California State University, Bakersfield

Hearing Conservation Program

CALIFORNIA STATE UNIVERSITY
BAKERSFIELD
Safety and Risk Management

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Contents

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Hearing Conservation Program

1.0 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.

2.0 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 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.

3.0 AUTHORITY

Title 8 CCR, §3203, Injury & Illness Prevention Program
Title 8 CCR, §5097 through §5100, Occupational Noise Exposure
Title 8 CCR, §3380, Personal Protective Equipment
Title 29 CFR, §1904.10, Recordkeeping and Reporting Occupational Injuries and Illness
Title 28 CFR, §1910.95, Occupational Noise Exposure
Title 29 CFR, §1910.132, Personal Protective Equipment

4.0 RESPONSIBILITIES

Safety and Risk Management Office (S&RM) will:

1. Coordinate the campus Hearing Conservation Program.

2. Provide consultation to departments according to their specific needs, including selection of hearing protection, audiometric testing intervals, and providing requisite training.

3. Conduct noise surveys in response to department requests, or periodically as

4. general noise surveys.

5. Assist departments in developing methods for noise abatement, reduction or control.

6. Coordinate an audiometric testing program for affected employees, providing consultation and notification of exam results. Costs of exams are borne by individual departments.

7. Maintain and make available records of exposure measurements and audiometric tests.

8. Maintain training

records.

Supervisors/Departments

will:

1. 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 S&RM prior to purchase.

2. Identify work areas that may expose employees to harmful levels of noise: notify S&RM for noise survey.

3. Implement noise abatement, reduction or control methods.

4. Notify Human Resources 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.

5. Train or arrange training for employees covered by the HCP.

6. Ensure employees comply with HCP procedures.

7. 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 will:

1 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.)

2 Read and comply with all appropriate hearing conservation safety procedures while performing assigned duties.

3. Use common sense and good judgment at all times.

4. Provide feedback on the program's merit's and shortcomings to improve the program.

5. Report unsafe conditions immediately to their supervisor.

Human Resources will:

1 Ensure new employee medical examination for positions identified in the HCP includes a baseline audiogram.

2 Provide baseline audiogram to S&RM for inclusion in the employee medical file.

5.0 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 are: (1) limit employee's time in noise hazard area, (2) limit duration of noisy operation, (3) increase distance between employee and noise source(s).

6.0 SOUND LEVEL AND PERSONAL DOSIMETRY

Safety and Risk Management staff conducts 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:

1. 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. S&RM attempts to anticipatethose classifications with noise exposure; however, when supervisors or employees feel they receive excessive noise exposure, they may make a personal exposure assessment request of S&RM.

2 An exposure equal to or exceeding an eight-hour time weighted average (TWA) sound level of 85 decibels as per the CalOSHA 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. Job classifications with measured exposures above 85 dBA TWA according to the American Conference of Governmental Industrial Hygienists (3 dB exchange rate, threshold 80 dBA), but below that required for inclusion in the CalOSHA MANDATORY HCP are included in mandatory audiometric monitoring every three (3) years.

4. When personal dosimetry has not been performed for a job classification within the past three years, individuals in that classification who work with or around equipment generating sound levels greater than 85 dB are automatically placed in

5. the mandatory annual audiometric testing program until dosimetry determines the appropriate audiometric testing interval for that job classification.

6. 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.

7. 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).

7.0 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.

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. Repeat testing within 30 days of the first test must verify 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.

8.0 PARTICIPANTS:

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

Mandatory Interval Participants. Employees with exposures below the MANDATORY limits, but within those recommended by ACGIH are required to submit to an audiogram every 3 year.

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 db 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 CSUB department as a component of the Occupational Medical Monitoring Program.

2. Central Valley Occupational is contracted to provide our audiometric testing using the criteria required by CalOSHA. Hearing is checked at frequencies from 500 to 8000 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 and Auto Shop
- Facilities Management - Central Plant and Air-conditioning units

 Facilities Management – Custodial

 Graphic Communications – Print Shop & Reprographic Services

 Science Department - Instructional Equipment Technician, Geology Instructional Technician, Geologists

 Arts - Instructional Technician - Theater; Instructional Technician - Art

5. Employees or supervisors who believe an environment above 85 dBA TWA is present should notify the Safety and Risk Management Office

9.0 PROTECTIVE EQUIPMENT

Hearing protection is provided at no cost to all employees exposed to 85 decibels or greater - for any length of time. Hearing muffs are replaced as needed due to wear. Ear plugs are single- use and are 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 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 at least three types of ear plugs and two types of muffs from which to choose. At the discretion of the Department in consult with S&RM, individual formed ear plugs can be procured on a case by case basis.

Note: University requirements for hearing conservation are more stringent than the CalOSHA standard. Under CalOSHA, employees may sustain a permanent loss prior to being required to wear hearing protection.

10.0 TRAINING

Hearing conservation training includes the following:

 How sounds travels, How the ear works,

 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.

11.0 DOCUMENTATION

CSUB 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. The CSUB medical monitoring contractor 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 Central Valley Occupational and the Director of Safety & 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.

