

# HearForever: Best Practices in Hearing Conservation



# Agenda

- Noise + Acoustics
- How We Hear
- Hearing Protection Selection
- Noise Reduction Rating (NRR)
- Reducing Costs + Claims for Hearing Loss
- Hearing Protectors + Fitting Tips
- Training + Motivation

# Noise + Acoustics

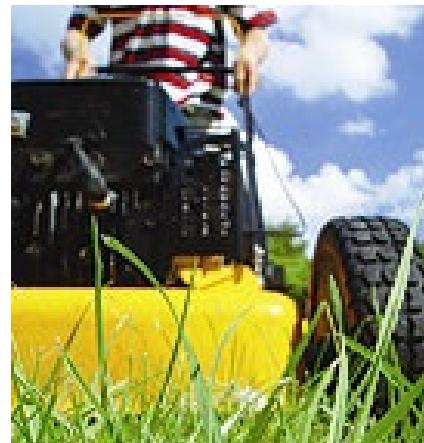
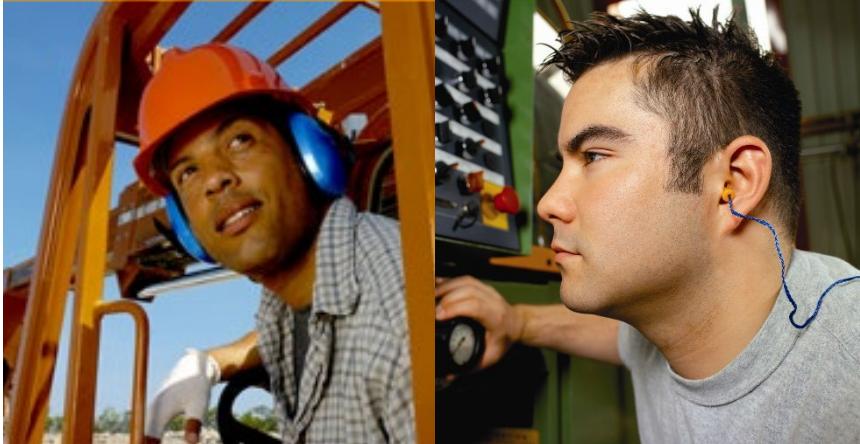
HOWARD  
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by SPERIAN

## Hazardous noise exposures occur

### On the Job



### Off the Job

# **Noise-Induced Hearing Loss**

**Causes no pain**

**Causes no visible trauma**

**Leaves no visible scars**

**Is unnoticeable in its earliest stages**

**Accumulates with each overexposure**

**Takes years to notice a change**

**Is Permanent + 100% Preventable**

Noise-induced hearing loss is the most common permanent and preventable occupational injury in the world.

*World Health Organization*

## Worker's Compensation

In many countries, excessive noise is the **biggest compensable occupational hazard**. Cost of NIHL to developed countries ranges from **0.2 to 2% of its GDP**. NIHL is **on the rise** globally. (Source: WHO)

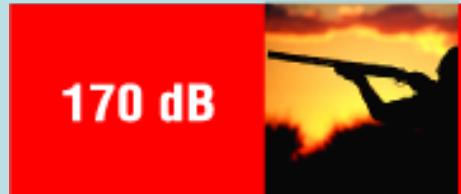
## United States Statistics

**Most common** occupational injury in the United States. **22 million US workers** are exposed to hazardous noise at work on a daily basis.

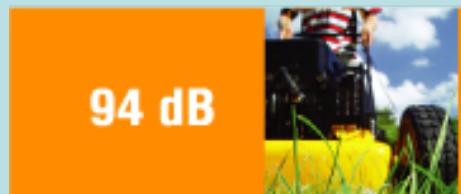
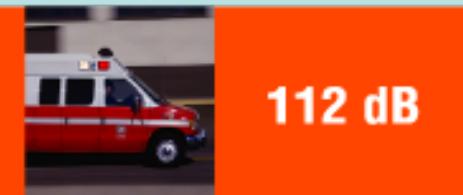
Approx. **8 million Americans suffer from NIHL.** (Source: NIOSH, 2009)

# Noise + Acoustics

## Non-Occupational



## Occupational



160 dB

Immediate Physical Damage

115 dB

Unprotected Noise Exposure  
of Any Duration Not Permitted  
Above This Level

90 dB

Hearing Protection Required by OSHA

85 dB

Ear Damage Possible

50 dB

Comfortable

If you must **SHOUT** to be understood over background noise...



...when standing one arm-length away from another person, that background noise is **HAZARDOUS**.

## Do jets, stereos, my neighbor's dog, air conditioner or mobile phones **cause NIHL?**

- To damage hearing, noise must be of sufficient intensity and duration
- Annoyance noises generally do not have the same intensity or duration to cause damage

## The decibel (dB) scale is a logarithmic scale, not a linear scale

83

If the noise source is doubled

86

The noise level only

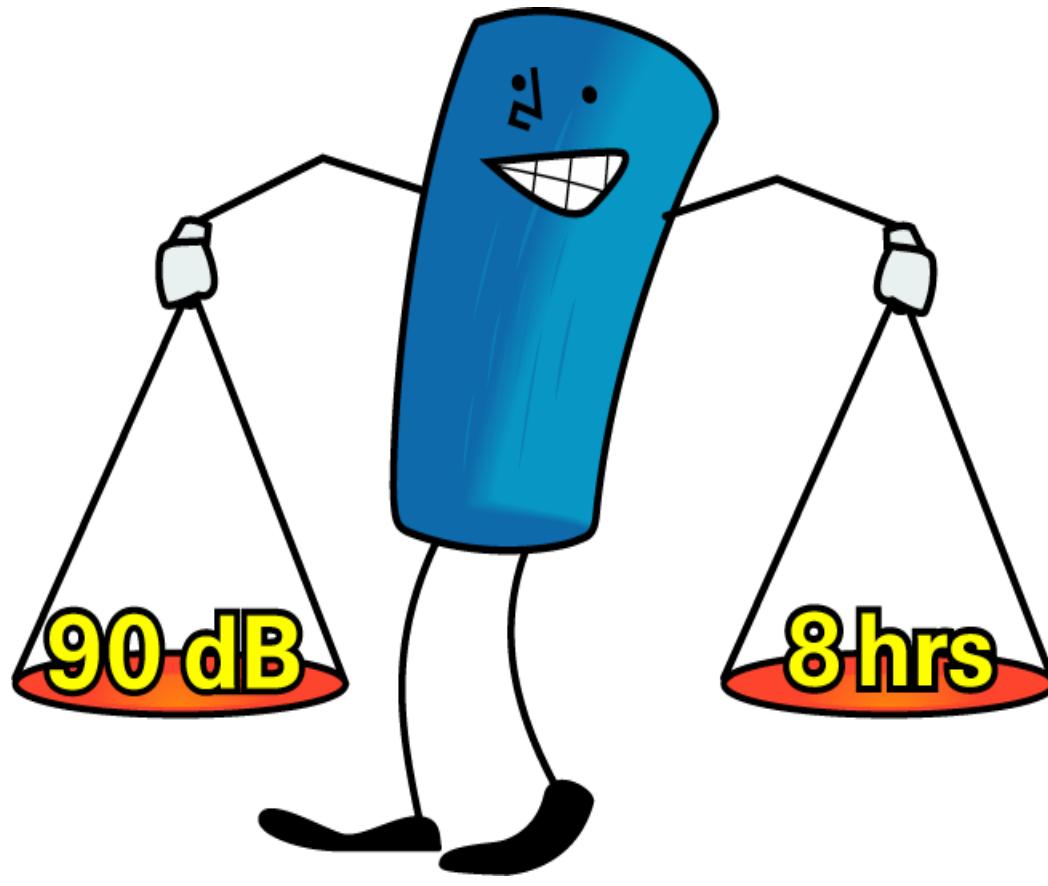
89

Small  
increases  
in decibel  
level

92

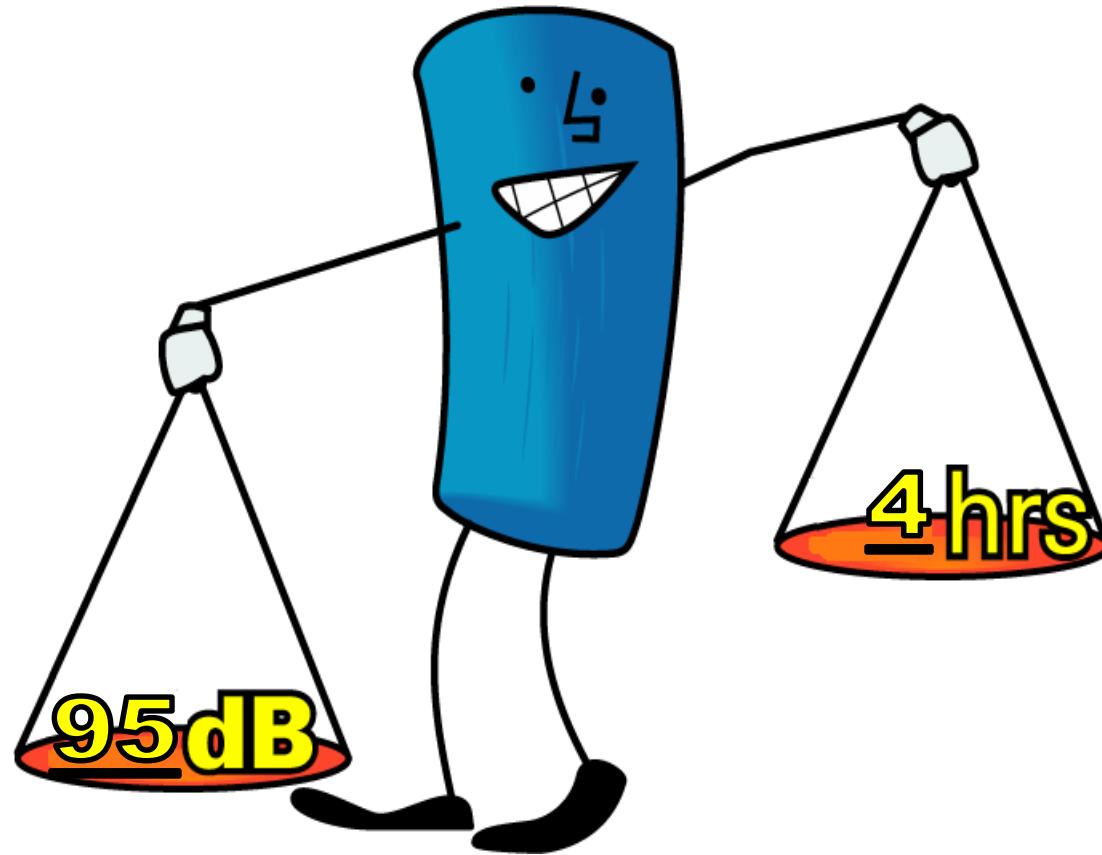
Represent enormous  
increases in noise level  
and risk

