

Sample Hearing Conservation Program

Company name here

Date:

Revision Date (as needed):

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Introduction

Millions of American workers are exposed to hazardous levels of noise in the workplace. These exposures can cause noise-induced hearing loss (NIHL), which can be temporary or permanent. Temporary hearing loss results from short-term exposures to noise with normal hearing returning after period of rest. Generally, prolonged exposure to high noise levels over a period gradually causes permanent damage. The extent of damage depends on the intensity of the noise and duration.

Purpose & Scope

Cal/OSHA’s noise standards under Title 8, Section 5095 to 5100 are designed to protect workers from initial occupational hearing loss, preserve and protect remaining hearing, and equip workers with the knowledge and hearing protection devices necessary to safeguard themselves. Research indicates that workplaces with appropriate and effective hearing conservation programs have higher levels of worker productivity and a lower incidence of absenteeism.

**<Company Name’s>** Hearing Conservation Program is designed to protect employees from hearing loss caused by uncontrolled exposure to hazardous noise by reducing employee noise exposures and providing appropriate hearing protection where this noise cannot be controlled.

The program includes the identification and control of hazardous noise within **<Company Name>’s** work areas through the use of engineering and administrative controls combined with the selection and use of hearing protection. It also details the areas of responsibility for managers/department heads, supervisors and employees within the company. Additionally, the program includes requirements for noise exposure surveys, audiometric testing, training in the selection and use of hearing protection, recordkeeping and program evaluation.

This program applies to all employees whose noise exposure levels equal or exceed an 8-hour time-weighted average (TWA) noise level of 85 dBA. All employees are required to follow the minimum procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Program Administrator.

Program Administrator/Responsibilities

**Management.** The management of **<Company Name>** is committed to the safety and health of its workers. Management supports the efforts of the Program Administrator by pledging financial and leadership support for the identification and mitigation of noise hazards. Management will regularly communicate with employees about this program.

**Program Administrator.** The Program Administratorreports directly to upper management and is responsible for conducting and/or coordinating the hazard assessments -- and the implementation, training and administration of the program. The Program Administrator will monitor the results of the program to determine needed focus areas. The Program Administrator will also:

* Coordinate and supervise any noise exposure monitoring
* Identify employees to be included in the program
* Designate areas where hearing protection must be worn
* Coordinate and supervise audiometric testing
* Develop hearing protection policies
* Supervise hearing protection selection
* Supervise employee training
* Coordinate and supervise recordkeeping
* Evaluate the program annually and make changes (as needed)
* Update the program whenever new equipment is introduced

**Supervisors.** Supervisor’s responsibilities include:

* Notifying the Program Administrator if a change in the workplace results in higher noise exposure levels
* Ensuring that employees properly use and maintain their hearing protection
* Ensuring employees comply with the requirements of this program

**Employees.** All employees working in designated noise areas with noise exposures equal or exceeding the action level (85 dBA for an 8-hour shift) will be included in the program. A list of identified areas and employees can be found in

**Appendix A**. Employee responsibilities include:

* Notifying their supervisor if a change in the workplace results in exposure to higher noise levels
* Using noise control measures as required
* Using hearing protection as required
* Attending all training and audiometric testing
* Notifying their supervisor of any complicating medical problems as soon as possible

Do I Have a Noise Problem?

If the answer to any one or more of the below questions is ‘yes,’ then you most likely need to monitor (e.g., complete a noise level survey).

1. Do you have to raise your voice to make yourself heard while at a typical conversation distance (e.g., 1-2 feet)?
2. Are workers experiencing ringing in their ears or buzzing after leaving the workplace?
3. Are workers showing evidence of permanent hearing loss?
4. Are workers complaining about the high noise levels in their work area?

Do I Need Monitoring? What Are the Requirements?

