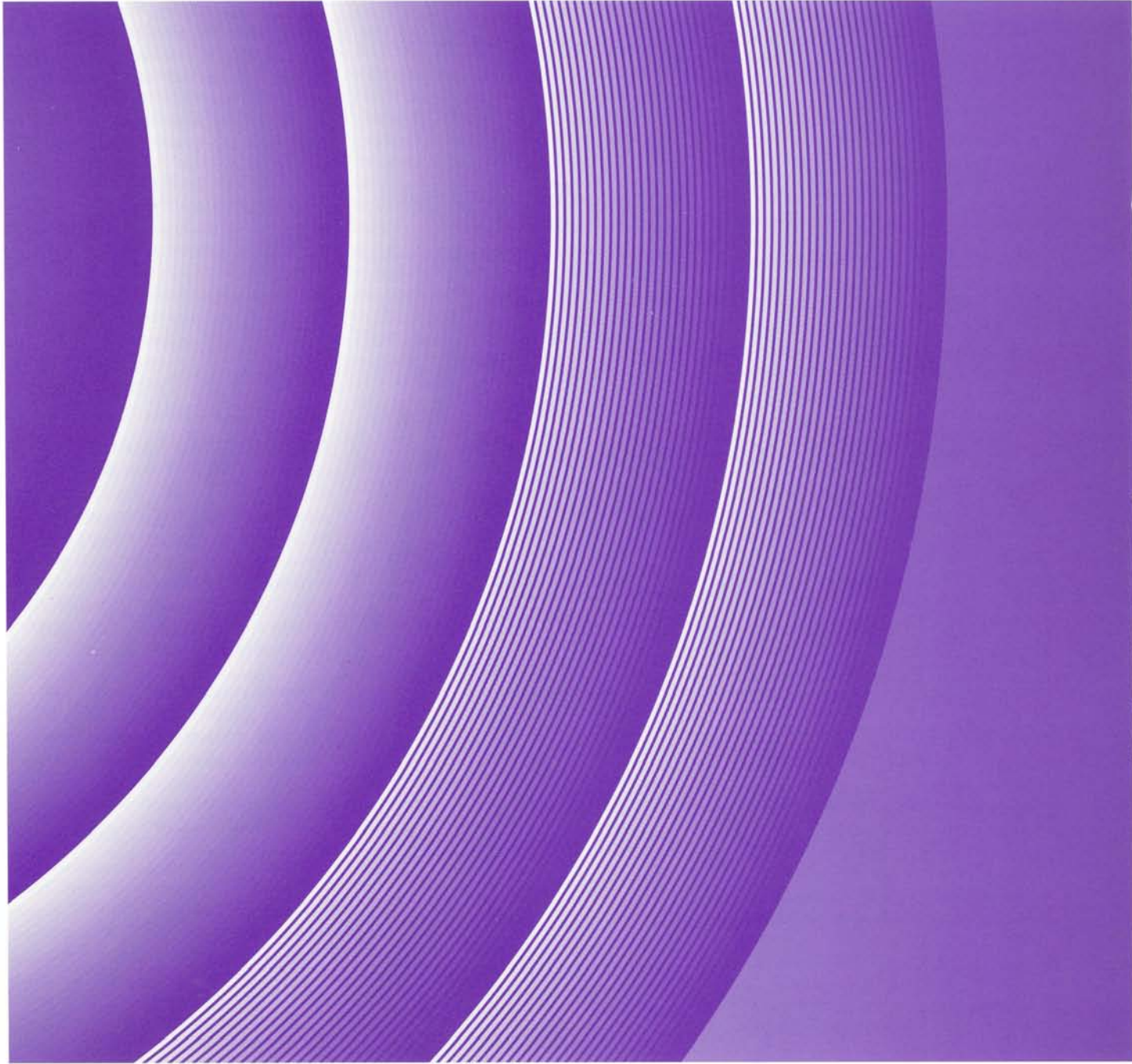


3M

Administrative Guide to Hearing Conservation



3M Hearing Conservation Program Administration

The OSHA general industry standard, Occupational Noise Exposure (29 CFR 1910.95) requires employers to reduce hazardous noise exposure to average levels of 90 dB(A) or below by means of feasible engineering or administrative controls. Employees whose average noise exposure levels exceed 85 dB(A) must be provided with a "continuing, effective hearing conservation program."

Responsibilities

1. Employer

The employer is responsible for setting the policy for the hearing conservation program, seeing that it is properly administered, and making sure that it complies with OSHA's requirements. This includes delegating or contracting with trained personnel to implement the various aspects of the hearing conservation program. Also the employer must provide or contract for the necessary noise control devices, noise measuring and audiometric equipment, and hearing protection devices.