## Time Weighted Average



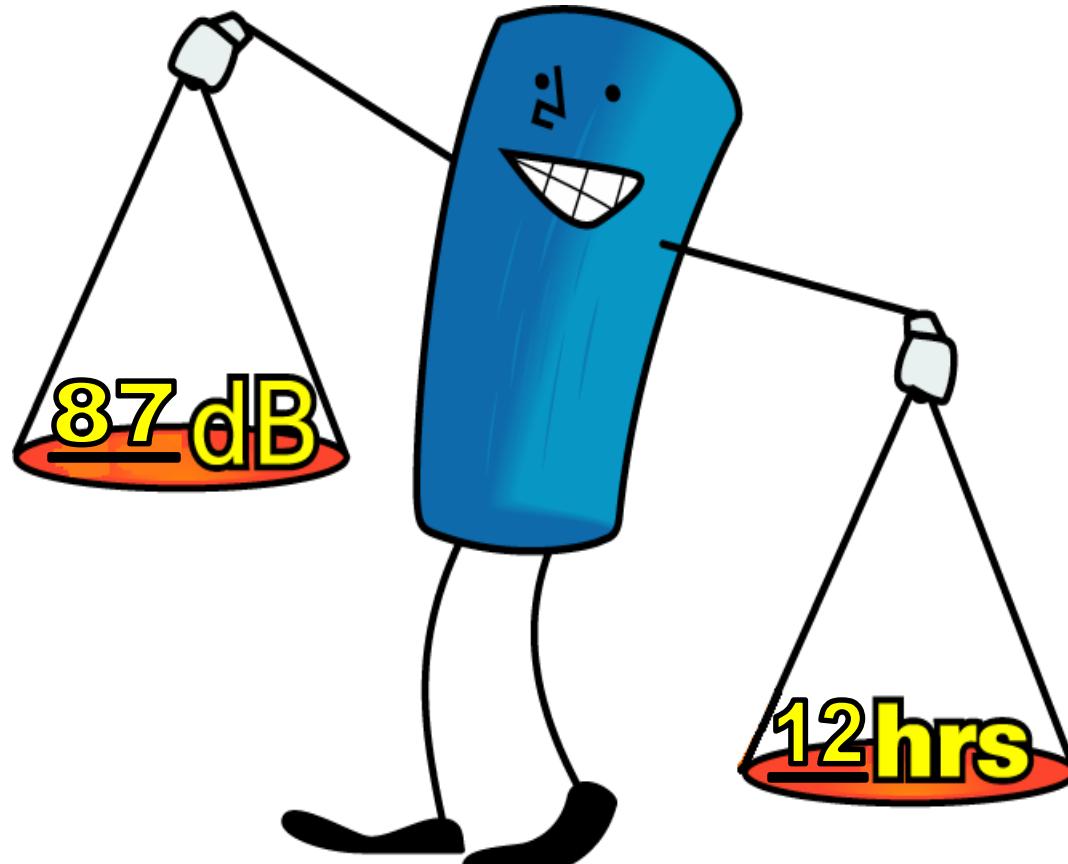
Permissible Exposure Limits

## Time Weighted Average



### Permissible Exposure Limits

## Time Weighted Average



Permissible Exposure Limits

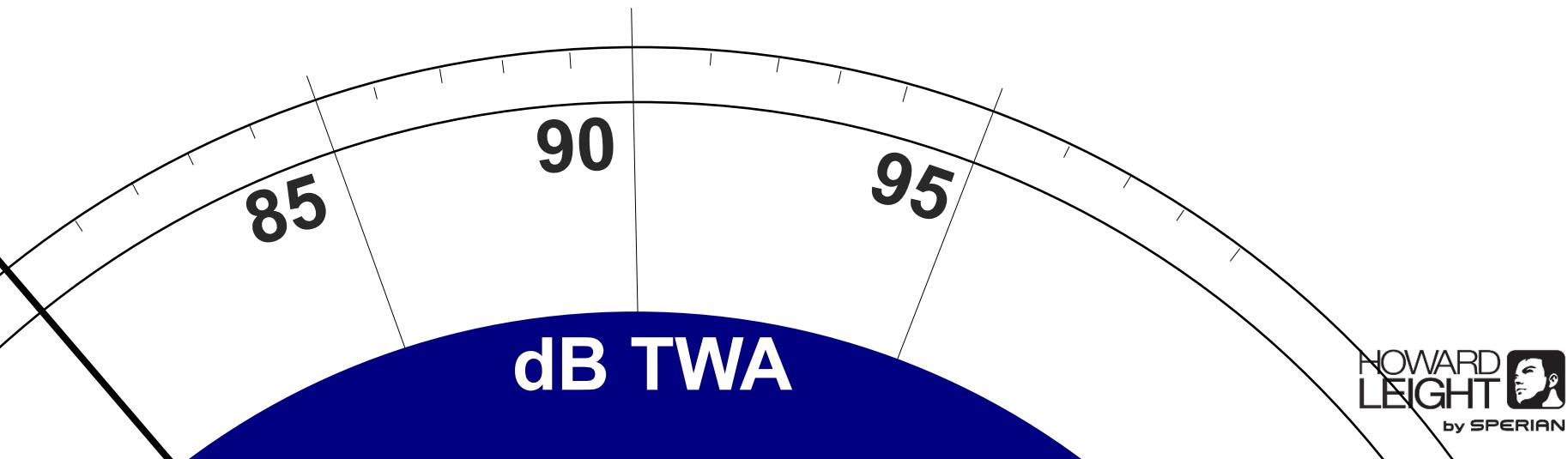
## Regulations in the United States

	<b>OSHA 29 CFR 1910.95</b> Industry	<b>OSHA 29 CFR 1926.52</b> Construction	<b>MSHA 30 CFR Part 62</b> Mining	<b>FRA 49 CFR 227/229</b> Railroads
<b>Permissible Exposure Limits</b>	90 dB	90 dB	90 dB	90 dB
<b>Action Level</b>	85 dB	85 dB	80 dB	85 dB
<b>Noise Monitoring</b>	Required	Not Required	Required	Required
<b>Audiometric Testing</b>	Annual	Not Required	Annual	Every 3 Years
<b>Training</b>	Required New Hires/Annual	Not Required	Required New Hires/Annual	Required New Hires/Annual
<b>Hearing Protectors</b>	Required @ PEL	Required @ PEL	Required @ PEL Dual Protection @ 105 dB TWA	Required @ PEL
<b>Recordkeeping</b>	Required OSHA 300 Log	Not Required	Required	Required OSHA 300 Log

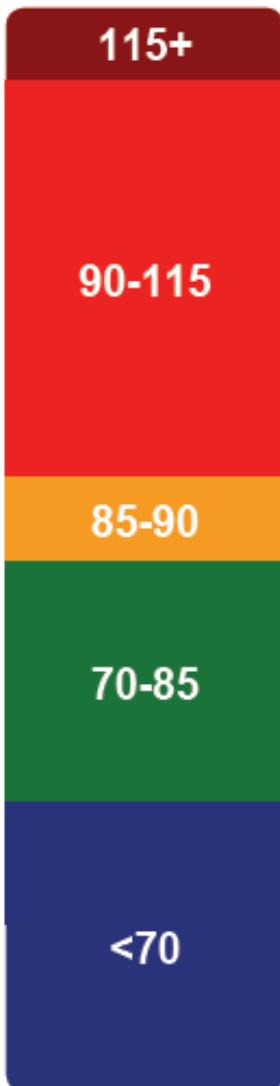
# Hearing Conservation Program

## Action Level – 85 dB

- Hearing Conservation Program implemented
- Hearing protectors made available
- Annual audiometric testing & training



## Overprotection/Underprotection



**20-25%** workers exposed between **80-90 dB** will still get **NIHL**. While HPD use is mandatory at 90 dB, you should **protect to at least 85 dB**.

Avoid **overprotection** – protected levels below **65-70 dB** can create additional safety risk.

## Noise Measurement Devices



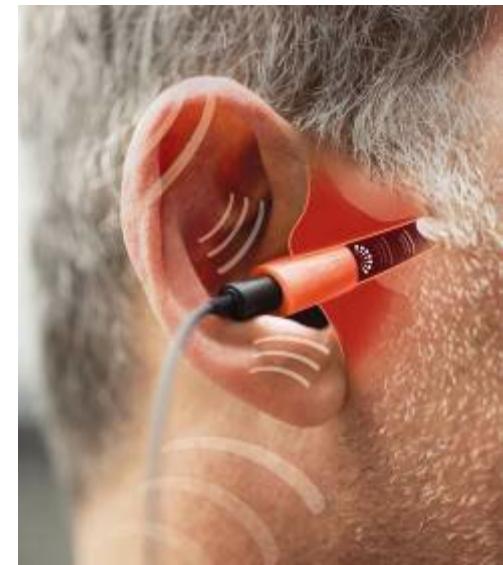
### SOUND LEVEL METER

Sound is measured immediately in a specific area



### PERSONAL DOSIMETER

Sound “averaged” throughout day for sample employee/job



### IN-EAR DOSIMETER

Collects personal noise dose – the only **real** measure of risk

## Hierarchy of Controls

### ENGINEERING CONTROLS

- *Buy Quiet*
- *Vibration Pads*
- *Enclosures*
- *Barriers*
- *Isolation*

### ADMINISTRATIVE CONTROLS

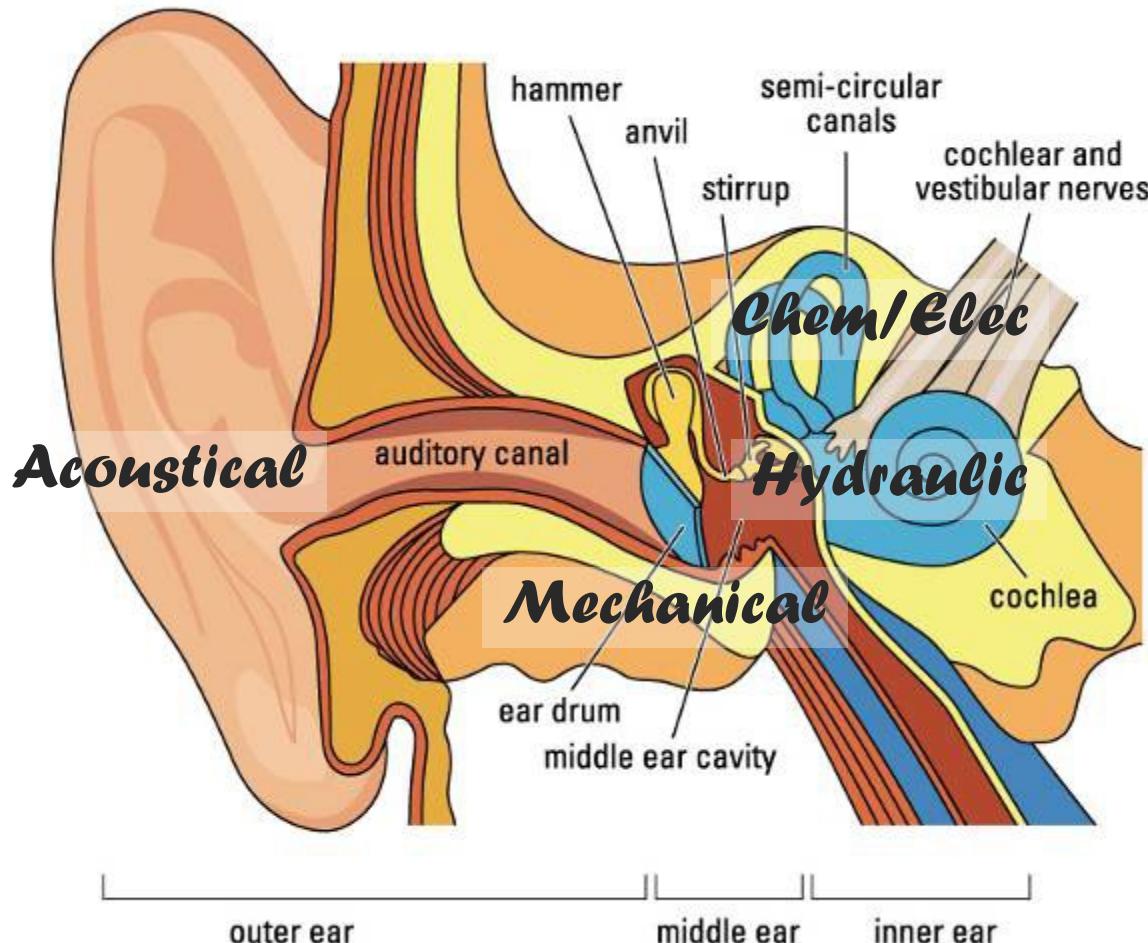
- *Rotate Work*
- *Extended Breaks*
- *2<sup>nd</sup>/3<sup>rd</sup> Shift*

### PERSONAL PROTECTIVE EQUIPMENT

# How We Hear

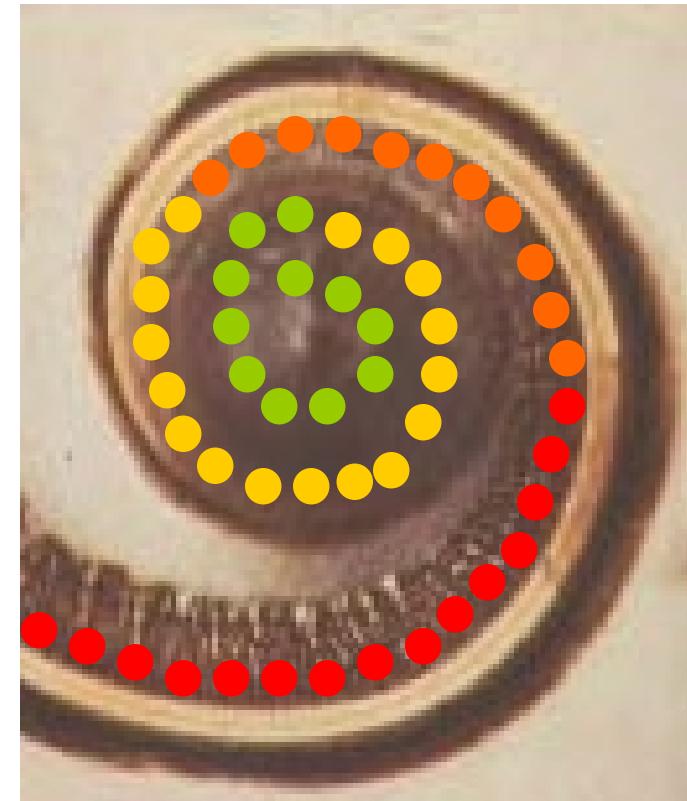
# How We Hear

## The Auditory System



# Hearing + Frequencies

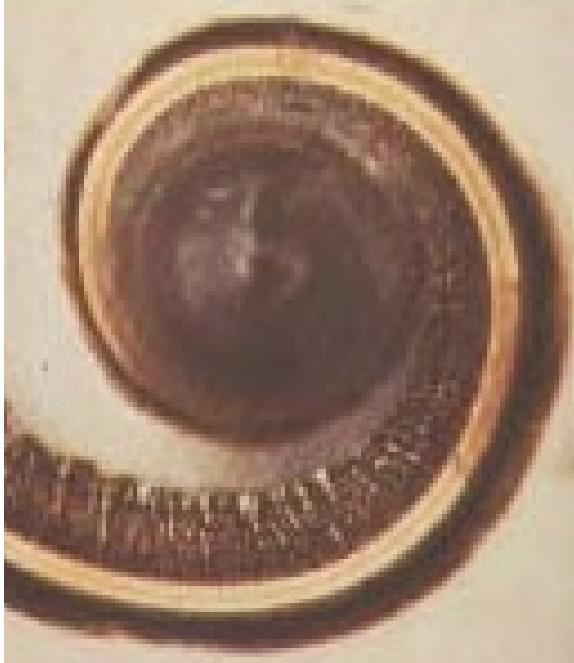
- Nerve cells in the cochlea are tuned to specific frequencies
- Base of the cochlea is sensitive to high frequency sounds (**red dots**)
- Tip of the cochlea is sensitive to low frequency sounds (**green dots**)



