

Safety and Health Policy and Procedure Manual

HEARING CONSERVATION PROGRAM Section 0110

Table of Contents

[I. INTRODUCTION](#)

[II. SCOPE](#)

[III. STANDARD](#)

[IV. GENERAL REQUIREMENTS](#)

[V. SPECIFIC PROCEDURES](#)

- A. Noise Exposure Measurements
- B. Engineering and Administrative Controls of Noise Exposure
- C. Personal Hearing Protection
- D. Audiometric Testing Program
- E. Employee Training
- F. Recordkeeping

Appendices

[A. Noise Control Solutions](#)

[B. 29 CFR 1910.95 Occupational Noise Exposure](#)

[C. Sample Otologic/Audiologic Case History Form](#)

[D. Common Noise Levels](#)

[E. Hearing Conservation Training Roster](#)

SECTION 0110

I. INTRODUCTION

This hearing conservation program is designed to protect all persons who work in high levels of noise, as defined by OSHA Standards, from sustaining significant work-related hearing impairment.

II. SCOPE

This policy applies to all university employees who, as part of their normal job function, are required to work in areas with noise exposure levels greater than or equal to 85 dBA (8-hour time-weighted average) as determined through both area and personal monitoring results.

III. STANDARD

[NCOSHA 29 CFR 1910.95](#): Occupational Noise Exposure.

IV. GENERAL REQUIREMENTS

1. Department Heads whose employees may be exposed to loud noises (noise levels too loud to speak above) shall request that the Office of Safety perform sound level testing. Employees who work in areas or on jobs which have been designated as greater than or equal to 85 dBA (8-hour time-weighted average) noise exposure level shall be included in the hearing conservation program and shall have hearing protection made available to them. If the area or job has been designated as >90 dBA (8-hour time-weighted average) noise exposure level, employees shall be required to use hearing protection whenever in the area or on the job. In lieu of sound level testing, Department Heads shall assume that any employees exposed to high noise levels (levels above 85 dBA TWA) shall be included in the hearing conservation program and wear hearing protection. (See [Appendix D](#) for common noise levels)
 2. All employees included in the hearing conservation program shall be required to have an annual audiogram and shall receive training in hearing conservation. The cost of this audiogram shall be paid by the employee's department.
 3. All employees who exhibit OSHA-designated significant changes in hearing on an annual audiogram shall receive appropriate follow-up procedures and shall be recorded on the OSHA Form 200, if required. ([Section V](#), D5&6)
-

V. SPECIFIC PROCEDURES

A. Noise Exposure Measurements

1. Employee noise exposure measurements shall be conducted by the Office of Safety for the following purposes:
 - a. to determine whether hazards to hearing exist in a given work area or job task,
 - b. to determine whether noise presents a safety hazard by interfering with speech communication or the recognition of audible warning signals,
 - c. to identify employees who shall be included in the hearing conservation program,
 - d. to classify employees' noise exposures for prioritizing noise control efforts and defining and establishing hearing protection practices,
 - e. to evaluate specific noise sources for noise control purposes, and
 - f. to evaluate the success of noise control efforts.
2. Noise measurements shall be conducted using instruments meeting current American National Standards Institute (ANSI) Standards, as a minimum. All continuous, intermittent, and impulsive sound levels from 80 to 130 dB shall be integrated into the measurements. The calibration accuracy of all measurement instruments shall be checked both before and after each measurement session.
3. Initially, measurements shall be made of sound levels at all regular employee work locations and on all regular employee job activities using, as a minimum, a Type 2 sound level meter as defined by ANSI S1.4-1983. Whenever worker mobility variations in sound level, or significant impulse or impact noise component exists in any job activity, personal sampling with a noise dosimeter that meets, as a minimum, the requirements of a Class 2AF-90/80-5 dosimeter, as defined by ANSI S1.25-1991, shall be performed on representative employees in such work areas and on such job activities if they have been identified by sound level meter measurements as having noise levels of >85 dBA. Dosimeter measurements shall be for the purpose of identifying employees whose 8-hour time-weighted average noise exposure levels equal or exceed 85 dBA. Monitoring can be setup through the Office of Safety.
4. Department Heads shall request that the Office of Safety perform noise exposure measurements whenever engineering, machinery, or administrative modifications have been made in any work area, or on any job activity which may significantly affect employees' noise exposure levels, expose additional employees at or above the action level of 85 dBA, or render inadequate the attenuation provided by hearing protectors being used by employees.
5. Each employee exposed at or above an 8-hour time-weighted average noise exposure level of 85 dBA, shall be notified of the results of their noise monitoring. Affected employees shall be given the opportunity of observing their noise measurements as they are taken, if they request to do so.
6. The results of all noise exposure measurements shall be properly recorded, documented, and filed in the Office of Safety. A summary of the measurements shall be forwarded to the Department Head.

