



## **Occupational Noise Exposure: OSHA Standard 1910.95 <sup>1</sup>**

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### **The Impact of Safety on Florida Agriculture**

Florida agriculture, including forestry and fishing, made an annual economic impact of \$98 billion in 2004. More than 390,000 workers are directly employed in these industries in Florida, and another 380,000 people are employed in activities related to agriculture (Hodges 2006). The state's agricultural enterprises range from large citrus, vegetable and cattle operations to small family-operated farms.

In spite of the popular images of agriculture, it is a highly mechanized, industrial profession with one of the highest injury and death rates among U.S. industries. The last study of death rates in Florida agriculture (Liller 2000) found 240 deaths from 1989 to 1998. In 2005, the Bureau of Labor Statistics (BLS 2005a) reported that death due to injury in agriculture was 31.4 deaths per 100,000 full-time workers, which was the highest rate among all major occupational groups and an increase of 14% over 2004. Also in 2005, the Bureau of Labor Statistics reported 6,100 injuries per 100,000 full-time workers (BLS 2005b).

Safety in Florida agriculture is challenging because:

- the state's agricultural enterprises are diverse,
- safety knowledge among workers varies,
- manual labor is used extensively,
- the climate creates year-round heat stress.

Therefore, it is vital to assist the public in learning about OSHA documents related to agriculture. More information about the OSHA Standards and agricultural safety is available at the following Web sites:

Florida AgSafe: <http://www.flagsafe.ufl.edu>

OSHA Regulations:  
<http://www.osha.gov/comp-links.html>

National Agricultural Safety Database:  
<http://www.cdc.gov/nasd>

### **Overview**

This is a condensation of OSHA Standard 1910.95. This document does not replace the standard but rather highlights the information and requirements in

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the complete OSHA standard that owners and managers of agricultural businesses should understand.

**Author's Comment:** Occupational noise levels are a serious problem in agriculture. Tractors, exhaust fans, pumps, chain saws, lawn mowers, leaf blowers, other machines and even animals can create excessive occupational noise. Where noise is known or suspected to be excessive, it is important to take readings of noise levels.

The National Safety Council (Lankford et al 2002) reported on the problem of noise exposure and hearing loss among agricultural workers. The study showed that hearing loss among workers aged 20-60 was "dramatically" increased when compared to the same age groups in an OSHA study from 1983. The study authors found that 92% of workers reported being exposed to very loud noise, principally from tractors, grain dryers, combines, chain saws, grain grinding, and animals. Over 75% of male workers believed they had suffered hearing loss and over 80% percent of those believed that farm exposures were largely responsible. A significant non-work exposure was firearm noise, which might explain increased hearing loss in the left ear.

When occupational noise levels are too high, every effort should be made to eliminate the problem through engineering controls: Will a redesign or a different location of a fan or motor equipment reduce noise in the work area? Will mufflers or noise abatement partitions reduce noise levels? If engineering or other administrative controls can reduce the noise levels to below the permissible noise exposure levels, a Hearing Conservation Program is not required. If noise levels cannot be brought down to acceptable levels, then a Hearing Conservation Program must be implemented to comply with OSHA requirements. Implementing such a program can be time-consuming and costly, but failure to do so can result in Workers' Compensation losses, OSHA citations and fines.

## Definitions

**Action level:** An eight-hour time-weighted average exposure of eighty-five decibels.

**Standard threshold shift:** A change in hearing threshold relative to the baseline audiogram of an average of 10 decibels or more at 2000, 3000, and 4000 Hz in either ear. (In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging to the change in hearing level.)

**Note:** Noise levels are measured in units of decibels. It is simplest to think of this as a measure of how loud a sound is, but it is also a measure of how much energy is being delivered to the ears. Eighty-five decibels is considered the maximum allowable noise level for continuous noise, but that amount of noise over time will be damaging. Decibels are measured on a logarithmic scale, so a change from 85 to 100 decibels might not seem like a lot, but it represents an increase of almost 100 times the energy delivered to the ears. Keep in mind that we hear using two structures, the ear drum and the inner ear. Exposure to loud noise can damage both of these structures resulting in hearing loss over time.

## Exposure

Employers must provide protection against the effects of noise exposure when the sound levels exceed those shown in Table 1, as measured on the dBA scale of a standard sound level meter at slow response.

When employees are subjected to sound levels exceeding those listed in Table 1, feasible administrative or engineering controls must be utilized. If such controls fail to reduce sound levels to the levels in Table 1, personal protective equipment must be provided and used to reduce noise to permissible levels.

