

Hearing Conservation

Guideline

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Applies To: Employees who have the potential for exposure to high levels of noise during the course of University work activities.

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Summary

The Hearing Conservation Guideline has been developed to provide information to University 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 University 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 University work activities are covered under this Guideline. Examples of potential high noise job tasks would include grounds keeping and maintenance service activities, mechanical room activities, gun range target practice, dish washing or extended work or research experiments 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 OSHA *Action Level* or short-term exposures exceeding 85 [decibels](#).

Reference Regulations

- [Occupational Noise Exposure Standard](#) – Michigan (MIOSHA) Occupational Health Standards for General Industry: Part 380, Rule 325.60101 – R325.60128
- [Noise Exposure for Construction](#) – Michigan (MIOSHA) Occupational Health Standards for Construction: Part 680, Rule 325.60131
- [Recording and Reporting of Occupational Injuries and Illnesses](#) – Michigan (MIOSHA) Occupational Safety and Health Standards: Part 11, Rule 408.22115

Glossary of Terms

TERM	DEFINITION
Action Level (AL)	An 8-hour Time-Weighted Average (TWA) of 85 decibels (dB), measured on the A-scale (slow response), and which requires implementation of a Hearing Conservation Program (HCP) according to the MIOSHA Occupational Noise Exposure Standard.
Administrative Controls	Actions taken by management to reduce the exposure of employees to noise, including reducing of employee exposure time in high noise areas or the consideration of purchase of lower noise producing equipment.
Audiogram	Means a chart, graph, or table resulting from an audiometric test showing an individual’s hearing threshold levels as a function of frequency.
Audiometric Testing	A medically administered examination (audiogram) used to assess personal hearing thresholds as a function of sound frequency.
Audiometric Zero	The amount of sound pressure that is audible to the average normal young ear.
Baseline Audiogram	The initial audiogram obtained at the start of employment for employees expected to be working in high noise areas. It will be used as a reference point against which future audiograms are compared.
Decibel (dB)	The unit used to measure sound pressure levels.
Decibel (dBA)	The unit used to measure sound pressure levels on the A-weighting scale.
Engineering Controls	Reducing the generation and transmission of noise through equipment design and proper maintenance.
Hearing Conservation Program (HCP)	A program to protect employee hearing from potentially damaging levels of noise that includes the following components: <ul style="list-style-type: none">• Noise monitoring• Audiometric testing• Employee training

TERM	DEFINITION
Hertz (Hz)	A unit of measurement of frequency and is numerically equal to cycles per second.
High Noise Levels	For the purpose of this Guideline, high noise levels are defined as measured noise levels approaching or above the Action Level of 85 dB(A) or the potential for a worker to be exposed to these levels anytime during normal work tasks at the University. For example, if it is necessary to shout for someone to hear you at an arm's length away, it is a good indication the sound level is too high.
Noise	Unwanted sound.
Noise Dosimeter	An instrument that measures sound levels (pressures) over a period of time in order to determine a person's average noise exposure, i.e., their TWA.
Noise Reduction Rating (NRR)	<p>The NRR is a single-number rating which is required by law to be shown on the label of each hearing protector sold in the United States. The NRR is the measure, in decibels, of how well a hearing protector reduces noise, as specified by the Environmental Protection Agency. The higher the NRR, the greater the potential noise reduction.</p> <p>When dual protectors are used, the combined NRR provides approximately 5 decibels more than the higher rated of the two products. For example, using ear plugs (NRR of 29 decibels) with ear muffs (NRR 27) would provide a combined NRR of 34 decibels.</p> <p>For more information on the methods to calculate the attenuation of hearing protectors, refer to this OSHA guidance document: Methods for Estimating Hearing Protection Devices (HPD) Attenuation.</p>
Permissible Exposure Limit (PEL)	<p>The 8-hour TWA of 90 dB(A) to which the average employee can be exposed without sustaining permanent hearing impairment.</p> <p>NOTE: Extremely intense impact or high noise levels of short duration may result in an exposure exceeding the PEL.</p> <p>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 (PPE) must be provided and used to reduce the exposure.</p>
Sound	Vibrations that travel through air, water, or some other medium, especially those within the range of frequencies (20 – 16,000 Hz) that can be heard (perceived) by the human ear.
Sound Level Meter	An instrument used to measure sound levels, i.e., it converts sound pressure levels into electrical signals given as decibels (dB). They are typically designed to react to noise much like the human ear. The measurements taken by sound level meters are compared to