B. Engineering and Administrative Controls of Noise Exposure

1. The technologic and economic feasibility of engineering noise controls shall be determined on a case-by-case basis in all work areas or job activities where employee noise exposure levels exceed an 8-hour weighted-average noise exposure level of 90 dBA or impulse or impact noise exists whose peak sound pressure level exceeds 140 dB.
2. In cases where the application of relatively-simple noise control solutions (see [Appendix A](#)) will reduce the noise hazard to the extent that the other elements of the hearing conservation program will no longer be necessary for employees in these work areas, such controls shall be implemented. Employees shall be counseled about the operation and maintenance of noise controls by their supervisor.
3. In cases where such simple noise control solutions do not exist and controls are not currently technologically or economically feasible, the following procedures will be followed:
 - a. Noise control needs shall be prioritized by the Office of Safety in conjunction with Facilities Design and Construction.
 - b. The cost-effectiveness of various options shall be assessed.
 - c. Employees and university management shall be informed of plans and timetables for noise control measures and their advice and support requested.
 - d. Selection of university engineering personnel or outside contractors to perform the work shall occur when approved by the university.
 - e. Once implemented, noise control projects shall be monitored by Facilities Design and Construction and the Physical Plant to insure timely completion.
4. Suppliers of noisy machinery and equipment shall be notified of the university's noise reduction goals and requested to supply, whenever possible, articles which comply with OSHA noise level criteria. This function will be performed during the design of any new equipment and included in applicable contracts. (*This is especially important in mechanical and equipment rooms*).
5. Within the limitation of work schedules and employee training, feasible administrative noise controls shall be considered. Where practical, overexposed employees shall be moved at appropriate intervals to work areas or jobs which have acceptable noise levels in order to comply with exposure duration specifications of Table G -16a of the OSHA Noise Regulation (see [Appendix B](#)).

C. Personal Hearing Protection

1. The proper, consistent wearing of hearing protectors shall be required whenever an employee is exposed to noise above an 8-hour time-weighted average noise exposure level of 90 dBA. The proper, consistent wearing of hearing protectors shall be a condition of employment, and employees shall be so instructed at their hearing conservation training session. Failure of an employee to properly wear hearing protection may result in termination of his or her employment with the university.
2. The proper, consistent wearing of hearing protectors shall be encouraged whenever an employee is exposed at or above an 8-hour time-weighted average noise exposure level of 85 dBA. Each supervisor of employees in such work areas shall insure that a supply of hearing

protectors approved by the Office of Safety is available to the employee. The Maintenance Materials Storeroom stocks several types of hearing protection.

3. The issuance of all types of hearing protectors shall always be preceded by training in the proper procedures for wearing, caring for, and cleaning of the devices issued. This training shall be provided by the employee's supervisor.

4. All new employees whose job activity will require them to be exposed to high noise levels, either continuously or intermittently, shall be initially fitted with appropriate hearing protection. Employees shall be responsible for the care of their hearing protectors, which should be washed daily with soap and water in order to avoid external ear infections or irritations. When the devices are no longer serviceable due to deterioration, a new pair may be obtained by requesting them from the employee's supervisors.

5. Several varieties of ear plugs and ear muffs shall be made available for selection by employees. The ability to wear *some* type of approved hearing protection device in designated areas or while performing designated activities shall be a condition of employment. If an employee is unable, for documented medical reasons, to use any type of wearable hearing protector, the employee shall not be assigned to work in high-noise areas or activities.

6. Employees shall be instructed never to wear another employee's hearing protectors.

7. Audits shall be made periodically by supervisors and by the Office of Safety personnel to assure compliance with the hearing protector use requirement. Violators shall receive appropriate disciplinary action according to the university's disciplinary policy for violation of safety policies.

