CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO

Environmental Health and
Safety Department

Hearing Conservation Program

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Hearing Conservation Program
Review and/or Update Log

The Hearing Conservation Program shall be review and updated at least every three years. The revision and update shall be documented in the form blow:

Date	Revised by:	Approved by:	Program reviewed* (x)	Program updated**	Comments:

*Review: Program was either edited for grammatical errors and formatting, small changes occurred
** Update: Program was edited for changes in content
We certified at the time of review, the information provided on this plan is complete and accurate

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1) Regulatory Authority

Title 8, California Code of Regulations, Sections 5097 through 5100, 3203 and Title 28 Code of Federal Regulations Section 1910.95

2) Administering Agency

California Occupational Safety and Health Agency (CAL/OSHA)

3) Environmental Health and Safety Policy

It is the policy of California State University, San Bernardino to maintain, insofar as it is reasonably within the control of the University to do so, a campus environment for students, faculty, staff and visitors that will not adversely affect their health, safety, and surrounding environment or subject them to available risks of accidental injury or illness.

4) PURPOSE

The Hearing Conservation Program (HCP) establishes requirements which when implemented prevent, and/or minimize employee hearing loss from exposure to damaging noise in the workplace. The key elements of this program are sound level surveys, personal noise exposure assessments, labeling, low-noise production purchasing requirements and engineered noise reduction, hearing protective equipment, hearing conservation training, and periodic audiometric testing.

5) SCOPE

This program applies to all campus areas, equipment, and personnel. The University shall identify and post equipment and areas in which sound levels are above 85 A-weighted decibels (dBA). When possible, engineering controls or design engineering will be used to reduce the noise source. When noise can't be reduced effectively in this manner, the use of hearing protectors will be required to ensure time weighted average exposure is less than 85 dBA.

6) DEFINITIONS

STANDARD THRESHOLD SHIFT is recorded when the hearing threshold has changed (relative to the baseline) an average of 10 dB at 2000, 3000, and 4000 Hz in either ear, or a 25 decibel change in any of those same frequencies. If an STS is detected, testing will be repeated within 30 days to verify that the loss is permanent.

TEMPORARY THRESHOLD SHIFT (TTS) is a short-term loss of hearing, but which is not permanent. A loss may be observed on an audiogram, but would not be verified when retested on an alternate day. TTS is effectively a warning the body has exceeded its limits. TTS is common when employees are exposed to impulse-impact noises, or to high noises without hearing protection to reduce the exposures. TTS can take as long as three weeks to fully recover, and over time TTS will become permanent.

RECORDABLE THRESHOLD SHIFT is recorded on the OSHA 300 Log when an employee has experienced a work-related standard threshold shift in one or both ears, and the employee's average threshold of hearing is 25 decibels (at 2000, 3000, and 4000 Hz) or greater. The 25 decibel threshold is not adjusted for age-related hearing loss. Once the threshold is verified, the loss is recorded on the OSHA 300 Log.

ENGINEERING CONTROLS: Noise levels can be controlled by making changes in a piece of machinery, the way the machinery operates, or the design of the structure in which the machinery is housed. Engineering controls include barriers, damping, isolation, muffling, noise absorption, mechanical isolation, variations in force, pressure or driving speed, or a combination of these controls to reduce noise emissions.

ADMINISTRATIVE CONTROLS: Administrative controls limit the length of time workers are exposed to noise in the work area. This involves assigning the worker to less noisy areas in the workplace so that the average of his/her daily exposure is less than the permissible exposure limit.

PERSONAL PROTECTIVE EQUIPMENT: When engineering and/or administrative controls either fails to reduce noise to within required limits or are not technologically feasible, hearing protectors must be used.

When either earmuffs or ear plugs are used, the department should have a sufficient variety to ensure that workers can obtain a good fit. Protective devices should be both effective and comfortable. Sized ear plugs are made of soft, flexible materials which will conform to the shape of the wearer's ear canal, they can be thrown away after each use, and are designed to fit all types and sizes of ears.

When ear muffs are used, make sure that the seal between the muff and the head is tight. Long hair, glasses, and other obstructions may diminish the effectiveness of the device.

7) RESPONSIBILITIES

Environmental Health and Safety

- Coordinates the campus Hearing Conservation Program.
- Provides consultation to departments according to their specific needs, including selection of hearing protection, audiometric testing intervals, and providing requisite training.
- Conducts noise surveys in response to department requests, or periodically as general noise surveys.
- Assists departments in developing methods for noise abatement, reduction or control
- Coordinates an audiometric testing program for affected employees, providing consultation and notification of exam results.
- Ensure new employee medical examination for positions identified in the HCP includes a baseline audiogram.
- Provide baseline audiogram for inclusion in the employee medical file.