## The Human Cochlea

### 17-year old girl

- Low noise exposure
- Normal cochlea
- Receptors intact



### 76-year old man

- Low noise exposure
- Fewer receptors but still intact



### 59-year old man

- High noise exposure
- Damaged cochlea
- Receptors destroyed



# High Frequency Sounds of Speech



# Normal Hearing is Understandable

# LOUDNESS

**How We Hear**

# **NIHL Lacks Clarity**

**CLEARNESS**

# Hearing Protection Selection

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# Hearing Protection Selection

## Earplugs

### PRO

- Comfortable for extended use
- Disposable earplugs available
- Cooler in hot/humid environments
- Single-use foam plugs can provide highest levels of attenuation



### CON

- Attenuation highly dependent upon good fit
- Hygiene issues in dirty environments

## Earplugs

### CARE/MAINTENANCE

- Dispose single-use earplugs daily
- Clean multiple-use earplugs with mild soap and water, dry thoroughly
- Inspect multiple-use earplugs for dirt, cracks or hardness, replace if damaged



# Hearing Protection Selection

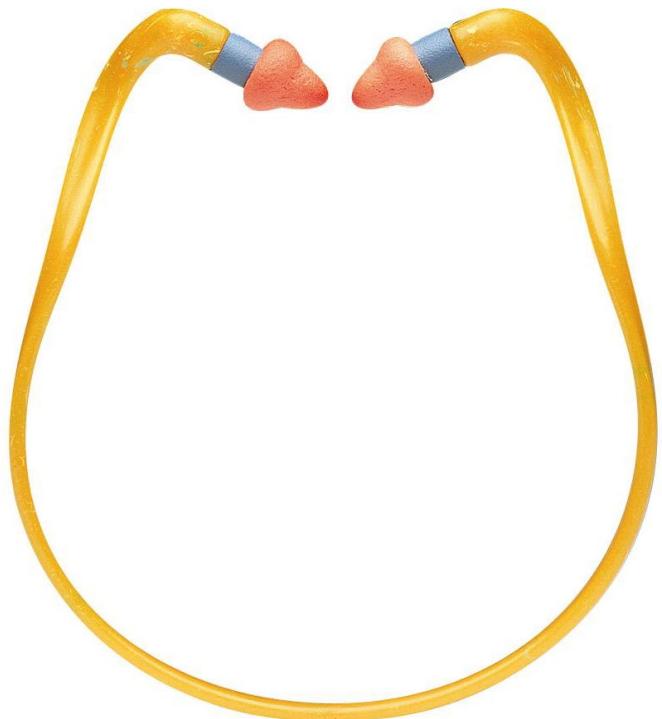
## Bands

### PRO

- Very convenient for intermittent noise
- Readily available around neck when not in use

### CON

- Lower attenuation than most earplugs
- Some noise transmission through band

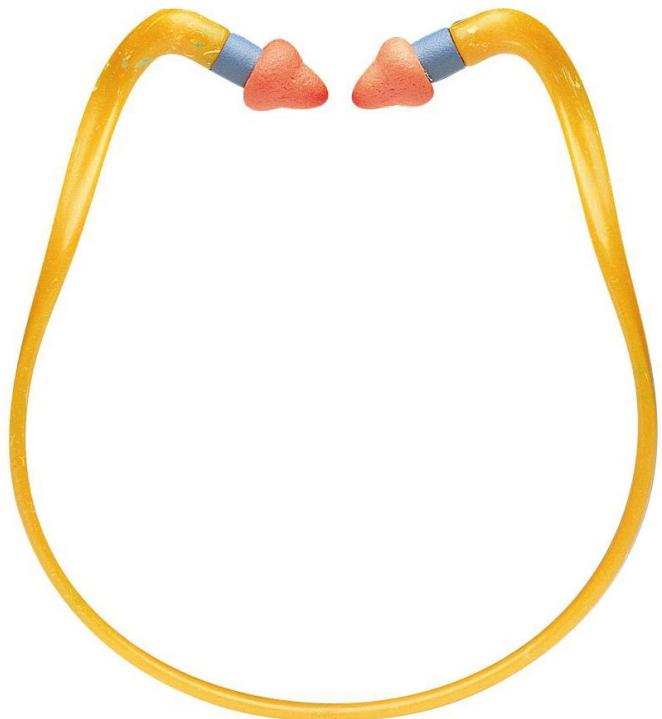


# Hearing Protection Selection

## Bands

### CARE/MAINTENANCE

- Clean and replace pods regularly
- Do not overstretch band



# Hearing Protection Selection

## Earmuffs

### PRO

- Easy to get proper fit
- Good for intermittent noise
- Radio & electronic options

### CON

- Can feel hot/heavy with extended wear
- Compatibility with other PPE?



# Hearing Protection Selection

## Earmuffs

### CARE/MAINTENANCE

- Clean ear cushions and headband regularly with mild soap and water
- Replace ear cushions and foam inserts every 4-6 months with normal wear, more often with heavy use/extreme conditions
- Do not overstretch headband



# Hearing Protection Selection

## Hearing Protection Selection Factors

Comfort

Noise Reduction

Size

Communication

Job Requirements

Hygiene

Use with Other PPE

- Select HPDs that can work with other PPE without compromise
- Cap-mounted earmuffs for hard hats
- Multiple-position earmuffs for full-brim hard hats
- Ultraslim neckband earmuffs with welding shields

# Hearing Protection Selection

## Selection Factors

Hearing Protection Basics      Hearing Protector Selector

**Make Your Selections**

**1 Exposure Levels**  
 Noise Level [dB]  
 Protection Level (NRR)  
 Don't limit results  
Exposure Range:  
95-100 dB

**2 Product**  
**3 Style**

**Reset Selections**

**4 Features**

**24 Products fit your criteria.**  
Select products to compare.

84      117

Earplugs       Earmuffs  
 Single-Use       Headband  
 Multiple-Use       Cap-Mounted  
 Banded       Neckband  
       Multiple-Position  
       Folding

High-Visibility       Ultraslim  
 Detectable       AM/FM Radio  
 Sized Earplugs       Sound Management  
 Uncorded       High-Visibility  
 Corded       Dielectric  
 Dispenser

  
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[www.howardleight.com/selector](http://www.howardleight.com/selector)

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# Hearing Protection Selection

*Who would buy sunglasses so dark that you couldn't see the cars coming down the road?*



*Who would buy earplugs so effective that you couldn't hear a forklift truck coming up behind you or a distant shouted warning? Everyone...at least every industrial buyer.*

**We've trained them so!**

# Hearing Protection Selection

## Hazards of Overprotection

Choosing a protector with an NRR higher than necessary may result in overprotection

- Verbal communication may be hindered
- Warning alarms may not be heard
- Machine noises may be too diminished
- HPD may be removed



dB  
-85  
-80  
-75  
-70

Worker Exposure  
in the Ear With  
Protectors

# Hearing Protection Selection

## Common Objections to Wearing HPDs

“I already lost some of my hearing, so why should I wear them?”

“Won’t I get an ear infection?”

“Hearing protectors are uncomfortable to wear.”

“I don’t need them! I am used to the noise.”

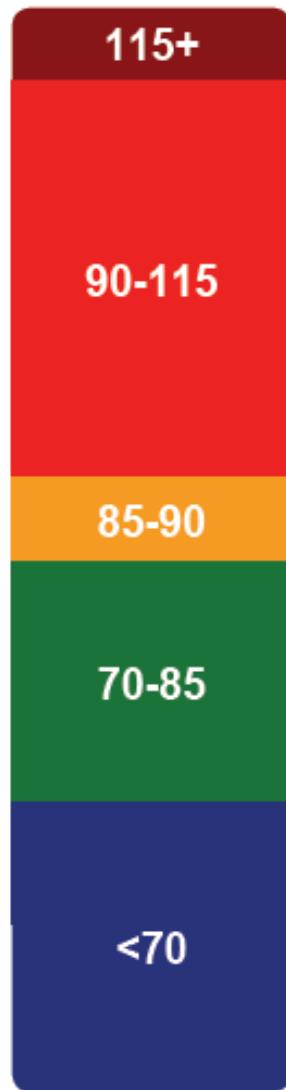
“I can’t hear my co-workers if I wear them.”

“Can I hurt my eardrums if I insert an earplug too deeply.”

“I can always get fit with a hearing aid.”

“My machine sounds different.”

# Hearing Protection Selection



In the United States, **76%** of noise-exposed workers need no more than **10 dB** of protection. **90%** need no more than **15 dB** of protection.

# Hearing Protection Selection

If workers already have hearing loss, are they exempt from using hearing protection ?

According to OSHA interpretation, Hearing Conservation regulations apply to **ALL** employees, even those with existing hearing loss.

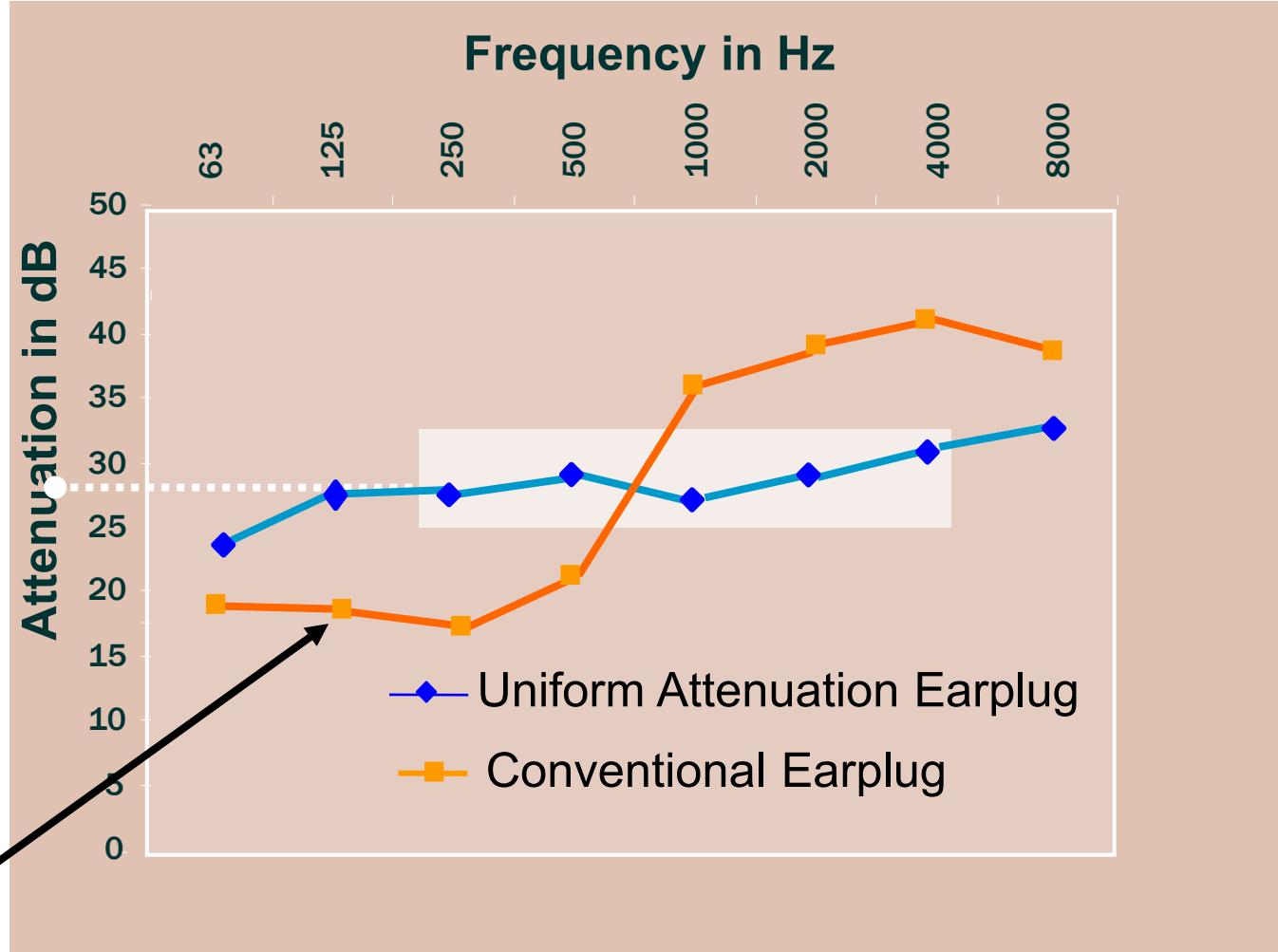
## Tips for Employees Wearing Hearing Aids

- Hearing aids alone are terrible protectors
- Use hearing aids + electronic earmuffs
- Use hearing aids + uniform attenuation earmuffs

# Hearing Protection Selection

Variation in attenuation is only 5 dB in speech range (250 - 4kHz)

Speech will sound more natural with this earplug



# Noise Reduction Rating (NRR)



# Noise Reduction Rating



Noise Level = 100 dB

Noise Reduction Rating = 30 dB

***How much noise is  
reaching the ear of  
the worker ?***

That is completely unknown ...

