

UCSF

Hearing Conservation Program

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Office of Environmental Health and Safety
University of California, San Francisco
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1. Purpose

Exposure to excessive noise in the workplace can cause permanent hearing loss. The University of California, San Francisco (UCSF) attempts to control noise exposures to UCSF workers at a level below the Cal-OSHA permissible exposure limit (PEL) of 90 dBA average over an 8 hour work day. It is not anticipated that UCSF employees are exposed to noise levels above the Cal-OSHA PEL or Cal-OSHA action level of 85 dBA averaged over an 8 hour work day.

2. Definitions

Action Level- The level of noise exposure at which:

- A person must be enrolled in a Hearing Conservation Program, and must be provided audiometric testing.
- On-going representative noise exposure monitoring must be performed.
- Hearing protection and training on noise hazards must be provided to employees.

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

A-weighted (dBA)- The A-weighted decibel scale utilizes filters to more adequately mimic the characteristics of human hearing that tends to perceive mid frequency sound as louder than high and low frequency sounds.

Decibel (dB)- The standard unit used to measure sound pressure level. The decibel scale is logarithmic and every five dB is a doubling of the sound pressure level.

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

Permissible Exposure Limit (PEL)-The maximum allowable noise exposure, established by Cal/OSHA as a legal limit. The current PEL for noise is 90 dBA averaged over an eight hour period.

Noise Reduction Rating (NRR)- A measure of the amount of noise reduction provided by a given hearing protection device.

Representative Exposure- A measurement of an employee's noise dose or 8-hour time-weighted average that the employer deems to be representative of exposures of other employees in the workplace.

Sound Level Meter (SLM) - An instrument used for the measurement of sound pressure level.

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.

3. Regulations and Standards

- Title 8, California Code of Regulations, Article 105, Sections §5095–5100, "Control of Noise Exposure"
- ANSI S1.11–1971 "Specification for Octave, Half–Octave, and Third–Octave Band Filter Sets"
- ANSI S1.25–1978 "Specification for Personal Noise Dosimeters"
- ANSI S1.4–1971 "Specification for Sound Level Meters"
- ANSI S3.6–1969 "Specifications for Audiometers"

4. Responsibilities

4.1. Department Managers, Supervisors, and Principal Investigators

- Provide work environments that minimize noise to the greatest extent reasonable.
- Request that the Office of Environment, Health & Safety (OEH&S) evaluate noisy operations.
- Provide hearing protection devices at no cost for employees where needed, and referral to OEH&S for appropriate training and to Occupational Health Services for audiometric training.
- Post areas known to present noise hazards with signs requiring the use of hearing protection.

4.2. Staff, Faculty, 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 protection in sanitary condition and proper working order.
- Report noise hazards and hearing protector problems to the appropriate supervisor.

4.3. Office of Environmental Health and Safety (OEH&S)

- Monitor worksites for noise levels and inform employees and supervisors of results.

- Recommend appropriate engineering and administrative noise control measures.
- Assist employees in selection of proper protection devices and provide instruction on their care and use.
- Based on noise monitoring, determine whether employees need to be enrolled in the UCSF HCP.
- Provide training to employees enrolled in the HCP, upon request.
- Periodically review and update the HCP to be consistent with changes in protective equipment and work processes.

4.4. Occupational Health Services (OHS)

- Provide baseline and annual hearing tests (audiometry) for employees enrolled in the UCSF HCP.
- 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.
- Establish any work restrictions necessary to prevent additional hearing loss.

5. Program

5.1. Exposure Monitoring

OEH&S performs noise exposure monitoring for UCSF staff, faculty, and students who may be exposed to noise over Cal/OSHA's 85 dBA Action Level on an eight hour time weighted average basis.

Personal or area noise monitoring is conducted to identify UCSF employees for inclusion in the HCP and to enable the proper selection of hearing protectors. Area noise monitoring is also used to identify locations or specific equipment and activities where average noise levels exceed Cal/OSHA's 85 dBA Action Limit. 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.

UCSF employees or their supervisors should contact OEH&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. OEH&S should also be contacted to schedule monitoring if the hearing protection in use are suspected of being inadequate. If desired, employees may observe the noise monitoring procedure by arranging with OEH&S prior to the date of the monitoring.

Persons whose noise exposures have been monitored will receive written notification of their exposure monitoring results from OEH&S. Persons whose eight hour time weighted average noise exposure exceeds the Action Level will be enrolled in the UCSF's HCP. (Representative Exposures should also be evaluated for individuals working in the same area but were not included in the monitoring process). Individuals enrolled in the HCP should receive audiometric testing, will have hearing protection made available to them by their supervisors, and will be provided training on the fitting, use, and care of these devices.

Persons whose eight hour time weighted average noise exposure is less than 85 dBA will not be enrolled in the campus HCP, and generally do not require audiometric testing, training, or the use of hearing protection. Additional monitoring of their personal noise exposures should not be required unless a significant change is perceived in the workplace noise level.

5.2. Audiometric Testing

OHS will coordinate annual audiometric testing on all persons enrolled in the HCP. 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 OEH&S and OHS. Other modifications to the workplace may also be needed to reduce noise exposures to prevent additional hearing loss.

5.3. Hearing Protectors

Departments must provide hearing protection (earplugs or earmuffs) to each of their employees exposed at or above the 85 dBA Action Level. Hearing protection 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 protection must be made available for selection by the wearer.

A hearing protector's ability to reduce noise is measured as its Noise Reduction Rating (NRR). Generally, the greater the NRR is, the better the noise attenuation is for that particular hearing protector. The NRR is usually listed on the hearing protector's box. OEH&S can help determine appropriate types of hearing protectors for specific situations, and can provide training on the proper use of hearing protectors.

It is the responsibility of Department Managers, Principal Investigators, and Supervisors to ensure that those personnel under their supervision wear proper hearing protection 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 protection.

5.4. Training

OEH&S provides annual training for all persons enrolled in the HCP. This training covers:

- The effects of noise on hearing
- The purpose of hearing protection (the advantages, disadvantages, and attenuation of various types)
- Instruction on selection, fitting, use, and care of hearing protection
- The purpose of audiometric testing and an explanation of audiometric test procedures

5.5. Record Keeping

OEH&S maintains records of all personal exposure monitoring and OHS 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 who are enrolled in UCSF's HCP.