UC Merced

Hearing Conservation Program

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HEARING CONSERVATION PROGRAM

1.0 PURPOSE

Exposure to excessive noise in the workplace can cause permanent hearing loss. Although the University of California, Merced (UC Merced) attempts to control noise exposures on campus, certain operations and workstations may expose faculty, staff, or students to hazardous noise levels. This Hearing Conservation Program is established to minimize risk of exposure to hazardous levels of occupational noise by implementing engineering and administrative controls where feasible and ensure that employees or other members of the campus community properly use and maintain assigned hearing protection when engineering or administrative control of noise is not feasible.

2.0 REGULATIONS AND OTHER APPLICABLE STANDARDS

Title 8 California Code of Regulations Article 105, §§5095- 5100, "Control of Noise Exposure"

ANSI S1.25 - 1978 "Specification for Personal Noise Dosimeters"

ANSI S1.11 - 1971 "Specification for Octave, Half- Octave, and Third-Octave Band Filter Sets"

ANSI S1.4 - 1971 "Specification for Sound Level Meters"

ANSI S3.6 - 1969 "Specifications for Audiometers"

3.0 RESPONSIBILITIES

3.1 Department Heads, Managers, Supervisors, and Principal Investigators

- Provide work environments that minimize excessive noise to the greatest extent reasonable.
- Request that Environment Health & Safety (EH&S) conduct required monitoring of noise levels to determine the feasibility of engineering and-or administrative controls, or select approved hearing protection for the levels determined.
- Post areas known to present noise hazards with signs requiring the use of hearing protectors.
- Ensure that employees exposed to noise over the 85 decibel Action Level are enrolled in the UC Merced Hearing Conservation Program, provided training on the hazards of occupational noise, and receive annual audiometric testing to ensure program effectiveness.
- Provide approved hearing protective devices (plugs or muffs) at no cost to employees and training in their proper use, care and maintenance.
- Ensure that employees assigned hearing protection use such devices properly.
- Ensure exposed staff enrolled in the Hearing Conservation Program, or their representatives have access to Title 8 California Code of Regulations Article 105 “Control of Noise Exposure” (§§5095 through 5700). Any informational materials regarding the hazards of noise supplied by California Occupational Safety and Health Administration (Cal/OSHA) shall also be provided to affected employees.

3.2 Faculty, Staff, Students, Visitors, and Guests

- Wear approved hearing protection devices in posted noise hazard areas and during tasks identified with potential noise exposure greater than 85 A-weighted decibels (dBA).
- Maintain hearing protectors in sanitary condition and proper working order.

- Report noise hazards and hearing protector problems to their immediate supervisor.

3.3 Office of Environment Health & Safety (EH&S)

- Conduct Monitoring of noise levels at UC Merced worksites that are suspected of exceeding the 85 dBA Action Level and inform supervisors, employees and other members of UC Community of results of such monitoring.
- Recommend appropriate engineering and administrative noise control measures.
- Assist employees in selection of approved hearing protective devices and provide training and instruction on their proper use and care.
- Based on results of representative noise monitoring determine campus tasks and operations where staff or employees need to be enrolled in the UC Merced Hearing Conservation Program.
- Provide mandated information and training to campus departments, staff and employees on the Hearing Conservation Program and hazards of noise as required under Title 8 CCR §5099.
- Periodically review and update the Hearing Conservation Program to ensure consistency with changes in working conditions, noise levels, protective equipment and work processes.

3.4 Occupational Health in Merced, CA (To Be Identified)

- Provide baseline and annual hearing tests (audiometry) on an annual basis.
- Provide complete audiometric evaluations as needed to determine a Standard Threshold Shift.
- Communicate any identified Standard Threshold Shifts to the employee and her/his supervisor.
    a. Establish any work restrictions, or requirements that may be necessary to prevent additional hearing loss.

4.0 Procedures

4.1 Area Monitoring

EH&S will perform area or machine noise monitoring of all machine and trade shops with a sound level meter or noise dosimeter annually subject to limitations of 4.2 below. The purpose is to identify of faculty, staff, and students who may be exposed to noise exceeding the 85 dBA Action Level on an eight-hour time-weighted average basis published by Cal/OSHA in T8 CCR Article 105 (§§5095 through 5100). The monitoring will be done with a Sound Level Meter/or noise dosimeter meeting the specifications of ANSI S1.4 -1971 AND ANSI S 1.11.

