



HEARING CONSERVATION PROCEDURE

1. PURPOSE

The purpose of this procedure is to prevent permanent and temporary occupational hearing loss that may result from impulsive, intermittent or continuous noise exposure.

2. SCOPE

All University faculty and staff whose potential exposure to sound levels averaging greater than 85 dBA for 8 hours per day, 40 hours per week or to periodic sounds that exceed 115 dBA, are required to participate in the University's Hearing Conservation Program. For the purposes of this program, the exposure is without regard to possible attenuation provided by the use of hearing protective equipment. Visitors and contractor personnel shall follow the provisions of this program related to the required use of hearing protective devices in areas above 85 dBA.

3. DEFINITIONS

- 3.1. **Administrative Control:** Any procedure that limits daily noise exposure by control of the work schedule.
- 3.2. **Audiogram:** A record of an individual's sensitivity for pure tones in each ear at each of the following frequencies: 500, 1,000, 2,000, 3,000, 4,000 and 6,000 Hz. (Note: information at 8,000 Hz is desirable but not always available with automatic audiometric equipment).
- 3.3. **Baseline Audiogram:** The audiogram against which future audiograms are compared.
- 3.4. **dBA:** The sound pressure level reading in decibels made on the A-weighted network of a sound level meter at slow response.
- 3.5. **Criterion Level:** The decibel level that will yield 100 percent dose, or an EER of 1.0 in 8 hours.
- 3.6. **Decibel (dB):** Unit of measurement of sound level (can be power or pressure depending on the reference level).
- 3.7. **Engineering Control:** Any procedure other than administrative control or personal protection (earplugs, earmuffs) that reduces the sound level either at the source of the noise or in the hearing zone of the employee.
- 3.8. **Hertz (Hz):** Unit of measurement of frequency, numerically equal to cycles per second.
- 3.9. **Impact or Impulsive Noise:** Variation in noise levels that involve noise peaks at intervals greater than one (1) second.
- 3.10. **Noise Dose (D):** The cumulative noise exposure of an employee during a workday, expressed in percent exposure.



- 3.11. **Noise Dosimeter:** An instrument that integrates a function of sound pressure over a period in such a manner that it directly indicates a noise dose.
- 3.12. **Noise Exposure:** The combination of exposure to a single noise level or any combination of noise levels and the duration of exposure.
- 3.13. **Standard Threshold Shift:** A change of hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2,000, 3,000, and 4,000 Hz in either ear.
- 3.14. **Sound Level Meter:** An instrument for the measurement of sound level.
- 3.15. **Time-Weighted-Average Sound Level (TWA):** That sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

4. RESPONSIBILITIES

- 4.1. Risk Management and Safety (RMS) (Program Administrator)
 - 4.1.1. Develop and maintain the Hearing Conservation Program.
 - 4.1.2. Develop annual hearing conservation training.
 - 4.1.3. Provide guidance to managers on who is included in hearing conservation program.
 - 4.1.4. Conduct initial and periodic sound level surveys and additional noise surveys of changes that may affect the work area.
 - 4.1.5. Provide direction on the selection of appropriate hearing protection devices, establishing hearing protection required areas and on required postings for high noise areas.
 - 4.1.6. Maintain records including sound level surveys and dosimetry results.
 - 4.1.7. Oversee third-party medical provider for maintenance of audiograms and audiogram test results.
 - 4.1.8. Conduct an annual program evaluation.
 - 4.1.9. Develop a training program to provide to all faculty and staff in the Hearing Conservation Program.
 - 4.1.10. Develop a monitoring plan including sound level surveys and personal dosimetry.
- 4.2. Supervisor
 - 4.2.1. Enforce the use of hearing protective devices in areas that expose employees to noise levels at or above 85 dBA for an 8-hour TWA or 82dBA for a 12-hour TWA.
 - 4.2.2. Ensure personnel within the Hearing Conservation Program complete annual training and annual hearing exams through a qualified audiologist.
 - 4.2.3. Communicate any changes in the work environment that create an increase in noise levels as applicable to their area of responsibility to RMS.
 - 4.2.4. Provide hearing protection at no cost to their employees.



- 4.2.5. Properly identify, through posting of signs, high noise areas with the assistance of RMS.
- 4.2.6. Notify RMS for evaluation when changes occur to equipment, processes or personnel that may change the intensity of noise output in the work areas.

4.3. Faculty and Staff in the Hearing Conservation Program

- 4.3.1. Follow program requirements including wearing hearing protection devices when required.
- 4.3.2. Participate in annual audiograms.
- 4.3.3. Participate in annual training.

4.4. Medical Administrator

- 4.4.1. Responsible for administration of the audiometric test program, coordination of employee examinations, review of test results, maintenance of employee records and informing employees of results.
- 4.4.2. Responsible for tracking and follow-up of employees that experience a Standard Threshold Shift (STS), this includes both verbal and written notification to employees.

5. GENERAL REQUIREMENTS

5.1. Noise Assessment

5.1.1. Representative exposure assessments shall be performed when there is an indication that an employee's exposure to noise may equal or exceed 85 dBA.

5.1.2. Initial Determination

- All work areas producing sound levels in excess of 85 dBA shall be identified by performing an initial noise survey then subsequent noise surveys as processes change.
- Signs that clearly indicate a hazard of high noise levels and the requirements to wear hearing protection shall be posted at the entrance(s) to, and the periphery of, noise hazard areas.
- When it has been determined that an area or piece of equipment produces noise levels that exceed an 8-hour TWA of 85 dBA, periodic monitoring shall be conducted to identify changes in noise output and to evaluate the feasibility of engineering and administrative controls.

