

Program Statement

The University of North Alabama (UNA) has implemented a hearing conservation program which is designed to protect employees with significant occupational noise exposures from hearing impairment even if they are exposed to such noise exposures over their entire working lifetimes. Employees will be included in this Program when noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent.

Objectives

The objectives are to ensure that the following Hearing Conservation Program elements are implemented and effective:

- Monitor noise exposure for affected personnel
- Individually-fitted hearing protection devices with an adequate noise reduction rating (NRR) are provided to over-exposed employees
- Annual training is provided
- Provisions such as engineering controls, work practice and administrative controls are instituted as the primary means of protection when feasible
- Baseline and annual audiometric tests are provided
- Procedures to prevent further hearing loss when identified are instituted

Noise Monitoring

- When information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, noise monitoring will be performed.
- The sampling strategy shall be designed to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.
- Representative personal sampling will be used to assess employee exposures, unless it can be shown that area sampling produces equivalent results.
- All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels shall be integrated into the noise measurements.
- Calibrated instruments will be used for monitoring to ensure measurement accuracy.
- Monitoring shall 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

- The attenuation provided by hearing protectors being used by employees may be rendered inadequate.
- Employees will be notified of the sampling results after completion of the evaluation.

Audiometric Testing

- Audiometric testing monitors an employee's hearing over time. It also provides an opportunity to educate employees about their hearing and the need to protect it.
- Audiometric testing will be provided at no cost to all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels. See Appendix B for audiometric test requirements.
- Within six months of assignment, new employees assigned to affected job tasks will receive the initial baseline audiometric test against which subsequent audiograms can be compared.
- A new audiogram will be obtained at least annually while a part of the Hearing Conservation Program.

Standard threshold shift

- A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB 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 (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in the OSHA Standard's 1910.95 Appendix F: "Calculation and Application of Age Correction to Audiograms."

Engineering, Work Practice, and Administrative Controls

- When levels that exceed 85 dBA TWA are found, all reasonable efforts will be made to use administrative and/or engineering controls to reduce exposure.

Hearing Protectors

- Hearing protectors are available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors shall be replaced as necessary.
- Hearing protectors must be worn by all employees exposed:
 - At levels shown in Table 1, Permissible Noise Exposures, below.

- To an 8-hour time-weighted average of 85 decibels or greater, and who:
 - Has not yet had a baseline audiogram established, or
 - Has experienced a standard threshold shift.
- Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors.
- The employer shall ensure proper initial fitting and supervise the correct use of all hearing protectors.

TABLE 1, PERMISSIBLE NOISE EXPOSURE

Duration per day, hours	8	6	4	3	2	1 1/2	1	1/2	1/4 or less
Sound level dBA slow response	90	92	95	97	100	102	105	110	115

- Hearing protector attenuation shall be evaluated for the specific noise environments in which it will be used by one of the methods described in the OSHA Standard's 1910.95 Appendix B: "Methods for Estimating the Adequacy of Hearing Protection Attenuation."
- Hearing protectors must attenuate employee exposure at least to an 8-hour time-weighted average of 90 decibels.
- For employees who have experienced a standard threshold shift, hearing protectors must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.
- The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. The employer shall provide more effective hearing protectors where necessary.

Training

- All affected employees will receive training annually covering the following topics:
 - 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
 - The purpose of audiometric testing, and an explanation of the test procedures
- The EHS Department will work with department supervision to deliver training.

Access to Information and Training Materials

- The Occupational Noise Standard, 29 CFR 1910.95 and its attachments A-I, are available in the following locations:
 - posted on bulletin boards in the affected departments
 - the OSHA website: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95>.
 - The EHS Department; contact them for a copy
- Material used for training will be available upon request, to personnel from regulatory agencies.

Recordkeeping

- Results of audiometric testing will be retained for the employee's duration of employment.
- Noise monitoring results will be maintained for at least two years.

APPENDIX A

GLOSSARY OF TERMS

- **A Weighting** – The weighting scale that closely matches the perception of loudness by the human ear.
- **Action Level** - An 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.
- **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.
- **Baseline Audiogram** - The audiogram against which future audiograms are compared.
- **Criterion Sound Level** - A sound level of 90 decibels.
- **Decibel (dB)** - Unit of measurement of sound level. Decibels are measured on a logarithmic scale which means that a small change in the number of decibels results in a huge change in the amount of noise and the potential damage to a person's hearing.
- **Exchange Rate, 5 dB** - When the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half.
- **Hertz (Hz)** - Unit of measurement of frequency, numerically equal to cycles per second.
- **Medical Pathology** - A disorder or disease. For purposes of this regulation, a condition or disease affecting the ear, which should be treated by a physician specialist.
- **Noise Dose** - The ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).
- **Noise Dosimeter** - An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.
- **OSHA Standard** – 29 CFR1910.95, *Occupational Noise Exposure*
- **Otolaryngologist** - A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.
- **Presbycusis** – Normal change in hearing level that occurs with aging.

- **Representative Exposure** - Measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.
- **Sound Level** - Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB). For use with this regulation, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.
- **Sound Level Meter** - An instrument for the measurement of sound level.
- **Time-weighted Average Sound Level** - That sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

APPENDIX B

AUDIOMETRIC TEST REQUIREMENTS

- Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation, or who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be certified. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.
- All audiograms obtained pursuant to this section shall meet the requirements of 1910.95, Appendix C: "Audiometric Measuring Instruments."
- Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.
- The employer shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.

Evaluation of audiogram

- Each employee's annual audiogram shall be compared to their baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. This comparison may be done by a technician.
- If the annual audiogram shows that an employee has suffered a standard threshold shift, the employer may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.
- The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation using the following information:
 - A copy of the requirements for hearing conservation as set forth in 1910.95;
 - The baseline audiogram and most recent audiogram of the employee to be evaluated;
 - Measurements of background sound pressure levels in the audiometric test room as required in Appendix D: "Audiometric Test Rooms".
 - Records of audiometer calibrations.

Follow-up procedures

- If a standard threshold shift has occurred, the employee shall 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 shall ensure that the following steps are taken when a standard threshold shift occurs:
 - Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.
 - Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
 - The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.
 - The employee is informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.
- If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels indicates that a standard threshold shift is not persistent, the employer:
 - Shall inform the employee of the new audiometric interpretation; and
 - May discontinue the required use of hearing protectors for that employee.

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.

Requirements

- Audiometric tests shall 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 shall be taken separately for each ear.
- Audiometric tests shall 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, S3.6-1969, which is incorporated by reference as specified in Sec. 1910.6.
- Pulsed-tone and self-recording audiometers, if used, shall meet the requirements specified in the OSHA Standard's 1910.95 Appendix C: "Audiometric Measuring Instruments."
- Audiometric examinations shall be administered in a room meeting the requirements listed in the OSHA Standard's 1910.95 Appendix D: "Audiometric Test Rooms."
- 1910.95(h)(5) "Audiometer calibration."
 - The functional operation of the audiometer shall 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 an acoustic calibration.

- Audiometer calibration shall be checked acoustically at least annually in accordance with the OSHA Standard's 1910.95 Appendix E: "Acoustic Calibration of Audiometers." 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.
- An exhaustive calibration shall be performed at least every two years in accordance with sections 4.1.2; 4.1.3.; 4.1.4.3; 4.2; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.