4.2 Area Monitoring Designated Locations

a. Central Plant
b. Mechanical rooms and shops in all Campus Buildings for baseline noise level. This would include all campus mechanical rooms. If the room have machines (Compressors, pumps and other noise emitting units that have a noise level at or above 85 dBA the room will be identified. If the room has no potential for noise above 85 dBA if will also be listed as such.
c. Outdoor personnel such as grounds who use weed eaters, leaf blowers, lawn mowers, etc.
d. Maintenance workers who are required to stay in an area that is likely to have a noise level that exceeds 85 dBA for 8 hours or more.

e. Other areas as specified by EHS Director.

4.3 Exposure Monitoring

EH&S performs noise exposure monitoring of faculty, staff, and students who may be exposed to noise exceeding the 85 dBA Action Level on an eight-hour time-weighted average basis published by Cal/OSHA in T8 CCR Article 105 (§§5095 through 5100). This monitoring must be done with a calibrated noise level meter meeting the requirements set forth in ANSI S1.4 -1971 AND ANSI S 1.11.

Representative personal or area noise monitoring is conducted to identify employees and students for inclusion in the Hearing Conservation Program and to enable the proper selection of hearing protectors. Area noise monitoring is also used to identify campus locations or specific equipment and activities where average noise levels exceed the 85 dBA Action Level (AL). These are areas where hearing protection should always be worn and signs should be posted to alert employees, students, and visitors to the required use of hearing protectors.

Employees or their supervisors should contact EH&S to schedule noise monitoring if they suspect exposures to excessive noise on the job, or if previously monitored noise levels may have changed due to modifications to equipment or processes. EH&S must be contacted to schedule monitoring if the individuals assigned the use of approved hearing protectors are documented with a Standard Threshold Shift in their annual audiometric testing.

If desired, employees or their representatives may observe the noise monitoring procedure by arranging with EH&S prior to the date of the monitoring.

Persons whose eight-hour time-weighted average noise exposure exceeds the 85 dBA Action Level will be enrolled in the UC Merced Hearing Conservation Program. These individuals will receive annual audiometric testing, will have hearing protectors made available to them by their supervisors, and will be provided training on the fitting, use, and care of these devices. Monitoring results for individuals whose noise exposure exceed the Action Level will also be notified in writing using Attachment A – Noise Monitoring – Dosimetry Results.

Persons whose eight-hour time-weighted average noise exposure is less than 85 dBA will not be enrolled in the campus Hearing Conservation Program, and generally do not require audiometric testing, training, or the use of hearing protectors. Additional monitoring of their personal noise exposures should not be required unless a change in potential exposure risk is noted in the workplace noise level.

4.4 Audiometric Testing (Site to be determined)

Occupational Health in Merced, CA will perform annual audiometric testing on all persons enrolled in the Hearing Conservation Program. The cost of the test must be covered by the employee's department and be provided free to the employee. Prior to significant work-related noise exposure, employees will establish a "baseline audiogram." Subsequent audiograms will be compared against this baseline. If it is determined that an employee has a Standard Threshold Shift, as defined above, he or she will be notified in writing within 21 days of STS determination. Such individuals will be retrained on the hazards and precautions of working in noisy environments and will be issued hearing protection devices if determined appropriate by EH&S and UHS. Other modifications to the workplace may also be needed to reduce noise exposures to prevent additional hearing loss.

4.5 Hearing Protectors

UC Merced departments must provide hearing protectors (earplugs or earmuffs) to each of their employees exposed at or above the 85 dBA Action Level. Hearing protectors must be provided free of cost to the wearer, and must be replaced when broken, defective, or unsanitary. At least two brands or types of hearing protectors must be made available for selection by the wearer.

At UC Merced, the use of hearing protectors is required:

- For all personnel who are exposed above the 85 dBA Action Level.
- In all areas posted or otherwise designated as requiring hearing protection.