* The Hearing Conservation Program (HCP) requires you to monitor the noise when information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels (per above. The employer shall obtain measurements for employees who may be exposed at or above that level.
* The monitoring can be done with area or personal monitoring that is representative of the employee’s exposure and noise levels. A handheld Type 1 or II sound level meter or personal dosimeters can be used.
* The monitoring should be completed for the purpose of identifying those employees who should be included in the hearing conservation program and enable the proper selection of the hearing protectors.
* Repeat monitoring should be conducted whenever there is a change in equipment, process or controls that may affect the noise levels. This includes the addition, removal or replacement of machinery, or change to the building structure.
* Employees are entitled to observe monitoring procedures and must receive notification of the results of exposure monitoring. The method used to notify employees is left to the employer’s discretion.

***Refer to the Appendix section for either Form I or Form II to record survey data.***

Do I Need a Hearing Conservation Program?

Yes, if monitoring results per above standard show levels to be at or above the Action Level (AL) as defined below:

* **Cal-OSHA Action Level (AL):** The AL is 85 decibels measured on the A-scale, slow response, as an 8-hour Time Weighted Average (85 dBA, 8-hr TWA), or an equivalent noise dose of 50%.
* **Cal-OSHA Permissible Exposure Limit (PEL):** The PEL is 90 dBA, 8-hr TWA. If PEL level is reached or exceeded, then engineering controls must be considered to reduce noise levels and mandatory hearing protection use is required.

The PEL is based on the average employee noise exposure for an 8-hour day, 40 hours a work week, at which nearly all employees may be exposed without adverse health effects. Adjustments should be made where employees work shifts greater than 8-hours.

The standards are intended to protect most, not all exposed employees, from noise-induced hearing loss (NIHL)

For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with ***the Permissible Exposure Limits Table N-1 in the Appendix Section,*** and without regard to any attenuation provided by the use of personal protective devices.

Do I Need to Provide Hearing Protection Devices (HPD)? Are They Required?

**Provide when:**

* They are exposed to noise at or above the AL (i.e. 85 dBA, 8-hr TWA)

**Required when:**

* They are exposed to noise at or over the PEL of 90 dBA, 8-hr TWA
* 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 audiograms if these tests are delayed due to mobile test van scheduling
* They have incurred standard threshold shifts that demonstrate they are susceptible to noise

Elements of a Hearing Conservation Program (HCP)

An effective HCP must be developed and implemented when the noise levels are at or exceed the Action Level (AL) of 85 dBA, 8-hr. TWA. There five main elements to an HCP are:

1. **Noise Monitoring**: Sound level meter or noise dosimeters can be used to identify jobs and areas that require controls and compliance. Employees should be notified of the results. ***Refer to the above section Do I Need Noise Monitoring?***
2. **Audiometric Testing (Hearing Tests)**: This is an important element of the HCP and the only way to determine whether hearing loss is being prevented. Hearing loss is not painful and happens gradually. The employee will notice the change until a loss has occurred. The hearing loss due to exposure to noise is irreversible.

At no cost to the employee, audiometric testing monitors the employees’ hearing and any loss over time and provides an opportunity to educate the employees about their hearing and the need to protect it. This is to be completed at the time of hire and annually thereafter. Results should be communicated with the employees. ***Refer to Appendix Section for further details.***

1. **Hearing Protection Devices (HPD):** A variety of HPD’s should be supplied and maintained at the employer’s expense. ***Refer to the Appendix section below for further details.***
2. **Training**: Annual training should be conducted at a minimum to determine how hearing loss occurs; the types of hearing protectors being offered and the proper way to wear and maintain them. ***Refer to Form I in the Appendix section below.***
3. **Recordkeeping:** Records of the noise monitoring and training will be maintained for two years -- and the audiometric testing results for the duration of the affected employees’ employment.

Audiometric test records will include the employee’s name and job classification, date, examiner’s name, date of the last acoustic or exhaustive calibration, measurements of the background sound pressure levels in audiometric test rooms, and the employee’s most recent noise exposure measurement.

