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1. Purpose

The purpose of this program is to establish minimum requirements for the University of Utah Hearing Conservation Program in order to maintain safe working conditions and prevent occupational hearing loss.

2. Scope:

The requirements of this program apply to all University employees exposed to occupational noise levels in excess of 85 dBA.

3. References

29 CFR 1910.95 – Occupational Noise Exposure

4. Definitions

Action Level: any noise exposure exceeding 85 dBA as an 8 hour time weighted average

Administrative Controls: Changes by management in work schedules or procedures that reduce employee exposure to hazards.

Affected Employee: An employee whose job requires them to be in the presence of hazardous noise, operate or use machines or equipment which produce sound waves that meet or exceed established regulatory limits.

Auditor: An individual with the responsibility to check districts, departments and individual areas to ensure compliance with all relevant rules, laws and guidelines.

Annual Audiogram: An audiogram performed at least annually, that is compared against baseline audiograms.

Baseline (Reference) Audiogram: An audiogram free from auditory fatigue and other transient otologic pathology, against which future audiograms are compared.

Canal Caps: An auditory protective device that blocks noise at the outer ear opening. As it does not extend into the ear canal it is less effective than some other devices.

Decibel (dB): A unit of measurement of sound pressure level. The sound pressure level, in dB, is equal to 20 times the common logarithm of the ratio of the existing sound pressure to a reference sound pressure of 20 micro-pascals.

Decibel A-weighted (dBA): The standard abbreviation for sound levels measured with an instrument set to the surrounding background environment (A-weighting Network). The A weighting network reduces the contribution of total noise or sound of lower frequencies or lower background noise that does not have detrimental auditory risk, which are of less concern for hearing conservation.

Decibel Peak (dBp): Standard abbreviation for peak sound level. Used in the measurement of impulse noise.

Ear Muffs: An auditory protective device that covers the entire ear limiting total sound received. For this device to be most effective the entire opening must be covered.

Ear Plugs: A device that is meant to be inserted in the ear canal to protect the user's ears from loud noises.

Engineering Controls: Specialized equipment designed to reduce employee exposure to hazards.

Hazardous Noise Level: Exposure to steady state noise equivalent to 85 dBA as an 8 hour time weighted average, or a single exposure at 140 dBA.

Hazardous Noise Area: Any work area where workers have the potential for exposure to hazardous noise levels.

Hertz (Hz): A unit of measure of frequency, numerically equal to cycles per second.

Impulse Noise: A short burst of an acoustic energy consisting of either a single impulse or a series of impulses. The pressure time history of a single impulse includes a rapid rise to a peak pressure, followed by a somewhat slower decay of the pressure envelope to ambient pressure, both occurring within 1 second. When the intervals between impulses are less than 500 milliseconds, the noise is considered continuous, excepting short bursts of automatic weapons fire, which are considered impulse noise.

NIOSH: National Institute for Occupational Safety and Health.

Permanent Hearing Loss: A permanent threshold shift usually caused by hazardous noise exposure. This threshold shift can be caused by hazardous noise exposure over time or by impulse noise that exceeds 140dBp, or can be the result of insufficient auditory rest or age. This change in threshold makes it impossible to perceive frequencies that were in previous threshold range.

Permissible Exposure Limit (PEL): Established by OSHA, PELs are the maximum allowable concentrations of dangerous noise that an employee can be exposed to without harmful effects during an 8-hour period. The OSHA PEL for noise is 90 dBA as an 8 hour time weighted average.

Physician Licensed Health Care Professional (PLHCP): Physician or other licensed health care professional, legally permitted to independently provide some or all of the health care services required by this program.

PPE: Personal Protective Equipment. Any equipment used to protect an employee from danger, including hard hats, boots, gloves, ear plugs, goggles, and respirators.

Program Audit: Reviews a program within districts, departments and individual areas to ensure that it meets all the required rules and applications of the program. The auditor specifically looks at three main areas a) technical merit and appropriateness, b) completeness and accuracy, c) feasibility. Audits can be done on request, scheduled or occur spontaneously based on need.

Program Administrator: Is the individual responsible for planning, implementing, and evaluating the hearing conservation program for a given area, shop, district, lab, etc.

Qualified Technician: A person that is able to perform assessments of working conditions for hazards and be able to maintain appropriate equipment used for assessments.

