees.
- When falling timber, it is important that timber be felled in an orderly fashion so that all of the timber is laying parallel to each other. Falling in such a pattern helps reduce the hazard to the logging crew during the logging process, and as noted above, the victim had been working his strip in this kind of orderly fashion before the incident. Any trees felled out of sequence can potentially create a hazard for the logging crew. Therefore, when faced with a hazard that needs to be alleviated, timber fallers need to make an overall risk assessment with regards to which possesses a greater hazard - disabling hazardous situations in an orderly fashion or using an adjacent tree (out of order) to alleviate the hazard, but possibly create potential other risks for the logging crew.

Recommendation #4: Employers should ensure that workers are trained and understand how to safely respond to snagged or hung limbs and other hazardous logging conditions.

- The OR-OSHA Division 7 standards related to Training [437-007-0140] and Hazard Identification and Control [437-007-0135] provide several recommendations and requirements that are relevant to prevent future fatalities like the current case. Specifically, training is required to include [437-007-0140(3)(c)] "Recognition of safety and health hazards associated with each employee's specific work tasks, including measures and work practices to prevent or control those hazards." Monthly safety inspections of worksites are required, as well as identifying who will conduct such inspections. It is also required to implement procedures to be used to report and correct hazardous conditions [437-007-0135(1-3)].
    - In the current case the employer had inspected the site for hazards before commencing cutting, had held a pre-work safety meeting two weeks prior to the incident, and had conducted a periodic safety inspection two days prior to the incident.
    - The company involved in the current incident reported that in past safety meetings they had communicated to workers their policy of seeking help from a cutting partner when encountering a hazardous condition. This is a good policy, and it was also good practice to readdress the topic periodically in safety meetings.
- To promote employee adherence to safety policies and practices it is especially important for supervisors and experienced workers (leaders) to model safe practices after training has taken place. For example, in the current case, the victim's cutting partner had modeled the safe approach to alleviating a hazard by requesting help from the victim himself one day prior to the incident.
- When employees speak English as a second language, employers can use pictorial training materials and/or a translator to confirm that a safety procedure or practice is understood. For certain skills employers may also be able to confirm worker understanding by asking them to physically demonstrate what they have learned.

Recommendation # 5: Employers should be aware of cultural differences that may place a worker at greater risk of working under hazardous conditions, and implement extra coaching, training, or supervision to promote the value of safety over productivity or independent efficiency.

- In Oregon, experienced timber industry workers report that it is relatively rare for a Hispanic worker to be employed as a timber faller; instead, they report that most forestry jobs held by the Hispanic work force are typically tree planting, fire-fighting, or entry-level logging jobs. The victim in this case was considered a hard worker who took pride in his work and abilities. A person working in a trade or specialty who belongs to an historically underrepresented minority group within that trade or specialty may be particularly motivated to continually prove his/her competence, productivity, and independence to co-workers. This motivation may cause individuals to occasionally take undue risks. Although the victim was said to have 15 years' experience in logging with 2 of those years falling timber, he may have not have fully understood the magnitude of the hazard he was exposed to. However, based on a view of the scene, the victim had eventually observed the hazard and ultimately attempted to alleviate it on his own.
- For employees from groups that are under-represented in a forestry trade or occupation or in an occupation in another hazardous industry (e.g., female commercial truck driver) employers may need to make extraordinary efforts to communicate to the priority of safety over independence and productivity in daily working operations.

REFERENCES

Oregon OSHA (2010). Oregon Administrative Rules, Chapter 437. Division 7 Forest Activities. Available online at: http://www.cbs.state.or.us/osha/pdf/rules/division_7/div_7.pdf

Oregon OSHA (2010). Yarding and loading handbook. Available online at: www.orosha.org/pdf/pubs/1935.pdf

Oregon FACE (2007). Fallers logging safety. Available online at: http://www.ohsu.edu/xd/research/centers-institutes/croet/outreach/or-face/publications/safety-booklets.cfm

FOR MORE INFORMATION

OR-FACE/CROET L606
Oregon Health & Science University
3181 SW Sam Jackson Park Rd
Portland OR 97239-3098

Phone 503-494-2281
Email: orface@ohsu.edu
Website: www.ohsu.edu/croet/face/

Oregon Fatality Assessment and Control Evaluation (OR-FACE) is a project of the Center for Research on Occupational and Environmental Toxicology (CROET) at Oregon Health & Science University (OHSU). OR-FACE is supported by a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH) (grant #2U60OH008472-06) through the Occupational Public Health Program (OPHP) of the Public Health Division of the Oregon Health Authority.