

City of Newport News

Hearing Conservation Program



OSHA Occupational Noise Exposure Standard
29 CFR 1910.95

TABLE OF CONTENTS

I. Purpose3

II. Scope3

III. Definitions3

IV. Responsibilities4

V. Engineering and Administrative Controls8

VI. Noise Measurement8

VII. Audiometric Testing9

VIII. Hearing Protectors10

IX. Training, Education and Access to Information11

X. Recordkeeping12

XI. Program Evaluation13

APPENDICES14

- A. Affected Jobs
- B. Equipment Requiring Hearing Protection
- C. Areas Requiring Hearing Protection: Newport News Waterworks

I. Purpose

This shall program shall serve as the general Hearing Conservation Program for the City of Newport News.

This program is put in place to meet or surpass all requirements set forth in the Occupational Safety and Health Standards, 29 CFR 1910.95, Occupational Noise Exposure; 1926.52, Occupational Noise Exposure; and 1904.10, Recording criteria for cases involving occupational hearing loss.

Refer to the City of Newport News Personal Protective Equipment Program for specific hearing protection requirements.

II. Scope

This program is intended for all employees of the City of Newport News who are exposed to hazardous noise levels equal to or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent.

For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with 29 CFR 1910.95 appendix A and Table G-16, and without regard to any attenuation provided by the use of personal protective equipment.

III. Definitions

"action level" is an 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.

"audiogram" is a chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

"audiologist" is a professional specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association of licensed by a state board of examiners.

"baseline audiogram" is the audiogram against which future audiograms are compared.

"criterion sound level" is a sound level of 90 decibels.

"decibel (dB)" is a unit of measurement of sound level.

"hertz (Hz)" is a unit of measurement of frequency, numerically equal to cycles per second.

"medical pathology" is a disorder or disease, a condition or disease affecting the ear which should be treated by a physician specialist.

"noise dose" is the ratio, expressed as a percentage, of:

1. The time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure
2. The product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level.

"noise dosimeter" is an instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

"otolaryngologist" is a physician specializing in diagnosis and treatment of disorders of the ear, nose, and throat.

"qualified person" means a person with specific training, knowledge and experience in the area for which the person has the responsibility and the authority to control.

"representative exposure" measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employees deem to be representative of the exposure of other employees in the workplace.

"sound level" is 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. The unit is decibel. Slow time response in accordance with ANSI S1.4-1971 (R1976) is required.

"standard threshold shift" is a change in hearing threshold relative to the baseline audiogram for an employee, of an average of 10 decibels (dB) or more at 2000, 3000, or 4000 hertz (Hz) in one or both ears.

"time-weighted average sound level" the sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

"work environment" is the establishment and other locations where one or more employees are working or are present as a condition of their employment, including physical locations, equipment and materials used by the employee during the course of his or her work.

“work site” means any facility or location within the limits of the City of Newport News where City employees are working.

IV. Responsibilities

The City of Newport News Hearing Conservation Program (HCP) requires the utilization of engineering controls, when feasible, to reduce noise exposure for employees exposed to hazardous noise levels of 85 dBA or more (continuous or intermittent) or 140 dB peak sound pressure (impulse or impact). Only when it has been determined that engineering controls are technologically unavailable or cost prohibitive will the utilization of personal hearing protective devices be considered a permanent means of control.

i. Department Directors shall:

1. Comply with and enforce the Hearing Conservation Program.
2. Implement all feasible and practical engineering controls to reduce occupational noise exposure.
3. Oversee exposure assessments, exposure monitoring, hearing protector selection, training programs, and recordkeeping.
4. Alert the Safety Program Administrator to noise-related safety concerns within the department.

ii. Department Supervisors shall:

