

The Introduction of a Comprehensive Logging Safety Standard in the USA – The First Eighteen Months

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ABSTRACT

In the 18 months since the effective date of the US Occupational Safety and Health Administration's (OSHA) Logging Standard, 289 logging site inspections had been performed in the US by OSHA personnel. In West Virginia, 25 inspections found 170 violations ranging from incomplete first-aid kits and poor record keeping to hazardous felling areas. Four of these inspections were initiated by accidents that caused serious injury or fatality. The average proposed penalty per citation was \$130.59. Approximately two-thirds of West Virginia loggers expressed misgivings about the OSHA standard. However, only 36% thought that they had a good knowledge of the OSHA logging regulations. Foresters and loggers in the US should be aware that OSHA regulations pertaining to timber harvesting operations are being enforced and, in some cases, may affect the way forests are harvested and managed.

Keywords: *Logging safety, safety regulations, Occupational Safety and Health Administration.*

Logging has been recognized as one of the most dangerous professions in the US [7, 9]. Most logging-related fatalities are caused by falling trees and limbs [3], while logging injuries most commonly occur during manual felling operations [2]. In response to these workplace hazards, the OSHA's regulations pertaining to logging operations, 29 CFR 1910.266, were published on October 12, 1994 [4]. The Occupational Safety and Health Act (OSHAct, Public Law 91-596) was passed by the US Congress in 1970 "... to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources" [11]. The OSHAct coverage extends to all employers and their employees in the

50 states, the District of Columbia, Puerto Rico, and all other territories under Federal Government jurisdiction. Where OSHA has not promulgated specific standards, employers are responsible for following the Act's general duty clause, which requires that each employer "shall furnish ... a place of employment which is free of recognized hazards that are causing or are likely to cause death or serious physical harm to his employees" [11].

Logging employers were required to be in compliance with all elements of the new standard by February 9, 1995, although some elements were later revised on September 8, 1995 [12] and became enforceable on August 9, 1995. This comprehensive standard replaced OSHA Sec. 1910.266, which was adopted from the American National Standards Institute guidelines for pulpwood logging in effect in the US since 1971. Prior to February 9, 1995, the US did not have a comprehensive national safety standard that applied to all logging operations, regardless of the end use of the forest products.

The new OSHA Logging Standard addresses not only activity around inherently dangerous woods conditions [5], but also the ways that a worker may perform individual logging tasks, such as felling [6]. These new regulations have the potential to both enhance logging safety and increase the costs associated with some logging activities. However, as with many government regulations, enforcement is a key to compliance by the target population. This may be particularly true of logging, an industry in which the workplace is often isolated and the workforce scattered, perhaps reinforcing a perception that logging sites are somewhat insulated from government intrusions.

The purposes of this study were to (1) determine the degree to which OSHA inspections of logging sites have occurred nationwide since the effective date of the new standard, (2) document the nature of the violations found during inspections in West Virginia, and (3) elicit the reactions of loggers to the new standard. This information will provide members of both the forestry and timber harvesting communities with information pertinent to logging safety regulations and will lend some initial insight into how loggers perceive these regulations.

METHODS

Data was analyzed from the US Department of Labor for logging inspections by OSHA in all 50 states during the 18-month period since the effective date of the recently published Logging Standard. In addition, OSHA citation data for logging operations were analyzed for the same time period for the State of West Virginia, located in the Appalachian Mountain region of the eastern US. Finally, approximately one year after the standard became effective, a survey of all licensed loggers in West Virginia was conducted, in part, to determine respondents' attitudes to the new OSHA regulations. The survey consisted of two mailings and a follow-up phone call to a sample of non-respondents. Three of the survey questions pertained to the OSHA Logging Standard.

RESULTS AND DISCUSSION

OSHA inspections and citations

There were 289 OSHA inspections of logging sites in the US in the 18 months since the logging standard became effective. Analysis of OSHA data revealed that most of these inspections (over 50%) took place in South Carolina (Table 1). This was followed by North Carolina (13.8%), West Virginia (9%), Mississippi (4.8%), Alabama (3.8%), and Montana and New York (each with 2.1%). Each of the remaining 19 states in which inspections of logging sites occurred contributed less than 2% to the total number of inspections nationwide (Table 1). West Virginia had the largest number of violations per inspection (5.7), while Alabama had the most "serious" violations per visit (2.5) (Table 1). A "serious"

Table 1. Number of inspections of logging sites, percent of total nationwide inspections of logging sites, and types of violations by state during the first 18 months since OSHA 29CFR 1910.266 became effective.