Supervisors/Departments will:

- Ensure that noise control is considered when procuring equipment, machinery and tools. Technical specifications shall be reviewed for any equipment likely to produce more than 90 decibels. Equipment producing greater than 100 decibels shall be reviewed by EHS prior to purchase.
- Identify work areas that may expose employees to harmful levels of noise: notify EHS for noise survey.
- Implement noise abatement reduction or control methods.

- Notify Environmental Health and Safety that a future employee will need a baseline audiogram, and to include on intake physical examination. Ensure employees not receiving a baseline audiogram prior to beginning work; receive an audiogram baseline within the first two weeks of employment.
- Train or arrange training for employees covered by the HCP.
- Ensure employees comply with HCP procedures.
- Maintain and make available records of exposure measurements and audiometric tests.
- Maintain training records (including online training).
- Purchase and provide appropriate personal protective equipment to affected employees; enforce the use of such devices when required; ensure that such devices are kept in good repair and maintained in a sanitary manner.

Employees:

- Wear hearing protection whenever working with equipment or in environments identified as requiring hearing protection. (Typically, equipment and areas of with greater than 85 dB sound level.)
- Read and comply with all appropriate hearing conservation safety procedures while performing assigned duties.
- Use common sense and good judgment at all times.
- Provide feedback on the program's merit's and shortcomings to improve the program.
- Report unsafe conditions immediately to their supervisor.

8) ENGINEERING AND ADMINISTRATIVE CONTROLS

Engineering and administrative controls are recognized as the preferred methods of controlling noise exposure in the workplace. Prior to purchase of new equipment, a review of technical information on anticipated noise levels and noise abatement options available will be conducted. Engineering controls are implemented whenever feasible.

1 Examples of engineering controls most likely to be considered include: (1) maintenance and adjustment of machinery, (2) elimination or substitution of noisy equipment with quieter equipment, (3) vibration mounting, (4) barriers and partitions.

2 Examples of administrative controls include: (1) limiting employee's time in noise hazard area, (2) limiting duration of noisy operation, (3) increasing distance between employee and noise source(s).

9) SOUND LEVEL AND PERSONAL DOSIMETRY

EHS staff conduct sound level measurements of sound-generating equipment, work areas, and employee noise exposure in accordance with Cal-OSHA standards. Appendix E contains the most current area surveys.

Area or Equipment Sound Level Determinations:

1. Employees may request to observe the measurements or may request that a Union representative observe on their behalf. Employees will be notified of the sound level data.

2. When equipment or areas are identified as operating at or above 85 decibels (dBA), signs are posted and the equipment is tagged as requiring hearing protection (plugs or muffs).

3. Areas or equipment which operate at 100 dBA or greater are signed as requiring double hearing protection (plugs and muffs).

Personal Dosimetry:

4. Employee personal exposures are assessed by job classification periodically in an effort to capture the typical exposure that a job classification would receive while on the job. In order to ensure that no one is left unprotected, dosimetry (personal exposure data collection) is gathered on those classifications with the highest anticipated exposure first. EHS attempts to anticipate those classifications with noise exposure; however, when supervisors or employees feel they receive excessive noise exposure, they may make a personal exposure assessment request to EHS.

2 An exposure equal to or exceeding an eight-hour time weighted average (TWA) sound level of 85 decibels as per the Cal/OSHA criteria (5 dB exchange rate, threshold 80 dBA) identifies the job classification for MANDATORY inclusion in the HCP. Mandatory HCP job classifications are listed in Appendix A.

3. A supervisor or employee (or Union representative) can request to have an assessment of an employee who is thought to have an atypical exposure for that job classification. Reasons for this might be the employee does not utilize equipment typical of those within the job classification which may either make his/her exposure significantly greater or less than others in the classification.

4. When an employee's activities are such that a policy can be implemented that would limit noise exposure to a maximum number of hours per day, the employee may be removed from the mandatory hearing conservation program. This is an example of using administrative controls (as discussed below). Contact EHS to conduct a follow-up noise dosimetry.

10) AUDIOMETRIC TESTING

An audiogram is a medical test that measures hearing thresholds at various intensities and frequencies. The audiogram is used to measure the permanent effects of noise exposure on hearing. In essence, if a person's hearing thresholds remain constant, this is an indication that the employee's hearing is adequately protected from workplace exposure. The baseline audiogram is compared with the new threshold

11) PARTICIPANTS:

Mandatory Participants. Employees listed in the MANDATORY HCP job classifications (Appendix A) are required to submit to an audiogram annually.

