

**COSTA WATER DISTRICT**  
**HEARING CONSERVATION PROGRAM**

December 1998

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## 1.0 INTRODUCTION

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Exposure to excessive noise in the workplace can cause permanent hearing loss. Although the Contra Costa Water District (District) attempts to control noise exposures on equipment, certain operations, and work areas, employees may be exposed to significant noise levels. This Hearing Conservation Program has been established to help ensure that employees do not suffer health effects from exposure to excessive noise while working at the District

### 1.1 Purpose

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The purpose of this program is to set forth guidelines for the prevention of potential hearing loss resulting from exposure to high intensity and impact noise sources.

### 1.2 Scope

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This program applies to all District personnel and contractors, and complies with the California Code of Regulations, Title 8, General Industry Safety Order, Article 105, Sections 5095-5100, "Control of Noise Exposure." and the Code of Federal Regulations 1910.95 "Occupational Noise Exposure".

### 1.3 Other Applicable Standards

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- 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"

## 2.0 RESPONSIBILITIES

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### 2.1 Management

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Department Heads/Superintendents/Supervisors are responsible for implementing this program and for ensuring departmental compliance.

Specific responsibilities:

- Provide work environment which minimizes noise to the greatest extent reasonable.
- Provide hearing protection devices for employees where needed.
- Request Safety Officer to evaluate noisy operations or equipment if suspected to be emitting noise greater than 90 dBA.
- Ensure that employees exposed to noise receive training and are provided hearing protection devices.
- Attempt to engineer out loud noise sources.
- Provide easy access to hearing protection devices and ensure that employees use such devices where appropriate.

### 2.2 Employees

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Employees are responsible for complying with the District's Hearing Conservation Program. This includes participating in training, attending audiometry appointments, and wearing hearing protection devices.

Specific responsibilities:

- Wear approved hearing protection devices in posted noise hazard areas or when working with noisy equipment.
- Maintain devices in sanitary condition and proper working order.
- Report noise hazards and hearing protector problems to supervisor.

### 2.3 Safety Officer

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The Safety Officer is responsible for assuring District compliance with Cal/OSHA hearing conservation requirements.

Specific responsibilities:

- Monitor work sites for noise levels and inform employees and supervisors of results.
- Recommend appropriate noise control measures.
- Assist employees in selection of proper protection devices and provide instruction on their use.

- Arrange for baseline and annual hearing tests (audiometry).
- Communicate any identified standard threshold shifts to the employee and her/his supervisor.
- Provide information and training on noise hazards and hearing conservation.
- Establish any work restrictions necessary to prevent additional hearing loss.
- Post areas known to present noise hazards with signs requiring the use of hearing protectors.

## 3.0 EXPOSURE MONITORING

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The Safety Officer performs noise exposure monitoring of employees who may be exposed to noise over Cal/OSHA's 85 decibel dBA Action Level on an eight-hour time weighted average basis. Personal or area noise monitoring is conducted to identify employees for inclusion in the Hearing Conservation Program and to enable the proper selection of hearing protectors. Area noise monitoring is also used to identify work locations where average noise levels are typically above Cal/OSHA's 90 dBA PEL. These are areas where hearing protection should always be worn.

Employees or their supervisors should contact the safety officer to arrange for 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. The Safety Officer is to be contacted for follow-up monitoring if the hearing protectors in use are suspected of being inadequate. If desired, employees or their representatives may observe the noise monitoring procedure by arranging with the Safety Officer prior to the date of the monitoring.

Persons whose noise exposures have been monitored will receive written notification of their exposure monitoring results within 30 days from the Safety Officer. Persons whose eight-hour time weighted average noise exposure exceeds the Action Level will be enrolled in the District's Hearing Conservation Program. These individuals will be offered audiometric testing, will have hearing protectors made available to them, 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 District's 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 significant change is perceived in the workplace noise level.