8. Since the published attenuation data for all hearing protection devices is based on laboratory test environments using a specially-selected test population, the university recognizes the need to reduce the Noise Reduction Rating (NRR), the published attenuation value, before determining the real-world protection likely to be provided by the hearing protector selected. Therefore, the NRR shall be reduced by one-half (as recommended by OSHA) after the evaluation [as described in [29 CFR 1910.95](#) (j)] of the effectiveness of each style of hearing protector selected for the specific noise environments in which the protector will be used.

D. Audiometric Testing Program

1. All new employees, required to work in areas with high noise levels, shall be given an audiometric test to establish baseline hearing threshold levels before being assigned to work in such areas. *Before the baseline test, the employee is not to be subjected to industrial or loud non-occupational type noise for a period of 14 hours.*

2. All employees exposed at or above an 8-hour time-weighted average noise exposure level of 85 dBA shall be provided with an annual audiometric test at no cost to the employee. The employee's department may at any time have an audiometric test performed on any noise-exposed employee if hearing deterioration is suspected. A thorough otologic/audiologic case history shall be taken each time an audiometric test is performed. Appendix C contains a copy of a representative case history form. This form or its equivalent shall be forwarded to the Office of Safety and maintained.

3. The audiometric testing program shall be under the supervision of an audiologist, otolaryngologist, or physician with expertise in the area of hearing assessment and protection, who shall also function as the professional reviewer of the audiogram performed as part of the university's hearing conservation program. The individual who conducts audiometric tests shall exhibit at least the minimum level of training required by [29 CFR 1910.95](#) (g) (3). The successful

completion of an audiometric technician training course approved by the Council for Accreditation in Occupational Hearing Conservation (CAOHC) will satisfy this requirement. Audiometric technicians shall be retrained/recertified as necessary to comply with CAOHC requirements.

4. All audiogram shall be administered using a properly-calibrated audiometer in a sound-treated room with acceptable background sound levels during testing (see Appendix B for the minimum requirements specified by the OSHA noise regulation). The audiometer's calibration status shall be checked on each day of testing, according to the requirements of [29 CFR 1910.95](#) (h) (5) (I). This check shall include the following:

- a. testing a person with known, stable hearing thresholds (or an equivalent electronic device) and comparing established threshold values to previously established threshold values to assure that deviations for any frequency do not exceed 5dB and
- b. listening to the audiometer's output to be sure that it is free from distorted or unwanted sounds.

Audiometers shall be electronically and acoustically checked annually in accordance with the requirements of [29 CFR 1910.95](#) (h) (5) (ii) and (iii). If departments contract with outside physicians, a copy of the calibration results shall be forwarded to the Office of Safety.

5. Each employee's annual audiogram shall be compared to his or her baseline audiogram to determine if the audiogram is valid and if a standard threshold shift [as defined in [29 CFR 1910.95](#) (g) (10)] has occurred. In making this comparison, the technician or professional reviewer may take into consideration appropriate age corrections as defined in the OSHA noise regulation. If a standard threshold shift is detected, follow-up steps as defined in [29 CFR 1910.95](#) (g) (8) shall be implemented promptly in order to increase the degree of protection for the affected employee. These steps include:

Supervisor's Responsibilities:

- a. notification of the employee in writing within 21 days;
- b. fitting or refitting, as appropriate, of the employee's hearing protectors,
- c. training or retraining, as appropriate, of the employee in the proper use and care of hearing protectors;

Departmental Responsibilities:

- d. performance of a noise-free retest to determine the validity of the threshold shift;
- e. determination by the professional reviewer of the need for referral of the employee for additional testing or otologic examination.

6. Should it be suspected through testing or upon diagnosis by the professional reviewer or another medical professional that an employee has experienced an occupational hearing loss, the Office of Safety shall be notified immediately so that the occurrence of the occupational hearing loss may be recorded on OSHA Form 200. Such recording shall also be made whenever an employee experiences a standard threshold shift, in accordance with current enforcement policy of NCOSHA. However, in the latter case, the entry shall be lined out if a retest within 30 days indicates that the threshold shift was temporary or if a detailed written statement is obtained from a physician that none of the threshold shift in question is occupationally related.

7. Audiogram performed as a part of this program are the property of the university and shall be controlled by the Office of Safety. All tests results shall be a part of employees' permanent medical files and shall not be released to anyone except employees or their representatives without the documented consent of the employee in question.

