The purpose of this standard is to protect employees over exposure to noise and to prevent hearing loss. This standard also states that employees must understand how to protect their hearing.

The actions needed to comply with this standard include:

**Training:** UHS trains employees and fits them with hearing protection devices at the time of their initial and annual hearing tests. This training includes the explanation of reasons for using hearing protection, the proper use of hearing protectors, how to care for hearing protectors, the University’s Hearing Conservation Program, and an introduction to audiometric testing.

**PPE:** The department must provide personal protective equipment (PPE), in the form of hearing protectors, to any employees who work in a high noise area. UHS will work with employees to determine what offers the best protection. The department must provide a clean place to store PPE when not in use.

**Medical:** Employees who work in high noise areas are required to have their hearing checked before they begin work, then once a year until they leave the University. Anyone with a suspected work-related hearing loss will have a follow-up with an audiologist. The supervisor must ensure that employees go to UHS for the initial and annual tests, and keep any follow-up appointments.

**Written Plan:** The University has a written plan to comply with OSHA’s regulation. This plan, the University of Rochester Hearing Conservation Plan, is available on request by contacting Environmental Health & Safety (EH&S) at ext 5-3241.

**EH&S** EH&S is responsible for maintaining the University’s written plan and for identifying high noise areas.

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**I. PURPOSE**

This program is intended to comply with the Occupational Safety and Health Administration’s Noise Exposure Standard (29 CFR 1910.95). The University of
Rochester’s Hearing Conservation Plan is designed to protect employees whose duties require them to work in areas where the potential for high intensity noise exposure exists. The purpose of this program is to prevent exposure to or injury from potentially damaging noise levels and serves the University’s overall goal of providing a workplace that is free from all recognized hazards. This document provides information on the University’s Hearing Conservation Plan, as well as other references, including the OSHA Occupational Noise Standard in Appendix 2.

Questions about the University’s program or compliance can be referred to URMES at ext 5-3241.

II. GENERAL PRINCIPLES

The OSHA Occupational Noise Exposure Standard (29 CFR 1910.95 (a) and (b)) was enacted to protect employees against the effects of high intensity occupational noise. The original standard includes the following components:

- the standard sets permissible exposure levels and exposure duration at sound levels at or above 90dBA as an 8-hour time weighted average (TWA) per workday
- the standard requires the employer to reduce employee exposure to within this level by the use of feasible engineering/administrative controls
- if engineering/administrative controls do not reduce sound levels to the specified exposure range, personal protective equipment (PPE) will be provided to the employee and used to reduce sound levels to the specified level
- the standard requires the combined effect of noise from varying sources be given special consideration
- the standard requires that distinctions between continuous and intermittent noise and associated sound levels be identified
- exposure to impact or impulse noise should not exceed 140dBA.

In addition, the hearing conservation amendment (29 CFR 1910.95 (c)(1)) requires that a “continuing effective hearing conservation program” be implemented whenever employee exposure exceeds 85 dBA as an 8-hour TWA, or an equivalent dose of 50% of the exposure limit, without regard to the use of hearing protectors. This hearing conservation amendment also requires that employees whose noise exposures at the work site equals or exceeds the action level of 85dBA be included in a hearing conservation program. The components of this program shall be described later in this document.

The amendment (29 CFR 1910.95 (c) through (o)) also details provisions dealing with monitoring employee noise exposures, annual audiometric testing for employees exposed to 85dBA or more as an 8-hour TWA, retesting under some circumstances, selection of appropriate hearing protectors, employee training and education, and record maintenance.

III. Summary of the Requirements of OSHA's Occupational Noise Exposure Standard
The following sections describe the requirements of the Hearing Conservation Standard. The Federal Register (48 FR 9738, March 8, 1983) discusses these topics in greater depth.

