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PURPOSE

The University of Illinois at Urbana-Champaign (University), through the Division of Safety and Compliance, Occupational Safety and Health Department (OSH), has established this Hearing Conservation Program to protect the health of university students, faculty and staff and to assure compliance with State and Federal occupational safety and health standards.

This Program provides the minimum requirements for campus units to develop and implement unit-specific written standard operating procedures (SOPs) to complement and meet the requirements detailed in this program, including completion and submission of Appendix A to OSH.

POLICY

It is the policy of the University to protect its students, faculty and staff from noise hazards. This is accomplished as far as feasible with effective engineering controls, employee training, and administrative controls. In cases where these controls are not adequate, personnel must be provided with hearing protection to eliminate the potential exposure to noise hazards.

RESPONSIBILITIES

Occupational Safety and Health (OSH)

OSH is responsible for the administration of this program, which includes determining the need for hearing protection based on the hazard assessment and hearing protector selection. An OSH program coordinator is designated to provide guidance, regulatory interpretation and oversight for this Program and to review this Program annually.

Deans, Department Heads and Directors (Campus Units)

Campus Units shall designate a Responsible Person that will be charged with implementing this Program and Unit-Specific SOPs.

Campus Unit Responsible Person

The Responsible Person shall work with Campus Unit Supervisors to identify personnel that may be required to wear a hearing protection and shall keep OSH apprised of new potential hazards entering the work area for both new-hire personnel and for those having a change in their job duties. In addition, personal protective equipment (PPE) assessments of work processes and tasks, described in the University's Personal Protective Equipment Program; must be completed to ensure that all personnel within their unit affected by this Program receive proper training. The Responsible Person shall ensure that Unit-Specific SOPs are reviewed annually.

Supervisors of Affected Employees (Supervisors)

Supervisors and Principle Investigators (PIs) are responsible for enforcing proper use, care, maintenance and storage of hearing protectors for the wearers under their responsible charge in accordance with this Program and Unit-Specific SOPs. They shall assist in the development and annual review of Unit-Specific SOPs. They shall ensure that all their personnel who must undergo audiometric testing do so on an annual basis. The testing is at no cost to the individual.

Affected Employees

Affected faculty, staff and students, herein called users, are responsible for using hearing protection when required by the specified work activity and ensure that the protectors are worn, cleaned, stored and maintained according to



the provisions of this Program, Unit-Specific SOPs, and manufacturer instructions. Those required to undergo annual audiometric testing shall do so in accordance with this Program.

PROCEDURES

Hazard Evaluation and Identification

The selection of appropriate hearing protection shall be made only after a determination of the potential exposure of University personnel to high levels of noise. A noise assessment of the workplace shall be conducted; including area surveys and/or noise dosimetry (see Appendices C, D, and E). OSH can conduct the noise assessment or assist the unit in identifying other providers.

Campus personnel that suspect occupational noise exposure can report it by submitting a Noise Assessment Request here <https://forms.illinois.edu/sec/8399111>.

Noise exposure monitoring shall include an area survey and personal monitoring.

Area Survey

The purpose of the area survey is to identify those operations or locations where personnel exposure may exceed an 8-hour time-weighted average (TWA) of 85 dBA or 50 percent dose. Noise levels are defined in terms of decibel (dB). This is accomplished using a sound level meter (SLM) or a noise dosimeter having an SLM function.

The SLM must meet requirements specified in ANSI S1.4, type 2, with operating parameters that are set at A-weighted (dBA) and slow response for monitoring. The SLM must be calibrated to ensure measurement accuracy. Noise surveys shall be completed annually, or when conditions change substantially.

Personal Monitoring (Noise Dosimetry)

The purpose of noise dosimetry is to quantify an employee's exposure to noise throughout the day. The noise dosimeter is worn by the employee and computes noise measurements such as dose, average dBA, and duration of monitoring.

In cases of high worker mobility, significant variations in sound level, or significant component of impulse noise make area monitoring inappropriate, representative personal sampling shall be used to comply with the monitoring requirements of this paragraph, unless it can be shown that area sampling produces equivalent results.

