

HEARING CONSERVATION TRAINING FOR EMPLOYEES

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

INTRODUCTION

Because hearing loss can be gradual, happening over a long period of time, we often don't recognize it's happening until it's too late. This is why we must make sound decisions when it comes to protecting our hearing by following our organization's hearing loss prevention plan, always wearing our hearing protection when required and taking steps to reduce off-job noise hazards. This program explains how your facility's hearing conservation program protects employees from the harmful effects of noise exposure.

Topics include how noise damages hearing, medical surveillance, noise reduction ratings, ear plugs and ear muffs, symptoms of hearing loss and off-job noise exposure.

PROGRAM OUTLINE

HOW NOISE CAN DAMAGE OUR HEARING

- Our sense of hearing is the culmination of a remarkable series of events.
- For us to hear a sound, it must first travel from its source to our ear. Sound travels in waves and upon reaching our outer ear, it is channeled into our ear canal.
- Inside the ear, these sound waves strike the eardrum, which is covered with a delicate membrane. The membrane of the eardrum vibrates against three delicate bones that carry the vibrations to a structure called the cochlea.
- The cochlea is filled with fluid and is shaped like a coiled tube. Inside the coiled tube-like structure of the cochlea are tiny hair-like structures called cilia.
- Similar to waves passing through marsh grass, waves induced by noise vibrations pass over the cilia, causing them to sway and bend. As they move, they transmit signals to the brain, which interprets these into the sounds we hear.
- Just as water waves can cause extensive damage as they increase in size and duration, as noise intensity and duration of exposure increase, the waves inside the cochlea can also become destructive and damage the delicate cilia structures.
- Damaged cilia do not repair themselves and we cannot grow more. When our cilia are damaged, any resulting hearing loss is permanent.

THE HEARING CONSERVATION PROGRAM

- To prevent hearing loss, OSHA requires a hearing conservation program be established when sound levels average 85 decibels over an eight-hour time-weighted period. The hearing program includes the key following elements.
- **Noise Assessment.** A noise assessment is conducted by properly trained hearing professionals. The noise assessment determines which areas require further noise reduction or the use of hearing protection. Once the noise assessment has been done, monitoring will take place periodically or when equipment or procedures have been changed that may affect noise levels.
- **Employee Training.** Properly trained employees are critical to a successful hearing conservation program. Employees will be informed how high levels of noise can damage their hearing and how to protect their hearing through the proper selection and use of hearing protection devices.
- **Audiometric Testing.** Audiometric testing refers to a program of hearing tests and evaluations by hearing professionals. These tests provide an initial hearing baseline for each employee so subsequent testing can reveal any indications of hearing loss.
- All of these elements together make up your organization's hearing conservation program.

MEDICAL SURVEILLANCE

- Medical surveillance is the process by which audiometric testing is used to help protect our hearing.
- Employees enrolled in the hearing conservation program will have their hearing tested once a year. An employee's initial test, known as a baseline audiogram, will establish a baseline against which future tests are compared.
- Employees should avoid high levels of noise or wear hearing protection for 14 hours prior to the test.
- During subsequent tests, if hearing loss of at least 10 decibels is recorded as compared to the baseline audiogram, a "standard threshold shift" has occurred. A standard threshold shift indicates that some hearing loss has occurred.
- When an employee's hearing test indicates that a standard threshold shift has occurred, the employee's exposure to noise and methods of protection will be examined.
- This may include retraining the employee to ensure hearing protection is being used properly or introducing administrative controls to reduce the amount of time the employee is exposed to high noise levels.

PROTECTIVE DEVICES & NOISE REDUCTION RATINGS

- Employees may be required to wear hearing protection to reduce their exposure to harmful noise.
- This will be the case when engineering and administrative controls fail to reduce employee noise exposure to those levels listed in OSHA's Occupational Noise Exposure Standard 1910.95 Table G-16; this table lists the maximum permissible noise exposures, in decibels, for various durations of exposure.
- For example, for an eight-hour exposure, the maximum permissible sound level is 90 decibels; for a shorter exposure of three hours, a sound level of 97 decibels is allowed.
- A noise assessment conducted by a hearing professional has determined the exposure levels of various work areas and appropriate hearing protection for those areas has been selected.
- The purpose of this hearing protection is to reduce employee noise exposure to levels at or below permissible levels indicated in Table G-16 of OSHA's Occupational Noise Exposure Standard.

- To help select hearing protection devices, each type of device has a noise reduction rating. The noise reduction rating is a measure, in decibels, of how much the device reduces the level of outside noise before it reaches the inner ear.
- Hearing protection devices with higher noise reduction ratings offer more protection than those with lower ratings.
- While useful in comparing one type of protection to another, be aware that the manufacturer's listed noise reduction rating is frequently higher than a device actually provides in real-world conditions.
- For example, the device must be properly installed and properly fitted to reach maximum effectiveness.
- In addition, there are various methods used to measure noise. The published noise reduction rating may have to be converted to match the type of noise measurements used by your organization; these conversion methods are listed in Appendix B of the OSHA Standard.
- Understanding a device's actual noise reduction rating and selecting appropriate hearing protection can be a complex process, which is why a hearing professional has participated in developing this critical part of your organization's hearing conservation program.
- If you are required to wear hearing protection, it will be provided to you by the company and you will be instructed how to use it properly.

