



**OLD DOMINION**  
UNIVERSITY

**OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY**  
5255 Hampton Blvd. ♦ Spong Hall, suite 2501 ♦ Norfolk, Virginia 23529  
Phone: (757) 683-4495 ♦ Fax: (757) 683-6025

*Occupational Safety & Health ♦ Environmental Health ♦ Laboratory Safety ♦ Industrial Hygiene ♦ Radiation Safety ♦ Hazardous Waste ♦ Pollution Prevention*

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# Hearing Conservation Program

Administered by

**Environmental Health and Safety Office**

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## **I. Introduction**

The purpose of this program is to prevent noise-induced hearing loss in employees who are exposed to high levels of noise in the course of their work. Implementation of this program is in accordance with the requirements of the Virginia Occupational Safety and Health (VOSH) program administered by the Virginia Department of Labor and Industry under standard 1910.95. Copies of this program are available to employees upon request at the Environmental Health & Safety Office.

Requirements outlined in this program are mandatory in nature where the word "shall" is used and are advisory in nature where the word "should" is used.

This program consists of the following sections:

- **Responsibilities**
- **Noise Monitoring**
- **Control Measures**
- **Hearing Protection**
- **Audiometric Testing**
- **Training and Information**
- **Recordkeeping**

## **II. Responsibilities**

**The Environmental Health & Safety Office (EHSO) shall:**

- Oversee the Hearing Conservation Program and appoint a Hearing Conservation Program Coordinator
- Provide funding for audiometric testing

**The Hearing Conservation Program Coordinator shall:**

- Administer this program in accordance with the Virginia Occupational Safety and Health (VOSH) 1910.95 standard
- Develop training and instructional programs
- Conduct training in accordance with Section VI of this program
- Provide technical assistance in the selection and application of control measures
- Provide technical assistance in determining the need for hearing protectors and in the selection of hearing protectors
- Monitor employee exposure to noise in the workplace and provide employees with monitoring results

- Maintain records in accordance with Section VII of this program
- Evaluate this program at least annually and revise this program as necessary to ensure the requirements of the VOSH standard 1910.95 are met

**Supervisors shall:**

- Arrange for employee audiometric testing
- Identify employees who perform tasks that may require the use of hearing protectors
- Notify the Hearing Conservation Program Coordinator when an employee is hired into a position requiring the use of hearing protectors
- Notify the Hearing Conservation Program Coordinator of any changes in workplace conditions that may result in the need for hearing protectors or the discontinuance of hearing protectors
- Notify the Hearing Conservation Program Coordinator when an employee who wears hearing protectors leaves the University or changes jobs within the University and is no longer required to wear hearing protectors
- Purchase appropriate hearing protectors as recommended by the Hearing Conservation Program Coordinator
- Ensure a supply of hearing protectors is maintained and available for employee use
- Require employees to wear hearing protectors during conditions that require such use
- Post a copy of the VOSH 1910.95 standard in the workplace
- Attend training and demonstrate understanding of the training material

**The Employee shall:**

- Use hearing protectors during conditions that require such use
- Use and maintain hearing protectors in a manner that complies with his/her instruction and training
- Inform his/her supervisor of any personal health problems that could be aggravated by the use of hearing protectors.
- Obtain audiometric testing in accordance with Section IV of this program
- Attend training and demonstrate understanding of the training material

**III. Noise Monitoring**

Noise monitoring shall be conducted in any work area where it is difficult to communicate in normal tones. A preliminary noise survey shall be conducted to determine whether a potential noise problem exists and, if so, to indicate how serious it is. A detailed noise survey shall be conducted for any work area, as identified in the preliminary survey, in which an employee's exposure may equal or exceed an 8-hour time-weighted average (TWA) of 85 decibels (dB). The noise survey shall be made using a general-purpose sound level meter which meets the standards set by ANSI S1.4 1983 and is set on the A-scale and slow response. The

sampling strategy used in the survey shall be designed to identify employees for inclusion in this program and to enable the proper selection of hearing protectors.

Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, personal monitoring shall be conducted. Personal monitoring shall be made using a noise dosimeter.

All continuous, intermittent and impulsive noise from 80 dB to 130 dB shall be integrated into the noise measurements. Sound level meters and noise dosimeters used in noise surveys shall be calibrated before use and shall have a current manufacturer's calibration.