As of Jan. 1, 2003, employers are required to record work-related hearing loss cases when an employee’s hearing test shows a marked decrease in overall hearing. Employers can make adjustments for hearing loss caused by aging, seek the advice of a physician or licensed health care professional to determine if the loss is work-related, and perform additional hearing tests to verify the persistence of the hearing loss.

If the business is sold, the records must be transferred to the new employer.

In addition, a copy of the training records and sign-in sheet will be retained for the record as documentation.

Do I Need to Control the Noise Levels?

There are two basic methods to reduce employee exposure to noise – engineering and administrative. When noise levels are decreased, employees are not only better protected from hearing loss, they can communicate better and hear warning alarms.

The options to reduce overall noise exposure should be considered. If you can decrease noise levels to below the AL of 85, then you no longer are required to have this program.

**Noise Controls Guidelines**

**Engineering Controls.** Engineering controls must be considered when the exposure levels are at or above the 90 dBA PEL. This is the preferred method for reducing noise levels because it involves modifications or replacement of equipment, or by providing sound absorption materials. Some examples include:

* Preventative maintenance and repair on equipment
* Sound absorbing materials (e.g., thick, soft, or poupous materials all are good sound absorbers)
* Dampening the vibration
* Reducing air or liquid velocity
* Noise cancellation
* Silencers on mufflers
* Replacing machines with quitter ones
* Increasing the distance between noise source and the employee

**Administrative controls.** Administrative controls consist of policies and procedures that are implemented to reduce noise exposure to the employee. Typical examples include:

* **Job Rotation:** Limiting exposure time by alternating employees from high noise to low noise areas.
* **Work Schedule:** When feasible, modify the times that noisy machines operate so that fewer employees are exposed to the noise.

To successfully implement these controls, the noise levels in ALL areas should be monitored and mapped out so that a decision can be made regarding the rotation. Another tip for success is to effectively train the employees and supervisors to ensure the job rotation, for example, is carried out as needed.

To determine the administrative controls that must be implemented for certain areas, the published Table N-1, in the Cal/OSHA noise standard provides a list of noise levels in dBA versus the allowable duration. ***This table is included in the below Appendix Section under Exposure Limits.***

Appendix

**Definitions and Reference Material**

* Form I - Hearing Conservation Program Employee Training
* Form II – Sound Level Meter Survey Record and Measurements
* Form III – Noise Dosimetry Survey Record and Measurements

**Further Details of Standards and Requirements**

* Audiometric Testing Program (Testing and Standard Threshold Shifts (STS)
* Hearing Protection Devices (HPDs) and Attenuation (Noise Reduction Ratings (NRR)
* Permissible Exposure Limits (PEL) Table N-1 and Calculations for Mixed Exposure Levels
* Definitions

Form I: Hearing Conservation Program Training Record

|  |  |  |  |
| --- | --- | --- | --- |
| **Department** |  | **Work Area** |  |
| **Employee** |  | **8-hour TWA Noise Exposure** |  |
| **Supervisor** |  | **Date** |  |

|  |  |
| --- | --- |
| **Topics to Cover** | |
| Company Hearing Conservation Program |  |
| Cal/OSHA Occupational Noise Standards explained |  |
| Worksite noise monitoring results |  |
| Effects of noise on hearing |  |
| Types of hearing protectors being provided, advantages/disadvantages of each, and attenuation and instructions |  |
| Purpose of the audiometric testing (hearing test) |  |
| Other |  |

I understand that I am responsible for the use of hearing protection in areas when it is required and will comply with the hearing conservation program, per the training received.

I acknowledge that I have been trained in the above areas.

Employee Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Form II: Sound Level Meter Survey Record and Measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** |  | **Survey Performed by** |  |
| **Address** |  | **Date** |  |
| **Sound Level Meter** |  | **Serial/Model #** |  |
| **Pre-survey Calibration Results** |  | **Post Survey  Calibration Results** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Location/Department** | **Time** | **Sound Level (dBA)\*** | **Duration at this level** |
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\*Measurements must be made with the A-Scale, slow response settings.