2. Program Administrator

It is the responsibility of the individual who administers the hearing conservation program to be trained and knowledgeable in noise measurement, audiometric testing, employee training, and the various aspects of hearing protection devices. The same individual need not perform all of these functions, but a supervising professional should ensure that the functions are effectively coordinated.

3. Employee

The employee is responsible for cooperating with the various elements of the hearing conservation program and for wearing hearing protectors when required. Employees are also responsible for selecting a suitable hearing protection device from a number of options offered by the employer, and are responsible for the proper use and care of these devices.

Administration

So that the lines of responsibility are clearly drawn, it is recommended that individuals who perform various parts of the program be identified.

1. Management

Responsible for overall program administration.

Name: _____

Signature: _____

2. Safety, or Industrial Hygiene Departments

Responsible for directing and coordinating engineering noise control, noise exposure assessment, evaluation, fitting, and supervision of use of hearing protectors.

Name: _____

Signature: _____

3. Audiologist or Physician

Responsible for administering audiometric testing program, supervising technicians, reviewing problem audiograms.

Name: _____

Signature: _____

A Summary of OSHA's Noise Standard

OSHA's noise standard, 29 CFR 1910.95, calls for a maximum permissible exposure limit (PEL) of 90 dB(A). This noise limit is a time-weighted average level (TWA). The standard also uses a 5 dB exchange rate or trading relationship between noise level and duration, meaning that the exposure level may be increased by 5 dB every time the duration is cut in half (i.e., 95 dB(A) for 4 hours, 100 dB(A) for two hours, and so forth. See table below:

NOISE LEVEL dB(A)	EXPOSURE ALLOWED Hours	NOTE
85	16	1
90	8	2
95	4	
100	2	
105	1	
110	30 min.	
115	15 min.	3

1. Employees whose exposures equal or exceed an action level of 85 dB(A) must be entered into a hearing conservation program consisting of noise exposure monitoring, audiometric testing, hearing protection devices, training and education, and record keeping. Hearing protection devices must be provided to employees whose exposures equal or exceed the TWA and employees must wear them.

2. Noise exposures in excess of the 90 dB(A) PEL must be reduced by feasible engineering or administrative controls.

3. Continuous noise levels may not exceed 115 dB(A).



3M Hearing Conservation Program Requirements

Noise Exposure Monitoring

The first step in any hearing conservation program is to monitor noise levels to determine the extent of the exposures, to target those areas where noise control may be necessary, and to identify employees who should be included in the other aspects of the program. The standard requires noise exposure monitoring for all employees exposed to a TWA of 85 dB(A) and above. Area monitoring is allowable under some circumstances, but personal monitoring is required when workers are highly mobile, noise levels vary considerably, or when the noise has a significant impulsive component. All continuous, intermittent, and impulsive sound from 80 dB(A) to 130 dB(A) must be included in the calculation of noise exposure level or dose. Employees must be provided the opportunity to observe the monitoring and must be notified of the results.

Engineering Noise Control

Employers must use feasible engineering or administrative controls to reduce noise levels to the PEL. These may include:

1. Controlling the noise source
 - a. by designing a quieter method of carrying out an industrial process,
 - b. by purchasing quieter equipment,
 - c. by isolating or enclosing noisy machines.
2. Controlling the noise pathway
 - a. by installing sound-absorbing materials on walls and ceilings,
 - b. by erecting barriers or large curtains.
3. By controlling the receiver's immediate environment by constructing a sound-treated booth or control room.

Audiometric Testing

Audiometric tests must be provided every year to all employees whose exposures exceed a TWA of 85 dB(A). The tests must be administered by personnel who are trained and competent and, preferably, certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC). The technician who administers the test must be supervised by an audiologist, otolaryngologist, or other physician. The baseline audiogram must be performed within 6 months of the employee's first exposure to noise and after at least 14 hours away from noise. If a mobile testing service is

used, the baseline audiogram must be conducted within 12 months of the employee's first exposure to noise. Hearing protectors may be substituted for the 14-hour noise-free period, but this practice is not recommended.

Technicians may evaluate most audiograms, but "problem" audiograms must be referred to the supervising audiologist or physician. Audiograms must be evaluated to determine whether a "standard threshold shift" (STS) has occurred, which is defined as a change from baseline in either ear of an average level of 10 dB over the audiometric frequencies 2000, 3000 and 4000 Hz. Employees who experience an STS must be notified of this fact within 21 days of the determination, they must be counseled, and their hearing protectors checked. An annual audiogram may be substituted for the baseline if the reviewing professional determines that an STS is persistent. Employees must be referred for further evaluation if additional testing is necessary or if a medical condition of the ear is incompatible with the use of hearing protectors.

Audiograms must include the test frequencies 500, 1000, 2000, 3000, 4000 and 6000 Hz and audiometers must meet ANSI specifications for performance and calibration. Audiometers must undergo a daily check before each use, an acoustical calibration at least annually, and an exhaustive calibration at least every two years.