(55 – 104 dB)

# Noise Reduction Rating

## Factors in Achieving the NRR

### 1. FIT

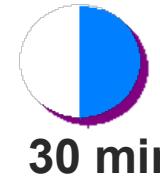
A worker who selects an earplug with an NRR of 30

but then removes that HPD for just ...

effectively reduced his 8-hour NRR to just ...

### 2. WEAR TIME

**30 dB**



26 dB

24 dB

22 dB

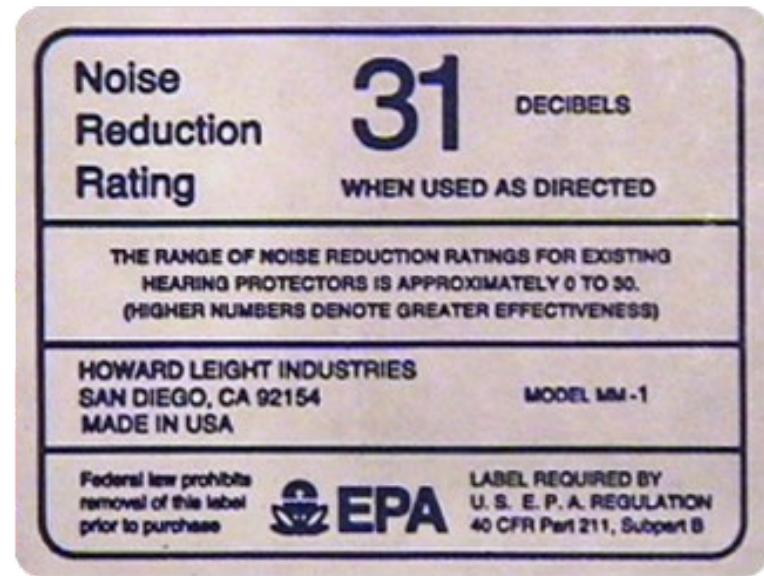
18 dB

In noise exposures, small intervals of no protection quickly void large intervals of adequate protection.

# Noise Reduction Rating

# Noise Reduction Rating

- A laboratory estimate of the amount of attenuation achievable by 98% of users when properly fit
- A population-based rating — some users will get more attenuation, some will get less



The NRR is only a population estimate, not a predictor of individual attenuation.

# Noise Reduction Rating – Determining an NRR

- 10 human subjects tested in a simulated industrial room
- Tested with ears open/occluded at nine frequencies
- Each subject tested 3x
- NRR calculated to be population average

A test subject in the Howard Leight Acoustical Lab, San Diego, CA, accredited by the National Voluntary Laboratory Accreditation Program (NVLAP)



# Noise Reduction Rating

## De-Rating Methods

**OSHA**

NRR ÷ 2  
(feasibility of  
engineering  
controls)

**NIOSH**

Earmuffs  
NRR – 25%

Formable Earplugs  
NRR – 50%

All Other Earplugs  
NRR – 70%

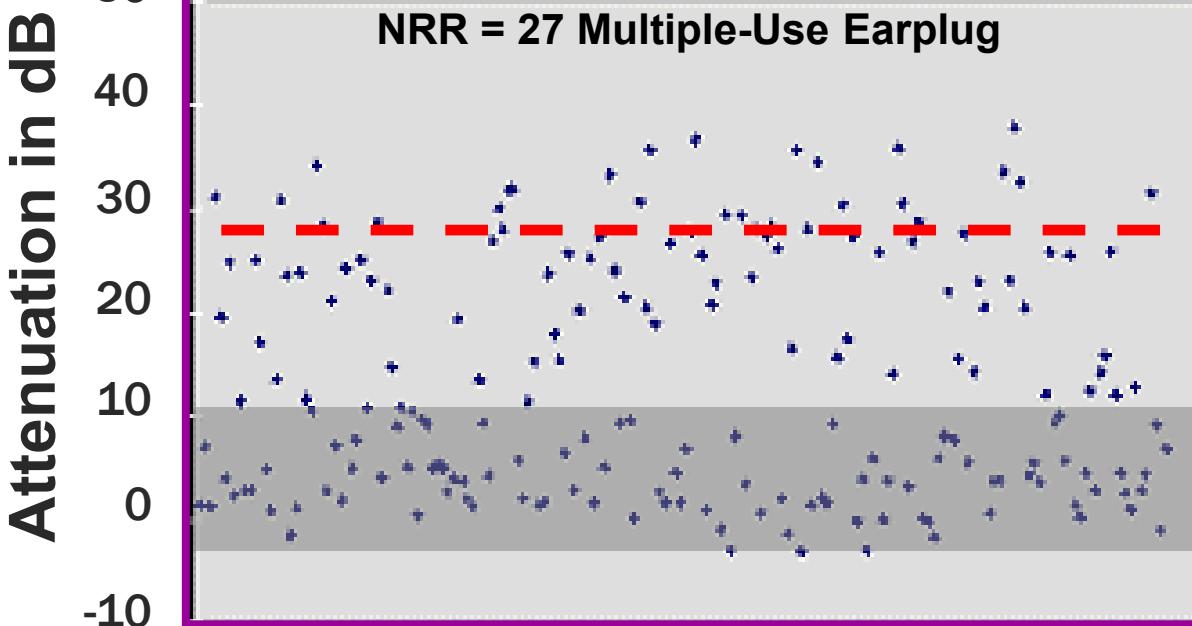
**CSA**

Class  
A up to 100  
B up to 95  
C up to 90

## Noise Reduction Rating –

# Real-World Attenuation $\neq$ NRR

192 users of a flanged reusable earplug ~ 27 NRR



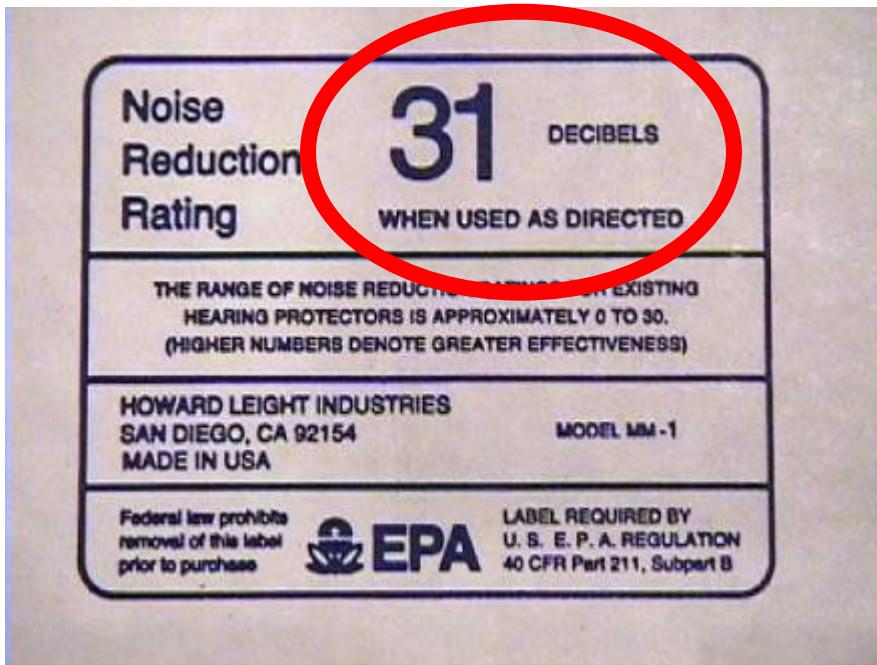
Real user  
attenuation  
<0 to 38 dB

Retraining  
and refitting  
resulted in an  
average  
14 dB  
improvement  
for this group

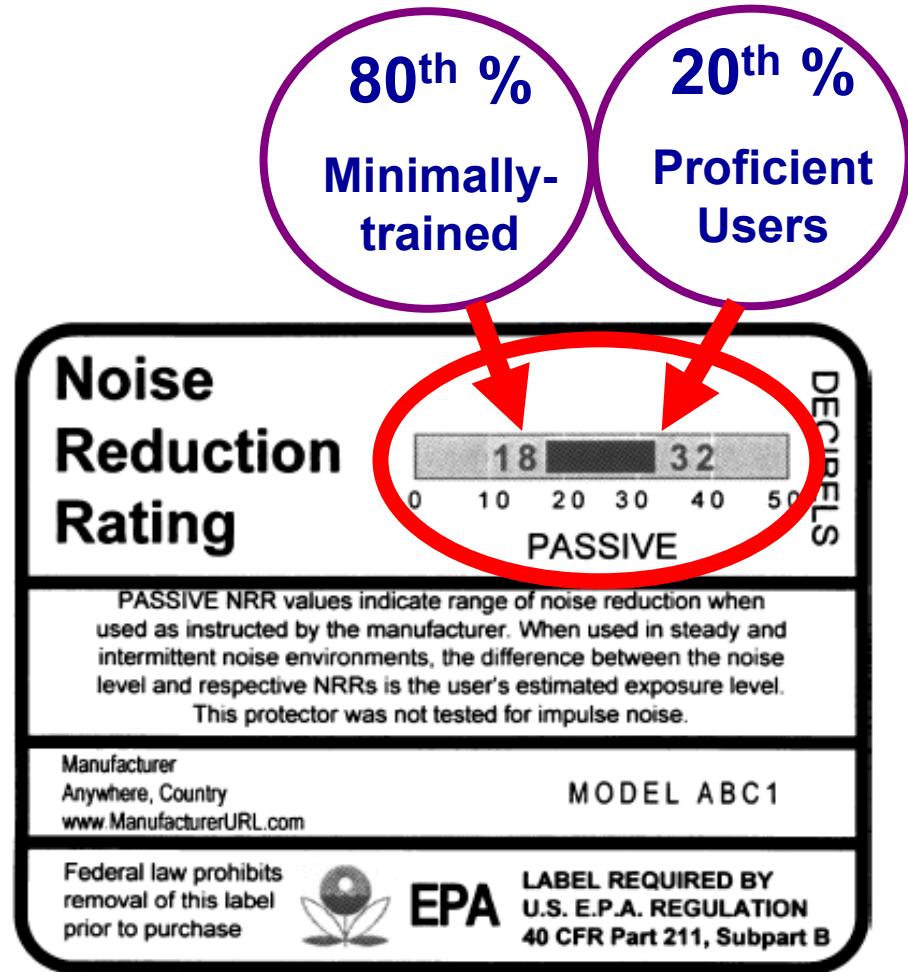
# Noise Reduction Rating

- The EPA recently made an announcement about a proposed change to the Noise Reduction Rating [NRR]
- This is the first change in hearing protector regulation in nearly 30 years

# Noise Reduction Rating



Current NRR Label



Mock-up of New Label

# Noise Reduction Rating

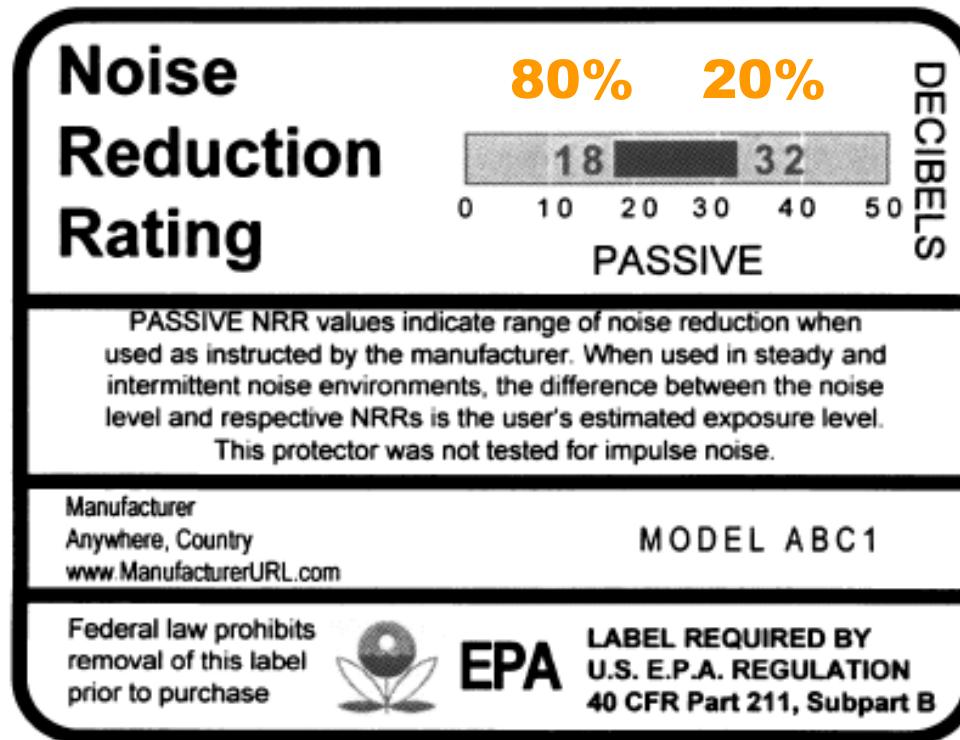
## Three New Labels

LABEL	DESCRIPTION
<b>Conventional HPD</b> 	<ul style="list-style-type: none"><li>• Perform lab test with subjects who fit the protector after brief training</li><li>• Estimates the range of protection achieved by 20% and 80% of users</li></ul>
<b>Active Noise Reduction [ANR]</b> 	<ul style="list-style-type: none"><li>• Uses a Microphone-in-Real-Ear [MIRE] method to estimate protection</li><li>• Measured with ANR turned OFF and ON to show the additional attenuation from the ANR</li></ul>
<b>Level Dependent/ Impulse Noise Reduction</b> 	<ul style="list-style-type: none"><li>• Testing will occur over a range of impulse noise levels. Multiple tests to determine lower and upper ranges of impulse noise reduction</li><li>• Will include two ranges to identify attenuation for passive and active modes</li></ul>

# Noise Reduction Rating

## How to Apply the New Label

Two-number range displays the estimated protection achievable by minimally-trained users [80%] versus proficient users [20%].