## 4.0 AUDIOMETRIC TESTING

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The District arranges for annual audiometric testing on all persons enrolled in the Hearing Conservation Program. Such testing is conducted to establish a baseline audiogram, and to determine if the person suffers any significant hearing loss, or "standard threshold shift." Any person whose audiometric testing shows they have undergone a standard threshold shift will be notified of these results in writing within 30 days of detection. Such individuals will be retrained on the hazards and precautions of working in noisy environments and will be issued hearing protection devices with greater attenuation if determined appropriate by the Safety Officer. Other modifications to the workplace may also be needed to reduce noise exposures to prevent additional hearing loss.

Audiometric tests will be performed by a Certified Audiology Technician, designated by the District. The designated testing facility will maintain records of annual examinations and provide test results to the Safety Officer. The Safety Officer will notify the appropriate supervisor of those employees who are medically required to use hearing protection.

## 5.0 HEARING PROTECTORS

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Departments must provide hearing protectors (ear plugs or ear muffs) to all persons 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.

The use of hearing protectors is required:

- For all personnel exposed above the 90 dBA PEL.
- For all personnel who have a documented standard threshold shift and 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 packaging. The Safety Officer can help determine appropriate types of hearing protectors for specific situations.

It is the responsibility of Department Heads, Superintendents, and Supervisors to ensure that those personnel under their control wear proper hearing protectors wherever required. Department Heads, Superintendents, and Supervisors with assistance from the safety officer must also ensure that areas where noise levels are known to exceed the 90 dBA PEL are posted as requiring the use of hearing protectors.

## 6.0 TRAINING

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The District provides annual training for all persons enrolled in the Hearing Conservation Program. The training will specifically address the following:

- 1) Noise exposure effects on the human ear;
- 2) Hearing protection devices that are available and their limitations;
- 3) Proper fitting, use, and care of hearing protection devices;
- 4) Results of work area noise survey and an explanation of how the survey was conducted by the Safety Officer; and
- 5) Employees' responsibilities under the Hearing Conservation Program.

## 7.0 RECORD KEEPING

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The Safety officer maintains records of all personal exposure monitoring, and Human Resources maintains audiometric testing records for all persons enrolled in the Hearing Conservation Program. Exposure monitoring records are maintained for a minimum of three years, and audiometric test results are maintained for the duration of the person's employment. These records are available upon request to employees or designated employee representatives.

<b>MAXIMUM PERMISSIBLE NOISE EXPOSURE</b>		
Duration per Day (Hours)	Permissible Exposure Limit	
	Cal/OSHA <sup>(1)</sup> (dBA Slow Response)	ACGIH <sup>(2)</sup> (dBA Slow Response)
8	90	90
6	92.5	91.5
4	95	93
3	97.5	94.5
2	100	96
1	105	99
½	110	102
¼ or Less	115	105
0	140 (Impact <sup>(3)</sup> )	

Footnotes:

- (1) Cal/OSHA regulatory required PEL.
- (2) American Congress of Governmental Industrial Hygienists recommended PEL.
- (3) Impact or impulsive noise is any noise that is not continuous or has breaks greater than 1 second between cycles.

## DEFINITIONS

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**Action Level.** The level of noise exposure at which:

- A person must be enrolled in the Hearing Conservation Program, and must be provided 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 decibels (dBA) over an eight-hour period.

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

**Audiometric Testing.** Testing conducted for measuring the sensitivity of a person's hearing threshold in decibels, the testing also establishes a baseline hearing threshold to determine if hearing loss has occurred.

**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.

**Decibel (dBA).** The standard unit used to measure sound level. The decibel scale is logarithmic and every 3 dBA is a doubling of the sound level.

**Dosimeter.** An instrument for the measurement of sound level averaged over time.

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

**Impact Noise.** A noise that is not continuous or has breaks greater than 1 second between cycles.

**Noise.** Any unwanted sound.

**Noise Reduction Rating (NRR).** The amount of noise reduction in decibels provided by given hearing protection device.

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

**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.

**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.

**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.