Department of Environmental Health & Safety

NOISE CONTROL AND HEARING CONSERVATION PROGRAM

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OHIO UNIVERSITY
NOISE CONTROL AND HEARING CONSERVATION PROGRAM

1.0 SCOPE

This document establishes procedures, responsibilities, and requirements which are to be used by all OHIO University (OHIO) supervisors with personnel exposed to excessive noise during work at OHIO. The OHIO Noise Control and Hearing Conservation Program (HCP) is administered by the OHIO Department of Environmental Health & Safety (EHS). The Director of EHS shall designate a Noise Control and Hearing Conservation Program Administrator from among the EHS staff.

2.0 PURPOSE

The purpose of this standard is to define the requirements of the Noise Control and Hearing Conservation Program. It is designed to prevent noise exposure, protect personnel from hearing impairment or injury, to comply with the OSHA Noise Standard 29 CFR 1910.95, and maintain a safe and productive work environment. A summary of the requirements of the OSHA Noise Standard can be found in Appendix B.

2.1 The requirements of the OSHA Noise Standard will be complied with as a minimum.

2.2 The emphasis of the OHIO program is on Hearing Loss Prevention and Noise Control, not just Hearing Conservation as referred to by the OSHA Noise Standard.

2.3 Departments will make reasonable attempts at controlling nuisance noise levels, even if below the OSHA 85 dBA action level. EHS is available for noise control consultation.

2.4 Departments will not create/purchase new devices or initiate processes that create sources of high noise, as much as possible. Noise criteria and attenuation will be evaluated as needed before purchasing new equipment with potential to cause noise problems.

3.0 NOISE LEVELS

The maximum permissible noise exposure limit (PEL) for Ohio University employees are listed in table #1. 85 dBA is the action level (AL) which triggers the OSHA Hearing Conservation Program.

Table #1

DURATION (Hours)	SOUND LEVEL (dBA/TWA)
16	85
12	87.5
8	90
4	95
2	100
1	105
1/2	110

4.0 UNIVERSITY MEASUREMENT AND COMPLIANCE ACTIVITIES

4.1 AREA MONITORING

The first step in establishing a Noise Control and Hearing Conservation Program is to perform a general Sound Level Survey (SLS). This survey is conducted to identify areas where noise levels are loud enough to effect employee hearing (generally > 85 dBA). This is summarized in Appendix A. Contact EHS to evaluate exposures and arrange a noise survey if necessary. The following actions are required based on noise level:

4.1.1 For those areas surveyed which have noise levels less than eighty-five decibels A Scale (85 dBA), no further action is necessary. This does not mean that control of nuisance noise should not be undertaken if desirable.

4.1.2 For those areas identified during the SLS where noise levels are greater than 85 dBA, personal noise dosimetry must be conducted to determine eight hour time weighted average (TWA) exposures.

4.1.3 Those areas where noise levels are greater than 90 dBA must be posted with warning signs at all entrances, indicating "Hearing Protection is Required in this Area."

4.1.4 As sound levels change due to equipment and task differences, the survey should be repeated in order to determine what, if any, changes have occurred in an area's overall noise level. Contact EHS when making any significant changes in the workplace.

4.2 PERSONAL MONITORING

Eight hour TWA noise exposures must be determined for personnel working in areas with noise levels greater than 85 dBA. If the TWA exposure results are:

4.2.1 Less than 85 dBA, no further action, other than employee notification of results, are required.

4.2.2 Between 85 and 90 dBA, the following must be completed:

- Hearing protection made available to effected employees.
- Baseline and annual audiometric testing performed.

- Training for employees which should include effects of noise on hearing, selection and use of protection, and the purpose of audiometric testing. Arrange training through EHS as necessary. Noise training must be repeated annually thereafter for all employees in the program.

- Repeat noise dosimetry periodically.

- Notify employees of monitoring and audiometry results.

4.2.3 Above 90 dBA, the items listed in Appendix A, Step 2 shall be implemented. The use of hearing protection must be strictly enforced by the area supervisor. Where feasible, engineering controls should be investigated and implemented to reduce noise levels in the workplace. Contact EHS for assistance as needed.

- Same requirements as 4.2.2, plus others listed in Appendix A.

4.2.4 An employee dosimetry recordkeeping form is provided in Appendix C for supervisors to keep track of their employees' exposure experiences.

5.0 SELECTION OF HEARING PROTECTION DEVICES

5.1 Hearing protection selected must reduce noise levels to below acceptable noise exposure limits. If questions arise in the selection process, the Environmental Health and Safety Department should be contacted.