State	Number of Inspections	Percent of Total	No. "Serious" Violations	No. "Other" Violations	Total Violations Per Inspection	Serious Violations Per Inspection
South Carolina*	147	50.9	225	447	4.6	1.5
North Carolina	40	13.8	73	127	5.0	1.8
West Virginia	26	9.0	40	108	5.7	1.5
Mississippi	14	4.8	21	13	2.4	1.5
Alabama	11	3.8	27	13	3.6	2.5
Montana	6	2.1	14	1	2.5	2.3
New York*	6	2.1	14	7	3.5	2.3

States with less than two percent of the nationwide OSHA 29CFR 1910.266 inspections in the 18 months since the standard became effective, with the number of inspections in that period in parentheses: Alaska* (2), Arkansas (1), Connecticut* (1), Florida (1), Georgia (1), Idaho (5), Kentucky* (3), Louisiana (4), Maryland* (1), Maine (4), Minnesota* (2), Missouri (1), New Hampshire (1), Ohio (1), Pennsylvania (1), Tennessee* (2), Texas (4), Vermont* (2), and Washington* (1).

*States with their own OSHA-approved job safety and health programs. These states must have a standard that is the same, or at least as effective, as the federal standard. Connecticut and New York plans cover only public employees.

violation is defined by OSHA as one that is likely to cause death or serious physical harm, e.g., personal protective equipment, such as chainsaw chaps and hardhats, not provided by the employer. Conversely, violations classified as "other" were not likely to cause death or serious harm, e.g., first-aid kits lacking some items required by OSHA.

Reasons for inspection visits in the US varied. Although most (73.7%) were "program planned" (i.e., surprise planned inspections), 17.6% were accident-related, and 2.1% were driven by employee complaints (Table 2). Other reasons included unplanned inspections (those, for example, that occurred while inspecting for another reason on another site) and referrals (those that were referred by a safety professional or other official). There was also some state by state variation. For example, 9 of 11 Alabama inspections and all 4 Texas inspections were initiated by a logging accident, while 2 of 12 inspections in Mississippi and 3 of 147 in South Carolina were initiated by accidents.

Table 2. Reasons for OSHA inspections of logging sites during the 18-month period since the effective date of OSHA 29CFR 1910.266.

Reason	Number of Inspections	Percent Inspections
Program planned	213	73.7
Accident	51	17.6
Complaint	6	2.1
Other	22	7.6

Reasons for citations also varied from site to site. Data from West Virginia were inspected and individual violations assigned to one of five general categories: records and paperwork, training, protective equipment, unsafe practices, and treatment of hazardous materials and fires. Analysis of the data revealed that the most common OSHA violations during the same 18-month period were lack of first-aid training (11.1%), absence of a hazard communication plan (10.6%), lack of documentation for hazardous chemicals (10.0%), and incomplete first-aid kits (8.9%) (Table 3). Insufficient training of employees (30.0% of the violations) and poor record

keeping (28.8%) appeared to be the general areas in which most violations occurred. Violations related to unsafe practices accounted for the fewest citations (5.3%). The average proposed penalty per citation was \$130.59 (range: \$0.00–\$1,500.00), while the highest total proposed penalty per inspection was \$5,400.00.

Of the 25 inspections performed in West Virginia, four were initiated by a report of serious injury or fatality. Three of the four accidents were a direct result of impact by what OSHA refers to as "danger trees," e.g., dead or lodged trees in the felling area. A snag in the felling area that had not been removed before harvesting began was implicated in one of these accidents, resulting in a proposed penalty of \$1,500.00 for that violation alone. The average proposed penalty resulting from violations during these four inspections was \$3,387.50.