A. **Monitoring** - The hearing conservation amendment requires employers to monitor noise exposure levels in a manner that will accurately identify employees who are exposed at or above 85-dBA as an 8-hour TWA, or equivalently, a dose of 50% of the PEL. The monitoring requirement includes the following points:

1. all exposure measurements shall include all noise within the 80 to 130 dBA range, and includes both continuous and intermittent sources of noise
2. some workers may experience varying sound level exposures due to high mobility, significant variations in sound levels, or significant impact noise, and area monitoring may be inappropriate. Personal sampling that is representative of the employee’s exposure, produces equivalent results, and complies with the standard shall be used in these cases.
3. instruments used for monitoring employee exposure must be calibrated to ensure that measurements are accurate
4. employers shall remonitor worker exposure for sound levels whenever there is a change in continuous or intermittent noise levels due to a change in process/equipment or work assignment
5. the employer shall notify employees exposed to sound levels at or above 85dB as an 8-hour TWA of the results of the monitoring
6. affected employees shall have the opportunity to observe the monitoring

Please refer to 29 CFR 1910.95 (d), (e) and (f) for a more complete review of this section.

B. **Audiometric Testing** - Audiometric testing not only monitors employee hearing acuity over time, but also provides an opportunity for employers to educate employees about their hearing and the need to protect it. The audiometric testing program includes:

- baseline audiograms
- annual audiograms
- training and follow-up procedures

Audiometric testing must be made available at no cost to all employees who exceed a 50% noise dose (the action level). A designated professional (audiologist, otolaryngologist, or physician, etc.) must be responsible for the program and meet with the professional and competence standards described in the Noise Control Standard. Professional responsibilities include:

- overseeing the program and the work of the technicians
- reviewing problem audiograms
- determining whether referral is necessary
Both professionals and trained technicians (as certified by the Council of Accreditation in Occupational Hearing Conservation) may conduct audiometric testing. In addition to administering audiometric tests, the supervising professional is also responsible for:

- ensuring that the audiometer works properly
- conducting audiometric tests in an appropriate test environment
- for reviewing audiograms for standard threshold shifts (STS)
- identifying problem audiograms requiring further evaluation by a professional.

There are two essential components of the medical testing program. These include conducting and evaluating all audiogram tests.

1. **Audiograms** - There are two types of audiograms required:

   a. **Baseline audiogram**—an audiogram performed within 6 months of an employee’s first exposure to occupational noise at or above the action level 85dBA. This audiogram serves as a reference against which future audiograms are compared. If the baseline audiogram will be obtained more than six months after the employee’s first exposure at or above the action level, the employee shall wear hearing protectors until the baseline audiogram is obtained. In addition, whenever a baseline audiogram is to be obtained from an employee, the employee shall have limited noise exposure at least 14 hours prior to testing. If necessary, hearing protectors may be used to limit the employee’s exposure to noise.

   b. **Annual audiogram**—once the baseline has been established, the employer must obtain a new audiogram within one year of the baseline, and then subsequent yearly audiograms if the employee is exposed above the Action Level.

2. **Audiogram Evaluation**

   The employee’s annual audiogram shall be compared to his or her baseline audiogram to determine if the annual audiogram is valid and to determine if a standard threshold shift (STS) has occurred. The standard defines an STS as an average audiogram shift of 10dB or more at 2,000, 3,000 or 4,000 Hz in either ear. Whenever a problem audiogram has been identified the audiologist

   - may retest the employee within 30 days and consider the retest the employee’s annual audiogram
shall review problem audiograms and determine whether further evaluation is required
shall provide all information necessary to perform the evaluation including the employee’s baseline and most recent audiograms, and information pertaining to test room and equipment requirements as outlined in the noise standard and its appendices.

Whenever an STS has been identified, follow-up procedures include:

- that the employer shall inform the employee, in writing, of the test results within 21 days of the determination
- if an STS is determined to be work related, employees shall be fitted and trained for hearing protectors if they are not currently using them or refitted and retrained in the use of hearing protectors if they are currently using them
- that the employee shall be referred for further clinical or audioligic testing or evaluation, as appropriate, shall be examined to determine if the hearing protectors are aggravating or promoting any medical conditions, and informed of any medical condition of the ear that is unrelated to the use of hearing protectors
- if subsequent testing of the employee, exposed at or below 90dBA as an 8-hour TWA, shows that the STS is not persistent, the employer shall inform the employee of the new test and evaluation result and discontinue the use of hearing protection for that employee

A recent, or annual audiogram may be substituted for the baseline audiogram, if the audiologist determines that:

- the STS identified in the audiogram is persistent
- there has been an improvement in the employee’s hearing over the baseline

The replacement audiogram is known as the revised baseline, which will help to identify any subsequent shifts in hearing should they occur.