Noise monitoring shall be repeated whenever a significant change in work practices or equipment increase noise exposures to 85 dB or higher or when attenuation provided by hearing protectors being used by employees is rendered inadequate. Monitoring shall also be conducted whenever audiometric data concludes that an employee has experienced a standard threshold shift (STS).

The Hearing Conservation Program Coordinator shall provide noise monitoring results in writing to each employee exposed at or above an 8-hour TWA of 85 dB. Additionally, any noise measurements taken in a work area shall be made available to affected employees or their representatives.

#### **IV. Control Measures**

The application of engineering and/or administrative noise control measures will be given high priority. Hearing protectors shall be used when controls are economically infeasible or impractical to University operations.

The Hearing Conservation Program Coordinator shall identify work areas where control measures are required and shall provide the affected department with recommendations for control measures to apply. Some noise conditions may require assessment by a contractor with specialized technical knowledge. University departments are responsible for any feasibility studies and/or design/construction costs associated with the control measures selected.

#### **V. Hearing Protection**

The Hearing Conservation Program Coordinator shall assist department supervisors in the selection of appropriate hearing protectors for employees. Supervisors shall ensure that an adequate supply and variety of hearing protectors are provided to employees at no cost. Hearing protectors shall be provided to employees exposed to an 8-hour TWA of 85 dB or greater and to employees exposed to an 8-hour TWA of 85 dB or greater who have not had a baseline audiogram or who have experienced a STS.

Employees exposed to an 8-hour TWA greater than 90 dB shall wear hearing protectors. Employees exposed to an 8-hour TWA of 85 - 90 dB should use hearing protectors. Supervisors shall ensure that employees receive hearing protectors that fit properly and shall ensure the protectors are used correctly.

The Hearing Conservation Program Coordinator shall provide training in the use and care of hearing protectors to employees. Supervisors should periodically evaluate their employees to ensure hearing protectors are being worn and maintained properly.

Hearing protectors shall reduce an employee's noise exposure below an 8-hour TWA of 90 dB. For employees who have experienced a STS, hearing protectors shall reduce their exposure below an 8-hour TWA of 85 dB. The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposure increases to the extent that the hearing protectors provided may no longer provide adequate attenuation. Hearing protectors that provide insufficient attenuation must either be replaced with a protector with a higher attenuation or supplemented with engineering controls.

The attenuation provided by hearing protectors shall be calculated by subtracting seven from the protector's noise reduction rating (NRR).

## **VI. Audiometric Testing**

Audiometric testing shall be provided at no cost to employees whose exposures equal or exceed an 8-hour TWA of 85 dB. The University's contracted occupational health care provider shall conduct the testing in accordance with VOSH 1910.95 (h). Employees shall receive a baseline audiogram within six months of their first exposure at or above 85 dB and annually thereafter.

The health care provider shall evaluate annual audiograms to determine that the audiograms are valid and if a STS has occurred. Additionally, the health care provider shall determine when an annual audiogram may be substituted for the baseline audiogram.

Employees who suffer a STS may be sent for a retest within 30 days and the results from the retest may be considered as their annual audiogram. The health care provider shall notify the Hearing Conservation Program Coordinator when an employee has suffered a STS, and the Hearing Conservation Program Coordinator shall in turn notify the employee within 21 days of the determination. Unless the health care provider determines that the STS is not work related or aggravated by occupational noise exposure, the following steps shall be taken when a STS occurs:

- Employees not using hearing protectors shall be fitted with hearing protectors, trained in their proper use and care, and required to use them.
- Employees already using hearing protectors shall be refitted and retrained in their proper use and care and shall be provided with hearing protectors that offer greater attenuation if necessary.
- Employees shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if it is suspected that a medical pathology of the ear is caused or aggravated by their use of hearing protectors.

If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 dB indicates that a STS is not persistent, the Hearing Conservation Program Coordinator shall inform the employee of the new audiometric interpretation and their use of hearing protectors may be discontinued.

## **VII. Training and Information**

The Hearing Conservation Program Coordinator shall conduct training for employees exposed to noise at or above an 8-hour (TWA) of 85 dB and to employees who have suffered a STS. Supervisors shall contact the Hearing Conservation Program Coordinator to arrange for training of their employees. Employees shall demonstrate understanding of the training by successfully completing a written test with a score of 70 percent or better. An employee who does not successfully complete the written test shall attend a personal training session that focuses on the aspects of the training not understood by the employee.