A hearing protector's ability to reduce noise is measured as its Noise Reduction Rating (NRR). The greater the NRR, the better the noise attenuation. The NRR is usually listed on the hearing protector's box. EH&S can help determine appropriate types of hearing protectors for specific situation. Supervisors must train untrained workers in the proper use of hearing protection.

It is the responsibility of Managers, Principal Investigators, and Supervisors to ensure that those personnel under their supervision wear hearing protectors properly wherever required. Managers, Principal Investigators, and Supervisors must also ensure that areas where noise levels are known to exceed the 85 dBA Action Limit are posted as requiring the use of hearing protectors.

4.6 Training

EHS provides annual training for all persons enrolled in the Hearing Conservation Program. This training covers:

- The effects of noise on hearing
- The purpose of hearing protectors; the advantages, disadvantages, and attenuation of various types; and instructions on selection, fitting, use, and care of hearing protectors
- The purpose of audiometric testing and an explanation of audiometric test procedures
- Noise Monitoring types and purpose

Additional training on noise hazards and their control is available upon request from EH&S. All audiometric examinations

4.7 Record Keeping (TBD)

EH&S will maintain records of all personal exposure monitoring and Occupation Health Clinic maintains all audiometric testing records for persons enrolled in the Hearing Conservation Program. Exposure monitoring records are maintained for a minimum of two years, and audiometric test results are maintained for at least thirty years after the employee’s last test. These records are available upon request to employees or designated employee representatives.

Attachment B is a form that can be used to document an individual employee’s overexposure to noise. EHS is to keep record and a record must be put into Employee’s personnel file.

4.8 Campus Resources

For additional information on noise hazards, hearing protection, or the Campus Hearing Conservation Program contact EH&S at (209) 228-4234

5.0 DEFINITIONS

Action Level:

The level of noise exposure at which:

- A person must be enrolled in the Hearing Conservation Program and must be provided annual audiometric testing.
- Representative noise exposure monitoring is required.
- Hearing protectors and training on noise hazards must be provided to the employee.

The current Action Level is 85 A-weighted decibels (dBA) averaged over an eight-hour period.

Audiometric Testing:

Testing conducted for measuring the sensitivity of a person's hearing threshold in decibels.

Decibel (dBA):

The standard unit used to measure sound pressure level. The decibel scale is logarithmic and every three dBA is a doubling of the sound pressure level.

Hertz (Hz):

The unit of measure for noise frequency in cycles per second. (1 cycle/second= 1Hz) Permissible

Exposure Limit (PEL):

The maximum allowable noise exposure, established by Cal/OSHA as a legal limit. The current PEL for noise averaged over an eight-hour work day is 90 dBA.

Noise Reduction Rating (NRR):

An Environmental Protection Agency (EPA) testing and measure of the amount of noise reduction provided by a given hearing protection device.

Standard Threshold Shift (STS):

A change in hearing threshold relative to the baseline audiogram of an average of 10 dBA or more at 2000, 3000, and 4000 Hz in either ear.

ATTACHMENT A
NOISE MONITORING DOCUMENTATION FORMS

NOISE SURVEY FORMS
Sound Level Meter (SLM) and Noise Dosimeter (ND)
Noise Exposure Documentation Form

Person Conducting Survey: **Instrument ____ & Model**_____

SLM Pre-Calibration: dB

SLM Post-Calibration: Db

Noise Dosimter Pre-Calibration: dB

Noise Dosimeter Post-Calibration: dB

Person Being Surveyed: N/A **Occupation/Work Activity**:_____

Equipment Used: SLM/ND **Hearing Protection**: Y **N** **Manf & Model**: N/A

Date: **Wind/Weather/Other Conditions**:

INSTRUCTIONS: 1. Take several SLM readings for each work activity, and whenever noise exposure changes, throughout the entire work shift.

2. Record time at which SLM reading is taken on Table A below.
3. When reading noise level round up to nearest full dBA. add 2 dBA, then record on Table A below.
4. Measure or estimate the TOTAL exposure time at each noise level and record on Table B
5. The levels and durations of ALL exposures must be recorded, including brief, intermittent noise.