5.1.1 Ear muffs or plugs are acceptable if required noise reductions can be achieved.

5.2 Personal hearing protection devices must be provided and must be used in areas where noise exposure is greater than 90 dBA TWA until such time that engineering or administrative controls can reduce exposures to less than 90 dBA.

5.2.1 Personal hearing protection devices must be provided where noise exposure is greater than 85 dBA TWA. EHS recommends departmental policy to require use at greater than 85 dBA exposure.

5.3 For employees who have experienced a significant threshold shift, hearing protection must be sufficient to reduce exposure to 85 dBA (TWA) or less.

5.4 Other factors to be considered when selecting hearing protectors include:

5.4.1 Employees should have protection available for use, regardless of exposure levels in noisy area or for noisy activities. For example, for nuisance noise that bothers employees, reduces productivity, reduces morale, interferes with communications or workplace acceptability.

5.4.2 Employees should have a choice of protection devices.

5.4.3 Hearing protectors should fit properly so that maximum attenuation and comfort is provided.

5.5 Use of hearing protection as needed off the job should be encouraged.

6.0 AUDIOMETRIC TESTING REQUIREMENTS

6.1 All new employees who's positions require a physical receive, as part of the pre-employment physical examination from Occupational Health Services, a baseline audiometric test. This must be done within the first 6 months of employment.

6.1.1 Employees hired to work in areas posted as high-noise areas or who are exposed at or above 85 dBA, 8 hr. TWA, shall also receive a baseline audiogram within 6 months of employment.

6.2 Departments will determine those employees that are required (section 4.2.2.) to be tested due to personnel doses above 85 dBA. These personnel must receive an annual audiometric test as long as they work in the high noise area.

6.3 Audiometric test equipment, testing personnel, procedures, and medical follow-up shall meet the OSHA standard and appropriate professional recommendations. It is the responsibility of the audiometric testing service and the employees supervisor to insure this.

6.4 Audiometric testing conducted and paid for by OHIO departments shall be scheduled through Occupational Health Services. Any costs associated with these services must be borne by the employing department. Services outside the university (this is not recommended) must be approved through your dean, director, or department head and arrangements made for records to be coordinated with the OHIO Noise Control and Hearing Conservation Program at EHS

6.5 An employee audiometry recordkeeping form can be found in Appendix E for supervisors to keep track of their employees' annual audiograms.

6.6 Supervisors are responsible to insure that all their employees in the Noise Control and Hearing Conservation Program make and keep appointments for annual audiograms.

7.0 FOLLOW-UP PROCEDURES FOR EMPLOYEES HAVING SIGNIFICANT THRESHOLD SHIFTS

7.1. The affected employee must be informed by the audiometry service in writing within 21 days of the determination of the existence of a significant threshold shift (STS) by the audiometric testing personnel.

7.1.1 The audiologist or healthcare provider shall also notify OHIO EHS of any employees suffering a STS or other noise induced health effect as soon as possible in order to investigate the work area and comply with the requirements of the Noise Standard.

7.1.2 The employees supervisor is responsible to follow this up.

7.2 If the STS persists on a repeat audiogram after the employee has been out of the workplace for at least 24 hours, the affected employee should receive a clinical audiological examination to help determine the cause of the STS.

7.3 Training must be conducted as per section 4.2.2.

7.4 Hearing protection use must be required and enforced for these personnel.

8.0 TRAINING

8.1 EHS will provide for training as part of the Noise Control and Hearing Conservation Program.

8.2 Supervisors will insure that any employees working for them that are enrolled in the Noise Control and Hearing Conservation Program attend the training program annually. Supervisors shall also take the training periodically.

8.3 An employee training recordkeeping form can be found in Appendix D for supervisors to keep track of their employees' training.

9.0 BEST PRACTICES ENCOURAGED

9.1 Emphasis is on hearing loss prevention, not just hearing conservation.

- Emphasis on noise reduction, conducive to a learning/study environment (university, library, etc.) and a residential setting shall be encouraged and supported

9.2 Departments should review all newly purchased equipment, machinery, or building materials being considered for purchase for acoustic properties with an eye toward noise reduction. Avoid creating new noise hazards, especially in academic, study, or residential areas.

9.3 Engineering controls to reduce high noise levels are desirable, regardless of noise levels or standards.

9.4 The Noise Control and Hearing Conservation Program will be reviewed periodically (Appendix F) by EHS. Department Directors or Supervisors should review their programs and records annually if they have employees in the Noise Control and Hearing Conservation Program.