## Hearing Conservation Program

The employer must administer a continuing, effective Hearing Conservation Program whenever employee noise exposures equal or exceed the action level.

## Monitoring and Testing

When information indicates that any employee's exposure may equal or exceed the action level, the employer must develop and implement a monitoring

program. Monitoring must be repeated whenever a change in production, process, equipment, or controls increases noise exposures to the extent that additional employees may be exposed at or above the action level or when the attenuation provided by hearing protectors being used by employees may be rendered inadequate.

### **Employee Notification**

The employer must notify each employee exposed to noise levels at or above the action level.

### **Observation of Monitoring**

The employer must provide affected employees or their representatives with an opportunity to observe any noise measurements conducted.

### **Audiometric Testing Program**

The employer must establish and maintain an audiometric testing program by making audiometric testing available to all employees whose exposures equal or exceed the action level. This program must be provided at no cost to employees.

The employer must establish a valid baseline audiogram against which subsequent audiograms can be compared within 6 months of an employee's first exposure at or above the action level, unless mobile test vans are used to meet the audiometric testing obligation, in which case the employer must obtain a valid baseline audiogram within 1 year of an employee's first exposure at or above the action level. At least annually after obtaining the baseline audiogram, the employer must obtain a new audiogram for each employee exposed at or above the action level.

### **Follow-up Procedures**

If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift has occurred, the employee must be informed of this fact in writing within 21 days of the determination. Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, the

employer must ensure that the following steps are taken when a standard threshold shift occurs:

- employees not using hearing protectors must be fitted with hearing protectors, trained in their use and care, and required to use them.
- employees already using hearing protectors must be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation, if necessary.

### **Hearing Protectors**

Employers must make hearing protectors available to all employees exposed to noise levels at or above the action level, at no cost to the employees. Hearing protectors must be replaced as necessary.

Employers must ensure that hearing protectors are worn by any employee whose exposure exceeds permissible levels and by any employee who is exposed to noise at or above the action level and who has not yet had a baseline audiogram established or who has experienced a standard threshold shift.

Employees must be given the opportunity to select their hearing protectors from a variety of suitable protectors provided by the employer, and the employer must ensure proper initial fitting, provide training in use and care, and supervise correct use.

### **Training Program**

The employer must institute a training program for all employees who are exposed to noise at or above the action level and must ensure employee participation in such program. The training program must be repeated annually for each employee included in the Hearing Conservation Program, and the information provided in the training program must be updated to be consistent with changes in protective equipment and work processes.

The employer must ensure that each employee is informed of the following:

- the effects of noise on hearing;
- the purpose of hearing protectors - the advantages, disadvantages and attenuation of various types - and instructions on selection, fitting, use, and care; and,
- the purpose of audiometric testing, and an explanation of the test procedures.

### **Access to Information and Training Materials**

The employer must make available to affected employees or their representatives copies of this standard. They must also post a copy in the workplace. The employer must provide to affected employees any pertinent informational/additional materials supplied to the employer by OSHA.

The employer must provide to OSHA, upon request, all materials related to the training and education program.

### **Recordkeeping**

The employer must maintain an accurate record of all required employee exposure measurements, as well as all employee audiometric test records. The audiometric test records must include:

- the name and job classification of the employee,
- the date of the audiogram,
- the examiner's name,
- the date of the last acoustic or exhaustive calibration of the audiometer, and
- the employee's most recent noise exposure assessment.

The employer must further maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.

The employer must retain all of these records for at least the following periods:

- noise exposure measurement records must be retained for two years.

- audiometric test records must be retained for the duration of the affected employee's employment.

### **Access to Records**

All records required by this section must be provided upon request to employees, former employees, representatives designated by the individual employee, and to OSHA. The provisions of the document "Access to Employee Exposure and Medical Records: OSHA Standard 1910.1020" apply to access to records under this section.

### **Transfer of records**

If the employer ceases to do business, he or she must transfer to the successor employer all records required to be maintained by this section, and the successor employer must retain them for the remainder of the prescribed period.

### **Changes to the Standard**

The OSHA Standard "Access to Employee Exposure and Medical Records" referred to in the Access to Records section is now OSHA Standard 1910.1020. It was formerly 1910.20.

Paragraph (p) in the Appendix to this standard, which does not appear in this publication or its previous version, was eliminated in April 2006 (71 FR 16672, April, 3, 2006).

### **References**

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**Table 1.** Permissible Noise Exposure.

<b>Duration Per Day, in Hours</b>	<b>Sound Level dBA, Slow Response</b>
8	90
6	92
4	95
3	97
2	100
1-1/2	102
1	105
1/2	110
1/4 or less	115

**Note:** When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each.