TERM	DEFINITION
	known standards to identify whether a noise level could have a detrimental effect on humans located near a noise source.
Standard Threshold Shift (STS)	A change in an employee's hearing threshold relative to a <u>baseline audiogram</u> of an average of 10 dB or more at 2,000, 3,000, and 4,000 <u>Hertz</u> in either ear. An STS and a 25 dB, or greater, loss from audiometric zero would represent a recordable illness on the MIOSHA 300 Log .
Time-Weighted Average (TWA)	An exposure that is averaged over a specified time period, typically an 8-hour work shift.
VeriPRO	Software system that assesses the fit and effectiveness of ear plugs for individual users.

Responsibility

Deans, Directors, and Department Heads

- Provide information to EHS concerning employees who may be exposed to high noise levels.
- 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, including investigation and funding of administrative and engineering controls to reduce workplace noise levels.
- Encourage all employees to follow this Guideline.

Work~Connections

Record an STS on the [MIOSHA 300](#) Log when there is a 25 decibel, or greater, 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 EHS, concerning employees who may have the potential for exposure to high noise levels. Implement procedures in accordance with this Guideline.
- Assure that staff is aware of this Guideline, instructed on the details of implementation, and provided with appropriate protective equipment and controls.
- Contact EHS regarding any changes in the workplace that would warrant re-monitoring of the noise levels, such as process, equipment or administrative changes.
- Be familiar with the applicable government regulations, safety standards, and prudent safety practices to protect themselves and their fellow employees. (Also refer to: [SPG 201.45](#), [SPG 605.1](#))

Employees

- Comply with this Guideline and any additional safety recommendations regarding noise exposure protection.
- Immediately report any unsafe or unhealthy working conditions and job-related injuries or illnesses to their supervisor.

EHS

- Assist departments in identifying high noise operations or work areas.
- Measure and evaluate sound levels and/or noise exposures. Provide recommendations for a safe and healthy work environment, and the applicability of this Guideline.
- Consider the use of the VeriPRO system during employee training and hearing loss investigations to assess the fit and effectiveness of hearing protection.
- Conduct employee training regarding occupational noise.
- 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 noise monitoring and training conducted by EHS staff.
- Provide Work~Connections with follow up documentation as noted in the Procedures section.
- Review and revise the Hearing Conservation Guideline as needed for compliance with applicable regulations.

Procedures

1. Supervisors will identify high noise level operations or work areas and follow the procedures below:
 - a. Contact the EHS representative assigned to your department/unit, or call EHS at 7-1142 to request that EHS measure and evaluate the sound levels and employee noise exposures using a sound level meter and/or noise dosimeter. When completed, EHS will submit a summary report of the findings and recommendations to the department/unit.
 - b. Implement EHS recommendations for controlling employee noise exposures to equipment and work areas above 85 dB(A). The feasibility of controlling noise levels at the source through administrative and/or engineering controls will be considered as first options. If such controls are not feasible, hearing protection devices must be used to reduce exposures to below 85 dB(A).
2. If the EHS report indicates an employee exposure above the Action Level of 85 dB(A) for an 8-hour TWA, the employee will be included in a Hearing Conservation Program, administered by EHS, including the following items:
 - a. Inform employees when monitoring results are at or above the 85 dB Action Level.
 - b. Contact the EHS Medical Surveillance Coordinator (615-2140) to schedule baseline audiometric testing (at no cost) shortly after hire, according to the Medical Surveillance Guideline for Audiometric Testing in Appendix A.
 - c. Assure employees correctly use hearing protection and are properly fitted as described in the EHS report. Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the employer, at no cost.
 - d. Schedule annual EHS training session for employees to address the following issues:
 - Effects of noise on hearing
 - Benefits of wearing hearing protectors, including the advantages and disadvantages of the various types of hearing protectors
 - An explanation of audiometric testing
 - The use and care of all hearing protectors provided
 - Make copies of the MIOSHA Occupational Noise Exposure Standard available to affected employees or representatives.