5.1.3. Noise Dosimetry

- Noise dosimetry shall be repeated per a monitoring plan or whenever any changes to facilities, equipment, work practices, procedures, or noise-control measures alter potential noise exposures.



- Personal noise monitoring shall be conducted on the employee with the greatest exposure potential, as determined by the hearing program administrator.
 - Dosimeters shall be configured with the following settings: the noise threshold set at 85 dBA, the 8-hour criterion level set at 85 dBA, and the exchange rate set at 5 dB.
 - Affected employees (employees whose exposures have been determined to exceed the 85 dBA Action Level for 8-hrs or 82 dBA for 12-hr) shall be notified of the results of noise monitoring within 15 days.
- 5.1.4. Engineering and Administrative Control of Noise
- Reasonable efforts shall be made to reduce employee exposure through engineering and administrative controls. Such controls may include selecting less noisy equipment, using noise-dampening barriers, increasing the employee's distance from the source of the noise or reducing the time of exposure to the noise through job rotation or a combination of the above.
- 5.1.5. Personal Hearing Protection
- When engineering and administrative controls are not possible to effectively minimize exposures to noise the following apply:
 - Employees exposed to sound levels that meet or exceed an 8-hour TWA of 85 dBA shall wear hearing protectors.
 - Employees exposed to impulse or impact noise exceeding 140 dBA shall wear hearing protectors.
 - Hearing protectors shall provide enough attenuation to reduce sound levels below 85 dBA.
 - RMS can offer assistance in the selection of hearing protection.
 - Hearing protectors shall be worn properly, providing a proper fit.
 - Hearing protectors shall be provided to the employees at no cost.
 - Employees exposed to noise levels exceeding and 8-hour TWA of 110dBA shall wear both earplugs and muffs.

6. MEDICAL EVALUATION OF HEARING

6.1. The University shall use a qualified audiologist to perform annual audiograms on all employees who are in the Hearing Conservation Program. All audiograms shall be consistent with the Occupational Health and Safety Standard, CFR 1910.95 as described by the following:

6.1.1. Audiograms:



- All University employees identified as being potentially exposed to average noise levels in excess of 85 dBA for 8 hours or to periodic sounds that exceed 115 dBA shall be scheduled for annual audiograms.
- A licensed or certified audiologist, otolaryngologist, or other qualified person shall interpret employee audiograms.
- The Notre Dame Wellness Center (NDWC) shall keep results of employee audiograms, with individual employee recommendations.

6.2. Recommended Action:

6.2.1. The licensed audiologist, otolaryngologist, or other qualified person may make various recommendations with respect to the results of the employee's audiogram. These recommendations and subsequent University actions include, but are not limited to:

- Normal Audiogram: no further action required
- Improvement in Audiogram: new audiogram is judged more representative and, therefore, adopted as new baseline audiogram.
- Possible Invalid Audiogram: employee shall be retested within 30 days.
- Invalid Audiogram: employee shall be retested within 30 days.
- Standard Threshold Shift: an employee with a standard threshold shift (STS) relative to the baseline audiogram, of an average of 10 decibels or more at 2,000, 3,000, and 4,000 Hertz in either ear.
 - In determining whether an STS has occurred employees shall be retested within 30 days to rule out a temporary shift.
 - In determining whether an STS has occurred, the consulting audiologist may make allowances for the contribution of aging.
 - If the comparison of the annual audiogram to the baseline audiogram indicates an STS has occurred, the employee shall be informed of this fact in writing, within 21 days of the determination.
 - A physician or audiologist shall evaluate the employee and determine if the STS is work-related or aggravated by occupational noise exposures.
 - If the physician determines the STS is not work-related or aggravated by occupational noise exposure, the employee shall be referred to his or her family physician.
 - If the physician determines STS may be work-related, the physician shall refer the employee for an audiological or otological evaluation at the University's expense.
 - RMS shall retrain and refit the employee with appropriate hearing protection and the employee's supervisor or department manager shall require its use.



- Change in job responsibilities or administrative controls may be necessary to reduce exposure.
- If an employee's audiogram reveals that the employee has experienced a work-related STS in hearing in one or both ears, and the employee's total hearing level is 25 dB or more above audiometric zero in the same ear(s) as the STS, it must be recorded on the OSHA 300 Log.

7. TRAINING

7.1. All employees exposed to noise levels that meet or exceed an 8-hr TWA of 85 dBA shall be trained annually. The training will include:

- 7.1.1. The effects of noise on hearing.
- 7.1.2. Contributing factors that cause hearing loss.
- 7.1.3. The purpose of hearing protection.
- 7.1.4. Advantages and disadvantages of the different types of hearing protection.
- 7.1.5. The attenuation factors of hearing protection.
- 7.1.6. How to select hearing protection.
- 7.1.7. How to properly use hearing protection.
- 7.1.8. The purpose of audiometric testing and what it means.
- 7.1.9. Employee responsibilities.
- 7.1.10. Employer responsibilities.

8. RECORD KEEPING

- 8.1. Audiograms shall be maintained as a permanent part of employee medical records and maintained for the duration of the affected employee's employment, plus 30 years with the Medical Administrator.
- 8.2. Sound level surveys and personal dosimetry results shall be kept with RMS.

9. FREQUENCY OF REVIEW

- 9.1. This procedure shall be reviewed annually and updated as needed to meet applicable regulatory changes.

10. REFERENCES

- 10.1. Occupational Noise Exposure, [29 CFR 1910.95](#)



Revision History Table

History	Effective Date