



Department of Public Safety & Environmental Health

Subject: Hearing Conservation Guideline

Date: July 18, 2006

Revision: 01

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SUMMARY: The Hearing Conservation Program has been developed to provide information to UM-D employees concerning the identification, evaluation and control of workplace noise. High noise levels have the potential to result in permanent hearing loss, and it is important to reduce personal exposures to the extent feasible. This Guideline is intended to be more protective than the governing regulations in an effort to reduce employee noise exposures and ultimately prevent hearing loss.

SCOPE: Employees who have the potential for exposure to high levels of noise during the course of work activities are covered under this Guideline. Examples of potential high noise job tasks would include grounds keeping; maintenance service activities; mechanical room activities in the ELB boiler room, co-gen room and machine shop; gun range target practice; or while using welding equipment or extended work located in close proximity to equipment generating high noise levels. When exposures are determined to have the potential to cause hearing loss, employees must be included in a Hearing Conservation Program. This would be exposures at or approaching the Action Level or short-term exposures exceeding 85 decibels.

REFERENCE

REGULATIONS: Occupational Noise Exposure Standard for General Industry 29 CFR 1910.95

Occupational Noise Exposure and Hearing Conservation, State of Michigan Occupational Health Standards for General Industry Rule 325.60101-325.60128

DEFINITIONS: *Action Level* - an 8 hour Time-Weighted Average (TWA) of 85 decibels (dB) will require implementation of the Hearing Conservation Program according to the Occupational Noise Exposure Standard.

Audiometric Testing - a medically administered examination (audiogram) used to assess personal hearing threshold as a function of sound frequency.

Auto Metric Zero – the amount of sound pressure that is audible to the average normal young ear.

Baseline Audiograms - the initial audiogram obtained at the start of employment for employees expected to be working in high noise areas. It



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will be used as a reference point for comparison purposes for future audiograms.

Decibel (dB) - the unit used to measure sound pressure levels.

Hearing Conservation Program - a program to protect employees hearing from potentially damaging levels of noise that include the following components:

- Noise Monitoring
- Audiometric Testing
- Employee Testing

High Noise Levels - high noise will be defined as measured noise levels at or approaching the Action Level of 85 dB or the potential for a worker to be exposed to these levels anytime during normal work tasks at the University. If it is necessary to shout for someone to hear you an arms length away, it is a good indication the sound level is too high.

Permissible Exposure Limit (PEL) - the 8-hour TWA of 90 dB to which the average employee can be exposed without sustaining permanent hearing impairment (level established by 29 CFR 1910.95). (Note: Extremely intense impact or short duration noise may result in exposure exceeding the PEL). When noise levels exceed the PEL, the standard requires implementing administrative or engineering controls to reduce the exposure. If these controls fail to reduce the levels, personal protective equipment must be provided and used to reduce the exposure.

Standard Threshold Shift (STS) - a change in an employee's hearing threshold relative to a baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 hertz in either ear. In Michigan, this would represent a recordable illness on the MIOSHA 200 log.

Time-Weighted Average (TWA) - an exposure that is averaged over a specified time period, typically an 8-hour shift.

RESPONSIBILITY: Dean, Directors, and Department Heads

Provide information to the Environment, Health & Safety (EHS) Office concerning employees who may be exposed to high noise levels.



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Designate and empower supervisors who will be responsible for the implementation of the Hearing Conservation Program.

Assign resources to support the implementation of this Guideline.

Encourage all employees to follow this Guideline.

Work-Connections

Record STS's on the MIOSHA 300 log when there is a 25 decibel shift from audiometric zero and the hearing loss is determined to be occupationally related.

Supervisors

Provide information to Deans, Directors, and Department Heads or directly to the EHS Manager, concerning employees who may have the potential for exposure to high noise levels. Implement procedures in accordance with this Guideline.

Assure that the staff is aware of this Guideline, instructed on the details of implementation, and provided with appropriate protective equipment and controls.

Contact the EHS Manager for technical assistance or regarding any changes in the workplace that would warrant re-monitoring of the noise levels, such as process, equipment or administrative changes.

Maintain records of training conducted.

Be familiar with the applicable government regulations, safety standards, and prudent safety practices to protect themselves and their fellow employees (Reference: SPG [605.1](#), [605.2](#)).

Employees

Comply with this Guideline and any additional health and safety recommendations regarding noise exposure protection.



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Immediately report any unsafe or unhealthy working conditions and job-related injuries and illnesses to your supervisor.

Environmental Health and Safety (EHS)

Assist departments in identifying high noise operations or work areas.