10.0 RECORDKEEPING

10.1 Although employee monitoring and training records for the OHIO Noise Control and Hearing Conservation Program are kept at EHS and the various OHIO hearing testing departments keep audiograms, it is recommended that supervisors keep their own records using forms supplied in this document, as a management tool.

10.2 Supervisors are responsible for seeing that their employees in the program get their audiograms and training annually (consequently, keeping records is important!)

11.0 OHIO UNIVERSITY – AREAS CURRENTLY INVOLVED

11.1 Laushe Heating Plant

- Stationary sources
- Engineering controls include sound enclosure rooms and box enclosures around induction fans and noise blankets around pressure reduction value in the basement.
- Engineering control needs – sound resistant control room being considered for future.

11.2 Ridges Heating Plant

- Stationary sources
- Few workers at this site, less time spent in building itself
- Some equipment abandoned/not used

11.3 Groundskeeping

- Mobile sites
- Sources include riding lawnmowers, pushpower mowers, tractors, athletic field machines, trenching and digging equipment, weed wackers, chain saws, leaf blowers, chippers, and leaf suction truck.

11.4 Facilities Management

- Control Shop
- AC Shop
- Recycling

11.5 Other Areas (tested, but not currently regulated to date)

- Dining Hall dishrooms
- Print Shop
- Upholstery Shop
- Wood Shops
- Food Preperation

11.6 Some of these areas may exceed AL85dBA at times, but due to short employee exposures in these areas, limits are not exceeded. EHS recommends voluntary provision of hearing protectors and continued efforts to engineer noise reductions during renovations, changes, and equipment purchase.

SUMMARY OF HEARING LOSS PREVENTION PROGRAM REQUIREMENTS BASED ON MONITORING RESULTS

QUICK REFERENCE

STEP I PERFORM SOUND LEVEL SURVEY

If noise levels are:

Less than (<) 85 dBA	No action necessary Repeat survey if significant changes in noise levels occur
Greater than (≥) 85 dBA but less than (<) 90 dBA	Perform noise dosimetry on affected personnel. Proceed to Step II.
Greater than (>) 90 dBA	Post "Hearing Protection Required" signs. Proceed to Step II.

STEP II PERFORM REQUIRED NOISE DOSIMETRY

If eight (8) hour time weighted average (TWA) noise exposures are:

Less than (<) 85 dBA	-No further action is necessary
Greater than (≥) 85 dBA but less than (<) 90 dBA	-Provide hearing protection -Provide annual training -Provide audiometric testing -Annual or periodic resurvey recommended
Greater than (>) 90 dBA	-Must use engineering or administrative controls where possible -Provide and insure use of hearing protection -Provide annual training -Provide audiometric testing -Annual or periodic resurvey recommended

OCCUPATIONAL NOISE EXPOSURE COMPLIANCE ASSISTANCE GUIDELINE

GUIDELINE ONLY: **THIS OCCUPATIONAL NOISE EXPOSURE COMPLIANCE GUIDELINE IS INTENDED AS A GUIDE TO ASSIST EMPLOYERS IN DEVELOPING AN INITIAL OCCUPATIONAL NOISE EXPOSURE PROGRAM OR FOR EVALUATING AN EXISTING OCCUPATIONAL NOISE EXPOSURE PROGRAM. COMPLETE TEXT OF OCCUPATIONAL NOISE EXPOSURE STANDARD MUST BE CONSULTED FOR COMPLIANCE WITH THE RULE.**

OBTAIN A COPY OF OCCUPATIONAL NOISE EXPOSURE STANDARD, 29 CFR 1910.95. READ/REVIEW.

The employer shall protect all workers from occupational noise exposure that exceeds an 8-hour time weighted average (TWA) of 90 decibels (dBA).

To protect workers the employer shall: (a) monitor noise exposure, (b) institute control measures, and (c) implement a hearing conservation program (HCP) when occupational noise exposure exceeds an 8-hour TWA of 85 dBA.

MONITOR NOISE EXPOSURE

- Monitor noise to determine level of exposure to employees.
- Calibrate all sound measuring equipment before and after each use according to the manufacturer's instruction.
- Measure noise exposure levels with a dosimeter and/or a sound instrument with an A-weighting network.

