

Hearing Conservation Essentials



WORK-COMP
MANAGEMENT SERVICES



Rob Beck, RN, COHN, CCM
Manager – Quality Assurance and Innovation
Work-Comp Management Services
C: 765.838.9908
O: 765.447.7473
rbeck@workcompms.com

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Learning Objectives

Understand the purpose of hearing conservation

Identify the 7 Elements

Understand Recordkeeping Requirements

Learn Best Practices

HC Tips from a COHN/COHC



Terminology

Action Level - The noise level at which precautionary measures are required

Administrative Controls - Changing the way work is performed

Age Correction - Accounting for normal, age-related hearing loss (presbycusis)

Decibels - Unit of measure for sound levels

Engineering Controls - Changing the equipment, layout, or environment

Frequency - The physical measurement of the subjective term "pitch"

Hertz - Unit of measure for frequency

Impact noise - Defined as noise bursts with peaks more than one second apart

NRR - Noise Reduction Rating

Recordable Hearing Loss - Amount of decline which requires OSHA recording

Standard Threshold Shift - A significant change in hearing thresholds

Time Weighted Average - A computed average of all incoming sounds over time



Hearing Conservation Purpose

- Loud noise is one of the most common causes of hearing loss
- Occupational hearing loss is the most common work-related injury in the United States, and nearly all cases are preventable.
- Approx. 22 million U.S. workers are exposed to hazardous noise levels at work, and an additional 9 million are exposed to ototoxic chemicals (styrene, toluene, carbon disulfide).
- The Hearing Conservation Amendment of 1981 requires employers to implement a hearing conservation program when employee exposure levels reach 85 non-attenuated decibels over an 8-hour time-weighted-average (TWA). This is known as the "Action Level".
- As safety and health professionals, we have a responsibility to eliminate the hazard. Noise should be considered as a workplace hazard the same as you would an unguarded machine.
- Likewise, work-related hearing loss should be treated and investigated like any other work-related injury.



7 Elements of a HCP

1. Measure
2. Control
3. Protect
4. Check
5. Train
6. Record
7. Evaluate



1. Measure

The first step to any hazard management program is always to measure. In order to know and understand the risk faced by employees and employers alike, you must quantify the risk itself.

Measuring is performed using a noise dosimeter

Noise measurements establish three very important factors:

- a. Identification of the need for a HCP
- b. Determination of the appropriate hearing protection to reduce risk
- c. Sets parameters for employee rotation (5 dB rule)



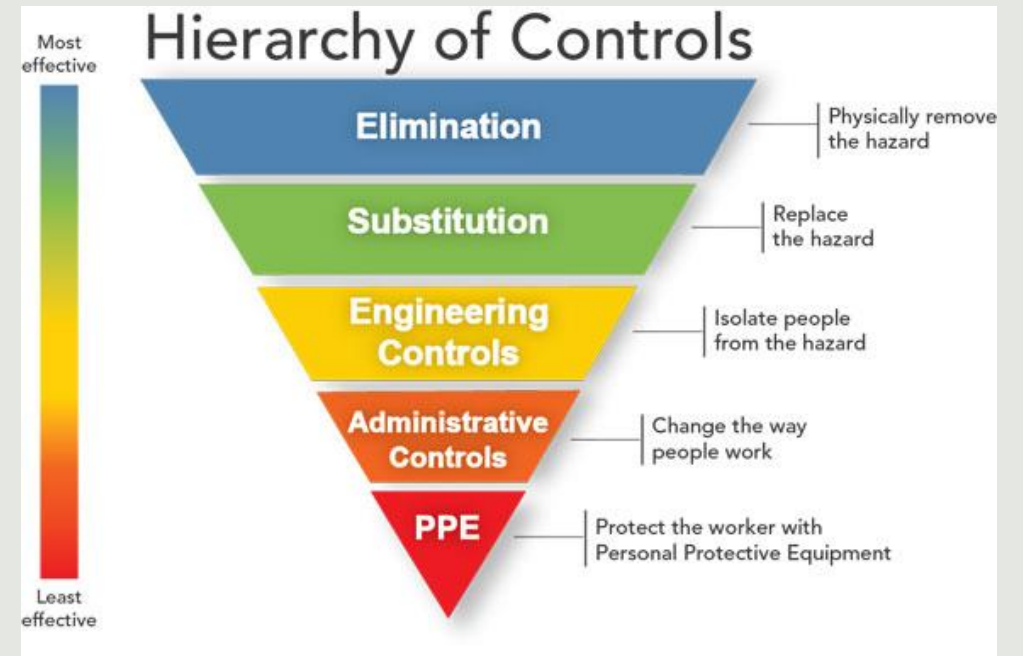
2. Control

Like any other hazard, we must turn to the Hierarchy of Controls.

Industrial equipment and other operations can exceed the action levels for noise exposure. Eliminating noise that exceeds 85 decibels is the most effective control.

