



VCU

Environmental Health
and Safety
Safety and Risk Management

VCU Hearing Conservation Program

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Revision Status

Contact(s)	Implementation Date	Revision Number	Comments
Holly Monger Industrial Hygienist	August 2024	1.0	Initial Written Program

1. Purpose

Virginia Commonwealth University is charged with the safety of all VCU faculty, staff, students and guests. Safety can only be effectively achieved with the cooperation of the entire campus community. VCU is dedicated to providing a safe work environment for all VCU community members.

Pursuant to this ideal, VCU Environmental Health and Safety administers the VCU Hearing Conservation Program. The goal is to create a safe and productive work environment by limiting noise exposure, protecting employees from hearing impairment, and complying with OSHA Noise Standard 29 CFR 1910.95, referenced at the end of this document. This program document defines the requirements and scope of the Hearing Conservation Program, roles and responsibilities.

2. Scope

This program applies to all Virginia Commonwealth University employees who are exposed to noise levels at or above the Occupational Safety and Health Administration (OSHA) action level of a time weighted average (TWA) of 85 dBA. All persons, regardless of affiliation, entering designated high-noise VCU areas are required to wear hearing protection.

3. Background

According to the National Institute of Safety and Health (NIOSH), approximately 30 million Americans are exposed to hazardous noise levels at work, and this has resulted in permanent hearing loss for approximately 10 million workers. Noise Induced Hearing Loss (NIHL) is preventable, and taking proactive steps to reduce workplace noise is essential for protecting workers' hearing health.

4. Definitions:

Action Level	An 8 hour time weighted average of 85 decibels measured on the A scale
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	(dose of 50%)
Audiogram	A chart, graph or table generated from an audiometric test showing an individual's hearing threshold
CAOHC	Council for Accreditation in Occupational Hearing Conservation
dB(A)	Decibels as measured on the A-Scale: a measurement of sound intensity that accounts for the sensitivity of the human ear to different frequencies.
HCP	Hearing Conservation Program
HPD	Hearing Protection Device
NIHL	Noise Induced Hearing Loss
NIOSH	National Institute for Occupational Safety and Health
NRR	Noise Reduction Rating: a hearing protection device's ability to reduce external noise (decibel) level reaching the user's ears.
SRM	Safety and Risk Management
OHC	Occupational Hearing Conservationist
OSHA	Occupational Safety and Health Administration
PS	Professional Supervisor
STS	Standard Threshold Shift: a change in hearing threshold relative to the baseline audiogram of an average of 10 decibels (dB) or more at 2000, 3000, and 4000 hertz in either ear.
TWA	Time-Weighted Average: a measure used to calculate a worker's exposure to a hazardous substance or condition (like noise) over a standard workday, typically an 8-hour period.
PEL	Permissible Exposure Limit: 90 decibels (dB) over an 8-hour workday. Exceeding this limit can pose significant health risks, including hearing loss.
EHS-SRM	Environmental Health and Safety
ANSI	American National Standards Institute
ISO	International Organization for Standardization
IH	Industrial Hygienist



5. Roles and Responsibilities

- Environmental Health and Safety (EHS-SRM) is responsible for administering the Hearing Conservation Program for VCU using the following role designations:
 - Program Manager - VCU Occupational Health Nurse
The program manager is a CAOHC-certified OHC who is responsible for the overall administration of the Hearing Conservation Program. Following OSHA and CAOHC guidelines, they:
 - Work with the EHS-SRM Industrial Hygienist (IH) to enroll employees who are over the OSHA Action Level in the Hearing Conservation Program
 - May visually inspect the ear prior to testing and fitting of hearing protection
 - Perform hearing health history and audiometric testing
 - Train, fit and/or retrain employees on the appropriate use of their hearing protection devices
 - Refer employees to the professional supervisor for medical follow-up
 - Ensure that employees are notified in writing within 21 days after the professional supervisor identifies an STS
 - Review this program annually and revise, as necessary
 - Maintain updated training and training records
 - Maintain Audiometric Testing Records
 - Train audiometric technicians
 - The professional supervisor is an MD, ENT, or Audiologist who is responsible for the effectiveness of the Hearing Conservation Program and following all relevant policies and guidelines of the CAOHC (see reference section for Professional Supervisor Scope of Practice), they:
 - Interpret audiograms
 - Diagnose hearing problems, and refers if necessary
 - Evaluate the effectiveness of the hearing conservation program
 - Identify and notifies employees of standard threshold shift (STS)
 - Determine work-relatedness of hearing loss
 - Approve individuals who are trained to be audiometric technicians
 - Industrial Hygienist - EHS-SRM Industrial Hygienist
 - Investigates sources of noise and recommends controls
 - Conducts noise exposure monitoring and maintains all monitoring equipment
 - Ensures equipment calibration is up-to-date and maintains calibration records
 - Recommends appropriate engineering and administrative controls to reduce exposure below the action level