Identification

High Noise Level Areas and High Noise Level Operations, as determined by the Hazard Evaluation shall be identified by posting standard noise-hazard signage (Appendix F).

Medical Surveillance - Audiometric Testing

The purpose of audiometric testing is to determine each employee's hearing threshold by determining the employee's response to noise at several frequencies.

Audiometric testing shall be conducted within six months of enrollment in this Program to determine a baseline, and annually thereafter if exposure is above 85 dBA for an 8-hour TWA or 50 percent dose (OSHA action level). If a baseline has not been determined, then the first audiometric test shall become the baseline.



The initial audiogram shall be used as a baseline measurement to which all subsequent audiograms shall be compared. Audiometric testing shall be completed annually for all employees whose exposures equal or exceed an 8-hour TWA of 85 dBA (Affected Employees).

The audiometric testing shall be conducted by a University-designated audiometric testing provider and shall be performed at no cost to the employee.

Employees who receive audiograms during a workday must wear hearing protection prior to their tests or have been exempt from workplace noise for a period of 14 hours prior to the testing procedures. During the 14 hours prior to the testing, the employees shall refrain from any noisy non-work exposures such as listening to loud music, mowing the lawn, target practice and woodworking.

The annual audiogram shall be compared to the baseline audiogram to determine if the audiogram is valid and if a standard threshold shift (STS) has occurred. An STS is defined as the average hearing loss of 10 dB or more at the tested frequencies of 2,000, 3,000 and 4,000 Hz in either ear.

If an STS is identified, the following steps shall be taken:

- Employees shall be notified of the results in writing within 21 days of the determination.
- Employees will be fitted and trained in the use of hearing protection equipment.
- Employees already wearing hearing protection shall be refitted and retrained in the proper use of hearing protection. Hearing protection offering greater noise reduction shall be provided to the affected employees.
- Employees must be retested within 30 days and the retest shall be considered the annual audiogram.

Evaluation of the results of the audiograms shall be performed by the testing agency (either the designated medical provider or the contracted company). The department will follow all recommendations made for each employee by the tester.

An employee may be referred for a clinical audiological evaluation or an otological examination for additional testing.

The OSH coordinator along with the employee's supervisor will review the effectiveness of any engineering and administrative controls to identify and correct any deficiencies.

Hearing Protection

Affected employees shall be provided with hearing protection as follows:

- Hearing protection shall be provided at no cost to employees
- Employees shall be able to select their hearing protection from a variety of suitable hearing protectors
- Employees will receive training in the use and care of hearing protection
- The use of hearing protection shall be required for employees who have not yet had a baseline audiogram, who have experienced an STS, or whose exposures exceed an 8-hour TWA of 85 dBA

Additional information on hearing protection devices is included in Appendix G.

Training

Employees included in the hearing conservation program will receive the following annual training:



- The effects of noise on the human ear and hearing
- The purpose of hearing protection, including the advantages and disadvantages of various types of hearing protection
- The proper selection, fitting, use and care of hearing protection
- The purpose and value of noise exposure monitoring and audiometric testing and a summary of the procedures
- The University's and employees' respective tasks for maintaining noise controls

Recordkeeping

The medical provider is responsible for maintaining training and audiometry records for affected personnel. Each campus unit that has personnel enrolled in this Program is responsible for maintaining training records of facility and operations-specific noise hazards and hearing protection requirements, according to the specific requirements listed below:

Each campus unit shall establish and maintain accurate records according to the OSHA Access to Employee Exposure and Medical Records Standard ([29 CFR 1910.1020](#)) and the OSHA Noise Standard ([29 CFR 1910.95](#)) for each person required to be in this Program.

The record shall include the following:

- Audiometric test results, including:
 - Name and job title
 - Baseline and all related correspondence
 - Date audiometric tests were performed
- The examiner's name and the physician's written opinion on any special medical examination related to the hearing conservation program
- A copy of all the latest noise exposure assessments

Records shall be retained as follows:

- Noise exposure assessment – 2 years
- Audiometric test records – duration of employment plus thirty years

All records required by this section shall be provided upon request to affected personnel, former employees, representatives designated by the individual employee, and OSHA or ILOSHA.