A wider range indicates greater variability in the fit of that HPD. Smaller ranges indicate more consistency of fit. For example, earmuffs will usually have a tighter fitting range than earplugs, and may have a smaller NRR range.

## What Can I Do Now?

Although the new labeling regulation takes effect whenever the final rule is published by the EPA, there are a number of actions you can take now to prepare your Hearing Conservation Program for the change.

- **Evaluate Noise Spectra** to determine if spectral balance corrections will be necessary
- **Update HC Training Program** on proper fit of hearing protectors. Hold a “Toolbox Training” and hold a refresher fit training session.

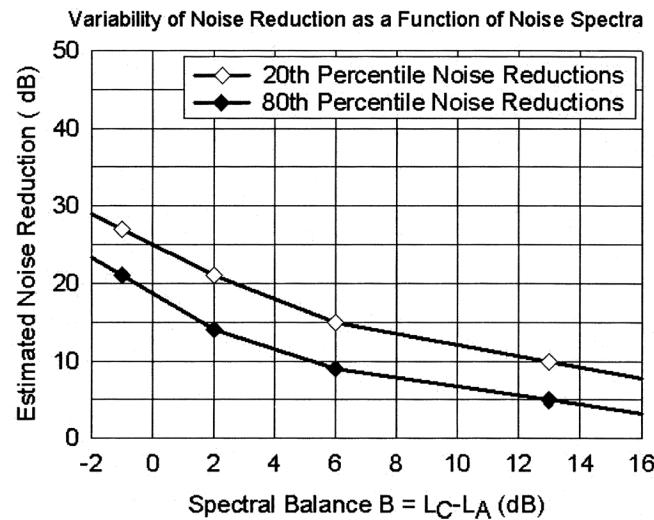


Figure 1. Example – Variability of Noise Reduction as a function of Noise Spectra

## What Can I Do Now?

- **Evaluate Current HPD Selection** to determine whether they are appropriate for your noise environment. Use the [Howard Leight Hearing Protector Selector](#) for recommendations.
- **Upgrade to One-on-One Training** research studies confirm that one-on-one training is superior to group training



## Earplug Fit Testing

Provides an *accurate, real-world* picture of your employees' hearing protector effectiveness.



Identify if your employees are:

- Receiving optimal protection
- Require additional training
- Need to try a different earplug style

## Earplug Fit Testing

As a problem solver:

- Derating Schemes
- One-on-One Training
- HPD Selection
- NRR Change



## In-Ear Dosimetry

### As a Problem Solver

- Employees with Documented NIHL or STS
- At-Risk Employees
- Training + Sampling
- Dual-Protection/  
Extreme Noise
- Engineering Controls