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Job Classification	Date, Dosimetry	Activity
Light Equipment Operator	2009, 2012	Lt. equip operation
Garden Specialist	2009, 2012	Gator cart, irrigation
Garden Specialist	2009, 2012	John Deer Tractor, pump sprayer
Garden Specialist	2009, 2012	Pesticide appllication
Groundsman	2009, 2012	Weedeater, blower
Garden Specialist	2009, 2012	Lt. equip operation
Irrigation Specialist	2009, 2012	Tractors, pumps, compressors
Groundsman	2009, 2012	Weedeater, blower
Garden Specialist	2009, 2012	Hand held sprayer
Groundsman	2009, 2012	Weedeater, blower
Groundsman	2009, 2012	Blowers, weedeaters
Garden Specialist	2012	Hand held sprayer
Groundsman	2009, 2012	Blower, weedeaters

The following list identified employees having the potential for receiving exposure above 85 dBA TWA, but whose exposure is administratively managed to be below 85 dBA TWA dose, whom who in the most recent dosimetry were below 85 dBA TWA. Audiograms are required every third year.

Job Classification	Date, Dosimetry	Activity
Refrigeration Mechanic	2009, 2012	Pumps, power tools, compressors
Refrigeration Mechanic	2009, 2012	Pumps, power tools, compressors
Building Service Engineer	2012	Pumps, power tools, compressors
Maintance Mechanic	2009, 2012	Pumps, tools, alarms
Maintance Mechanic	2009, 2012	Pumps, tools, alarms
Maintance Mechanic	2009, 2012	Pumps, power tools
Auto Mechanic	2012	
Carpenter	2009, 2012	Pumps, tools, saws
Plumber	2009, 2012	Pumps, power tools, compressors
Electrician	2009, 2012	Pumps, power tools, compressors

JobClassification	Date. Dosimetrv	Activitv
Welder	2009,2012	Pumps, tools alarms
Custodian	2012	
Custodian	2012	
Custodian	2012	
Custodian	2012	
Custodian	2009,2012	Vacuum. floor buffer
Custodian	2012	
Custodian	2012	
Custodian	2012	
Custodian	2012	
Custodian	2012	
Instructional Tech Theater	2012	Saws. oower tools amolifiers
Instructional Tech Theater	2012	Saws. oower tools amolifiers
Instructional Tech Art	2012	Woodshoo
Instructional Tech Art	2012	Woodshop
Instructional Tech Geoloav	2012	Geo Lab
Equipment Tech Science	2012	Geo Lab
Police Officer	2012	Gunfire (ranae officer)
Repro Specialist	2012	
Reoro Soecialist	2012	
Administrator	2012	
Graphic Specilist	2012	

APPENDIX B

Hearing Conservation On-Line Training

All employees working in areas or on equipment, at or above 85 dBA, are 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 on-line.

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
S&RM	Ear Plug	Howard Leight Max	33 dB
Roads & Grounds	Ear Plug	Howard Leight	30 dB
Trades	Ear Plug	Howard Leight	32 dB
Trades	Ear Plug	3M 1100	29 dB
Trades	Ear Plug	Air Soft	27 dB
Custodial	Ear Plug	3M Classic	33 dB
Over the Head	Ear Muff	3M H10A	30 dB
Over the Head	Ear Muff	3M H10A	29 dB
Behind the Head	Ear Muff	3M H6B/V	21 dB
Behind the Head	Ear Muff	3M H10B	29 dB

CALIFORNIA STATE UNIVERSITY
BAKERSFIELD

Safety and Risk Management

APPENDIX C Mandatory Hearing Conservation Program Audiometry Declination

MEMORANDUM

DATE: _____

TO: _____

FROM: **Tim Ridley, CSP, ARM-P**
Director, Safety and Risk Management

SUBJECT: **Audiometric Test Declination**

As an employee of California State University, Bakersfield, 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, as such, this program dictates that audiometric testing be offered at no charge to employee's 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**

The following employees are enrolled in the Hearing Conservation Program and have been trained using the Skillsoft on-line training site at https://shib.csub.edu/idp/Authn/UserPassword

Printed Name	Date Trained	Signature	Audiogram Consult

On-line training consists of the following mandatory 1information:

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 ENVIRONMENT

The effect of continued overexposure to noise is the destruction of tile hair cells and a permanent loss of hearing. The first warming 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 overexposure 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 1is 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 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 means hearing loss. Speech frequencies 2000, 3000, 4000 hz. The first sign of a loss is often at 4000 or 6000 hz. If you see a change there, you need to be more consistent about wearing your hearing protection.

TYPICAL SOUND INTENSITIES

This list is provided as a guide only, actual noise levels 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		

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 means hearing loss. Speech frequencies 2000, 3000, 4000 hz. The first sign of a loss is often at 4000 or 6000 hz. If you see a change there, you need to be more consistent about wearing your hearing protection.

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

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 get 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 earmuffs 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.

DATE	LOCATION	OPERATION/ EQUIPMENT	dBA
6/11/12	Performing Arts	Sheet metal shaping with hammer	100.8
6/11/12	Performing Arts	Evolution Rage 2 multipurpose saw	108.0
6/11/12	Performing Arts	Portable grinder with DeWalt wheel	106.0
6/11/12	Performing Arts	Biesemeyer table saw- soft wood - hard wood	94.2, 100.6
6/11/12	Performing Arts	Air compressor	91.1
6/11/12	Performing Arts	DeWalt Sliding Compound Miter Saw	98.9
6/11/12	Performing Arts	Dayton Band Saw- sheet metal - wood	104.3, 100.0
6/11/12	Performing Arts	Craftsman bench grinder- 6" wheel	106.5
6/11/12	Performing Arts	Pressure washer	90.2
6/11/12	Performing Arts	Serigraph press (vacuum tables)	87.0

APPENDIX C Noise Dosimeter Results Per Area

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