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- Consider the use of the VeriPRO system during employee training and hearing loss investigations to assess the fit and effectiveness of hearing protection.
- e. 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.
3. If an employee incurs an STS (Standard Threshold Shift) or hearing loss, the following will take place:
- a. The EHS Medical Surveillance Coordinator will inform the EHS representative responsible for the employee's department of the STS. Upon receipt of the medical report from the University's occupational health provider, the EHS representative will contact the employee to arrange for a meeting to discuss the incurred STS. The meeting will include an explanation and discussion of the following:
- an STS and the warning signs of hearing loss
 - known high noise work activities (present previously collected noise data, if available)
 - the need for EHS to monitor unknown high noise activities
 - how to recognize high noise levels, both on and off the job, which can contribute to hearing loss
 - how to be protected from high noise levels, both on and off the job
 - the proper use of hearing protection for the range of noise levels expected to be encountered
 - the Noise Reduction Ratings (NRR) for hearing protection
- b. The employee's supervisor will be informed of the meeting, and if necessary 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. The written noise monitoring report will be retained in the EHS medical file. Copies will be sent to the employee, supervisor and Work~Connections.
- c. Employees not using hearing protectors must be fitted with hearing protectors that attenuate the employee exposure at least to a time-weighted average of 85 decibels, trained in their use and care, and required to use them.
- d. Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering a greater attenuation of 85 decibels, if necessary.
- e. The VeriPRO system will be used to assess the fit and effectiveness of the earplugs used by the employee.
- f. In addition to the meeting and the occupational medical provider's report, the employee will be given a letter explaining an STS and methods to protect their hearing. The letter format is contained in [Appendix B](#). For written documentation purposes, the letter will be signed by the EHS representative and the employee.
- g. The employee will receive the original letter. Copies of the signed letter will be sent by the EHS representative to the supervisor, Work~Connections, and the EHS medical file. After the meeting, a brief narrative will be written by the EHS representative including any additional information discussed. Copies of the narrative will be sent to the employee, Work~Connections and the EHS medical file.

4. Determination of MIOSHA recordable and non-recordable STS is made by the University’s occupational health provider and Work~Connections based on the employee’s medical and workplace information.

An occurrence of an STS and a 25 dB, or greater loss from audiometric zero necessitates the recording of an occupational illness on the [MIOSHA 300](#) Log which is maintained by Work~Connections. An [Employee Illness or Injury Report Form](#) will be completed by the EHS representative and submitted to Work~Connections, with a copy to the supervisor. The Injury and Illness Form is also located in [Appendix C](#). The original Report Form will then be sent to Work~Connections, along with the letter, the meeting narrative, and noise monitoring information or reports. The supervisor will maintain a copy of the Report Form as required by the department/unit.

The following Table indicates who will receive the documents listed on the left side when a MIOSHA recordable hearing loss occurs. It is the responsibility of the designated EHS representative to assure this occurs.

Table 1: Document Distribution for a MIOSHA Recordable Hearing Loss.

DOCUMENT	EHS & WORK~CONNECTIONS	SUPERVISOR	EMPLOYEE
Injury/Illness Report Form*	yes	yes	(optional)
STS Letter	yes	yes	yes (original)
Meeting Notes	yes	(optional)	yes
Noise Monitoring Results	yes	yes	yes

* Plant Operations requires that a copy of the Report Form be sent to the Business Office.

If an STS is identified but the employee has not sustained a 25 decibel, or greater, loss from audiometric zero, the hearing loss is not recordable and only re-education and the continued use of hearing protectors are required. Re-education will consist of items under the section “If an employee incurs an STS, (the STS letter, employee meeting, notes, issuance of hearing protection and training/re-training). However, the documents will only be sent to the employee and EHS medical file, and not to Work~Connections or the supervisor.

Related Documents

- Occupational Safety and Environmental Health Policy: [SPG 605.1](#),
- Protective Clothing and Equipment Policy: [SPG 201.45](#)
- [Summary of MIOSHA Part 380 Occupational Noise Exposure](#)
- [MIOSHA Construction Fact Sheet: Noise in Construction](#)

Technical Support

All reference guidelines, regulations, and other documents are available through EHS (7-1142)

Attachments

- [Appendix A – Audiometric Test Evaluation and Follow-up Procedures](#)
- [Appendix B – Employee Letter for Notification of STS](#)
- [Appendix C – Illness or Injury Report Form](#)