# **Reducing Costs + Claims for Hearing Loss**



# Reducing Costs + Claims

## How Can You Prevent NIHL?

### Earplug Fit Testing

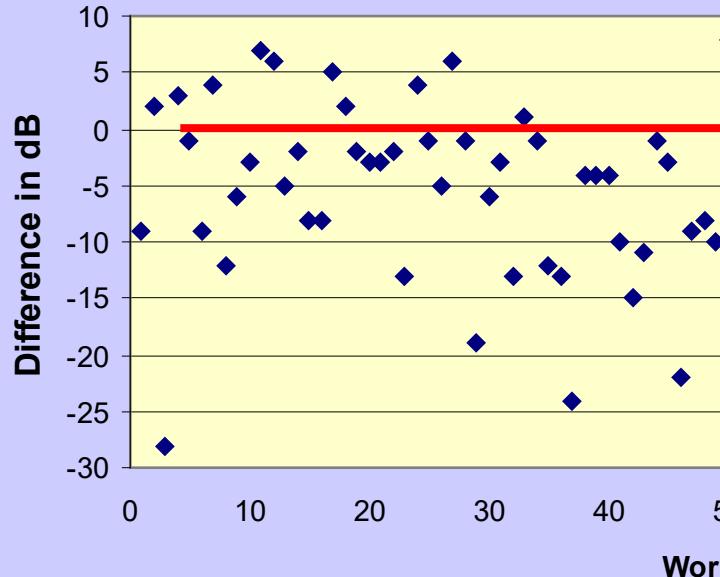


### In-Ear Dosimetry

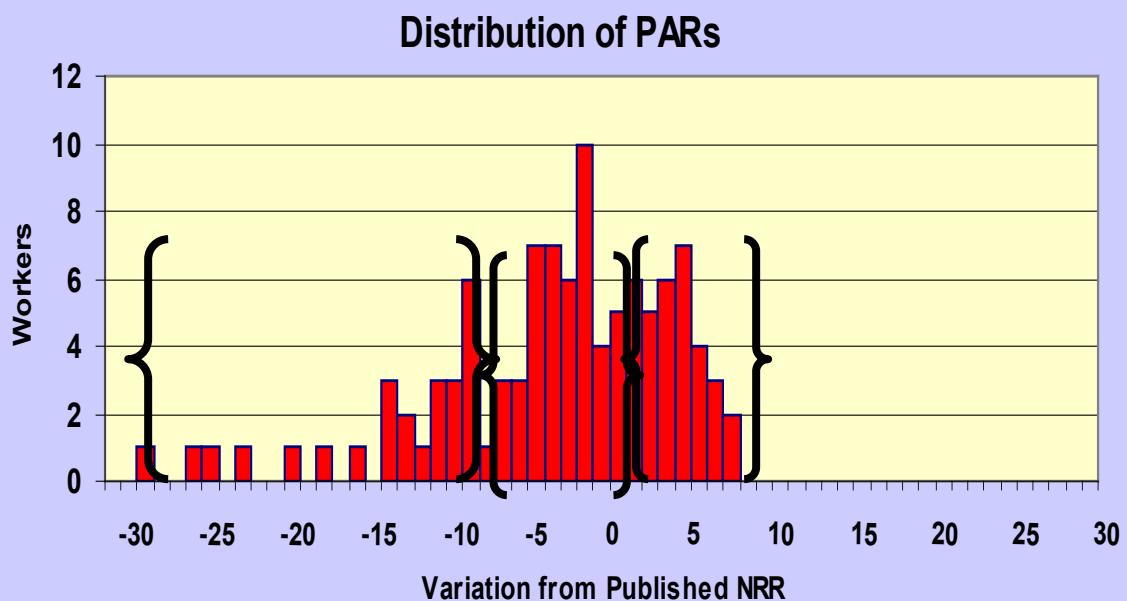


# Reducing Costs + Claims

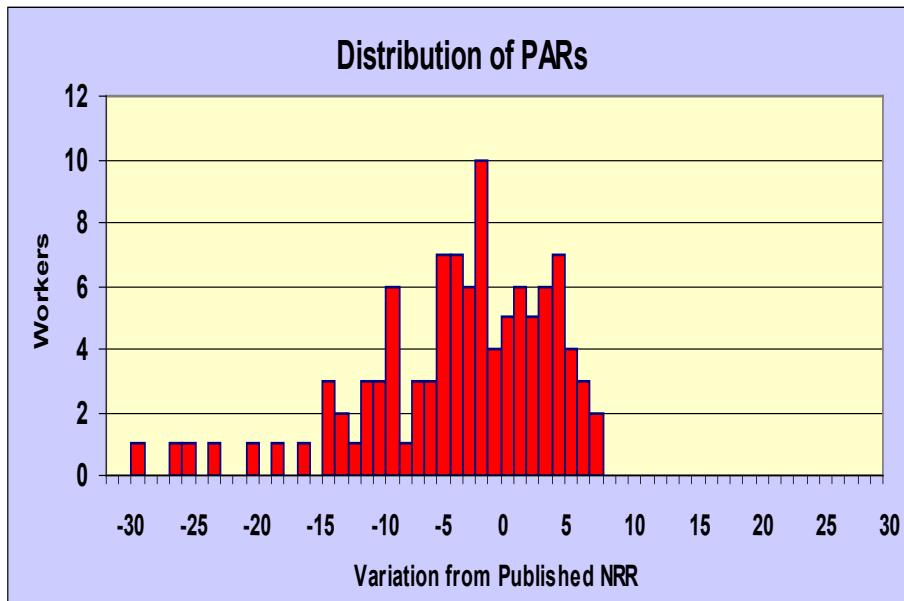
Variation from Published NRR



Published  
NRR



# Reducing Costs + Claims



## Personal Factors



Gender



Age



Years in Noise



Ear Canal Size



Familiarity



Model of Earplug

## Program Factors



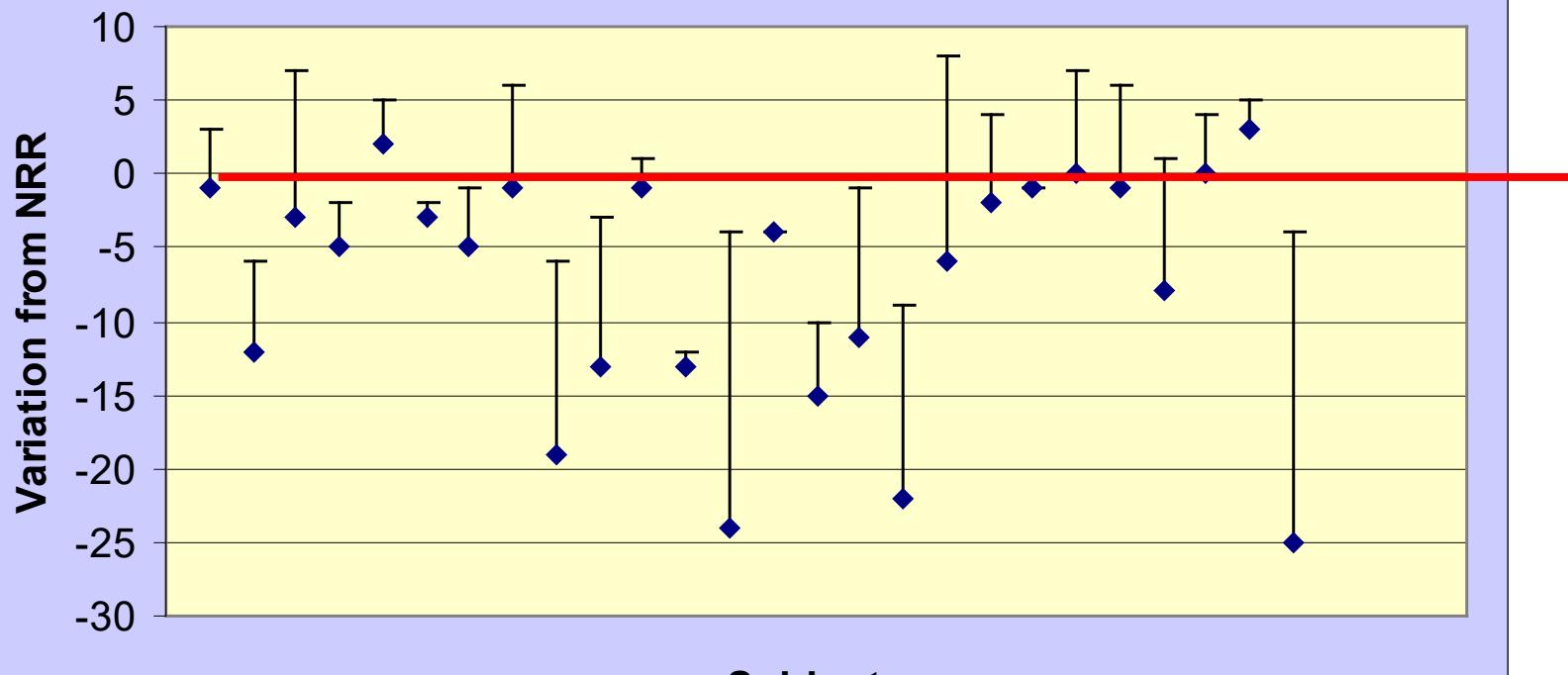
# Group Trainings



# Personal Trainings

# Reducing Costs + Claims

Difference on 2nd / 3rd Test



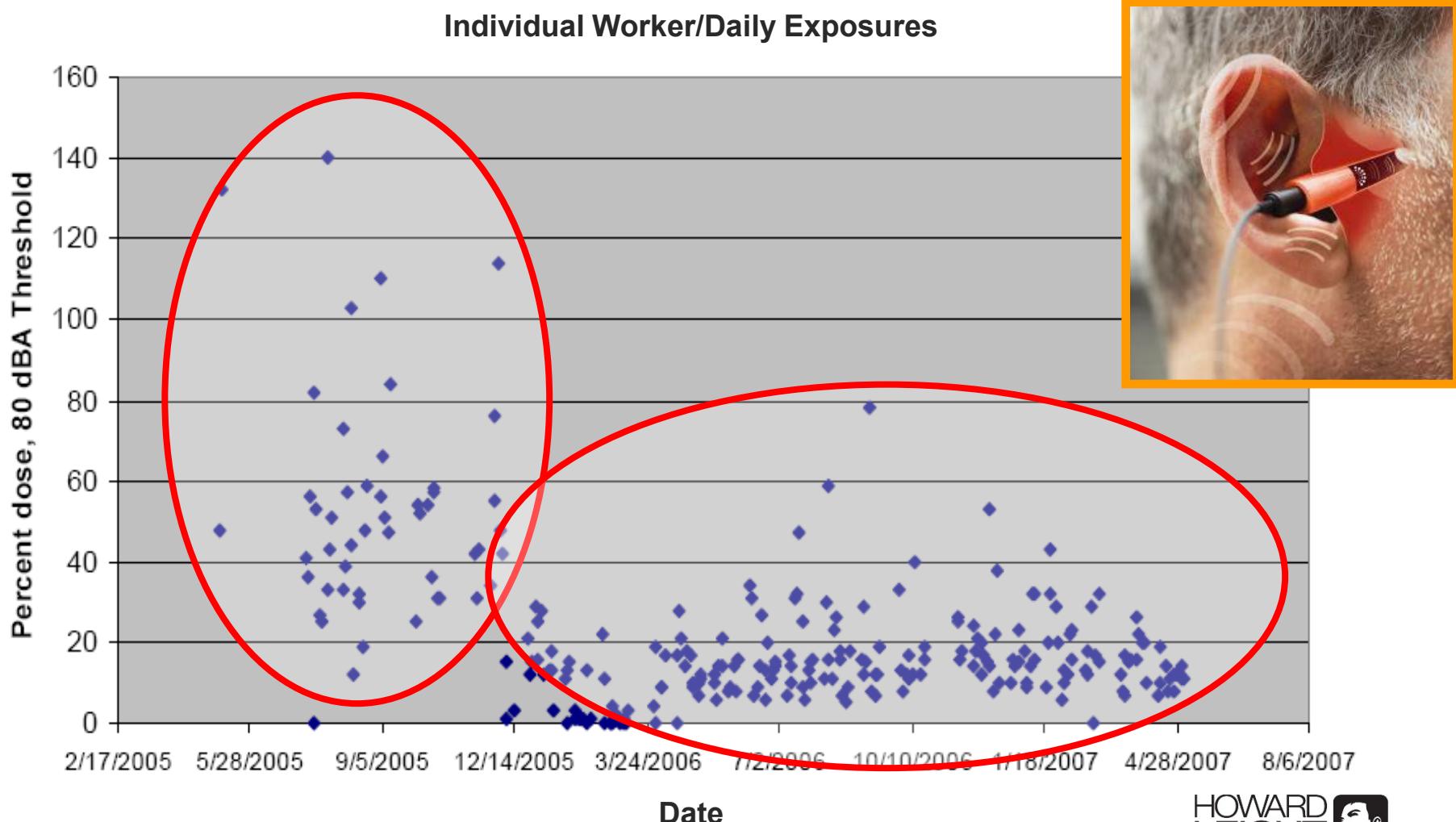
**Trying a second earplug often improves attenuation**

## In-Ear Dosimetry as a Problem Solver

- Employees with documented noise-induced hearing loss or Standard Threshold Shift [STS]
- Employees at-risk for NIHL
- Employee training + sampling
- Dual-protection/extreme noise exposure
- Engineering controls

# Reducing Costs + Claims

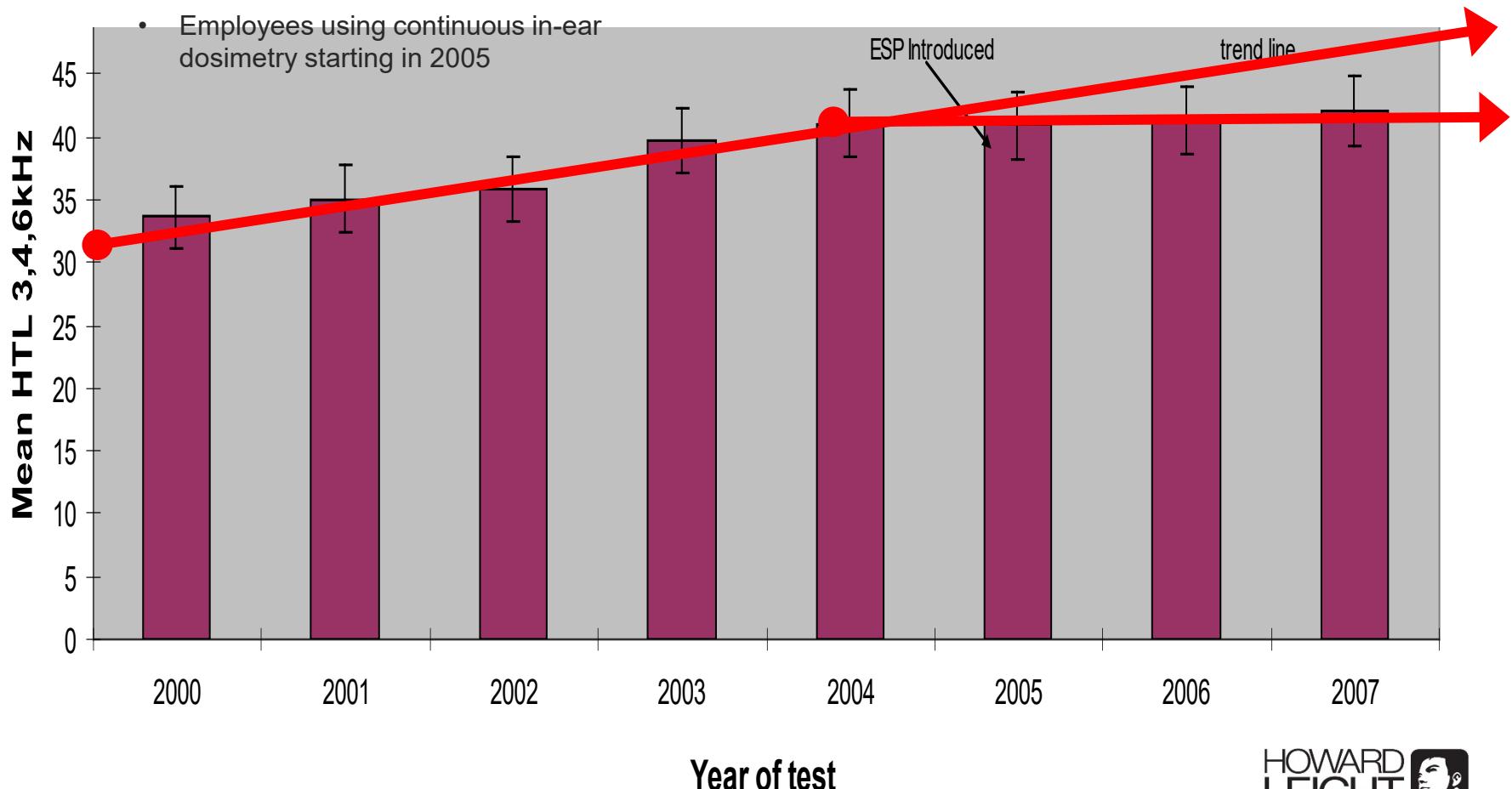
## In-Ear Dosimetry as a Problem Solver



# Reducing Costs + Claims

## In-Ear Dosimetry as a Problem Solver

- Mean Hearing Threshold (2k, 3k, 4kHz):  
2000 – 2007 (N = 46)
- Employees using continuous in-ear  
dosimetry starting in 2005



# Reducing Costs + Claims

## Preventive Action After NIHL

In practice, an OSHA-recordable STS is not a preventive action

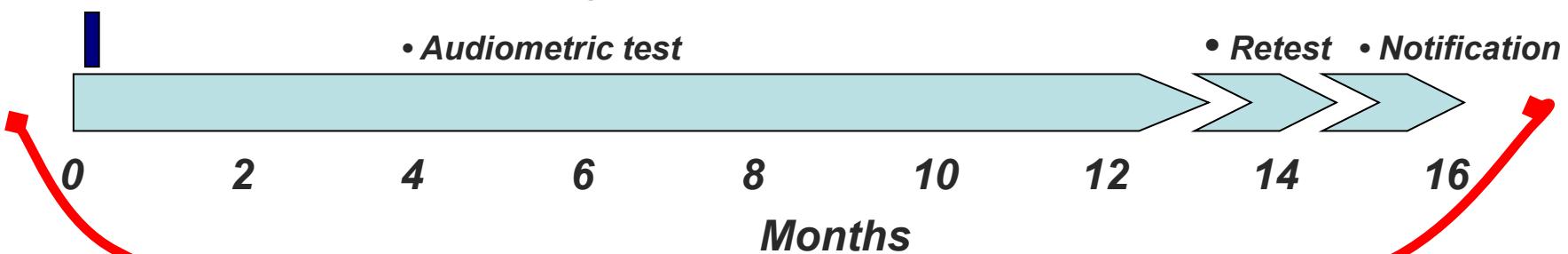
*It is documentation of a hearing loss after the fact.*

*How soon will an employee suffering NIHL be re-fit / re-trained ?*

“Best case scenario” per Hearing Conservation Amendment

In-ear dosimetry “worst case”  
scenario ...

1 Day



# Reducing Costs + Claims

## Additional Information

### OSHA Alliance: Best Practice Bulletin

[www.hearingconservation.org](http://www.hearingconservation.org)



#### BEST PRACTICE BULLETIN: Hearing Protection-Emerging Trends: Individual Fit Testing

Much has been learned on the efficacy of hearing protection for individual users since the Occupational Safety and Health Administration (OSHA) Hearing Conservation Standard (29 CFR 1910.95) was issued in 1983. The Standard requires employers to select one of the methods listed in Appendix B: to evaluate the adequacy of hearing protector attenuation (29 CFR 1910.95 (j)(1)). One of the methods for evaluating hearing protector attenuation is the Noise Reduction Rating (NRR) developed by the U.S. Environmental Protection Agency (EPA). The NRR is a single number intended to represent the amount of attenuation a given hearing protector will provide. The EPA requires the NRR to be listed as a label on the package of each hearing protector (40 CFR 211 Subpart B). The NRR is a laboratory based method for calculating the amount of attenuation provided by hearing protection.

While labeling hearing protectors provides one indicator of hearing protector performance, these methods rely on optimum fitting under laboratory conditions and group statistics to predict an individual wearer's hearing protector performance in the field. The consequence of this approach is that an individual user may actually receive more but usually less attenuation than



[www.hearforever.org](http://www.hearforever.org)

## Tools for HCP Prevention Metrics

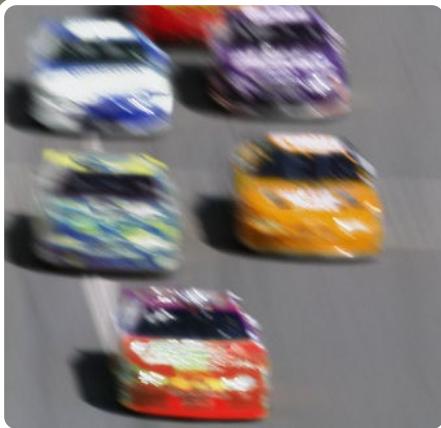
### PROS

- ~~Estimate~~ Measure
- NRR obsolete
- Fulfils OSHA compliance
- Eliminates need for de-ratings
- Medico-legal cases
- Delineates non-occupational
- Eliminates double protection
- Provides employee feedback

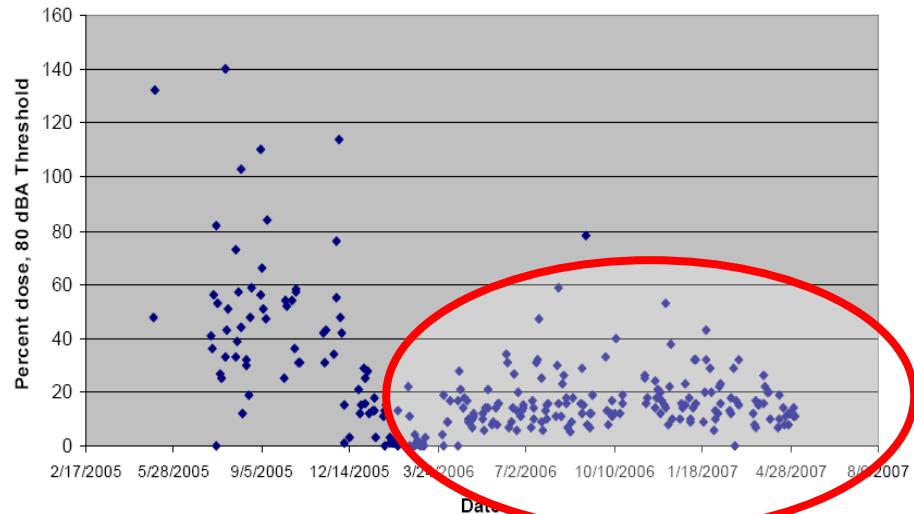
### CONS

- Cost
- Time Investment
- Not standardized

# Reducing Costs + Claims



Individual Worker, Daily Exposure



**Off-job + On-job = STS**



JOIN THE EXPERTS. GET THE EXPERTISE.