EXAMPLE 1: Front-end loader operator spends entire 9-hr (540 min) shift in enclosed cab. SLM readings taken in cab at high RPM (91 dBA), medium RPM (84 dBA), and low RPM (78 dBA). Based on observation of loader operations, estimate 20% of shift at high RPM, 60% of shift at medium RPM, and 20% of shift at low RPM. Thus, SLM readings and observation of operations result in estimate of full shift noise exposure of 108 minutes @ 91 + 2 = 93 dBA, 324 minutes @ 84 + 2 = 86 dBA, and 108 minutes @ 78 + 2 = 80 dBA

CAUTION: If noise levels change too quickly or over too large a range to be accurately documented using an SLM and this form, do not use an SLM to determine noise exposure. Use a noise dosimeter.

TABLE A - Sound Level Meter (SLM) Readings

Location/Work Activity/Equipment Operated/ Source of Noise (Include Equipment ID)	Time of Reading	Noise Level

TABLE B-DOSIMETER READINGS

Location/Work Activity/Equipment Operated/ Source of Noise (Include Equipment ID)	Time of Reading	Noise Level (Round SLM unit up to Nearest Full dBA)

TABLE C - Exposure Times WITH SLM ONLY

Noise Level in decibels	Estimate Of Total Shift Time Exposed At This Noise Level (Rounded Up To 15 Min., 30 Min., Or Nearest Full Hour}	Noise Level in decibels	Estimate Of Total Shift Time Exposed At This Noise Level (Rounded UpTo15Min.,30Min., Or Nearest Full Hour}	Noise Level in decibels	Estimate Of Total Shift Time Exposed At This Noise Level (Rounded Up To 15 Min., 30 Min., Or Nearest Full Hour}
Less Than 80	Not App1icable	92		105	
80		93		106	
81		94		107	
82		95		108	
83		96		109	
84		97		110	
85		08		111	
86		99		112	
87		100		113	
88		101		114	
89		102		115	
90		103			
91		104		Not App1icable	

UC MERCED NOISE DOSIMETRY DATA SHEET

Sample Date:	Sample Number:

Employee Name:	EID:
Employee Job Class	
Work Location	DEPT/UNIT: SITE/AREA:

WORK CONDITIONS

Work Conditions/Degree of Exposure: ___ Routine ___ Worst-Case ___Other
(specify)_____ Ear Protection Used:

___ None Required ___ Headset ___ E-A-Rsoft Yellow Neons (corded) NRR 33 dB ___ Other Foam Plugs

___ None Worn ___ Muffs ___ E-A-R Classic NRR 29 dB

___ Other(specify) _____

Can a single noise source be identified which contributes the greatest to the employees overall noise exposure?

Exposure Task Frequency (circle): Daily Weekly Monthly Other (Specify):

CALIBRATION DATA

Noise Dosimeter Mfg & Model:	Criterion Level: dBA dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____	Threshold Level: dBA dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____	Exchange Rate: dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____
Noise Dosimeter Serial No.:	Dose Exposure %: dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____	TWA: dBA dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____	TWA (8): dBA dose 1 _____ dose 2 _____ dose 3 _____ dose 4 _____

	Sample Start Time:	Sample End Time:	Duration: minutes
Calibration Method :	Calibration Date:	PreCal:	PostCal:

Calibrator Mfg. & Model:	Serial Number:	Annual Calibration Date:

Work Activity

Activity Monitored (Work descriptions, tasks, and task times):

Collected by:	Date:

Attachment B

NOISE MONITORING - DOSIMETRY RESULTS

Date:_____
dd/mm/yyyy

Dear: _____
Print or type

UC Merced EH&S office is pleased to provide you with your individual noise exposure assessment, which was conducted on :_____. *dd/mm/yyyy*

Your equivalent level of noise exposure averaged over an 8-hour period on the date of assessment was _____ decibels (dBA). Our representative noise monitoring and sampling documentation records indicate that you are being exposed to occupational noise levels exceeding 85 dBA. Therefore, in addition to annual audiometric testing and training on the hazardous to exposure to occupational noise, wearing assigned hearing protection is mandatory when you are working in identified hazardous noise areas, or conducting tasks or activities with noise levels exceeding 85 dBA.

_____
Signature EHS representative

_____
Printed name & title

ADDITIONAL RESOURCES:

https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95