The training shall cover at minimum the following:

- The effects of noise on hearing
- The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instruction on selection, fitting, use and care
- The purpose of audiometric testing, and an explanation of the test procedures
- Employee responsibilities as they pertain to this program

The Hearing Conservation program Coordinator shall make copies of the VOSH standard 1910.95 and this program available to employees, their supervisors and their representatives. Supervisors shall post a copy of the standard in the workplace. A copy of the standard is in **Appendix B** of this program.

## **VIII. Recordkeeping**

The Hearing Conservation Program Coordinator shall maintain written information regarding employee exposure monitoring, audiometric tests and other related medical evaluations and training. The records shall be kept at the Environmental Health and Safety Office and shall be made available in a reasonable time, place and manner upon request from an employee, former employee, employee's representative or from the Assistant Secretary.

### **Employee Exposure Monitoring Records**

The following records shall be retained for at least two years:

- Employee noise exposure monitoring results
- Calibration Records for monitoring equipment

### **Audiometric Testing Records**

Audiometric testing records shall be retained indefinitely. Records obtained from an employee's previous employer shall also be retained indefinitely regardless of whether or not the employee was placed in this program during their period of employment at Old Dominion University.

Audiometric testing records shall include:

- Name, age, gender, social security number and job classification of employee
- Employees most recent noise exposure assessment
- Date and time of audiogram
- Name and credentials of audiometric technician
- Audiometer make, model, serial number, and date of last acoustic or exhaustive calibration
- Measurements of the background sound pressure levels in audiometric test rooms
- Name and credentials of CAOHC-certified technicians, audiologists or physicians that review audiograms
- Reviewer's follow-up recommendations
- Documentation of employee's written notification of STS

**Training Records:**

- Outline of annual training program content
- Training rosters

**Program Evaluation Records:**

- Record of proposed changes and/or additions to this program

## **IX. References**



## Appendix A

### Definitions

**Action Level:** The sound level of 85 dBA, based on an 8 hour time weighted average, at which when reached or exceeded necessitates implementation of activities to reduce the risk of noise-induced hearing loss.

**Audiogram:** A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

**Audiologist:** A professional specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-hearing Association or licensed by a state board of examiners.

**A -Weighted:** The A-weighting, expressed as dBA, is the scale used for most occupational noise measurements. The A-weighting approximates the range of human hearing as it filters out lower frequency noises, which are not as damaging as the higher frequencies.

**Baseline Audiogram:** The audiogram against which future audiograms are compared.

**Decibels (dB):** The unit used to express the intensity (loudness) of sound.

**Dosimeter:** An instrument that measures sound levels over a specific interval, stores the measures, and calculates the sound as a function of sound level and duration.

**Employee:** Any person hired by the university or the research foundation as full or part time personnel, including administrators, faculty, staff, students, and work study students.

**Hearing Protective Devices (HPD's):** Personal Protective equipment that is designed to be worn in the ear canal or over the ear to reduce the sound level reaching the ear drum.

**Hertz:** The unit of measurement of frequency, expressed as cycles per second.

**Noise:** Any unwanted sound.

**Noise Induced Hearing Loss:** A sensorineural hearing loss that is attributed to noise and for which no other etiology can be determined.

**Noise Reduction Rating (NRR):** A number rating assigned to a HPD that indicates the theoretical amount of reduction of noise levels that can be achieved if the HPD is worn correctly.

**Permissible Exposure Limit (PEL):** The occupational exposure limit of 90 dBA, based on an 8 hour time weighted average, which is the maximum sound level that an employee can be exposed to.

**Sound:** A vibration or pressure oscillation that is detectable by the eardrum.

**Sound Level Meter:** An instrument for the measurement of sound.

**Standard Threshold Shift:** A change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 hertz in either ear.

**Supervisor:** A person in charge of a particular department or unit.

**Time Weighted Average (TWA):** A value, usually expressed in dBA, which is computed so that the resulting average would be equivalent to an exposure resulting from a constant noise level over an eight hour period.

## Appendix B

### Occupational Noise Standard

Occupational Noise Exposure (1910.95): [Occupational noise exposure. - 1910.95](#)

OSHA: [Occupational Safety and Health Administration - Home](#)