1. Implement all feasible and practical engineering controls to reduce occupational noise exposure.
2. Enforce employee use of ear protective devices and ensure that these devices are available at all times.
3. Wear hearing protection at all times when required.
4. Ensure pre-employment, annual and post-employment audiometric testing for all affected employees by communicating to Human Resources all pertinent information regarding affected employees occupational noise exposure.
5. Provide copies of noise measurements, training records and evaluations to Safety Program Administrator for recordkeeping purposes.
6. Schedule exposure assessments, exposure monitoring and training as needed.
7. Ensure all affected employees within their department/division are trained annually as required by standard 1910.95(k)(1)(2).
8. Communicate to Department Directors and Safety Officers first-hand observations of discrepancies and deficiencies noted in the City’s Hearing Conservation Program.
9. Alert the Departmental Safety Officer or Safety Program Administrator (926-1844) to noise-related safety concerns within the department.

iii. Medical Services Program Coordinator/Human Resources shall:

1. Schedule annual audiometric testing for personnel based on information provided by each department noting which employees are due for testing.
2. In writing, notify affected employees and departmental supervisors of scheduled audiometric testing to ensure it is conducted.
3. Receive results and maintain records of exposure monitoring and audiograms.
4. In writing, notify employees who have experienced a standard threshold shift (STS) of such an occurrence and schedule a follow-up audiogram if necessary. Notify the Safety Program Administrator so that program elements and employee use of hearing protection can be re-evaluated.

iv. Occupational Medicine shall:

1. Establish and maintain an audiometric testing program for all personnel included in the City of Newport News Hearing Conservation Program.
2. Maintain employee audiograms in accordance with referenced recordkeeping requirements.

v. Safety Program Administrator and Departmental Safety Officers/Representatives shall:

1. Oversee and/or conduct exposure assessments, exposure monitoring, hearing protector selection, training programs, and recordkeeping.
2. Communicate to Department Directors first-hand observations of discrepancies and deficiencies noted during inspections of high-noise work areas.
3. Recommend changes to the Hearing Conservation Program to increase its effectiveness.
4. Conduct noise measurements to identify hazardous noise areas and equipment.
5. Recommend engineering controls to minimize employee exposure to occupational noise.
6. Evaluate high-noise work areas at least annually and when changes in the workplace necessitate additional evaluations.
7. Evaluate hearing protector attenuation capability and assist in selection.
8. Ensure all required training is conducted and maintain training records.
9. Departmental Safety Officers and representatives will make available to the Safety Program Administrator copies of all training records applicable to the HCP when requested.

vi. Affected Employees Shall:

1. Follow safe work practices that reduce or prevent occupational noise exposures.
2. Attend required training.
3. Participate in audiometric testing.
4. Wear properly fitted hearing protection when necessary/required.
5. Report to supervisors any changes in processes or equipment that alter noise levels.

****A list of affected job positions can be found in Appendix A.****

vii. Affected Departments

Affected employees in the following departments are covered under the Hearing Conservation Program:

1. Engineering
2. Fire
3. General Services
4. Juvenile Services
5. Parks, Recreation & Tourism
6. Police
7. Public Works
8. Purchasing
9. Sheriff
10. Waterworks

V. Engineering and Administrative Controls

Whenever feasible, engineering, administrative, or work-practice controls will be instituted. Although insufficient to reduce exposure to below the permissible exposure limit (PEL), these controls shall be required in conjunction with PPE to reduce exposure to the lowest practical level.

VI. Noise Measurement

A. Noise Survey

Noise monitoring and measurement will be conducted when employee exposures are at or above the action level. Factors that suggest noise exposure in the workplace may be excessive include:

- Employee complaints of loudness of noise
- Indications employees are losing their hearing

- Noisy conditions which make normal conversation difficult
- Employees notice speech and other sounds are muffled for several hours after work, or they develop ringing in their ears

A preliminary noise survey will be conducted using appropriate sound-level measuring equipment and protocols to determine whether a potential noise problem exists. The preliminary noise survey will determine specific locations, work practices or equipment that require more detailed study and attention.