Measure and evaluate sound levels. Provide recommendations for a safe and healthy work environment, and the applicability of this Guideline.

Conduct employee training regarding occupational noise, as requested.

Provide technical assistance in complying with this Guideline.

Schedule and maintain records of all medical testing relative to this Guideline and maintain records of all monitoring.

Provide Work-Connections with follow up documentation as noted in the Procedures section.

Review and revise the Hearing Conservation Program as needed for compliance with applicable regulations.

Procedure

A. Supervisors will identify high noise level operations or work areas and follow the procedures below:

1. Contact EHS Manager at extension 3-4914 to request that monitoring be conducted to measure and evaluate the noise levels using a sound level meter and/or noise dosimeter. The EHS Manager will submit a summary report of the findings and recommendations to the unit/department.

Implement the EHS Manager's recommendations. *The feasibility of engineering controls at the source will be considered as the first option prior to using protective equipment.*

2. Implement the Hearing Conservation Program when determined necessary, as outlined below.



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- a. Inform employees when monitoring results are at or above the 85 dB action level.
 - b. Contact the EHS Manager at 3-4914 to schedule baseline audiometric testing. This will be conducted according to the Medical Surveillance Guideline for Audiometric Testing in [Appendix A](#).
 - c. Assure employees use hearing protection as described by the EHS Manager.
 - d. Schedule a hearing conservation training session for employees to Address these situations:
 - a. Effects of noise on hearing
 - b. Benefits of wearing hearing protectors
 - c. Explanation of audiometric testing
- B. Employees will be scheduled automatically for annual audiometric testing, after the initial baseline test. The audiogram results will be compared to the employee's baseline test by the health care provider to determine if an STS has occurred. When an STS is identified and there is a 25 decibel loss from audiometric zero, the employee must be notified in writing within 21 days of the determination and the following procedures will be conducted by the EHS Manager:
1. Upon receipt of the medical report the UM-D medical provider and the EHS Manager will contact the employee to arrange for an interview to discuss the incurred STS and the proper use of hearing protection during high noise activities both on and off the job. The interview will consist of the following:
 - a. an explanation of the STS-warning signs of hearing loss
 - b. high noise work activities
 - c. the need for Public Safety to monitor high noise activities
 - d. how to recognize high noise levels, both on and off the job that can contribute to hearing loss
 - e. how to protect themselves from high noise levels, both on and off the job



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- f. proper use of hearing protection for the range of noise levels expected to be encountered
 - g. use of the Noise Reduction Ratings (NRR) for hearing protection
 2. In addition to the interview and the occupational medical provider's report, the employee will be given a letter explaining a STS and methods to protect their hearing. The letter format is contained in [Appendix B](#). For written documentation purposes, the EHS Manager conducting the interview and the employee will sign the letter. The employee will receive the original letter. The EHS Manager will send copies of the signed letter to the employee's supervisor, Work-Connections and the medical file. After the interview, a brief narrative will be written by the EHS Manager including any additional information discussed and will be kept in the employee's medical file and a copy provided to Work-Connections.
 3. The employee's supervisor will be informed of the interview and arrangements will be made for noise monitoring of job tasks in the department. Results of the noise monitoring will be discussed with the affected employees and supervisor. Copies of the written noise monitoring report will be retained in the medical file and a copy provided to Work-Connections and the supervisor.
- C. In the State of Michigan, an occurrence of an STS and a 25 dB loss from audiometric zero necessitates the recording of an occupational illness on the MIOSHA 300 log, which is maintained by Work-Connections. An employee Accident or Illness Report Form will be completed by the EHS Manager and signed by the employee and the supervisor. The report form is located in Appendix C. The original Report Form will be sent to Work-Connections, along with the letter, the interview narrative, and noise monitoring information or reports. The supervisor will maintain a copy of the Report Form as required by the department.



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- D. The following table indicates who will receive the documents listed on the left side when MIOSHA recordable hearing loss occurs. It is the responsibility of the EHS Manager to assure this occurs.

	Public Safety & Work-Connections	Supervisor	Employee
Report Form	Yes	Yes	(Optional)
STS Letter	Yes	Yes	Yes (Original)
Interview Notes	Yes	(Optional)	(Optional)
Noise Monitoring Results	Yes	Yes	Yes

- E. If an STS is identified but the employee has not sustained a 25 decibel loss from audiometric zero, the hearing loss is not recordable and only re-education is required. Re-education will consist of steps B1 thru B3, (STS letter, employee meeting and notes). However, the documents will only be sent the employee and the medical file, and not to Work-Connections or the supervisor.