Standard Threshold Shift (STS): When there is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more a 2000, 3000 and 4000 Hz in either ear.

Temporary Hearing Loss: A temporary loss of hearing due to noise exposure.

Time Weighted Average (TWA): A weighted average exposure level over a given amount of time, usually 8 hours.

5. Roles and Responsibilities

A. Principal Investigators, Managers, Supervisors or their designee:

1. Identify, in association with OEHS as needed, situations where hearing conservation may be required
2. Implement, and maintain, a Hearing Conservation Program as required in this rule
3. Ensure areas under their management are in compliance with the requirements of this rule
4. Commit resources required to ensure hearing conservation and regulatory compliance
5. Establish programs and designees for dissemination of hearing protection information and required training
6. Establish methods for implementation of hearing conservation program
7. Identify a program administrator qualified to supervise the hearing protection program and maintain records of training, evaluations and annual audiometric testing documentation
8. Ensure all employees participate in any required training
9. Ensure all employees comply with the requirements of this program
10. Providing initial hearing conservation training and annual refresher training

11. Maintaining all records as required in this rule
12. Maintain a written Hearing Conservation Program and Worksite specific procedures with instructions for each work area requiring hearing protection
13. Notify OEHS of any issues or changes in work processes that would impact observed noise levels

B. Staff:

1. Participate in all required training
2. Comply with all the requirements of the program
3. Wear all required PPE in accordance with the program and worksite specific procedures
4. Properly maintain hearing protection equipment
5. Report concerns to their supervisor

C. OEHS

1. Review annually this rule and update as necessary based on changes to the regulations and/or changes in OSHA regulatory interpretations in order to ensure that the program complies with all applicable local, state and federal regulations.
2. Conduct periodic program compliance audits
3. Maintain historical exposure assessment records
4. Assist with identification of hazardous noise areas and work site specific procedures as needed
5. Provide advice and counsel in selection of appropriate audiometric testing services, retesting, and problematic audiograms

6. Rule

The hearing conservation program requires the following:

- A. Personal (and/or area as appropriate) exposure monitoring for all employees whose noise exposure is equivalent to or greater than the action level. Exposure levels must be reassessed whenever procedures, equipment, etc. changed. Contact OEHS to schedule noise monitoring as needed
- B. Audiometric testing for all employees exposed to noise at or above the action level, is required within the first 6 months of an employee's first exposure to noise at or above the action level. Including, but not limited to, baseline audiograms, annual audiograms, training, and follow up procedures. Audiometric testing is provided at no cost to all employees who are exposed at or above the action level. All audiometric testing must be provided, and reviewed, by a licensed or certified audiologist, otolaryngologist, or other qualified PLHCP
- C. Annual audiograms must be conducted for all employees exposed at or above the action level
- D. Fit or refit any employee showing a Standard Threshold Shift (STS) with adequate hearing protectors, show the employee how to use them, and require the employee to wear them
- E. Notify employees within 21 days after the determination that their audiometric test results show an STS
- F. Provide hearing protectors to all workers exposed at or above the action level. Employees must wear hearing protectors:

1. For any period exceeding 6 months from the time they are first exposed to 8-hour TWA noise levels of 85 dB or above, until they receive their baseline audiogram
 2. If they have incurred standard threshold shifts that demonstrate they are susceptible to noise; and
 3. If they are exposed to noise over the permissible exposure limit of 90 dB over an 8-hour TWA
- G. Provide employees with a selection of a variety of hearing protection devices. Employees should decide, with the help of a person trained to fit hearing protectors, which size and type protector is most suitable for the working environment. The protector selected should be comfortable to wear and offer sufficient protection to prevent hearing loss. Hearing protectors must adequately reduce the noise level for each employee's work environment
- H. Reevaluate the suitability of the employee's hearing protector whenever a change in working conditions may make it inadequate.
- I. Training of employees in the proper use and care of hearing protection and ensure that they continue to wear them correctly
- J. Training of employees on the hazards associated with exposure to excessive noise, the purposes of hearing protection, the advantages and disadvantages of certain types of hearing protection, and the requirements of this program.
- K. Supervisors must maintain all records as follows:
1. Exposure assessment records – maintain for 2 years
 2. Audiometric testing records (baseline and annual) – maintain for the duration of an employee's employment



HEARING CONSERVATION PROGRAM

Area Specific Procedure for:

(list area, shop, district, etc.)