Detailed noise surveys will be conducted to obtain specific information about the noise levels for each employee's job. These surveys will be used to develop guidelines for establishing engineering and administrative controls, identify jobs where HCP enrollment is required and define areas or processes where hearing protection is required.

B. Exposure Monitoring

A monitoring program will be implemented when exposure assessments indicate that an employee's exposure may equal or exceed the action level. Monitoring will be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:

- Additional employees may be exposed at or above the action level.
- The attenuation provided by hearing protectors being used by employees may be rendered inadequate.

Sampling will be conducted as needed. Sampling is designed to identify employees for inclusion in the hearing conservation program and enable the proper selection of hearing protectors. Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, representative personal sampling will be used.

Employee noise exposures will be computed without regard to any attenuation provided by the use of personal protective equipment.

VII. Audiometric Testing

i. General Requirements

Each employee subjected to occupational noise at or above the action level will be provided an annual audiogram (hearing test). Audiograms shall be provided free of charge to all employees whose occupational noise exposures equal or

exceed the action level. Qualified personnel will administer audiograms provided by the City of Newport News.

ii. Baseline Audiograms

A valid baseline audiogram will be established within 6 months of an employee's first exposure at or above the action level. Where baseline audiograms are obtained more than 6 months after the employee's first exposure at or above the action level, employees will wear hearing protectors for any period exceeding six months after first exposure until the baseline audiogram is obtained.

Employees will be notified of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.

iii. Annual Audiograms

Employees's annual audiogram will be compared to their baseline audiogram to determine if the audiogram is valid and if an STS has occurred. If the annual audiogram shows that an employee has suffered an STS, a retest will be conducted within 30 days and the results considered as the annual audiogram. If a comparison of the annual audiogram to the baseline audiogram indicates an STS has occurred, the employee will be informed of this fact in writing within 21 days of the determination.

An annual audiogram may be substituted for the baseline audiogram when the audiologist, otolaryngologist or physician who is evaluating the audiogram determines the STS revealed by the audiogram is persistent, or the hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram. This will be considered the "revised baseline."

iv. Standard Threshold Shift

A standard threshold shift (STS) is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. Allowance may be made for the contribution of aging (presbycusis) to the change in hearing level.

Unless a physician determines that the STS is not work-related or aggravated by occupational noise exposure, the following steps will be taken when an STS occurs:

- Employee's already using hearing protectors will be refitted and retrained in the use of hearing protectors.

- Employees will be provided hearing protectors offering greater attenuation if necessary.
- Employees will be referred for additional testing if necessary.

If subsequent audiometric testing indicates that an STS is not persistent, Human Resources will inform the employee. At the discretion of safety personnel, the employee may be allowed to discontinue the required use of hearing protectors.

VIII. Hearing Protectors

i. General Requirements

Hearing protectors shall be made available at no cost to all employees exposed at or above the action level. Hearing protectors will be replaced as necessary at no cost. Employees will be given the opportunity to select from a variety of suitable hearing protectors provided and receive training in their care and use. Supervisors will ensure proper initial fitting and supervision of the correct use of all hearing protectors. For known high noise job assignments, employees will be fitted and trained prior to job assignment.

The following employees shall wear hearing protectors:

- a. Any employee exposed at or above the action level and who has not yet had a baseline audiogram established
- b. Any employee exposed at or above the action level and has experienced an STS
- c. Any employee who is required to wear ear protective devices based on results of previous testing

The City of Newport News will take no responsibility for protecting the hearing of employees of outside contractors. The City is not responsible for providing hearing protection to these persons or enforcing its use. Departmental Directors and/or supervisors will ensure that visitors on City property are given adequate ear protective devices before entering high-noise areas where hearing protection is required.

****A list of equipment for which hearing protection is required can be found in Appendix A.****

****A list of "Hearing Protection Required" areas specific to Newport News Waterworks can be found in Appendix B.****

ii. Attenuation

Hearing protector attenuation will be evaluated for the specific noise environments in which the protector(s) will be used. The adequacy of hearing protector attenuation will be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. Supervisors are responsible for informing safety personnel if re-evaluation is necessary.