- Recommends appropriate hearing protection, if needed, based upon the environment and the noise reduction rating (NRR) of the hearing protection
- Provides results to all employees who are monitored for noise exposure
- Maintains records of noise exposure measurements
- Audiometric Technician - Trained SRM and Employee Health staff
Works under the supervision of the professional supervisor and program manager, they:
 - Conduct audiometric tests, and obtains hearing history according to CAOHC guidelines contained in Appendix 1
 - Train employees on the proper use and fit of hearing protection devices
 - Assist program manager with recordkeeping
 - Maintain inventory of Hearing Protection devices
- VCU Departments and Supervisors:
 - Supervisor
 - Ensures employees use hearing protection as required when working in environments with noise exposure over 85 dB TWA
 - Contacts EHS-SRM regarding potential noise exposures, including changes in the work environment and equipment that could increase noise exposure, and for noise monitoring requests
 - Notifies EHS-SRM of new employees who are subject to this program
 - Ensures employees exposed at or above a TWA of 85 dBA complete annual training and annual audiometric tests
 - Purchase and provide hearing protection devices at no cost to employees exposed at or above a TWA of 85 dBA
 - Posts signage notifying personnel of high noise environments where identified
 - Employees
 - Participate in noise monitoring activities
 - Attend and complete annual training and audiometric tests
 - Wear hearing protection as required
 - Ensure hearing protection is maintained in good condition
 - Notify supervisors of changes in the workplace that could change noise exposures or when hearing protection needs to be replaced

6. Noise Monitoring

When employee exposure to noise is suspected or known to equal or exceed a TWA of 85 dBA, noise monitoring will be coordinated by EHS-SRM. Exposure measurements include assessment of continuous, intermittent, and impulsive sources that lie within the 80 to 130 dBA range. Exposure to impact or impulsive noise must never exceed 140 dBA.

- Noise exposure monitoring will be conducted with area sound level meters, personal dosimetry, or a combination of these techniques
- Measurements will be made with calibrated equipment operated by EHS-SRM or a designee
- Monitoring will be repeated whenever there is a change in production, process, equipment, or controls that results in increased noise exposure
- Affected employees will have the opportunity to observe any noise measurements during collection and will have access to monitoring results

7. Audiometric Testing

- All employees with known or suspected noise exposure at or above the OSHA action level (TWA of 85 dBA) are required to participate in audiometric testing. This excess exposure can occur as infrequently as one day, or workshift, per year.
 - A baseline test will be conducted within 6 months of the employee's first exposure at or above the action level of a TWA of 85 dBA
 - Supervisors must ensure employees properly wear hearing protectors or are not exposed to hazardous occupational noise for 14 hours prior to baseline testing
 - Audiometric testing will be conducted annually
 - All employees will receive the results of audiometric testing in writing. If an STS has occurred, employees will receive written notification within 21 days
 - If the results of annual audiometric testing indicate an STS, the employee has to retest within 30 days. The results of the retest will be considered as the annual audiogram and the STS will be documented on the OSHA 300 log.
 - When tests indicate an STS, the following must occur:
 - Employees not wearing hearing protection will be provided and required to wear hearing protectors, as well as be trained in their use and care
 - Employees already using hearing protectors will be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary
 - Hearing protection must reduce employee exposure to a TWA below 85 dBA
 - An Employee Health Physician will review test results and determine if further evaluation or retraining is needed