As defined by the standard, an STS is a shift in hearing of 10dB or more in either ear, at 2,000, 3,000 or 4,000 Hz. The standard recognizes the effects of natural aging upon hearing, and makes allowances for the application of age correction factors in evaluating an employee’s annual audiogram.

In order to obtain valid audiograms, audiometric equipment and facilities
must be used, calibrated and maintained according to specifications described in the noise control standard.

Please refer to 29 CFR 1910.95 (g) and (h), and appendices C, D, E and F for a complete discussion of the audiogram and testing requirements.

C. **Hearing Protectors and Protector Attenuation** - Hearing protectors are made available to all workers exposed at or above the Action Level for noise (85dBA TWA) at no cost to the employee. The employer shall ensure that hearing protectors are worn by employees whenever:

1. feasible engineering/administrative controls fail to reduce noise levels to 90dBA or less
2. an employee is exposed to 85dBA and has
   a. not yet had a baseline audiogram or
   b. experienced and STS.

Employees will have the opportunity to select hearing protectors with the help of a professional trained in the selection and fitting of these devices. The protectors should be comfortable to wear and provide sufficient attenuation of noise to specified levels. The employer shall also provide for employees:

1. training in the use and care of the protectors
2. appropriate fitting and supervision to ensure correct use of these devices at the work-site.

Hearing protectors shall provide adequate attenuation of noise for each employee. Hearing protector attenuation shall be evaluated for each specific work environment (Appendix B of the noise standard) by the employer, and the protectors must

1. reduce noise exposure to 90dBA or less as an 8-hour TWA
2. reduce noise exposure to 85dBA or less for workers who have not yet received a baseline audiogram or who have experienced and STS

The adequacy of hearing protectors shall be re-evaluated by the employer whenever

1. there is a change in the employee’s work conditions or noise exposure levels, and the current protectors may not provide adequate attenuation
2. An STS has occurred in a worker, therefore exposure levels need to be reduced through the use of PPE to 85dBA or less as and 8-hour TWA.

Where necessary, the employer shall provide more effective hearing protectors. 29 CFR1910.95 (i) and (j) and corresponding appendices provide a complete discussion on hearing protectors and attenuation of noise.

D. Training - The University of Rochester is responsible for providing training to employees exposed to noise at or above an eight hour time-weighted average of 85dBA. The training program shall be repeated annually for each employee, and will contain information that is up to date and includes any changes regarding the work environment or process, as well as changes in personal protective equipment (such as hearing protectors). A training program shall be provided by the employer and will include the following components:

1. the effects of noise on hearing
2. the purpose, advantages and disadvantages of properly fitting hearing protectors for attenuating noise levels
3. selection of hearing protectors
4. fitting and use of hearing protectors
5. the care of hearing protectors
6. the purpose and procedures for audiometric testing

The employee or their supervisor shall have access to information and materials, upon request, regarding this program including:

1. copies of the noise control standard
2. access to training and hearing conservation materials for this program
3. training or educational materials from this program pertaining to the noise control standard

The employer will provide training and educational materials that best suit each situation as it pertains to noise exposure, control and hearing conservation. The training requirements are such that they will promote employee awareness and participation, and allow for routine assessment of the level of compliance of the program by the employer. Please refer to 29 CFR 1910.95 (k) and (l) for the complete description on this section.

E. Record Keeping and Access to Records - The employer is responsible for maintaining records for certain periods of time as specified in the hearing.
conservation amendment (29 CFR 1910.95 (m)). Recording keeping requirements of the noise control standard include:

1. Maintaining noise exposure measurement records for a period of 2 years
2. Retaining hearing test records that include
   a. the name and job classification of the employee
   b. dates of all audiogram tests
   c. examiner’s name
   d. date of the last acoustic or exhaustive calibration of test equipment,
      measurements of the background sound levels in audiogram test rooms
   e. the employee’s most recent noise exposure measurement
3. Audiometric test records must be maintained for the duration of the affected individual’s employment

The records required by this section must also be made available upon request to affected employees and other specified individuals as described under this section and also under 29 CFR 1910.20 (a)-(e) and (g)-(i). For a complete discussion on record keeping, please refer to these sections of the Standard.