IX. Training, Education, and Access to Information

A. Training Program Requirements

A training program shall be implemented by the department for all employees who are exposed to occupational noise at or above the action level. A competent person will conduct training. Training shall be repeated annually for each affected employee. Any and all updates or changes in protective equipment, work processes, or current regulations will be addressed in hearing conservation training. Employee participation shall be enforced.

B. Required Training Material

Affected employees shall be trained on the following:

1. The requirements and rationale for the OSHA standards regarding hearing protection and occupational noise exposure.
2. The departmental policy for hazardous noise reduction in the work area, including noise controls already implemented or planned for the future.
3. Hazardous noise sources at the specific work site(s).
4. Audiometry and its purpose; the description of the test procedure; and interpretation of the test results. Hearing-impaired employees will also be informed of special individualized audiometric testing requirements that may be used to obtain a valid audiogram.
5. Individual responsibilities for preventing hearing loss.
6. Training in the use of hearing protectors, which shall include the following elements:
 - The effects of noise on hearing
 - The purpose of hearing protectors
 - The types of hearing protectors available as well as the advantages and disadvantages of each
 - Instructions for selection, fitting, use and care of hearing protectors
 - Methods for solving common problems associated with hearing protector use including supervised, hands-on practice in the proper fitting of hearing protectors

C. Access to Information

A copy of the Hearing Conservation Program shall be made available to all affected employees. Informational materials that are supplied to the City of Newport News by OSHA regarding the HCP shall also be made available to affected employees.

Warning signs indicating "Hearing Protection Required" shall be posted on the periphery of all high-noise areas.

X. Recordkeeping

A. General Requirements

Employee (or former employee) records relating to occupational noise exposure and audiometric testing shall be provided upon request to the employee, representatives designated by the employee, OSHA, and the Safety Program Administrator.

Hearing Conservation Program documentation:

- Noise exposure measurement records shall be retained for a period of no less than 30 years
- Audiometric test records shall be retained for the duration of the affected employee's employment
- Departments will maintain an accurate record of all employee exposure measurements gathered during monitoring
- Documentation of engineering and administrative controls will be kept on file by the department
- Results of engineering sound surveys, installations of noise controls completed, evaluations, and equipment maintenance records will be kept on file by departments

The City of Newport News is responsible for providing to OSHA, upon request, all materials related to occupational noise exposure training and employee education. Departments implementing the HCP shall send copies of training rosters, educational materials, and all other information applicable to the HCP to the Safety Program Administrator for recordkeeping and compliance purposes.

B. OSHA 300 Log Requirements

Cases of occupational noise-related hearing loss must be recorded in the OSHA 300 Log when:

- An employee's audiogram reveals that the employee has experienced a work-related STS in one or both ears (and the employee's total hearing level is 25 decibels (dB) or more

above audiometric zero averaged at 2000, 3000, and 4000 Hz in the same ear as the STS).

- The employee is to be retested within 30 days and the retest indicates a recordable STS has occurred.
- If an event or exposure in the work environment either causes or contributes to hearing loss, or aggravates a pre-existing hearing loss, the case will be considered work-related unless otherwise determined by a physician.

Do not record hearing loss in the OSHA 300 Log when:

- The employee is to be retested within 30 days and the retest does not confirm a recordable STS.
- A case may be erased from the 300 Log if subsequent audiometric testing indicates that an STS is not present.

XI. Program Evaluation

The City of Newport News Hearing Conservation Program will be reviewed on an annual basis and updated as organizational or regulatory changes occur. Hearing losses prevented for each worker and the overall rate of hearing loss for all City employees exposed at or above the action level will be identified and evaluated to facilitate improvements in the program. Current engineering and administrative controls, employee and management training, as well as monitoring and audiometric testing practices are to be evaluated annually by each department implementing a Hearing Conservation Program.