Mandatory in the Absence of Dosimetry. Individuals in a job classification for which dosimetry has not been accomplished during the past three years, and who work with or around equipment generating sound levels greater than 85 dBA are automatically placed in the Mandatory annual audiometric testing program until dosimetry determines the appropriate audiometric testing interval for that job classification.

1. The cost for the audiogram is paid for by the applicable CSUSB department as a component of the Occupational Medical Monitoring Program.

2. A third-party audiometric testing company is contracted to provide our audiometric testing using the criteria required by Cal/OSHA. Hearing is checked at frequencies from 500 to 800 Hertz using an automated instrument.

3. Supervisors are to instruct employees to avoid loud noises for at least 14 hours prior to an audiogram. When an employee must be around noise above speech level intensity, hearing protection is required.

4. The potential for exposure to noise above 85 dB for any length of time exists in the following departments and areas:
    - Facilities Management – Trades and Maintenance Mechanics
    - Facilities Management – Grounds Maintenance and Auto Fleet Shop
    - Facilities Management – Heating and Air Conditioning
    - Facilities Management – Custodial Services
    - Printing Services – Duplicating Operators
    - Science Departments - Instructional Support Technicians
    - Visual Arts – Instructional Support Technicians
    - Performing Arts – Instructional Support Technicians

5. Employees or supervisors who believe an environment above 85 dBA TWA is present should notify EHS.

12) PROTECTIVE EQUIPMENT

Hearing protection is provided at no cost to all employees exposed to 85 decibels or greater - for any length of time. It is the individual department's responsibility to provide PPE. Hearing muffs are replaced as needed due to wear. Ear plugs are single-use and are to be disposed of after a single day's use or when contaminated.

Employees are required to use hearing protectors when exposed at or above 85 dBA or greater for any length of time - as indicated by either area signage or equipment labeling.

Supervisors shall enforce the use of hearing protectors. Supervisors will set a positive example by wearing hearing protection when entering or working in high noise areas.

Ear plugs must have an average attenuation of at least 26 dB. Ear muffs must have a minimum attenuation of 15. When a hearing loss has occurred, the sound level at the ear can be no more than 85 dB. The reduction can be accomplished by wearing either plugs and/or muff.

Employees are given a selection of several models of ear plugs and muffs from which to choose. Individually formed ear plugs can be procured on a case by case basis and at EHS discretion.

~~Note: University requirements for hearing conservation are more stringent than the Cal/OSHA standard.~~

13) TRAINING

Hearing conservation training includes the following:

- The effects of noise on hearing,
- The purpose of hearing protectors,
- Instruction on selection, fit, use and care of protective equipment,
- Audiometric testing,
- How to read and interpret an audiogram,
- Explanation of the Cal OSHA Noise Exposure Control Regulations.

14) DOCUMENTATION

CSUSB maintains records of personal exposure measurements in the employee's medical file. Sound surveys of areas are kept until new sound surveys are performed in a given area. CSUSB stores audiometric test records and evaluations for 30 years following employee termination or retirement. All records will be provided to employees, former employees or their representatives upon request as per the Occupational Medical Monitoring Program.

APPENDIX A: Hearing Conservation Program Participants

All employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels are provided an examination and an audiometric baseline following a 14-hour quiet period. Examinations are conducted by a licensed or certified audiologist, otolaryngologist, or other physician, or by a certified technician who is responsible to the above-mentioned professionals. Results of examinations are reviewed by the occupational health provider & EHS/Risk Management Individuals demonstrating significant changes in hearing are retested per the OSHA standard.

The following list identifies job classifications included in the **mandatory** Hearing Conservation Program. These job classifications are required to take an audiogram every year.

Job Classification	Date, Dosimetry	Activity
Grounds workers	2011, 2016, 2017	Lawn mowing, trimming, edging; leaf blowing

The following groups of employees are NOT currently including in the Hearing Conservation Program; however, they participated in EHS-directed noise dosimetry:

Job Classification	Date, Dosimetry	Activity
Music Department conductors	2016, 2017	Conducting the symphonic and jazz bands

APPENDIX B: Hearing Protection Available

Employees must wear hearing protection in areas where the sound level is above 85 dB. In some instances, it may be necessary to wear both earplugs and earmuffs.

Name	Type	Brand	NRR

CALIFORNIA STATE UNIVERSITY
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Environmental Health and
Safety Department

MEMORANDUM

DATE: _____

TO: _____

FROM: **Teresa Fricke**
Director, Envir. Health & Safety

SUBJECT: **Audiometric Test Declination**

As an employee of California State University San Bernardino, your job classification requires you to be part of the University's Hearing Conservation Program (HCP). The Hearing Conservation Program is an integral part of the Occupational Medical Monitoring Program, and as such, this program dictates that audiometric testing be offered at no charge to employees who have exposure to sound in excess of the daily permissible exposure limits. It is your right as an employee to decline participation in the audiometric testing program.