IV. RESPONSIBILITIES

This section provides a description of each department’s responsibilities in accordance with the Hearing Conservation Program.

A. Industrial Hygiene Unit (IH Unit) of Environmental Health & Safety (EH&S)

1. Perform environmental sound pressure level measurements in areas of potentially excessive noise exposure, or whenever there is a change in process, equipment, or production that may affect an individual’s exposure to noise:
   a. Evaluate noise measurements and identify exposure at or above the permissible exposure level (PEL) of 90 dBA as an 8-hour TWA
   b. Monitor employee exposures in areas where noise levels may exceed 85 dBA as an 8-hour TWA (action level)
   c. Recommend feasible engineering controls
   d. Perform Noise exposure computations (29 CFR 1910.95 Appendix A)
   e. Estimate adequacy of hearing protectors (29 CFR 1910.95 Appendix B)
2. Report findings to employees, appropriate department supervisors and UHS
3. Provide program oversight and make recommendations
4. Maintain necessary records
5. Maintain the University’s written plan
B. **Supervisors and Facilities Managers**
   1. Make themselves familiar with the University’s Hearing Conservation Program, and ensure that employees comply with the requirements of this plan
   2. Ensure that all of their facilities have been surveyed and that all high noise areas or work activities have been identified
   3. Help to identify employees who have the potential for exposure to sound levels that exceed the OSHA permissible exposure limit (PEL)
   4. Enroll eligible employees in to the hearing surveillance program with University Health Services (UHS)
   5. Make sure that employees are educated and trained on safe working practices
   6. Ensure that employees are trained and properly fit tested for the use of hearing protectors
   7. Ensure that hearing protectors are properly used by the employees where necessary
   8. Provide a clean area where hearing protectors can be stored
   9. Maintain necessary records

C. **University Health Service (UHS)**
   1. Administer a continuing and effective hearing conservation program that includes audiometric testing for all employees whose exposure equals or exceeds an 8-hour TWA of 85dBA (action level)
   2. Conduct baseline and annual audiograms, evaluate the audiograms for standard threshold shifts (STS), conduct retesting when necessary and provide evaluations to the employee
   3. When an STS has occurred, provide medical follow-up of exposure testing results and make provisions for retesting and revising baseline audiograms where necessary
   4. Provide general training and fit testing in the use of hearing protectors
   5. Retrain and refit employees in the use of hearing protection if an STS has occurred
   6. Maintain an audiogram test system that complies with the noise standard, meets with the calibration requirements of the National Standard Specification Audiometers S3.6-1969, and with the requirements described in Appendices C, D and E of the standard
   7. Maintain necessary records

D. **Employees**
   1. Comply with the University of Rochester’s Statement of Safety Policy (Appendix 1) and with the Hearing Conservation Program
   2. Carry out their duties in a manner so as to promote safe work practices
3. Use the provided hearing protectors in accordance with training and Standard Operating Procedures (SOPs)
4. Make sure that their hearing protectors are in good condition
5. Inform their supervisors when they need replacement hearing protectors
6. Communicate any problems in the work process or new hazards that may compromise the effectiveness of the hearing conservation practices
7. Keep all medical surveillance and audiogram appointments at UHS

V. APPENDICES

A. Appendix 1 - University of Rochester Statement of Safety Policy

It is the policy of the University of Rochester to provide a work environment that is free from all recognized hazards. The University’s general and specific safety programs are intended to comply with the various policies set forth by the Occupational Safety and Health Administration.

The intent and purpose of each policy is to promote safety and well being of all persons on University property and to protect its facilities from damage from unsafe acts or conditions.

It is the responsibility of all employees, students and staff to participate in the University’s efforts to control hazards and to promote safety. It is the responsibility of each supervisor and of the University’s Chief Safety Officer to administer the University’s Safety Program. Programs will be developed where necessary by departmental supervisors with the guidance and assistance of the Chief Safety Officer and other appropriate individuals so as to design and execute such programs.

B. Appendix 2 - The Occupational Noise Exposure Standard CFR 1910.95

C. Definitions and Abbreviations

D. Initial Noise Determinations