APPENDIX A**Affected Job Positions under the Hearing Conservation Program****Engineering**

Architectural Engineer
Architectural Inspector
Construction Inspector
Construction Inspector Supervisor
Crew Supervisor A, B, C
Electrical Specialist
Electronics Specialist
Electronics Technician
Operations Superintendent
Supervising Engineer
Surveying Technician
Traffic Counter
Traffic Sign Fabricator
Traffic Sign & Mark Mechanic
Traffic Signal Tech
Traffic Technician

Fire

Chiefs
Fire Chief ASST
Fire Marshall
ASST Fire Marshall
Deputy Fire Chief
Deputy Fire Marshall
EMS Chief Fire
Battalion Chiefs
Fire Captains
Fire Lieutenants
Fire Prevention Inspectors
Fire Investigators
Firefighter/Medics

General Services

Asbestos Technician
Assistant Automotive Superintendent
Auto Technician
Automotive Technician Master
Automotive Welder
Carpenter Specialist
Construction Specialist
Electrical Specialist

APPENDIX A (cont'd)**General Services (cont'd)**

Environmental Services Supervisor
Fire Equipment Specialist
Generator Specialist
Maintenance Mechanic
Maintenance Specialist
Operations Superintendent
Plumber
Plumber Specialist
Trades Assistant

Juvenile Services

Detention Specialist
Juvenile Services Supervisor
Laundry Worker

Parks, Recreation, & Tourism

Auto Technician
Carpenter
Carpenter Specialist
Crew Leader
Crew Supervisor A & B
Equipment Operator
Golf Course Technician
Groundskeeper Assistant
Groundskeeper
Landscape Specialist
Landscape Technician
Park Ranger
Parks Construction Project Coordinator
Parks Landscape & Irrig Specialist
Parks Operations Superintendent
Parks Maintenance Specialist
Ranger Aide
Ranger Technician
Superintendent of Park Maint/Landscaping
Tree Maintenance Assistant
Tree Maintenance Specialist

Public Works

Asphalt Finisher
Carpenter
Carpenter Specialist
Concrete Specialist
Concrete Maintenance Worker

APPENDIX A (cont'd)**Public Works (cont'd)**

Concrete Worker
Construction Maintenance Worker
Construction Specialist
Crew Supervisor A, B, C
Equipment Operator
Generator Mechanic
Generator Specialist
Groundskeeper Assistant
Groundskeeper
Hydrant Repair Specialist
Inflow/Infiltration Tech
Maintenance Mechanic
Maintenance Specialist
Operations Superintendent
Operations Supervisor
Pipelayer
Pipelayer Specialist
Utilities Locator
Vector Control Superintendent
Vector Control Technician
Wastewater Inspector

Police

Captain
Lieutenant
Master Officer
Sergeant
Police Officer (all)
Police Officer Recruit

Purchasing

Printing Coordinator

Sheriff

Chief Deputy Sheriff
Deputy Sheriff
Jail Administrator
Laundry Worker
Sheriff

Waterworks

Asphalt Finisher
Automotive Technician
Automotive Technician Master

APPENDIX A (cont'd)**Waterworks (cont'd)**

Automotive Technician Welder
Construction Maintenance Worker
Crew Supervisor A, B, C
Equipment Operator
Forest Technician
Fleet Maintenance Supervisor
Fleet Operations Supervisor
Maintenance Mechanic
Maintenance Specialist
Master Meter Technician
Meter Operations Coordinator
Meter Operations Superintendent
Meter Reading Route Supervisor
Meter Reader
Meter Technician
Pipelayer
Residuals Facilities Operator
Residuals Operations Supervisor
Source Water Monitoring Tech
Source Water Monitoring Supervisor
Trades Assistant
Utility Crew Supervisor
Utility Pipeline Inspector
Valve Maintenance Specialist
Water Distribution Operations Coordinator
Water Distribution Superintendent
Water Systems Inspector Coord
Water Systems Inspector
Water Treatment Plant Manager
Water Treatment Plant Operator
Water Treatment Plant Op Trainee
Water Treatment Plant Shift Supervisor
Water Treatment Plant Supervisor