NATIONAL HEARING CONSERVATION ASSOCIATION

A graphic for the NHCA conference. It features the NHCA logo at the top left. In the center, the text "Explore the World of Hearing Loss Prevention" is displayed above "35th Annual Hearing Conservation Conference". To the right is a blue globe with a dotted line orbiting it. Below the globe is a horizontal sequence of icons connected by thin green lines: a stethoscope, a person's head with sound waves, a human ear with musical notes, and a mobile phone. The entire graphic is set against a white background.

**February 25-27, 2010 Orlando, FL**

HOWARD  
LEIGHT  
by SPERIAN

# Hearing Protectors + Fitting Tips



## Fitting Tips

0 dB



EAR #1

0 dB



EAR #2

33 dB

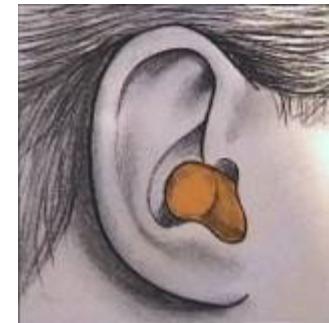
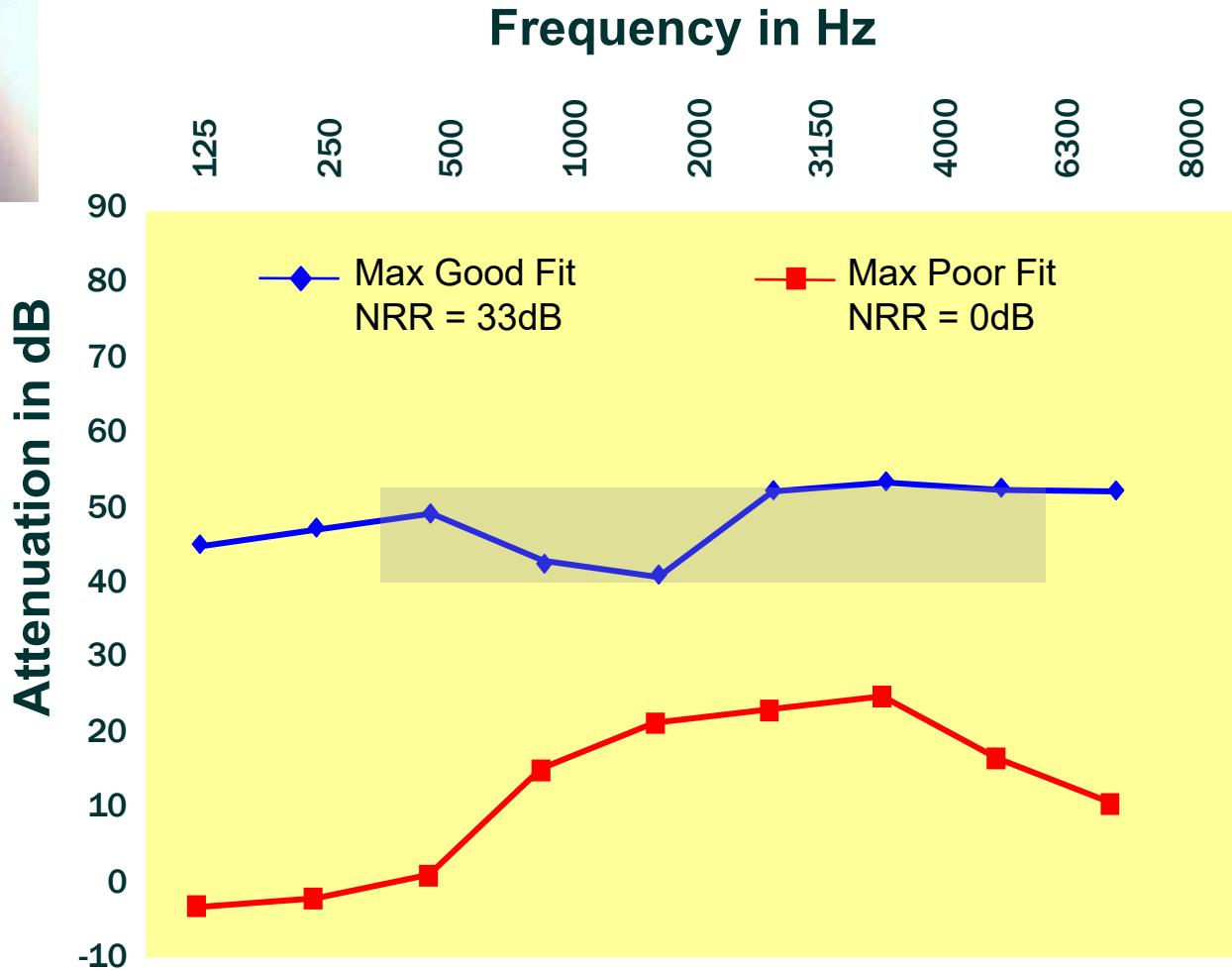


EAR #3

# How much protection?

# Fitting Tips

## Good Fit vs Bad Fit

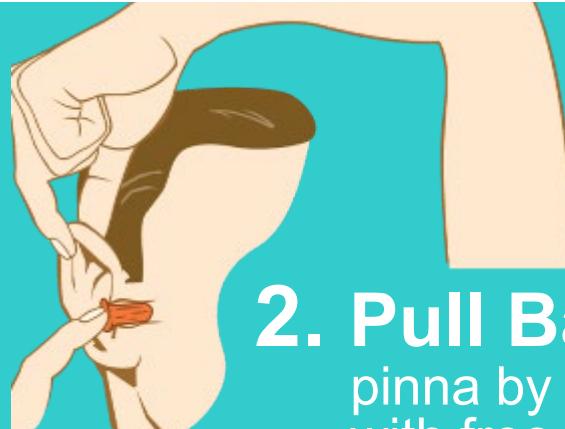
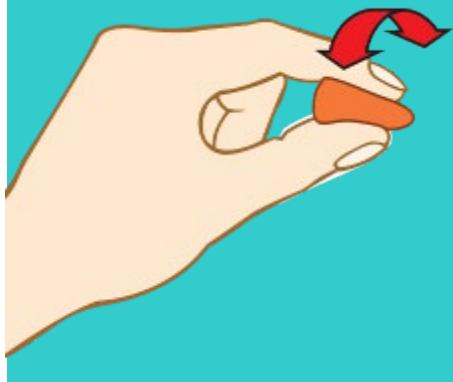


# Fitting Tips

## Roll-Down Foam Earplugs

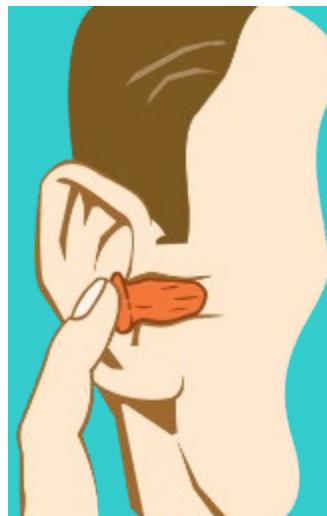
### 1. Roll

entire earplug  
into a crease-free  
cylinder



### 2. Pull Back

pinna by reaching over head  
with free hand, gently pull top  
of ear up and out



### 3. Insert

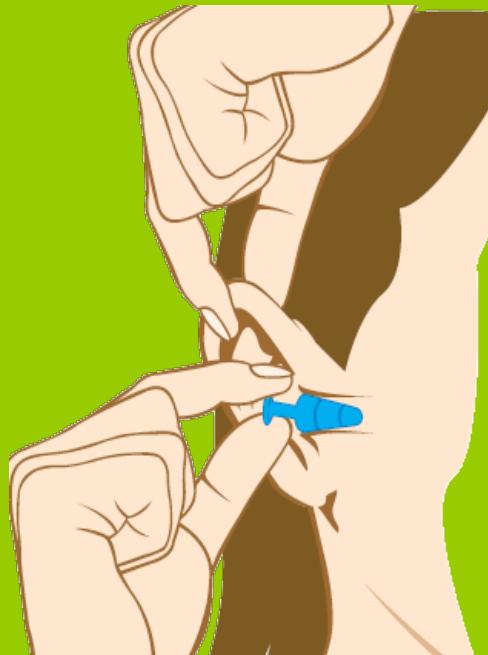
earplug  
well into  
ear canal  
and hold  
until it fully  
expands

# Fitting Tips

## Multiple-Use Earplugs

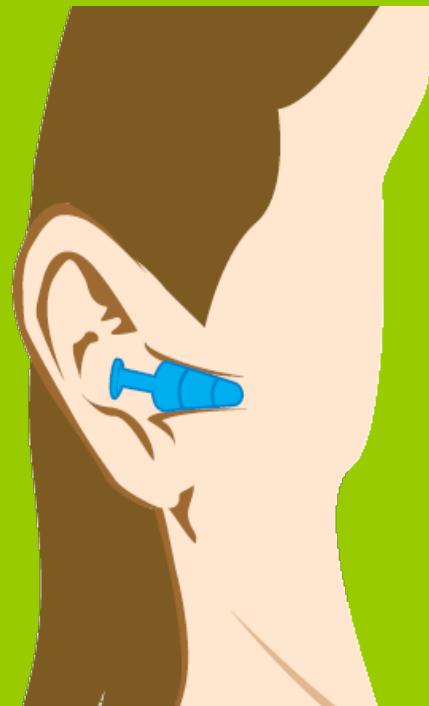
### 1. Reach

While holding the stem, reach hand overhead and gently pull top of ear up and back.



### 2. Insert

Insert earplug so all flanges are well inside the ear canal.



### 3. Fit

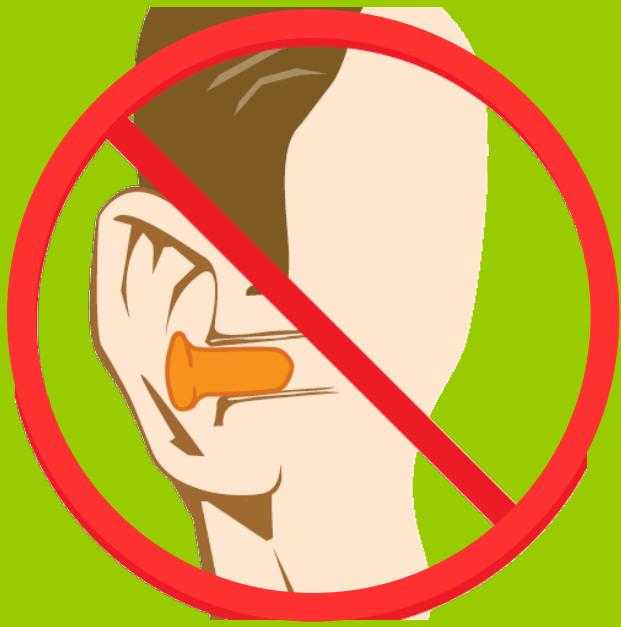
If properly fitted, only the stem of the earplugs should be visible to someone looking at you from the front.

# Fitting Tips

## Visual + Acoustical Checks

### 1. Visual Check

The earplug should sit well inside the ear canal and not stick out.



### 2. Acoustical Check

Cup hands over ears and release. Earplugs should block enough noise so that covering your ears with hands should not result in a significant noise difference.



# Fitting Tips

## Earmuff Instructions

1. Place earcups over each outer ear



2. Adjust the headband by sliding the headband up or down at the attachment buttons



3. The ear cushions should seal firmly against the head



# Fitting Tips

# Fitting Instruction Posters

## Earplug Fitting Instructions

### Keys to Successful Hearing Protection with Earplugs

- KNOW • Read and know all earplugging instructions
- SELECT • Select the right type of earplugs for your ear, coverage or environment - choose the proper type, size, and style earplugs for your use.
- FITTING • Fit earplugs correctly to your ear canal and seal them tightly. Use proper technique. Multiple-use earplugs can last up to 2 years. Reuse earplugs only if they fit well and have not been damaged.
- CARE • Clean and replace pads on reusable earplugs regularly.