PROGRAM EVALUATION

This Program will be reviewed annually by OSH. The written Unit-Specific SOPs shall be reviewed and updated by the respective Campus Unit at least annually and more frequently as hazards, tasks, procedures and/or equipment change.



APPENDIX A – UNIT-SPECIFIC STANDARD OPERATING PROCEDURES



Campus Unit: _____

It is the policy of the above-mentioned unit to comply with the University of Illinois at Urbana-Champaign Hearing Conservation Program. The purpose of this document is to complement the University's Hearing Conservation Program with site-specific written standard operating procedures.

PROGRAM ADMINISTRATION

The University of Illinois recognizes that supervisors are not necessarily experts in the area of hearing conservation. However, as outlined in the Campus Administrative Manual policy number RB-13, "The immediate managers of employees or supervisors of other members of the campus community are responsible for maintaining a healthy and safe environment within their areas under their supervision and are responsible for the safety of activities, procedures and operations under their control or direction." OSH and other qualified personnel will assist supervisors and individuals in fulfilling these obligations upon request.

The following individual has responsibility for the administration of hearing conservation in the above-mentioned unit. It is the responsibility of this person to supervise the use of hearing protection and to ensure that it is used when required and in the manner in which the wearer has been trained.

(Name)

(Title)

EXPOSURE MEASUREMENTS

Records of employee exposure for this unit can be found in _____.

SELECTION

Hearing protection types selected for use (include manufacturer, model number and location of use):

Manufacturer	Model	NRR	Location of Use

ANNUAL AUDIOMETRIC TESTING AND TRAINING

Audiometric testing is required for all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels. 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.

Training shall be provided as required by this program.

Training and audiometric testing is provided by: _____



APPENDIX B – DEFINITIONS



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.

Hertz (Hz) - Unit of measurement of frequency, numerically equal to cycles per second.

High Noise Level Area – An area characterized by background noise levels exceeding 85 dBA.

High Noise Level Operation – An operation that generates noise levels exceeding 85 dBA.

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.

Otolaryngologist - A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.

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 C – NOISE DOSIMETRY FORM



Employee name:		Badge:	Shop/Department:				
Job Title:							
Date:	Time on:	Time off:	Dosimeter number:				
Sampled by:							
Hearing Protection Worn?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Type:	<input type="checkbox"/> Foam plugs	<input type="checkbox"/> Flanged plugs	<input type="checkbox"/> Custom plugs		
			<input type="checkbox"/> Muffs	<input type="checkbox"/> Other			
		NRR:					
		Brand:	<input type="checkbox"/> Howard Leight	<input type="checkbox"/> 3M	<input type="checkbox"/> Custom	<input type="checkbox"/> Other	<input type="checkbox"/> Unknown
Recommended Hearing Protection			<input type="checkbox"/> Foam plugs	<input type="checkbox"/> Flanged plugs	<input type="checkbox"/> Custom plugs		
			<input type="checkbox"/> Muffs	<input type="checkbox"/> Other			
		NRR:					
Other PPE:							
Building/Location:							
Job activities/comments:							
Results	Time-weighted Average:		Percent Dose: *				

*Employees are required to be enrolled in the Hearing Conservation Program if their noise dosage is 50% or greater (which is equivalent to 85 dBA for an 8-hour exposure).

Conclusion:

- Employee needs to be enrolled in the Hearing Conservation Program (HCP).
- Employee does not need to be enrolled in the HCP at this time. No further action required.

If the employee needs to be enrolled in the Hearing Conservation Program, the following steps need to be taken.

1. **Audiometric testing.** An initial baseline test must occur within 6 months of the issuance of this report. Testing is then repeated annually thereafter. New employees should also participate in an initial baseline within 6 months of employment.
 - a. Department of Speech and Hearing Science provides audiometric testing. Appointments should be scheduled with this department.
 - b. When the testing is done: 14-hours before testing, the employee must wear hearing protection or avoid exposure to workplace noise. They also must avoid high levels of non-occupational noise.
2. **Training.** Initial and annually thereafter is required. The Department of Speech and Hearing Science conducts this training.
3. **Hearing Protection.** At least two different styles of hearing protection should be available for fitting and selection. These shall be provided at no cost to the employee. The supervisor is responsible for ensuring that employees wear the hearing protection devices.
4. **Access to information.** Copies of the OSHA Standard 1910.95 "Occupational Noise Exposure" should be available to employees and a copy should be posted in the shop.
5. For further information, contact Safety and Compliance at 217-265-9828.