In industry, it is common that noise cannot be eliminated. In these instances, engineering controls should be sought to limit the amount of noise. This is accomplished through regular maintenance, soundproofing and noise dampening, and updating equipment.

If engineering controls are not possible, administrative controls, such as rotating employees out of noise, should be considered.



3. Protect

In instances where engineering and administrative controls are not possible or effective, the next step in the Hierarchy of Controls is PPE.

Each NIOSH approved attenuation device has an associated noise reduction rating (NRR).

The goal of attenuation should be for the NRR to bring the employees exposure level to or below 90 dBA (PEL).

Double Attenuation Rule - 100 dBA/8hr TWA; 140 dBA impact noise

Keep in mind that NRRs are assigned in a laboratory setting. Due to this, attenuation devices must be "derated" prior to being assigned as compliant.

Applying the NRR is performed as follows:

Step 1: Subtract 7db from the listed NRR

Step 2: "Derate" - divide the result of step 1 by two.

Step 3: Subtract the result of step 2 from the exposure rating

An Example of Reducing the NRR

8-hour TWA noise exposure: 93 dBA

NRR of hearing protectors: 29 dB

Subtract 7 dB from the NRR: $29 \text{ dB} - 7 \text{ dB} = 22 \text{ dB}$

Divide by 2: $22 \div 2 = 11 \text{ dB}$

Subtract 11 dB from the
8-hour TWA noise exposure: $93 \text{ dBA} - 11 \text{ dB} = 82 \text{ dB}$

Decide if 82 dB (known as the "Protected Exposure")
is below the PEL for noise



4. Check

Worker's exposed to hazardous noise must be routinely checked to make sure they are not losing hearing due to noise in the workplace. This is true even for employees who regularly wear hearing protection.

OSHA requires a baseline audiometric (hearing) test within 6 months of employment (within 1 year if you use a mobile testing solution)

The baseline audiogram becomes the control for determining hearing loss.

Following the establishment of baseline, annual hearing tests are required thereafter. Annual audiograms are compared to baseline.

Standard Threshold Shift: A change in hearing threshold of an average of 10 dB or more at 2000, 3000, and 4000 hertz.



5. *Train*

Employees working in hazardous noise must be trained annually on the following items:

1. The effects of noise on hearing
2. The purpose of hearing protectors and advantages/disadvantages of various types of attenuation.
3. Instructions on selection, fitting, use, and care
4. The purpose of audiometric testing



6. Record

To record or not record?

1. Has the employee suffered a STS?

No - Stop. This is NOT an OSHA recordable hearing loss.

Yes - Continue to question 2

2. Is the employee's overall hearing level at 25dB or more above audiometric zero?

No - Stop. - This is not an OSHA recordable hearing loss.

Yes - Continue to question 3

3. Is the hearing loss work-related?

No - Stop. This is NOT an OSHA recordable hearing loss.

Yes - Record this as a hearing loss case on your OSHA log.



7. Evaluate

In order to determine if the HCP is effective, it should be evaluated annually. The following questions should be asked?

1. How many work-related STSs occurred last year?
2. How recent is our noise sampling data?
3. Is our training program sufficient?
4. Are our employees knowledgeable about our HCP?
5. Are employees compliant with the attenuation standards of the company?
6. Are there technological advancements for engineering controls?
7. For past solutions that were not implemented, has something changed such that the solutions should be reconsidered?



Tips from a COHN/COHC



1. Revise the baseline... but do it right!

A common mistake is to revise the baseline immediately following a recordable threshold shift. Per OSHA, in order to revise a baseline, the shift must be continuous.

Baseline revision should occur the following year after the shift is confirmed in a 2nd audiometric test. The 2nd test does not need to be recorded, and the prior year's test becomes the new baseline.

2. Retest!!!!

“A single annual audiogram doeth not a recordable make”

- Socrates..... (maybe)

Use your 30 day retest to confirm the shift!

3. Apply age correction

Age correction is fair game. OSHA maintains a table for age correction in its standards. Every EH&S manager should have this in their desk somewhere.

4. Run the numbers again

Audiometric testing software is not perfect.... Nor are the people administering the program....

The first thing you should do upon learning of a potential STS is verify and validate the calculations. This can be done manually with age correction applied, or there are many STS calculators available for use online.

5. File the claim

Work related hearing loss is considered a work-related injury. A claim should be filed with your worker's compensation insurance/TPA for appropriate management.

6. Most important - Investigate!

Applying causation to hearing loss can be challenging for a physician or audiologist. Investigation documents can be incredibly helpful. These include noise sampling data, impact noise ratings, outside hobbies, prior hearing loss, etc.

All of this information should be provided to the claim adjustor/ENT/Physician prior to the referral for evaluation. Failure to do so may lead to a recordable on your OSHA log that may not truly be due to work.

Questions?