### Do's and Don'ts of Howard Leight® Earplugs

Proper fit  
is the key to effective hearing protection.

Placing earplugs  
incorrectly can damage  
your hearing.

Reusing earplugs  
can damage your  
hearing.

Apertus Hearing Protection, LLC  
7401 Mission Valley Road, San Diego, CA 92164  
ph. 800/426-6480 fax 800/288-2919  
[www.howardleight.com](http://www.howardleight.com)

## Earmuff Fitting Instructions

### Keys to Successful Hearing Protection with Earmuffs

- KNOW • Read and know all earmuff fitting instructions.
- SELECT • Select the right type of earmuffs for your needs and environment - choose the proper type, size, and style earmuffs for your use.
- FITTING • Fit earmuffs correctly to your head and seal them tightly. Use proper technique. Multiple-use earmuffs can last up to 2 years. Reuse earmuffs only if they fit well and have not been damaged.
- CARE • Clean and replace pads on reusable earmuffs regularly.

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earmuff  
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can damage  
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**HOWARD LEIGHT**  
by SPERIAN

## Fitting Tips

# FAQ: Earmuffs + Safety Eyewear

In our facility, several noisy areas require safety eyewear as well as earmuffs.

Can earmuffs be worn over safety eyewear without affecting attenuation?

Attenuation is impacted significantly by **thick-framed eyewear**.

### Affect on Attenuation

Thin Frame (1-2 mm)	0 dB
Medium Frame (3-4 mm)	2 dB
Thick Frame (5-6 mm)	5 dB



## FAQ: Dual Protection

At our facility, we are exposed to extreme noise levels and wear both earplugs and earmuffs. How much reduction in noise level can we expect from dual protection?



To estimate protected noise level, **add 5 dB** to the **higher NRR** protector.

Max® earplug 33 dB

Viking™ earmuff 29 dB

**Maximum Protection 38 dB**

## FAQ: Earmuffs + Absorbent Pads

We work in a humid environment and use moisture-absorbing pads with our earmuffs.

Do the pads affect the attenuation of the earmuff ?



**No significant affect on attenuation!**

## FAQ: Custom Molded Earplugs

What about Custom Molded Earplugs?



### PRO

- Comfort
- Personal attachment

### CON

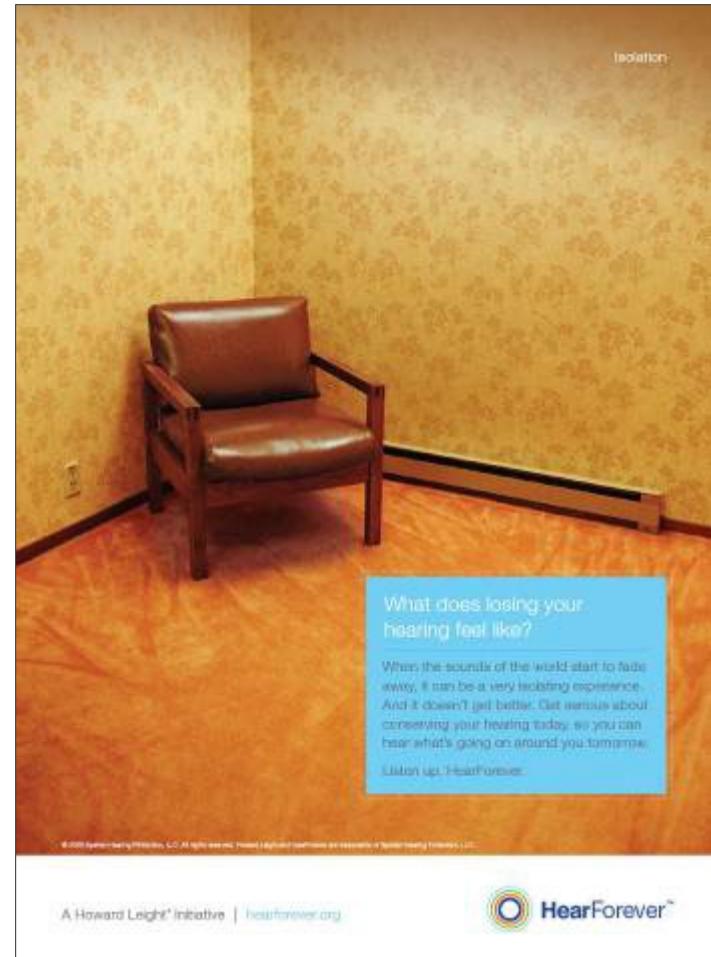
- Lower attenuation
- Variability in attenuation
- Lubricant required
- No extended-life benefit

# Training + Motivation

## Personalize Hearing Loss

### Show, Don't Tell

- Provide copy of annual audiogram to worker
- Use personal examples to demonstrate consequences of hearing loss
- Ask questions:
  - *What is your favorite sound?*
  - *What sound would you miss the most if you couldn't hear?*
  - *What sounds connect you to people and your environment?*



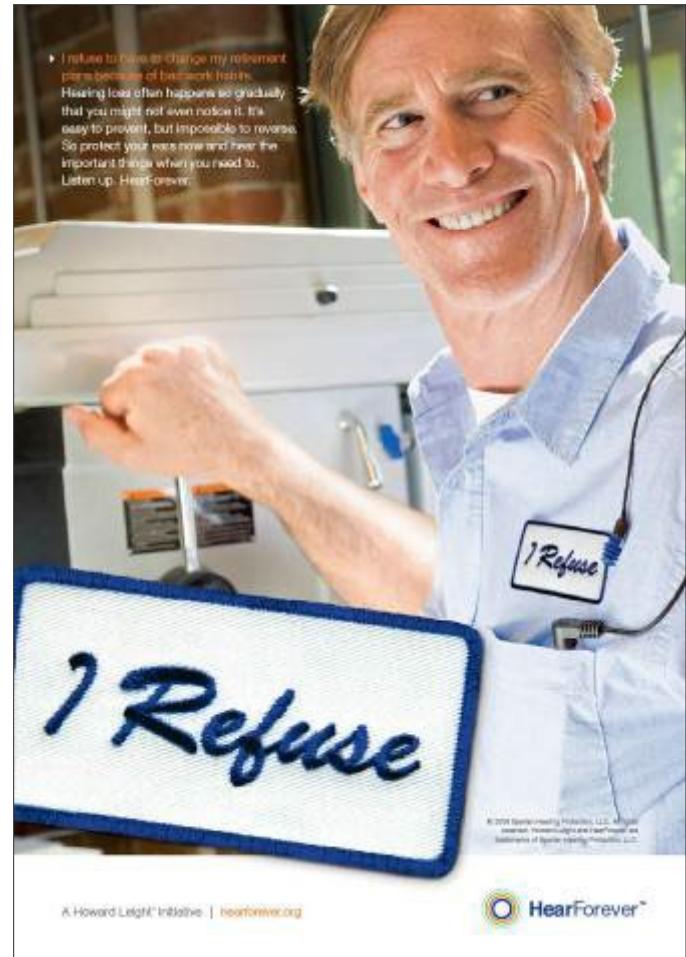
A Howard Leight® Initiative | [hearforever.org](http://hearforever.org)



## Demonstrate Future Risk

### Training Materials

- [www.hearforever.org](http://www.hearforever.org)
- [www.hearingconservation.org](http://www.hearingconservation.org)
- [atl.grc.nasa.gov/HearingConservation/Resources/index.html](http://atl.grc.nasa.gov/HearingConservation/Resources/index.html)
- [www.cdc.gov/niosh/topics/noise](http://www.cdc.gov/niosh/topics/noise)
- [www.dangerousdecibels.org](http://www.dangerousdecibels.org)

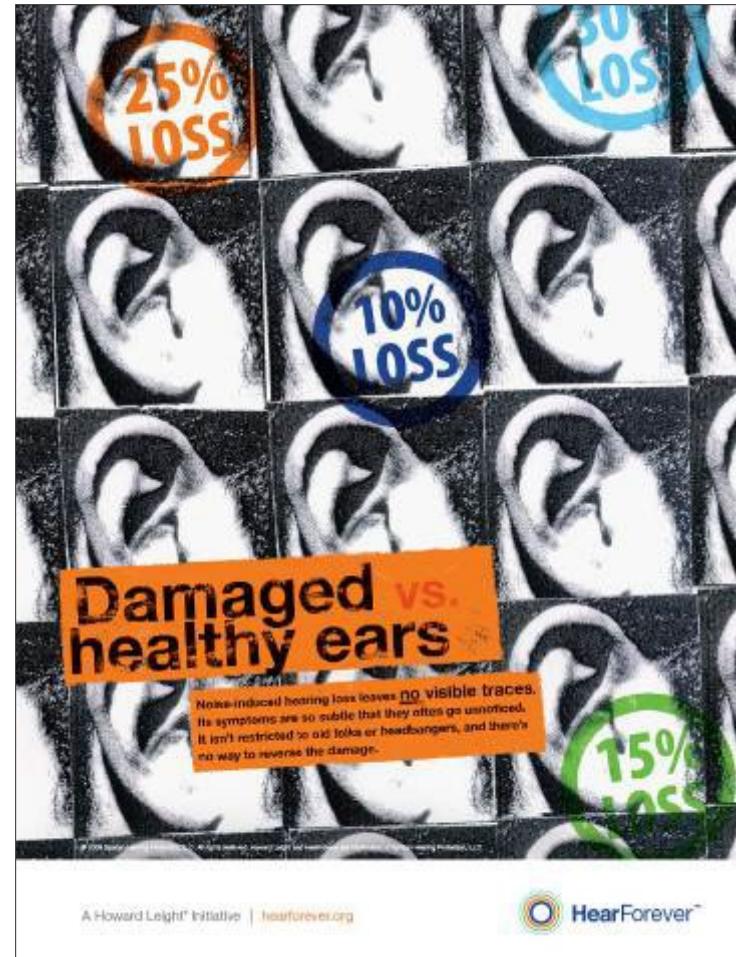


# Training + Motivation

## Send Clear Message On + Off Job

### HC Part of Everyday Life

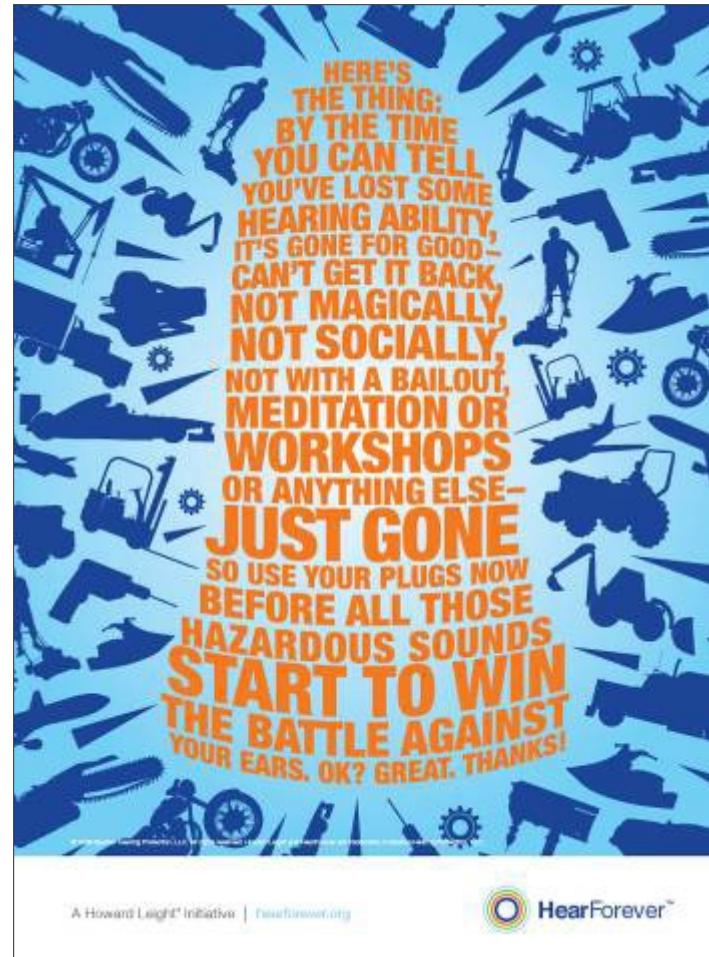
- Include recreational hearing conservation in annual training
- Provide extra HPDs for home use
- Promote Hearing Conservation at company/family events



## Remove Barriers to HPD Use

### Make HPDs Available

- Highlight “where to find HPDs” in annual training
- Make sure HPDs are well-stocked and accessible
- Include group of workers in selection process for increased acceptance
- Offer wide variety to match comfort, job requirements



**Hearing Loss Due To  
Noise Exposure Is ...**

**Painless**

**Permanent**

**Progressive**

**... and very Preventable!**