

Video-based Safety Intervention for West Virginia Loggers

One of America's most dangerous industries

Many people may not think about what is involved with how lumber and raw wood materials are retrieved and processed. While logging is a necessary occupation in order to provide materials for the goods and products that we rely on, many do not realize how dangerous the logging industry is.

In 2004, there were approximately 74,000 logging workers in the United States.¹ Loggers in the U.S. have a fatality rate that is **23 times** that of the overall national fatality rate for all workers combined, at 92.9 deaths per 100,000 workers, compared to 4.0 deaths per 100,000 workers, respectively (based on 2005 data).²

Loggers have to deal with many obstacles and dangers within their day-to-day job duties. Falling trees, falling from trees, maneuvering sloped, steep and uneven terrain and muddy grounds, and experiencing high noise levels from machinery are just some of the hazards that are present. Natural occurrences, such as encountering animals, poisonous plants, insects and extreme weather also pose threats to loggers.¹ Handling trees can be difficult as well, particularly hard wood species that are irregularly shaped and have large diameters.³ Once injured, medical personnel may be delayed in reaching loggers, as loggers often work in remote areas.¹

Who makes up a logging crew?¹

- ♦ Tree Fallers- cut down trees with power chain saws
- ♦ Choke Setters- fasten steel cables or chains around logs to be dragged to set areas
- ♦ Rigging Slingers and Chasers- set up and disable guy wires and cables
- ♦ Log sorters, markers, movers, and chippers- sort, mark and move logs based on size and species; operate the machines that chip up the logs
- ♦ Log equipment operators- operate various machines to cut down trees, move logs, and to load or unload logs in trucks or railroad cars
- ♦ Log graders and scalers- inspect logs for defects, measure logs, and estimate the value of the logs

West Virginia Logging Industry

Mechanized Harvesters

According to a NIOSH study, of companies in West Virginia that began to use mechanized harvesters, the workman's compensation claims dropped from 19.4 claims per 100 workers, to 5.2 claims per 100 workers. This is compared to 16.6 claims per 100 workers in West Virginia companies that did not use mechanized harvesters.⁶

West Virginia (WV) loggers experience the same risks as loggers elsewhere. However, WV loggers have higher fatality rates in part due to the low availability of mechanized harvesting among West Virginia logging companies. Mechanized harvesting, or harvesting trees using self-propelled mobile machinery with cutting devices,⁴ has shown to reduce the number of injuries.

As determined by 2000-2004 Fatality Assessment and Control Evaluation data and the Census of Fatal Occupational Injuries data, West Virginia loggers have a fatality rate of 386 deaths per 100,000 workers, as compared to the U.S. logger fatality rate of 155 deaths per 100,000 workers during the same time period.³ West Virginia logger injuries are more likely to result in death, as compared to other West Virginia industries such as coal mining and construction.⁵

Additionally, non-fatal injury rates among WV loggers is approximately **double** the national rate (based on workman's compensation claims): 16 injury claims per 100 workers as compared to 8.5 injury claims per 100 workers, respectively.⁷

Non-fatal injury claim reports established that the highest rates of injuries among WV loggers were from being struck by an object- mostly trees, snags, or logs.⁷

Fatality Assessment and Control Evaluation (FACE) program

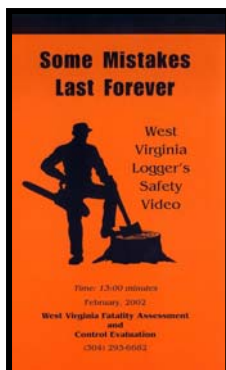
The Fatality Assessment and Control Evaluation (FACE) program was initiated in the early 1980s by the Division of Safety Research (DSR) within National Institute for Occupational Safety and Health (NIOSH). The purpose of FACE is to track traumatic occupational fatalities in order to determine the cause, and to recommend and disseminate safety strategies to avoid future incidents.⁸ Along with national FACE programs conducted through DSR, there are FACE programs at the state level, one of which was located within the West Virginia University Injury Control Research Center from October 1996 through August 2006. The West Virginia FACE (WVFACE) program was led by Dr. Jim Helmkamp.

FACE investigators review fatal occupational injuries utilizing two recognized public health models, the Haddon Matrix and the Public Health Model. Investigators look at the cause of the injury (specifically, how energy was transferred), the worker who died, and the environment in which the fatality occurred. These factors are analyzed in the context of time frames: before the incident occurred, the actual incident, and after the incident took place. Interviews are performed, reports are analyzed, and the sites are examined. FACE investigators piece together information and identify factors that contributed to the incident. Recommendations are formulated and distributed, with the ultimate goal of preventing similar fatalities in the future.⁸

Selected incidents investigated by WV FACE program:

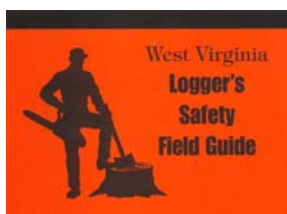
- ♦ March 1998, a 39-year-old male tree cutter died from injuries after a log fell from a loaded truck on top of him.⁹
- ♦ July 1999, a 36-year-old male tree feller died from injuries from a tree hitting him in the back of the head as the tree became trapped in entangled vines.¹⁰
- ♦ January 2004, a 68-year-old male tree feller died from injuries after a tree struck him after becoming entangled with another tree.¹¹

WV Logger Safety Module



Due to the high fatality and injury rates among WV loggers, the WVFACE program and the West Virginia Division of Forestry (WVDFO) developed a safety program on common hazards among the logging industry. The groups wanted to reduce the number of injuries among loggers in West Virginia.