Loggers attitudes toward the OSHA Logging Standard

A survey was designed to elicit loggers' attitudes on a broad range of topics, including workers compensation insurance, Best Management Practices, and the OSHA Logging Standard. Of the 1108 West Virginia loggers who were mailed the survey, 304 responded by either phone or mail (response rate = 27.4%). Survey participants were asked whether they agreed or disagreed with or had no opinion on a series of three OSHA-related statements.

Approximately two thirds of respondents agreed that OSHA's logging regulations may put them out of business (Table 4, Statement 2). Showing some consistency among the respondents as a whole, nearly the same percentage of loggers disagreed that the new Logging Standard was good for logging (Table 4, Statement 1). In addition, there was a significant, negative correlation between responses to these two statements ($\rho = -0.324$, $p < 0.0001$), indicating that many of the loggers who had disagreed with Statement 1 also disagreed with Statement 2.

Finally, only 36% of loggers indicated that they had a good knowledge of the OSHA regulations (Table 4, Statement 3). There was, however, little correlation between responses to this statement and those to either Statement 1 ($\rho = -0.0078$) or Statement 2 ($\rho = -0.0089$).

Table 3. Citations issued by OSHA to logging contractors in West Virginia during the 18 month period since OSHA 29CFR 1910.266 became effective.

Records and Paperwork

Employer had not developed, implemented, or maintained a written Hazard Communication Program for the worksite for each hazardous chemical that the employee may be exposed to, e.g., gasoline, bar-and-chain lubricant, and transmission and hydraulic oil.	18
Employer did not have a material safety data sheet on site for each hazardous chemical.	17
Employer did not prepare a written certificate record for "certification of training" for his employee.	7
Employer did not assure that the operating and maintenance instructions were available on equipment.	5
Employee was fatally injured and the employer did not report it to OSHA within 8 hours.	2
TOTAL	49

Training

Employer did not ensure that each employee received first aid training at least every three years and CPR training at least annually.	19
Employee was not provided with information and training on hazardous chemicals on the worksite.	14
Employees had not been trained regarding the requirements of the new OSHA Logging Standards.	7
An employee cutting in the felling area had not attended a chainsaw training course.	6
Employee was not properly trained in hazard recognition.	2
An employee cutting in the landing area had not attended any chainsaw training course.	1
Employer did not hold safety and health meetings as necessary and at least each month for each employee.	1
Employer did not ensure that employees can properly and safely perform the work tasks and operate the tools, and equipment on the job.	1
TOTAL	51

Protective Equipment

Employer did not provide proper eye and face protection for the employee operating a chain saw.	7
A seat belt was not provided on on-site equipment.	6
Employer did not provide proper leg protection for the employee operating a chain saw.	4
The lower portion of the skidder was not completely enclosed with solid material to prevent objects from entering the cab.	4
Employer did not ensure that equipment was in serviceable or safe condition, e.g., cracked window on loader.	4
Employer did not provide proper head protection for his employees.	3
Employer did not ensure that each employee who operates a chainsaw wore proper foot protection.	1
TOTAL	29

Unsafe Practices

Improper and unsafe felling technique was used.	4
A danger tree was not removed or avoided.	2
Employee was fatally injured by a falling tree.	1
A clear path of retreat was not maintained during felling.	1
Felling area was not evaluated for hazards.	1
TOTAL	9

Treatment of Hazardous Materials and Fires

Employer first-aid kit did not contain the required minimum items.	16
Employer did not provide first-aid kits at each worksite where felling was being conducted, at each landing, and on each transport vehicle.	6
Employer did not provide and maintain portable fire extinguishers on each machine and vehicle.	7
Fuel container for hazardous chemicals, e.g., diesel fuel, was not labeled.	2
Container used to store hazardous chemicals was not an approved container.	1
TOTAL	32
TOTAL CITATIONS	170

Table 4. Responses of West Virginia loggers to statements about the OSHA Logging Standard. Percents do not add to 100 due to a "neutral" category.