CONTROL

The employer shall institute engineering and/or administrative controls whenever possible. If these controls fail to reduce employee noise exposures to an 8-hour TWA of 90 dBA or less, then the employer shall provide and enforce the use of hearing protectors that attenuate employee exposure to at least an 8-hour TWA of 90 dBA.

ENGINEERING CONTROLS

- Use technology to reduce noise levels.
- Keep machinery in good maintenance repair to reduce noise.
- Erect total or partial barriers to confine noise.

ADMINISTRATIVE CONTROLS

- Limit employees scheduled work time in a noisy area.
- Limit noisy operations and activities per shift.

PERSONAL PROTECTIVE EQUIPMENT

- Provide at no cost to the employee a selection of hearing protection appropriate for noise levels in the environment.
- Provide training on the selection, fitting, use, and care of hearing protectors.
- Ensure that protectors are worn.

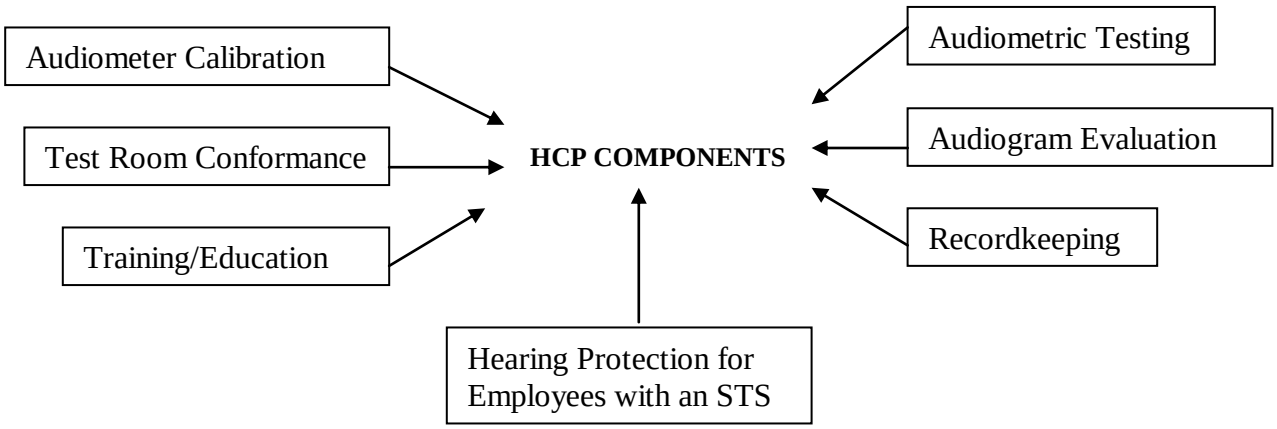
IMPLEMENT A HEARING CONSERVATION PROGRAM

To protect workers whose noise exposure equals or exceeds an 8-hour TWA of 85 dBA the employer shall implement a continuing, effective hearing conservation program (HCP).

MONITORING NOISE EXPOSURE

- Use only measuring instruments that meet the American National Standard Institute (ANSI) specifications.
- Use a sampling strategy that will pick up all continuous, intermittent, and impulsive sound levels from 80-130 dBA, and include all of these sound levels in the total noise measurement.
- Permit employees or their representatives to observe monitoring.

- Notify employees of noise exposure at or above 8-hour TWA of 85 dBA.



AUDIOMETER CALIBRATION

- Perform a biological calibration of the audiometer's functional operation by testing a person with known, stable hearing thresholds and listening to the audiometer's output to determine if there are distorted or unwanted sounds present.
- Acoustical calibration must be done at least annually and whenever a deviation of 10 dBA or greater is found during the biological check.
- An exhaustive calibration must be done at least every two years and whenever there is a 15 dBA change in the acoustic calibration of the audiometer.

TEST ROOM CONFORMANCE

- Audiometric tests shall be administered in a room meeting OSHA requirements for background noise levels (see appendix D in 29 Code of Federal Regulation (CFR) Part 1910.95).

AUDIOMETRIC TESTING

- Provide free of cost to employees with noise exposure equal to or above an 8 hour TWA of 85 dBA.
- Calibrate audiometer to meet ANSI standards.
- Use only a licensed or certified audiologist, otolaryngologist, other physician, or a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation or has demonstrated competence in performing audiometric testing.
- Precede baseline testing by at least 14 hours without workplace noise exposure.
- The use of hearing protectors during work hours may substitute for the 14-hour requirement.
- Establish a baseline within 6 months of first exposure or within one year if using a mobile van to test. Hearing protection must be worn from the sixth month until testing is performed.
- • Obtain an audiogram annually from the baseline date.