Hearing Protection

All employees exposed above the PEL (TWA of 90 dB(A)) must be provided with hearing protectors and must wear them.

Protectors must also be worn by employees exposed to a TWA of 85 dB(A) or above if:

- They have not yet received a baseline audiogram or
- They have experienced an STS

Employers must provide workers with a choice of suitable protectors, which OSHA has interpreted to mean at least one model of ear plugs and one model of ear muffs. More are preferred.

Hearing protectors must attenuate exposures to at least 90 dB(A) in most cases and to at least 85 dB(A) for employees who have not yet received a baseline audiogram or who have experienced an STS.

A choice of methods for assessing attenuation are given in the standard's Appendix.

The most convenient and commonly used method is the Noise Reduction Rating (NRR), which is printed on the hearing protector package. The NRR is to be subtracted from the employee's C-weighted workplace TWA. If C-weighted noise levels are not available, a 7 dB penalty must be subtracted from the NRR to account for spectral uncertainty before the NRR is subtracted from the A-weighted noise level in the employee's environment.

Employers must reassess the adequacy of hearing protector attenuation whenever there is a change in exposure or process that might necessitate greater attenuation.

Training Program

OSHA requires an annual training program for employees exposed to a TWA of 85 dB(A) or above. This program must include the following:

1. An explanation of the effects of noise on hearing.
2. The purposes and procedures of audiometric testing.
3. Several aspects of hearing protection:
 - The purposes of hearing protectors.
 - The advantages, disadvantages, and attenuation of various types.
 - Selection, fitting, use, and care of the devices.

It is also advisable to discuss extracurricular (recreational) noise exposures, as they also affect hearing in the same manner as occupational noise exposures.

The entire training program need not be conducted all at one time.

Record Keeping

The OSHA noise standard requires employers to keep records of noise exposure and audiometric tests, including details about instrumentation and calibration. Noise exposure measurements must be kept for at least two years and audiometric test records must be kept for the duration of employment. It is recommended, however, that both types of records be maintained for substantially longer periods.

The OSHA noise standard is a minimum standard and may be improved upon in numerous areas, as long as employers provide at least as much protection by the standard.

Hearing Protector Checklist

To achieve optimal results, the following checklist should be used for the issuance, inspection, and maintenance of hearing protectors:

1. Are hearing protectors available to all employees exposed above the 85 dB(A) action level?
2. Are hearing protectors worn by all employees exceeding the 90 dB(A) PEL? Are hearing protectors worn by those exposed over a TWA of 85 dB(A) who have not yet had baseline audiograms or who have incurred an STS?
3. Are employees properly trained in the selection, fitting, use and care of the devices? Are they motivated to wear the devices?
4. Are employees given a sufficient variety of protectors from which to choose?
5. Are the hearing protective devices sized if necessary? Are they fitted carefully with special attention to employee comfort?
6. Are employees instructed in the proper hygiene requirements for their specific devices?
7. Are employees trained at least once a year?
8. Are those who issue hearing protectors and counsel employees trained and competent in these tasks?
9. Are regular audits made to ensure employee compliance with the company's hearing protector policies?
10. Do workers who are required to wear protectors wear them for the entire time they are exposed to hazardous noise?
11. If employees use disposable plugs, are replacements readily available?
12. Are protectors inspected regularly for signs of age and wear? Are they replaced when necessary?
13. Do employees receive periodic otoscopic inspections to see if there are any problems with the ear canal or external ear that would contraindicate the wearing of hearing protectors?
14. Are unanticipated audiometric checks employed to test the fit of ear plugs?
15. Do employees receive special counseling with regard to hearing protection when their audiograms show progressive hearing loss?
16. Are employees encouraged to take their hearing protectors home for use during noisy yard work and hobbies?
17. Is the effectiveness of the hearing protection reevaluated periodically?

Hearing Protector Fitting and Use Form

Employee name:

Employee no.:

Job Title:

Work Area:

Date of last noise monitoring:

Noise exposure: _____ dB(A)

Area Monitoring

Personal Monitoring

Date and results of otoscopic inspection:

HEARING PROTECTOR

Minimum noise attenuation required _____ dB

Type:

Manufacturer:

Model:

Date issued:

Size:

Left

Right

Fitted and trained by:

Dates hearing protectors inspected:

Dates attenuation checked:

Frequency of use (always, sometimes, or never):

Comments:

Note: The information contained within this brochure represents the key elements of a written hearing conservation program as stated in OSHA's general industry standard for Occupational Noise Exposure (29 CFR 1910.95). For more specific information concerning legal requirements in your area, contact your local OSHA office. The information stated is not intended to represent 3M Company's written hearing conservation program.

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