Form III: Noise Dosimetry Survey Record and Measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** |  | **Survey Performed by** |  |
| **Address** |  | **Date** |  |
| **Dosimeter Type** |  | **Model #** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Serial #** | **Calibration Pre/Post** | **Representative Employee** | **Dept./Work Area/Job Title** | **Time**  **Start/End** | **8-hr TWA exposure Level \*** | **Include under the HCP (Yes/No)** |
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\*Measurements must be made with the A-Scale, slow response settings.

**Survey Comments:**

Audiometric Testing Program Requirements

The below are additional Cal/OSHA requirements under the HCP

Employees in the HCP will be provided baseline (first) audiogram and annual audiometric testing at no cost to determine if a standard threshold shift (STS) has occurred.

**Testing**

* Baseline. The test will take place within six months of an employee’s first exposure at or above the (AL).
* Before an audiometric test can be administered, the employee must have at least 14 hours without exposure to workplace noise (such as over a weekend) or worn hearing protection for this period or if a mobile test van is used, a baseline audiometric testing within one year of the first exposure at or above the AL. NOTE: If a mobile test van is used and employees will be working more than six months without a first (baseline) audiometric test, employers must require these employees to wear hearing protectors until the baseline audiograms is obtained.
* Annual. Annual audiograms will be conducted within one year of the baseline and every year thereafter if an employee continues to be exposed to noise levels at or above the AL. The baseline and annual audiograms will be evaluated to establish a hearing threshold and annual retests will be compared to the baseline to determine if a standard threshold shift has occurred.
* Employees will have access to their monitoring and audiometric testing records.
* Employees who have experienced a standard threshold shift (TST) will be referred to a clinical audiologist or otologist for further examination. Such referrals may also be made if the audiological contractor suspects that medical problems of the ear have been caused or aggravated by hearing protection.

Audiometric testing contractor will comply with all requirements of the Cal/OSHA standard on hearing conservation including test location, equipment calibration and recordkeeping requirements.

**Standard Threshold Shift (STS)**

STS is defined as a change in the hearing threshold relative to the baseline audiogram of an average of 10 decibels or more at frequencies of 2000, 3000 and 4000 hertz in either ear. This just means that the audiologist must turn up the audiometer volume an average of 10 decibels so that the worker can hear these tones, it effectively is an STS. The standards allow some hearing loss from aging to be factored into the calculation of the STS.

Any standard threshold shift will be evaluated by a designated physician to determine if it is work-related. This evaluation will be done at no cost to the employee. If the annual audiogram shows that an employee experienced a standard threshold shift, a retest may be conducted within 30 days and the results of the retest will be used as the annual audiogram. If an STS has occurred:

* The employee’s hearing protection will be refitted.
* The employee will be retrained in the use of hearing protection and provided with hearing protection offering greater attenuation if necessary. NOTE; the hearing protection at this point must decrease the employee’s exposure to 85 dBA or below, instead of 90 dBA or below.
* The Program Administrator will determine whether the hearing loss should be recorded in the OSHA 300 form.
* The employee will be notified in writing by program administrator within 21 days.
* The employer must make available a copy of the Occupational Noise Regulations (California Code of Regulations, Title 8, General Industry Safety Orders, Occupational Noise Control of Noise Exposures, Sections 5095 through 5100), to the employee or representative, and post a copy in the workplace.

Hearing Protection Devices (HPDs)

Several types of personal hearing protectors should be provided. The most common ones are earplugs and earmuffs. There are other important types such as ear canal caps and helmets. Employees should be allowed to choose, with the help of the person providing the training, which are most comfortable.

It is important that employees understand how to wear these protectors properly and consistently to prevent hearing loss.