AUDIOGRAM EVALUATION

- Compare subsequent audiograms to the baseline audiogram to determine if there is a change in hearing threshold of 10 dBA or greater in either ear at 2000, 3000, and 4000 Hertz (known as a standard threshold shift (STS)).
- Notify the employee in writing within 21 days if a determination of an STS is made.
- If an STS exists, the employer may retest the employee within 30 days and use the test results as the annual audiogram.

FOLLOW-UP OF EMPL0YEES WITU AN STS

- Employees not already using hearing protection 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 their use and provided with hearing protectors offering greater attenuation if necessary.
- The employee shall be referred for a clinical audiological evaluation or otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or is 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 protection is suspected.

TRAINING/EDUCATION

- Implement a training and education program for those employees whose noise exposure equals or exceeds 85 dBA.
- Repeat training/education program annually for employees included in HCP.
- Include in the training program the effects of noise on hearing; the purpose of - hearing protectors, their advantages and disadvantages; attenuation of various hearing protectors, and instructions on how to select, fit, use, and care for them; and the purpose of audiometric testing and an explanation of the testing procedure.

RECORDKEEPING

- Audiometric test records shall include: name and job classification of employee, date of the test, examiner's name, date of the last acoustic or exhaustive calibration o£ the audiometer, and the employees' most recent noise exposure assessment.
- Retain audiometric test records for the duration of the affected employee's employment.
- Retain noise exposure measurement records for two years.
- Record and maintain test room background noise measurements.
- Provide access to audiometric test records and noise exposure measurement records upon request to the employee, former employees, employee's designated representative, of the Assistant Secretary of Labor for Occupational Safety and
  Health.

DEFINITIONS

ACOUSTICAL CALIBRATION. A procedure by which an audiometer is checked to determine if it is producing the correct intensity level of pure tones, at specified frequencies, and that the signals are free from distortion and unwanted sounds.

ANSI. An abbreviation for the American National Standards Institute; a standards making body.

ANNUAL AUDIOGRAM. An audiogram performed yearly following a baseline audiogram.

AUDIOLOGIST. A professional specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or 1icensed by a state board of examiners.

AUDIOMETER. An electroacoustical generator of pure tones at selected hearing frequencies and of calibrated output used for the purpose of determining an individual's threshold of hearing.

A-WEIGHTED SOUND LEVEL METER. An instrument that measures sound pressure levels in decibels using an A-weighting network which attenuates low frequency sounds in a manner similar to the human ear.

BASELINE AUDIOGRAM. An audiogram against which future audiograms are compared.

BIOLOGICAL CALIBRATION. An audiometer calibration that tests the audiometer's output using an adult with known normal hearing who has not been exposed to noise and has no history of ear disease. .

CALIBRATE. To check noise measurement equipment and audiometric testing equipment for accuracy and uniformity.

dBA. An abbreviation for decibels measured with a sound level measuring instrument with an A-weighting network.

DECIBEL (dB). Unit of measurement of sound pressure level.

EXHAUSTIVE CALIBRATION. A procedure by which an audiometer is sent to a laboratory or manufacturer's factory for actual adjustments to conform to the ANSI S.3.6 Standard.

HERTZ (Hz). A unit of frequency; synonymous term for cycles per second.

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.

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.

INFORMATION SOURCES

Title 29, Code of Federal Regulations (CFR) Part 1910.95 (Occupational Noise Exposure)

OSHA-2056	All About OSHA
OSHA-2098	OSHA Inspections
OSHA-3074	Hearing- Conservation
OSHA-3077	Personal Protective Equipment
OSHA-3021	OSHA: Employee Workplace Rights
OSHA-3000	Employer Rights & Responsibilities Following an OSHA Inspection
OSHA-3110	Access to Medical and Exposure Records

A single free copy of the above materials can be obtained from the OSHA Publications Office, Room N3101, 200 Constitution Ave. N.W., Washington, DC, 20210, (202) 523-9667; or call your Local OSHA Area Office (listed under the U.S. Department of Labor in the telephone book).

*U.S. GPO: 1991-519-701/20406

PERIODIC NOISE MONITORING DATA

Department Name_____

Name	Emp. #	Results to Employee Date	Monitoring Date	TWA8 (dBA)	Dose (%)

***Individual monitoring printouts/reports located : EHS, Hudson Health Center**

***Individual employee monitoring results sent to the employee's supervisor for distribution to employees within 5 working days.**