Appendix B

EQUIPMENT REQUIRING HEARING PROTECTION

<u>Equipment</u>	<u>A-Scale (dba)</u>
Air Gun	97.3
22k Air Motor	96.4
3P5	91.0
Boom Axe	96.3
Bulldozer D-3	95.5
Bulldozer D-7	105.7
Chain Saw	113.2
Chipper	97.4
Concrete Saw	104.0
Crane Bantam	92.0
Forklift (J.Deere)	94.3
943 Front End Loader	93.0
Generator on Line Truck	90.6
Grinder Bench	90.2
Grinder/Buffer grinding metal	92.7
Grinder 8" (Electric)	108.2
Impact Wrench (Pneumatic)	95.9
Jack Hammer on concrete	107.1
Jack Hammer on packed gravel Employee standing within 25' of Jack Hammer	107.5 96.3

Motor Grader	93.6
Mower (Lawn – Cub Cadet)	95.3
Mower (Push)	94.0
Mower (Riding Mitsubishi)	97.2
Mower (Tractor Ford)	94.0
Needle Gun	N/A
Pipe Motor (Ditch Witch)	93.1
Pipe Saw (Sawing pipe)	106.3
Pony motor	93.1
Ratchet (Pneumatic)	101.1
Roller	100.3
Stump Grinder	102.8
Tamper (Gas)	98.7
Tamper (Pneumatic)	96.7
Tractor Farm (John Deere)	94.7
Tractor (Ford)	94.3
Wach Travel Saw	95.8
Water Pump (Not pumping)	90.8
Weed Eater	97.1
Weed Eater (Stihl)	92.3
Welder/Generator	90.2

Appendix C

AREAS REQUIRING HEARING PROTECTION: Newport News Waterworks

<u>AREA MONITORED/LOCATION</u>	<u>TYPE SAMPLE</u>	<u>SOUND PRESSURE IN DECIBELS A-SCALE (dba)</u>
Diascund Pumping Station	Sound Level Meter	96.1
Harwood's Mill Pump Room (FW)	Sound Level Meter	85.4
<u>2600 Building Mail Star (8-30-05)</u>		
Mail Star	Sound Level Meter	90.7
<u>Lee Hall Water Treatment Plant (3-6-06)</u>		
Ozone Chiller	Sound Level Meter	84.7
Raw Water Intake	Sound Level Meter	83.7
HVAC Room	Sound Level Meter	78
Ozone Electrical Station	Sound Level Meter	66.6
Ozone Generator w/o Fan Running	Sound Level Meter	71.6
Ozone Power Source	Sound Level Meter	73.4
Ozone Recycle Pumps 2 Pumps Running	Sound Level Meter	97.3
Air Process Room	Sound Level Meter	86.8
Pilot Plant Research	Sound Level Meter	70.2
Pilot Plant Office	Sound Level Meter	67.6
Degas (Saturator)	Sound Level Meter	79.3
DAF Electrical Room	Sound Level Meter	69.2
DAF Basin (Clarification)	Sound Level Meter	79
Flash Mix Pump	Sound Level Meter	82.2
Ozone Destruct Unit Ozone 1&2 Running	Sound Level Meter	84.1
Ozone Destruct Unit Exhaust Outside	Sound Level Meter	77.7
Filter Back Wash gallery	Sound Level Meter	65.8
Humidifier room	Sound Level Meter	91.1
Filter Backwash Electrical	Sound Level Meter	68
High Service Pump Room 2 Pumps Running	Sound Level Meter	86.3
Lime mixing Room	Sound Level Meter	73.8
Electrical Switch gear	Sound Level Meter	73.8
Chiller	Sound Level Meter	68.4
Potassium Permanganate Room	Sound Level Meter	73.1