- An annual audiogram may be substituted for the baseline audiogram (i.e., revised baseline) when, in the judgment of the physician who is evaluating the audiogram, determines that:
 - The STS revealed by the audiogram is persistent, or
 - The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram
- An employee subject to this program whose duties change, where they are no longer exposed to a TWA of 85 dBA, will be required to complete at least one additional annual audiogram, as regularly scheduled
- Audiometric testing must be performed in accordance with Appendix 1 (Audiometric Testing Requirements)
- Audiometric testing will be provided at no cost to VCU employees if required by this program

8. Hearing Protection

- A variety of hearing protection will be made available, at no cost, to all employees exposed to or likely to be exposed to noise levels at or above the OSHA action level of a TWA of 85 dBA
- The following employees must wear hearing protection:
 - Employees exposed to a TWA of 90 dBA or more
 - Employees exposed to a TWA of 85 dBA or more who have not yet completed a baseline audiogram
 - Employees exposed to a TWA of 85 dBA or more who have experienced an STS
- Hearing protection guidelines are as follows:
 - Training will be provided by EHS_SRM on the use and care of provided hearing protection
 - Hearing protection will be replaced as necessary
 - Hearing protection must provide a noise reduction rating (NRR) sufficient to attenuate the noise below the 85 dBA action level

9. Training

- Each employee with known or suspected exposure to noise at or above a TWA of 85 dBA must receive hearing conservation training upon hire and annually thereafter.
- Training must include:
 - The effects of noise on hearing
 - The purpose, advantages, and disadvantages of properly fitting hearing protectors for attenuating noise levels
 - Instructions on selection, fitting, use, and care of hearing protection
 - The purpose of audiometric testing and an explanation of test procedures
- Training will be conducted by the following mechanisms:
 - Online, or



- In-person with EHS-SRM personnel

10. Recordkeeping

- VCU Environmental Health and Safety will maintain:
 - Noise monitoring data for two years
 - Training records for three years
 - Calibration records at intervals as required by each piece of equipment
 - Audiometric test records for the duration of employment
- The Audiometric testing record must include:
 - Name and job classification of the employees
 - Dates of the audiogram
 - Examiner's name
 - Date of latest audiometer calibration

11. Regulations

VCU, all those responsible for the Hearing Conservation Program will comply with the Occupational Safety and Health Administration's (OSHA) standards and any other applicable codes and standards, including:

- [29 CFR 1910.95 – Occupational Noise Exposure](#)
- [29 CFR 1904.10 – Recording Criteria for Cases Involving Occupational Hearing Loss](#)
- [OSHA 29 CFR 1910.1020 – Access to Employee Exposure and Medical Records](#)

12. References

- [Occupational Hearing Conservationist Handbook](#)
- [Professional Supervisor Scope of Practice](#)

13. Contact

For questions contact Environmental Health and Safety at srm@vcu.edu.

Appendix 1 - Audiometric Testing Requirements

- Audiometric tests will be performed by:
 - A licensed or certified audiologist, otolaryngologist, or other physician, or
 - An individual who is credentialed by the Council of Accreditation in Occupational Hearing Conservation (CAOHC),
 - If the audiometer is functioning in the automatic test mode, then a trained - not certified- individual may conduct the hearing test.
- Audiometric tests will be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency will be taken separately for each ear.
- Rooms used for audiometric testing will not have background sound pressure levels exceeding those in Table 1.

Table 1: Maximum Allowable Octave-Band Sound Pressure Levels for Audiometric Test Rooms

Octave-band center frequency (Hz)	500	1000	2000	4000	8000
Sound pressure level (dB)	40	40	47	57	62

- Audiometric tests will be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.21.
- Functional Operation:
 - The functional operation of the audiometer must be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds.
 - Deviations of 10 decibels or greater require acoustic calibration.
- Acoustic Calibration:
 - Audiometer calibration will be checked acoustically at least annually.
 - Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check.
 - Deviations of 15 decibels or greater require an exhaustive calibration.
- Exhaustive Calibration:
 - An exhaustive calibration will be performed at least every two years.
 - Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.
- Revised baseline:

An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist, or physician who is evaluating the audiogram:

- The standard threshold shift revealed by the audiogram is persistent, or
- The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

<https://www.CAOHC.org>