RELATED DOCUMENTS:

SPG [605.1](#) and [605.2](#)

TECHINCAL SUPPORT:

All reference guidelines, regulations, and other documents are available Through the EHS manager at (3-4914).

ATTACHMENTS:

Appendix A – Medical Surveillance Guideline for Audiometric Testing
 Appendix B – Employee Letter for Notification of STS
 Appendix C – www.umich.edu/~connect/forms.htm **click on: Injury & Illness Report Form**

APPENDIX A

UM-EHS

Physical Examination Program

DATE: October 8, 1997

TITLE: Audiometric Test Evaluation and Follow-up Procedures

POLICY: All employees who indicate that their work environment may expose them to noise will be provided with annual audiometric testing.

Procedures for administering, evaluation and follow-up of audiometric tests shall be in compliance with the OSHA/MIOSHA regulation 29 CFR 1910.95, "Occupational Noise Exposure" attached (herein referred to as the regulation).

PROCEDURE: (1) 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 audiometer 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.

(2) Audiometric instruments and audiometric test rooms shall meet the requirements of Appendix C, D and E of the regulation.

(3) Audiometric tests shall be conducted in accordance with 1910.95 (h).

a) They shall be pure tone, air conduction, hearing threshold examination, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hertz. Tests at each frequency shall be taken separately for each ear.

b) Audiometric tests shall be conducted with audiometers that meet the specification of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.6-1969.

c) Pulse-tones and self-recording audiometers, if used, shall meet the requirements specified in Appendix C.

d) Audiometric examinations shall be administered in a room meeting the requirements listed in Appendix D.

e) 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.

(4) For every employee determined to be included in this program, a valid baseline audiogram shall be established against which subsequent audiograms can be compared. A new audiogram will be obtained for each employee annually for "standard threshold shift" (STS) determination.

(5) Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a "standard threshold shift" (STS) has occurred. This would be a change in hearing threshold relative to the baseline audiogram of an average of 10 decibels or more, at 2000, 3000, and 4000 Hertz in either ear. This comparison may be done by a technician.

(6) When no hearing impairment is detected, the audiologist may report the results verbally to the employee.

(7) When a Standard Threshold Shift is detected:

a) A physician shall review the audiogram and repeat the testing to confirm the results if deemed necessary.

b) The audiologist or physician may verbally report any test result abnormalities to the employee, but MAY NOT supply a hard-copy of the results or electronic report on-site. EHS Manager will supply the employee with a report within the required 21 days.

c) EHS Manager shall be notified immediately, in writing using the medical surveillance result form that the employee incurred a STS, unless a physician determines that the shift is not work related or aggravated by an occupational noise exposure. If the employee's condition would prohibit the wearing of hearing protectors, this must also be indicated on the result form.

d) Once notified, EHS Managers shall re-evaluate the noise exposure in the employee's workplace and follow the protocol outlined in the Hearing Conservation Guideline. If the physician suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors, the physician may indicate on the result form that the employee be referred for a clinical audio logical evaluation or ontological exam.

e) Work-Connections will be informed of the STS through the 101 form that will be submitted from EHS Manager. Work-Connections will coordinate any additional medical evaluations or treatment as appropriate.

APPENDIX B

EMPLOYEE LETTER FOR NOTIFICATION OF STS

TO:

FROM:

DATE:

SUBJECT: Hearing Loss

The results, of your recent OSHA physical examination, indicate you have sustained a Standard Threshold Shift (STS) in your hearing ability. A Standard Threshold Shift is a permanent hearing loss of 10 decibels or greater averaged over the 2000, 3000 and 4000 Hertz frequency ranges in either ear. This is based on comparison of your most recent Audiogram with your initial baseline audiogram. Allowances have been made for the contribution of aging to the change in hearing level.

The 2000 to 4000 Hertz range is considered to be part of the speech frequency range. Losses in this range will eventually make it difficult to understand normal conversation. You may start to notice that people have to shout to make you understand. Telephone and radio use will be affected due to the absence of face to face contact. Reduction of these types of problems with the use of effective hearing conservation methods will enhance your quality of life.

As your employer, it is our responsibility to inform you of this hearing loss and provide you with information to preserve your present hearing level without additional losses. It is necessary to continue to wear effective hearing protection, earplugs or muffs, when working in noisy environments. Noise induced hearing loss is a gradual process that you may not realize is occurring until it is too late and there is no treatment for it.

The following items were discussed:

- Explanation of the STS and ways to prevent hearing loss
- Use of properly fitted hearing protection
- Monitoring of workplace noise levels

EHS Manager: _____

Date: _____

Employee: _____

Date: _____

cc: Work-Connections
Employee's Departmental Files
OSHA Physical File