8. Audiometric technicians shall insure that proper department and employee identification is shown on each audiogram, as well as the following information:

- a. the specific purpose of the audiometric test (baseline, annual, retest, other)
- b. the specific audiometric equipment used and its most recent calibration date
- c. the tester's name
- d. the date and time of the audiometric test
- e. the otologic/audiologic case history information
- f. the hearing threshold values obtained
- g. the tester's judgment of the subject's response reliability
- h. the tester's comments, if any
- i. the results of hearing protector inspection, and a record of any refitting, reissuing, or retraining

9. The audiometric testing program, as defined in this section, will detect university employees who begin to develop significant hearing impairment as result of on-the-job noise exposures; at the same time, it will identify employees whose off-the-job noise exposures or personal medical or genetic conditions may be producing hearing threshold changes. Appropriate counseling shall be provided to all employees who exhibit significant hearing changes of any type. Medical or audiologic referral shall be made whenever deemed appropriate by the audiometric technician, after consultation with the program supervisor described above in (D) (3).

E. Employee Training

1. Department Heads shall insure that annually, each employee with 8-hour time-weighted average noise exposure level of 85 dBA or above is trained by the Department Trainer or the Safety Training Coordinator in hearing conservation. The training program shall consist of a presentation that informs each employee of the following items, as required by [29 CFR 1910.95](#) (k) (3):

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

d. A copy of 29 CFR 1910.95 is included as [Appendix B](#).

During training, this policy on the use of hearing protective devices shall be explained. Employees shall be encouraged to ask questions about their involvement in the hearing conservation program.

2. In accordance with [29 CFR 1910.132](#) (f) (4) [Personal Protective Equipment], each employee shall certify that they have received and understood the required training through a written certification that contains the employee's name, signature, employee ID number, the date of the training, and the subject of the certification. This information shall be recorded on the training roster provided as [Appendix E](#).

F. Recordkeeping

1. The Office of Safety shall maintain records that support compliance with all applicable federal and state standards and with all sections of this policy. These records must be forwarded by the department to the Office of Safety **immediately** following training. These records shall be available at all times for inspection by authorized university personnel, by affected employees or their designated representatives, and government inspectors.

2. In the case of employee audiogram and other associated medical records, access shall be limited to the affected employee or representative, authorized Office of Safety personnel, and representatives of the Assistant Secretary of Labor.

3. Although computer storage of records is permitted, original copies of all records associated with individual audiometry and noise exposure monitoring shall be retained in personal medical files.

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

Noise Control Solutions

Typical simple noise control solutions involve the following:

1. Reducing the noise at the source
2. Interrupting the noise path
3. Reducing reverberation
4. Reducing structure-borne vibration

Common examples of the implementation of such controls are:

1. Installing a muffler
 2. Erecting acoustical enclosures and barriers
 3. Installing sound-absorbing material
 4. Installing vibration mounts and providing proper lubrication
-

Appendix D, Section 0110

COMMON NOISE LEVELS (measured in decibels)

Threshold of hearing	0
Quiet whisper	20
Quiet office, Audiometric testing	40
Average residence, Large office	50
Conversational speech	60
Freight train - 100 ft.	70
Average automobile - 30 ft.	74
Very noisy restaurant; Average factory	80
Lawn mower, Diesel truck 40 mph - 50 ft.	85
Electric drill	88
Subway; printing shop	90
Garden tractor	92
Shop vacuum	98
Looms in textile mill; Electric furnace area; Table saw	100
Loud rock music; Chain saw; Pneumatic chipper	115
Hydraulic press; 50 hp siren - 100 ft.	120
Jet airplane	140
Rocket launching	180

**THE UNIVERSITY OF NORTH CAROLINA at GREENSBORO
HEARING CONSERVATION PROGRAM
TRAINING CHECKLIST**

Dept: _____ Trainer: _____ Date: _____

- The effects of noise on hearing.
- The purposes of hearing protectors; advantages, disadvantages, and attenuation of various types.
- Instructions on the selection, fitting, use, and care of hearing protectors.
- The purpose of audiometric testing, and an explanation of the test procedures and typical findings.
- Personal Protective Equipment Certification.
- Location of 29 CFR 1910.95 posted in the workplace for employees covered by the Standard.

Trainees:

EMPLOYEE NAME	EMPLOYEE ID NUMBER	SIGNATURE

Route copies to: Office of Safety