THE EAR PLUG

- One of the most common types of hearing protection device is the ear plug.
- One advantage of ear plugs is that they are available in different sizes and can be disposable or reusable.
- Some ear plugs are designed to be inserted into the ear canal, while others, sometimes called canal caps, only cover the entrance to the ear canal.
- Most disposable ear plugs are made of polyurethane or other expandable foam, which is easily compressed for insertion into the ear.
- It is important to understand that these types of ear plugs must be installed properly to achieve their full noise reduction rating.
- To properly install this type of disposable ear plug into the ear, first make sure your hands are clean. One disadvantage of ear plugs is that handling with unclean hands can allow dirt, germs and other foreign matter to enter our ear canal.
- Once your hands are clean, compress the ear plug by rolling it in your fingers. With your other hand, pull up on the top of the ear; this helps to open the entrance to the ear canal so the plug can be inserted.
- Insert the plug into the ear canal and hold it in place with the tip of your finger while the ear plug expands. The ear plug will expand to conform to the shape of your ear.
- Reusable ear plugs do not require compression. This type of plug is usually made of silicone, rubber or plastic.
- They must also be inserted properly in the ear canal to achieve maximum noise reduction.

- Reusable ear plugs should be cleaned with soap and warm water on a regular basis and stored in a clean, dry container when not in use.
- Ear plugs come in many shapes and sizes, so be sure you find one that fits properly and comfortably. Ask for help if you are unsure about fit, comfort or installation of your ear plugs.

THE EAR MUFF

- Ear muffs are also a popular choice when it comes to hearing protection.
- Ear muffs are designed to cover the entire ear and consist of a pair of cups connected by a headband. These cups are usually filled with soft foam to provide a comfortable, secure fit and low-pressure seal.
- Some advantages of ear muffs are that one size fits all, they are easy to put on and take off and it is easy to visually verify they are being worn by employees.
- Also, with proper cleaning, ear muffs may be shared with other employees.
- Some disadvantages to ear muffs are some employees may find the tight fit uncomfortable; they may cause sweating or additional discomfort in hot environments; and, they may interfere with other equipment.
- In extremely loud environments, it may be necessary to wear both ear plugs and ear muffs.

SYMPTOMS OF HEARING LOSS

- If you are enrolled in the hearing conservation program, your annual audiometric testing will reveal if you have experienced any substantial hearing loss; however, you should also be aware of the symptoms that may indicate the onset of hearing loss.
- People with hearing loss can often hear but not understand what others are saying, especially in the presence of background noise or other conversations.
- Other symptoms include increasing the volume of your television or radio to levels uncomfortable for others and having trouble hearing in the higher frequency ranges, which include the voices of women and children.
- One common result of hearing loss, unfortunately, is to withdraw from social interactions because trying to communicate is difficult and frustrating. Relationships can suffer and depression is common.
- Hearing loss can have a huge impact on our state of mind and quality of life. If you suspect you are experiencing hearing loss, you must be extra vigilant to protect what hearing you have left.

OFF-JOB EXPOSURE

- In addition to protecting your hearing at work, it is equally important to protect your hearing off the job because harmful noise is harmful no matter where it occurs.
- For example, the noise level of lawn mowers and power tools is generally around 90 decibels; chain saws, circular saws and drills are each around 100 decibels; and, firing a gun exposes to over 120 decibels of noise.
- Depending on our length of exposure, each of these off-job activities can cause irreversible hearing loss if protection is not used.
- Keep a pack of disposable ear plugs in your tool box or garage. Get in the habit of wearing them or a pair of ear muffs any time you use lawn equipment, power tools or other noise-making equipment.

PREPARE FOR THE SAFETY MEETING

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your Videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to explain how your facility's hearing conservation program protects employees from the harmful effects of noise exposure.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Lead discussions about specific job tasks and work areas at your facility that have hazardous noise levels and the types of protection employees should use to prevent these hazards from causing damage to their hearing. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewers will be able to explain the following:

- How noise can damage our hearing;
- How the organization's hearing conservation program works;
- What the advantages and disadvantages are for various types of hearing protection;
- What some of the symptoms of hearing loss are;
- Why they should protect themselves from off-job noise hazards.

HEARING CONSERVATION TRAINING FOR EMPLOYEES
REVIEW QUIZ

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. Damaged cilia in the ear do not repair themselves and we cannot grow more.
 - a. true
 - b. false

2. OSHA requires a hearing conservation program be established when sound levels average _____ decibels over an eight-hour time-weighted period.
 - a. 65
 - b. 85
 - c. 105

3. A standard threshold shift has occurred when a hearing test indicates hearing loss of at least five decibels when compared to an employee's baseline audiogram.
 - a. true
 - b. false

4. According to the OSHA Noise Exposure Standard, the maximum permissible noise exposure for sound levels at 97 decibels is _____ hours.
 - a. three
 - b. six
 - c. eight

5. Hearing protection devices with higher noise reduction ratings offer less protection than those with lower ratings.
 - a. true
 - b. false

6. _____ ear plugs do not require compression when you insert them into your ear.
 - a. Disposable
 - b. Reusable

7. In extremely noisy environments, you may be required to wear both ear plugs and ear muffs.
 - a. true
 - b. false

8. Which of the following is a symptom of hearing loss?
 - a. having difficulty understanding what others are saying
 - b. increasing the volume of your television to levels uncomfortable to others
 - c. having trouble hearing in high-frequency ranges
 - d. all of the above
 - e. none of the above

ANSWERS TO THE REVIEW QUESTIONS

1. a

2. b

3. b

4. a

5. b

6. b

7. a

8. d