Statement	Disagree (percent)	Agree (percent)
1. The new OSHA logging standard may put me out of business.	17	63
2. Overall, the new OSHA logging standard is good for logging.	62	15
3. I have good knowledge of the new OSHA logging standard.	33	36

IMPLICATIONS

The OSHA Logging Standard is being enforced across the nation, although somewhat unevenly. In the 18 months since the effective date of the standard, 289 logging site inspections had been performed nationwide by OSHA personnel. South Carolina, one of 23 states with its own OSHA-approved job safety and health program, accounted for over 50 percent of all logging site inspections, while several states had few or no inspections. A recent conversation with officials with South Carolina's OSHA office indicated that both high statewide logging fatality rates during a period of several years before publication of the OSHA standard and the fact that the standard was new contributed to a concentrated effort in the state to document safety conditions on logging sites.

In West Virginia, there were 25 inspections that found 170 "serious" and "other" violations of the standard ranging from incomplete first-aid kits and poor record keeping to hazardous felling areas. Four of these inspections were initiated by accidents that caused serious injury or fatality to a woods worker. Although the average proposed penalty per citation was \$130.59, when serious injury or fatality occurred the average proposed penalty increased dramatically to \$3,387.50. These penalties, however, do not reflect the human costs associated with logger injury or death.

What do loggers think of OSHA's logging regulations? Approximately two-thirds of West Virginia

loggers expressed misgivings about the OSHA standard, yet only 36% thought that they had a good knowledge of the OSHA logging regulations. Logging employee training in all elements of these regulations appears necessary and, indeed, is now required by OSHA of logging industry employers. Loggers associations, cooperative extension professionals, regional cooperatives, state forestry associations, and others are sponsoring logger safety training [1, 8], often including training in elements of the OSHA standard.

Perhaps most significant to the forestry community are the possible effects of the OSHA logging regulations on forestry practices. OSHA inspection data, particularly those pertaining to accidents related to "danger trees," appear to reinforce speculation about the potential relationship between elements of the logging standard and the ways that forests are managed [7, 10]. For example, data show that failure to remove a snag that might ordinarily be left for wildlife purposes could result in substantial penalties. It should be noted, however, that in the 25 West Virginia inspections studied, "danger trees" were cited by OSHA only in those cases in which injury or death occurred. Nevertheless, foresters should consider relevant elements of the standard when marking stands for harvest. The possible impact of OSHA regulations on trees with potential wildlife habitat value requires careful consideration and further research.

REFERENCES

- [1] Clatterbuck, W.K. and G.M. Hopper. 1996. Partners in success: The Tennessee Master Logger Program. *Journal of Forestry* 94(7):33-35.
- [2] VI Department of Labor, Bureau of Labor Statistics. 1984. Injuries in the logging industry. Bulletin 2203.
- [3] VI Department of Labor, Bureau of Labor Statistics. 1988. Selected occupational fatalities related to logging as found in reports of OSHA fatality/catastrophe investigations.
- [4] VI Department of Labor, Occupational Safety and Health Administration. 1994. 29 CFR Parts 1910 and 1928. (Docket No. S-048). Logging Operations. October 12, 1994.

- [5] Egan, A. 1995a. OSHA's 'danger trees' – new regulation will have an impact on forest management and timber availability. *Timber Harvesting* 43(8):22.
- [6] Egan, A. 1995b. Making felling safer – here's what the OSHA standard says about manual felling. *Timber Harvesting* 43(10):461–462.
- [7] Egan, A. 1996. Hazards in the logging woods: Who's responsible? *Journal of Forestry* 94(7):16–20.
- [8] Heffernan, P. 1996. Harvesting technology, safety, and cooperation in forest management: The Montana experience. *Journal of Forestry* 94(7):12–15.
- [9] Myers, J.R. and D.E. Fosbroke. 1994. Logging fatalities in the United States by region, cause of death, and other factors – 1980 through 1988. *Journal of Safety Research* 25(2):97–105.
- [10] Myers, J.R. and D.E. Fosbroke. 1995. The Occupational Safety and Health Administration Logging Standard: What it means for forest managers. *Journal of Forestry* 93(11):34–37.
- [11] US Department of Labor, Occupational Safety and Health Administration. 1995a (revised). All about OSHA. OSHA 2056.
- [12] US Department of Labor, Occupational Safety and Health Administration. 1995b. 29 CFR Part 1910. Logging operations: Final rule. September 8, 1995.