I understand that due to my occupational exposure to high levels of sound, I may be at risk of noise induced hearing loss. I have been given the opportunity to have my hearing tested at no charge to myself. However, I decline to have my hearing tested at this time.

I understand that by declining audiometric testing, I will not have the opportunity to have my hearing checked again at my employer's expense until the next scheduled testing interval. The next testing interval, will be in approximately_year(s); at that time, another opportunity to have my hearing tested will be made available to me.

_____	_____	_____
Print Name	Date	Signature

APPENDIX D: Hearing Conservation Online Training

All employees working in areas or on equipment at or above 85 dBA must be provided training in hearing conservation to establish a working knowledge sufficient to protect them from noise hazards. Training may be accomplished through formal classroom instruction and/or online.

The following employees are enrolled in the Hearing Conservation Program and have been trained using the SumTotal on-line training site at https://mycoyote.csusb.edu :

Printed Name	Date Trained	Signature	Audiogram Consult Date

On-line training consists of the following mandatory information:

A. The effects of noise on hearing
B. The purpose of hearing protection
C. The use and limitations of hearing protection
D. The fitting and care of hearing protective devices
E. The purpose and an explanation of audiometric testing
F. The OSHA Occupational Noise Standard
G. An explanation of workplace noise monitoring procedures
H. A point of contact to access monitoring data

EFFECTS OF OVEREXPOSURE TO HIGH NOISE ENVIRONMENTS

The effect of continued overexposure to noise is the destruction of the hair cells and a permanent loss of hearing. The first warning of hearing loss is often the inability to hear high frequency sounds. People with hearing deficiencies caused by overexposure to noise lose sensitivity to sound at about 4,000 Hz, the approximate frequency of a bird's song or a voice on the telephone. If the over-exposure continues, the range will gradually be extended until the entire hearing is affected. As more

and more hair cells of the inner ear are destroyed, the ability to hear is progressively and permanently reduced. Damaged hair cells cannot be repaired or replaced. As a person loses sensitivity to higher frequencies, sounds become distorted. He/she may be able to hear a conversation but unable to understand it. The use of a hearing aid makes the sound louder, but it will not clear the distortion.

READING AN AUDIOGRAM

0 dB level the "normal ideal" for the young adult

0 to 25 dB level within normal limits of hearing

26 to 40 dB level mild hearing loss

41 to 70 dB level moderate hearing loss

71 to 90 dB level severe hearing loss

91 and above dB level profound hearing loss

Comparison is between the baseline values and current. A higher number may be indicative of hearing loss. Speech frequencies are 2000, 3000 and 4000 Hz. The first sign of a loss is often at 4000 or 6000 Hz.

TYPICAL SOUND INTENSITIES

This list is provided as a guide only, actual noise levels may vary by manufacturer and condition/maintenance of machinery or equipment.

Shop Equipment	**Heavy Equipment**	**Specialized Equipment**
Table Saw 110-115 dB	Forklift 90 dB	Riding Mower 95-100 dB
Router 110-115 dB	Road Grader 90-95 dB	Weed Trimmer, Gas 95-100 dB
Band Saw 100 dB	Front End Loader 90-95 dB	Chain saw 110 dB
Hand Power Saw 110-115 dB		Shotgun 12 GA 140 dB
Planer 110-115 dB		
Chop-Saw 90-95 dB		
Power Drill 95 dB		
Grinder 100-110 dB		
Steam Cleaner 95 dB		

APPENDIX E: Real-Time Sound Level Meter Results by Area

The equipment utilized to survey the noise levels in these workplaces has been properly calibrated by a CSUSB EHS specialist or professional technical service representative prior to use. Measurements were taken at the employee point of operation.

DATE	LOCATION	OPERATION/ EQUIPMENT	dBA
Feb 2016	Grounds	Leaf blower	100.5
Feb 2016	Grounds	Weed trimmer	102.7
Mar 2017	Grounds	Riding lawn mower (w/blades engaged)	97.9
May 2016	Chemical Sciences	Research laboratory (noisy ventilation)	55-73
Apr 2006	Biological Sciences	Renovation project (drilling into concrete)	81-90
Jun 2011	Grounds	John Deere riding mower (1 blade)	87-89
Jun 2011	Grounds	John Deere riding mower (3 blades)	90-94
Jun 2011	Grounds	Backpack leaf blower	87-91