APPENDIX D –NOISE DOSIMETRY RESULTS



Name _____ Building _____ Date _____

UIN _____ Job Description _____

From: The Division of Safety and Compliance

The noise dosimetry for _____ indicates that noise exposure is _____ [dBA] as a time weighted average for an eight-hour day.

_____ is required to be enrolled in the University Hearing Conservation Program.

If you have any questions, please call (217) 265-9828 for additional information.



APPENDIX E – SOUND LEVEL SURVEY FORM



Building:							Room/Location:						
Area Posted:	<input type="checkbox"/> Single	<input type="checkbox"/> Double	<input type="checkbox"/> No	Hearing Protection In Use:			<input type="checkbox"/> Single	<input type="checkbox"/> Double	<input type="checkbox"/> No				
Sound Level Meter Results													
Sample #													
<i>Source Description</i>													
<i>Measurement Location</i>													
<i>Noise Pattern</i> C = Continuous IN = Intermittent IM = Impulse/Impact													
<i>Noise Source Labeled</i>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>Noise Radius (ft)</i>	at 85 dBA			at 85 dBA			at 85 dBA			at 85 dBA			
	at >96 dBA			at >96 dBA			at >96 dBA			at >96 dBA			
	at 140 dB(P)			at 140 dB(P)			at 140 dB(P)			at 140 dB(P)			
	at 165 dB(P)			at 165 dB(P)			at 165 dB(P)			at 165 dB(P)			
<i>Meter Response</i> F = Fast S = Slow I = Impulse/Impact	F S I			F S I			F S I			F S I			
<i>Result</i>	dBA			dBA			dBA			dBA			
	dB Peak			dB Peak			dB Peak			dB Peak			
Comments:													
Diagram													



APPENDIX F – NOISE HAZARD SIGNAGE



High Noise Level Area (background noise exceeds 85 dBA)



High Noise Level Operation (operation generates noise that exceeds 85 dBA)



APPENDIX G – HEARING PROTECTOR INFORMATION



Expandable foam plugs

These plugs are made of a formable material designed to expand and conform to the shape of each person's ear canal. Roll the expandable plugs into a thin, crease-free cylinder. Whether you roll plugs with thumb and fingers or both hands does not matter, but do not roll between your palms as this causes distortion and creases. What is critical is the final result – a smooth tube thin enough so that about half the length will fit easily into your ear canal. Some individuals, especially people with small ear canals, have difficulty rolling typical plugs small enough to make them fit. A few manufacturers now offer a small-size expandable plug.

Pre-molded, reusable plugs

Pre-molded plugs are made from silicone, plastic or rubber and are manufactured as either “one-size-fits-most” or are available in several sizes. Many pre-molded plugs are available in sizes for small, medium, or large ear canals.

A critical tip about pre-molded plugs is that a person may need a different size plug for each ear. The plugs should seal the ear canal without being uncomfortable. This takes trial and error of the various sizes. Directions for fitting each model of pre-molded plug may differ slightly depending on how many flanges they have and how the tip is shaped. Insert this type of plug by reaching over your head with one hand to pull up on your ear. Then use your other hand to insert the plug with a gentle rocking motion until you have sealed the ear canal.

Advantages of pre-molded plugs are that they are relatively inexpensive, reusable, washable, convenient to carry, and come in a variety of sizes. Nearly everyone can find a plug that will be comfortable and effective. In dirty or dusty environments, you do not need to handle or roll the tips.

Canal caps

Canal caps often resemble earplugs on a flexible plastic or metal band. The earplug tips of a canal cap may be a formable or pre-molded material. Some have headbands that can be worn over the head, behind the neck, or under the chin. Newer models have jointed bands, increasing the ability to properly seal the earplug.