I. PURPOSE

The purpose of this hearing conservation program is to prevent occupational hearing loss and ensure University of Utah complies with OSHA Standard CFR 1910.95, Occupational Noise Exposure.

Hearing conservation program administrator name: _____

Contact information: Phone _____ email _____

II. NOISE MONITORING

A. Surveys

OEHS will conduct noise surveys in areas with the potential for noise exposure

Include the results of the monitoring below, or in an attached appendix to this document:

| Date of survey: | Name of individual, location, or task surveyed | Observed noise level (dBA – as an 8hr TWA) | Method of survey (dosimetry, SPL meter, etc.) |
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B. Monitoring

1. When information indicates any employee's exposure may equal or exceed an eight-hour time weighted average of 85 decibels, a monitoring program will be implemented
2. Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, representative sampling will be used to comply with the monitoring requirements of the standard unless sampling produces equivalent results
3. Monitoring must be conducted in compliance with 29 CFR 1910.95
4. Instruments used to measure employee noise exposure will be calibrated to ensure measurement accuracy
5. Monitoring will be repeated whenever a change in production, process, equipment or controls increases noise exposure to the extent that:
 - a. Additional employees may be exposed at or above the action level; or
 - b. The attenuation provided by the hearing protection devices being used by employees may be rendered inadequate to meet the requirements of paragraph (j) of the standard.

III. AUDIOMETRIC TESTS

A. Testing

1. Audiometric testing will be conducted at least annually at no cost on all employees whose exposures equal or exceed an 8-hour time-weighted average TWA of 85 decibels (Action level).
2. Audiometric tests will be performed by:

(Specify 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). 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.

B. Baseline Audiogram

1. A baseline audiogram will be conducted within 6 months of an employee's first exposure at above the action level in order to establish a valid baseline audiogram against which subsequent audiograms can be compared
2. Testing to establish a baseline audiogram will be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise
3. The supervisor/PI will notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination

IV. AUDIOMETRIC EVALUATION

A. Baseline Audiogram Comparison

1. Annual audiograms will be compared to the baseline audiogram to determine if a standard threshold shift had occurred. Standard threshold shift is defined as a change in hearing threshold relative to the baseline threshold of an average of 10 dB of more at 2000Hz, 3000Hz, and 400Hz. The technician who is administering the audiometric test may do the comparison
2. Comparison of an annual audiogram to an audiogram from the preceding year is not acceptable unless the audiogram of the preceding year is the baseline audiogram
3. Baseline audiograms may be revised if in the judgment of the audiologist, otolaryngologist or physician, the standard threshold shift is deemed to be persistent or if there is significant improvement in subsequent audiograms
4. Retesting may be done within thirty days after the annual audiogram to determine if the annual audiogram should be regarded as valid. If the follow up audiogram shows improvement, it may be used as the annual audiogram. Consult with OEHS if retesting is needed
5. Evaluation of problem audiograms will be done by a PLHCP to determine if there is a need for further evaluation. The evaluator will be provided with the following information:
 - a. A copy of the hearing conservation amendments to the noise standard
 - b. The baseline audiogram and the most recent audiograms of the affected employee
 - c. Measurements of the background sound pressure levels in the audiometric testing room or chamber (which the vendor should be able to supply, and
 - d. The record of audiometer calibration as prescribed in the noise standard, paragraph (h)(5)
6. Follow-up procedures. If there is a standard threshold shift, the following must occur:

- a. In writing inform the affected employee of any standard threshold shift within 21 days of receipt of the results by PLHCP. The employee will also be informed of what will be done as a consequence (e.g. provide repeat testing within 30 days). A Standard Threshold Shift letter is an appropriate method of documenting this information to the employee. A copy of the letter must be forwarded to the employee's supervisor
- b. Unless the PLHCP has made a determination that the standard threshold shift is not work related, the following steps will be taken:
 1. Hearing protection will be provided for all affected employees not already using them
 2. Employees will be fitted and trained in the care and use of the protective devices
 3. Protective devices are required to be used as a condition of employment
 4. Refitting and retraining will be provided for all employees who are already wearing hearing protection; hearing protection devices with greater attenuation will be provided
 5. If additional testing is necessary or if there is reason to believe that there is a medical pathology that is created or aggravated by the use of hearing protection devices, the employee will be referred to the PLHCP for a clinical audiological evaluation
 6. The employee will be informed of any need for further otological examinations that might result from determination of a medical pathology that is not related to the use of hearing protection devices
 7. Hearing loss will be entered on the OSHA 300 log if determined to be work related and as required
 8. If subsequent audiometric testing of employees who have noise exposures that are less than 85 dBA as an eight hour weighted average are determined to have improved, the affected employees will be informed of the new audiometric determination and may discontinue the use of required hearing protection