Dr. Jim Helmkamp and his team of researchers from the West Virginia University Injury Control Research Center developed a video-based safety intervention to determine if a safety video increased awareness and knowledge of on-the-job safety, as well as changed safety behaviors and safety practices among loggers.⁵



The video, titled *Some Mistakes Last Forever*, contains loggers describing their injury experiences on the job.⁵ Each depiction of an injury corresponded to actual investigations by WVFACE investigators. The factors were presented in the video along with prevention strategies that loggers could adopt.⁵

In addition, the *WV Logger's Safety Field Guide* was distributed during required logger training classes. This is an illustrated "pocket-sized" reference guide with basic safety tips.⁵ Topics such as implementing and managing a company safety program, felling, limbing and bucking, log loading, chain saw safety, and basic first aid were included.⁵

The safety module was incorporated into required certified logger WVDOF logger training courses. Attendees were given a brief pre-test before viewing the safety video and an immediate post-test after viewing the video. This measured any changes in knowledge and attitudes regarding on-the-job safety. Videos and field guides were then given to these workers to share with their co-workers on the job site. Lastly, six months after attendance of the training session, a telephone survey was conducted to see if the video and field guide had been distributed among co-workers and if the materials had an influence on safety practices among loggers.

Overall, the safety training was a success! Eighty-six percent of loggers claimed that the information within the video was useful, and 57% noted that the video was more useful than other logger training components.^{3,5} Logging trainees (over 90%) felt they could relate to those in the video, and that the safety guide provided a quick and easy reference. A majority of loggers (85%) also claimed that safety management meetings were important, and around 75% of trainees felt that taking risks to make profits was unnecessary.^{3,5}

The video was a finalist in the national **2002 Telly Awards** recognizing short safety videos.

SUCCESS!!

From April 2002 to October 2003, 1,197 loggers attended 80 training sessions, which included the safety video. Safety knowledge among these loggers **improved** by:⁵

- ◆ 92% for identifying the distance from stumps where fatal incidents occur
- ◆ 48% for identifying an overloaded log truck
- ◆ 46% for identifying the safest escape path
- ◆ 33% for identifying the safest notch to make

Behavior Change

During the 6 month follow-up telephone survey, loggers self-reported that the video increased their safety awareness and visually described safer worker practices.⁵

The training video was shared with 238 additional workers; the field guide was shared with 226 workers.

Logging Injuries and Economic Costs



Feller Buncher

The National Safety Council estimates in 2004 the average total economic costs of all fatal and nonfatal occupational injuries were \$27.1 million *per death*.¹² When estimating the average cost of wage and productivity losses, medical expenses, and administrative expenses, deaths from work-related injuries cost \$1.1 million per case, while disabling injuries cost \$30,000 per case.¹³

As stated previously, logging is considered one of America's most dangerous jobs. Not only are the fatality rates much higher than those of other occupations, the non-fatal injury rates are also higher, particularly among West Virginia loggers.

By preventing injuries, society may benefit economically by saving on medical costs, resource costs (police, fire services, property damage), work loss and quality of life costs. Occupational injury prevention methods are always being investigated. For example, according to a NIOSH study, the workers' compensation injury claims for the West Virginia logging industry averaged at \$10,400 per claim.⁶ NIOSH estimated that injury claim amounts could be **reduced** by \$118,560 per 100 workers, just from switching to mechanized harvesting/felling machines.⁶ If half of the 1,500 logging workers in West Virginia worked for a mechanized logging company, injury claim amounts could be reduced by \$900,000 per year.⁶

Review of West Virginia's logging-related workers' compensation claims data from 2000-2004 indicates a decrease in the number of overall claims as well as the total cost of injuries.¹³

Summary

Logging is a necessary but dangerous occupation. Based on the information collected from programs such as WVFACE, researchers and practitioners are aware of the dangers inherent in logging and how to mitigate them. By having this knowledge, it allows for future logging injuries and fatalities to be prevented.

The video-based safety intervention has shown that injury research is vital to preventing injuries within the logging industry. Dr. Helmkamp and his colleagues defined the problem, identified causes, developed and implemented a successful intervention to increase awareness and knowledge of safety practices for logging. Loggers also self-reported that they now incorporate these practices on-the-job. The logger safety video and field guide was incorporated into West Virginia logger training courses. The video contained examples of injuries and incidents that the loggers could relate to. The video-based safety intervention was approached using theory-based models, as well as the NIOSH Research to Practice paradigm.

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