The main advantage canal caps offer is convenience. When it is quiet, employees can leave the band hanging around their necks. They can quickly insert the plug tips when hazardous noise starts again. Some people find the pressure from the bands uncomfortable. Not all canal caps have tips that adequately block all types of noise. Generally, the canal cap tips that resemble stand-alone earplugs seem to block the most noise.

Earmuffs

Earmuffs come in many models designed to fit most people. They work to block out noise by completely covering the outer ear. Muffs can be “low profile” with small ear cups, or large to hold extra materials for



use in extreme noise. Some muffs also include electronic components to help users communicate or to block impulse noises.

Workers who have heavy beards or sideburns or who wear glasses may find it difficult to get good protection from earmuffs. The hair and the temples of the glasses break the seal that the earmuff cushions make around the ear. For these workers, earplugs are best. Other potential drawbacks of earmuffs are that some people feel they can be hot and heavy in some environments.

Miscellaneous devices

Manufacturers are receptive to comments from hearing protection users. This has led to the development of new devices that are hybrids of the traditional types of hearing protectors. Because many people like the comfort of foam plugs, but do not want to roll them in dirty environments, a plug is now available that is essentially a foam tip on a stem. You insert this plug much like a pre-molded plug without rolling the foam.

Scientists are developing earmuffs using high-tech materials to reduce weight and bulk, but still effectively block noise. On the horizon may be earplugs with built-in two-way communication capability.

Still, the best hearing protector is the one that is comfortable and convenient and that you will wear every time you are in an environment with hazardous noise.



APPENDIX H – PROGRAM AUDIT CHECKLIST



	Yes	No
1. Has a written hearing conservation program that includes work-site specific procedures been established?	<input type="checkbox"/>	<input type="checkbox"/>
2. Has a campus unit responsible person, with appropriate training and experience, been designated and identified in the written program?	<input type="checkbox"/>	<input type="checkbox"/>
3. Have area surveys (using a sound level meter) been performed to identify areas and operations that may expose employees to sound levels in excess of 85 dBA?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has personal noise dosimetry been performed for representative employees who may be exposed above 85 dBA based on an 8-hour TWA?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has each employee represented by the personal noise dosimetry been informed of the monitoring results?	<input type="checkbox"/>	<input type="checkbox"/>
6. Have high noise level areas and operations been identified using signs or labels?	<input type="checkbox"/>	<input type="checkbox"/>
7. Do employees that have noise exposures above 85 dBA based on an 8-hour TWA obtain annual audiograms?	<input type="checkbox"/>	<input type="checkbox"/>
8. Do employees that have noise exposures above 85 dBA based on an 8-hour TWA receive annual training?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are First Reports of Injury/Illness being completed and submitted to Worker's Compensation/Claims Management when a physician determines that a Standard Threshold Shift (STS) has occurred and is work-related or aggravated by occupational noise exposures?	<input type="checkbox"/>	<input type="checkbox"/>
10. Have hearing protection devices capable of providing protection from expected noise levels been provided to employees who are expected to be exposed to sound levels above 85 dBA?	<input type="checkbox"/>	<input type="checkbox"/>
11. Have employees that have been assigned hearing protection devices been given sufficient training on the use, care and maintenance of their devices?	<input type="checkbox"/>	<input type="checkbox"/>
12. Are the following records being maintained:		
a. Annual audiogram results for each affected employee maintained for duration of employment plus 30 years?	<input type="checkbox"/>	<input type="checkbox"/>
b. Training records for the duration of employment?	<input type="checkbox"/>	<input type="checkbox"/>
c. Noise hazard assessments for at least 2 years with a minimum of one assessment for each location, operation, representative employee on file?	<input type="checkbox"/>	<input type="checkbox"/>



DOCUMENT REVISIONS

June 2, 2016	Review document, update forms, add Appendix G
November 28, 2019	Review document, update forms, add Noise Assessment Request link
March 26, 2020	Review, update format, and add Program Audit Checklist
April 8, 2021	Review, update format, and minor editing