V. CONTROLS

OEHS is available to assist with identification of appropriate controls

A. Engineering Controls

Whenever feasible, engineering controls such as acoustic baffling should be used

B. Administrative Controls

In situations where engineering controls are not feasible, administrative controls should be utilized. Administrative controls include, but are not limited to:

1. Time restriction within a given hazardous noise area. In situations where this control is utilized, signage must be posted indicating the maximum allowable time within the hazardous noise area (such as a mechanical room)

2. Time restriction for a given task. If this control is utilized then additional training must be provided to all impacted personnel to ensure that they understand the time restrictions for a given task
3. Job rotation – rotation of employees through various tasks or areas with differing noise levels

C. Personal Protective Equipment

In situations where engineering and administrative controls are not feasible, appropriate hearing protection must be utilized.

1. In situations where hearing protection is required, proper use of hearing protection is a condition of employment. Failure of employees to wear required hearing protection may result in disciplinary action.
2. Hearing protection will be available on request for all employees who work in areas or at operations in which their noise exposure equals or exceeds 85 dBA as an eight hour average.
3. A choice of several types of hearing protective devices will be provided to allow employees to select the most comfortable hearing protection. It is recommended that at least two types of earplugs and one type of earmuff be made available.

a. List types of PPE provided:

b. List location of provided PPE (where can employees get required PPE):

c. Hearing protection is required for the following areas/tasks:

| Area/Task: | Type of hearing protection required: |
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d. Affected Employees – list all employees affected by the requirements of this program:

| Name: | Job Title: |
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4. Hearing protectors must be capable of providing attenuation to at least 85 dBA. A choice of several types of hearing protection devices is provided to allow employees the most comfortable style or type. Employees are encouraged to try different types in order to determine their preference
5. Procedures for defining the appropriate attenuation rating are provided in Appendix B of the noise standard (1910.95)
6. The supervisor/PI, in consultation with OEHS as needed, will evaluate the attenuation characteristics of the hearing protection devices to ensure that a given device will reduce the employee’s exposure to the required decibel level

VI. EMPLOYEE TRAINING

- A. An annual training program will be provided for all employees who are exposed to noise levels at or above an eight-hour average of 85 dBA
- B. Training will be conducted by the supervisor/PI, with assistance from OEHS, or vendor, as needed, and will include information on:
 1. The effects of noise on hearing
 2. The purpose and use of hearing protectors
 2. The advantages and disadvantages of various types of protection
 3. Instruction in the selection, fitting, use and care of protectors
 4. The purpose of audiometric testing and an explanation of the test procedures
- C. All employee training must be documented using the employee training log in appendix A of this program
- D. The training program will be repeated annually for all employees exposed to noise at or above the action level

The following information must be made available as a part of the training program:

1. A copy of the OSHA Noise Standard 1910.95
2. Any informational materials pertaining to the standard that are provided by OSHA
3. A copy of The University of Utah Hearing Conservation Rule and this area specific program.

VII. RECORDKEEPING

A. Noise exposure measurements, as provided by OEHS, will be maintained for two years. Exposure data should be included in Appendix B of this document

B. Audiometric testing records, as provided by the PLHCP, must be maintained by the supervisor/PI for the duration of an employee's employment in Appendix C of this document

The record of audiometric testing must include the following:

1. The name and job classification of the employee
2. The date of the audiogram
3. The examiner's name
4. The date of the last acoustic or exhaustive calibration of the audiometer
5. The employee's most recent noise assessment
6. An accurate record of the background measurements in the testing room or chamber

Appendix A – Training Log

Appendix B – Noise exposure assessments

Appendix C – Employee Audiograms

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