**Cal/OSHA requirements include the following:**

* HPDs should be worn when baseline audiograms have not been done and noise levels are at or above the AL.
* Engineering controls to reduce the noise levels below PEL are not feasible.
* Whenever an STS is experienced and noise levels are greater than the AL.
* They must be provided to employees are exposed at or above the AL.
* Employers must ensure that the HPDs reduce employee exposure to less than the PEL, or less than the AL when an employee has experienced an STS. Below is a definition for noise reduction rating (NRR) for this criterion to work.

**Noise Reduction Rating (NRR).** The NRR is a single-number rating that indicates how much the overall noise levels will be reduced by the use of the HPD. The NRR represents the protector’s ability to reduce noise under ideal laboratory conditions. This number must be adjusted to reflect the actual working environment.

To estimate the actual NRR, Cal/OSHA Appendix E within the noise standards lists several methods. The most popular is subtracting seven from the stated NRR on the HDP and then account for an additional 50% safety factor. For example:

* If the NRR of an earplug or earmuff = 29 dB
* First subtract 7 from 29 = 22 dB
* Then divide 22 in half to get a final adjusted NRR = 11 dB
* This HPD is adequate to protect most workers exposed to sound levels up to 101 dBA (i.e. 101 dBA – 11 = 90 dBA), unless, of course, an STS has been detected.

Double protection (e.g., earplugs and earmuffs) increase the protection by 5 dB over the higher of the two adjusted NRR rating.

Exposure Limits

Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table N-1 of this section when measured on the A-scale of a standard sound level meter at slow response.

When employees are subjected to sound levels exceeding those listed in Table N-1 of this section, feasible administrative or engineering controls should be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

**Table N-1 Permissible Noise Exposure1**

***Permitted Duration Permitted Duration***

***Sound Per Workday per Workday***

***Level (hours- Sound Level (hours-***

***(dBA) minutes) hours (dBA) minutes) hours***

90........... 8-0...... 8.00 103......... 1-19.... 1.32

91........... 6-58..... 6.96 104.......... 1-9.... 1.15

92........... 6-4...... 6.06 105.......... 1-0.... 1.00

93........... 5-17..... 5.28 106......... 0-52.... 0.86

94........... 4-36..... 4.60 107......... 0-46.... 0.76

95........... 4-0...... 4.00 108......... 0-40.... 0.66

96........... 3-29..... 3.48 109......... 0-34.... 0.56

97........... 3-2...... 3.03 110......... 0-30.... 0.50

98........... 2-38..... 2.63 111......... 0-26.... 0.43

99........... 2-18..... 2.30 112......... 0-23.... 0.38

100.......... 2-0...... 2.00 113......... 0-20.... 0.33

101.......... 1-44..... 1.73 114......... 0-17.... 0.28

102.......... 1-31..... 1.52 115......... 0-15.... 0.25

1 When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C1/T1 + C2/T2 . . . Cn/Tn exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level.

(c) If the variations in noise level involve maxima at intervals of 1 second or less, the noise is to be considered continuous.

(d) Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Definitions

**Action Level**. An 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of 50%.

**Audiogram**. A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

**Audiologist.** A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech, Hearing and Language Association or licensed by a state board of examiners.

**Baseline Audiogram**. The audiogram against which future audiograms are compared.

**Criterion Sound Level.** A sound level of 90 decibels.

**Decibel (dB**). Unit of measurement of sound level.

**dBA (Decibels-A-Weighted).** A unit of measurement of sound level corrected to the A-weighted scale, as defined in ANSI S1.4-1971 (R1976), using a reference level of 20 micropascals (0.00002 Newton per square meter).

**Hertz (Hz).** Unit of measurement of frequency, numerically equal to cycles per second.

**Medical Pathology.** A disorder or disease. For purposes of this regulation, a condition or disease affecting the ear, which should be treated by a physician specialist.

**Otolaryngologist**. A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.

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

**Sound Level.** Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB). For use with this regulation, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.

**Sound Level Meter.** An instrument for the measurement of sound level.