

Occupational Noise and Hearing Conservation in British Columbia



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The Odyssey – Homer

*"If any one unwarily draws in too close and hears the singing of the Sirens, his wife and children will never welcome him home again... Therefore pass these Sirens by, **and stop your men's ears with wax that none of them may hear...**"*

8th century BC

Why care?

Social Costs...

- Shorter, less frequent, less spontaneous conversations,
- Less attentive,
- Avoid social gatherings and noisy surroundings,
- Reduced social contact,
- Shame, guilt and anger,
- Embarrassment,
- Lack of concentration,
- Short term memory symptoms,
- Sadness or depression,
- Feel ignored,
- Worry and frustration,
- Anxiety and suspiciousness,
- Insecurity,
- Self-criticism and low self-confidence,
- **WITHDRAWAL**



Why care?

Q: How much do you think WorkSafeBC (and therefore BC's employers) pay for ONIHL Claims per year?

Why Care? cont'd...

A: \$18 – 20 million/year for health care costs alone (hearing aids and hearing aid services)

Almost \$2 million a year for hearing aid batteries!!



Why Care?

**ONIHL is PERMANENT and
PREVENTABLE**

How does WorkSafeBC address this?

- OHS Regulation – Division 1, Part 7 – “Noise Exposure”
 - Outlines 7 elements of a Hearing Conservation Program (HCP)
 - By putting it into the Regulation – HCPs are required, not optional.
- Employers of noise exposed workers must establish and maintain a noise control and hearing conservation program.

7 components of the HCP:

- 1) Noise measurement – Is there a hazard?
(85dBA Lex or peak of 140dBC)
- 2) Education & training;
- 3) Engineered Noise control;
- 4) Hearing Protection;
- 5) Posting of noise hazard areas;
- 6) Hearing Tests (annual);
- 7) Program Review – is it working?

Noise Measurements – How can you obtain them?

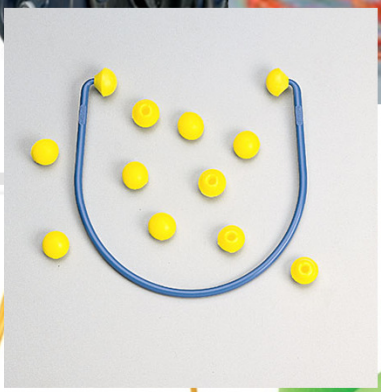
- You might not have to:
Exemption (7.4)
 - Do not need to conduct measurements if (based on other information) identifies that worker is noise exposed AND implements a HCP.
- How does one conduct Noise Measurements?
 - Occupational Noise Surveys; Basic Noise Calculations (www.worksafebc.com)

Noise Measurements – How can you obtain them?

- Can WorkSafeBC conduct NLM?
 - Complaints investigation – OHOs
 - Claims investigation – initiated by Hearing Loss Unit
- Noise Database – (contact me)
- Other sources:
 - www.e-a-r.com/hearingconservation/faq_main.cfm
 - The Noise Navigator® database of over 1700 noise sources.
- Consulting Companies
- Industrial Audiometric Technicians

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE



Issue #2— Hearing Protection

Environmental Protection Agency (EPA) identified 1029 different HPD products in the US in 2009.

- 403 earplugs or semi-insert
- 572 earmuffs
- 54 active noise reduction models
- 156 impulse noise reduction models

Earplugs: formable; pre-formed; custom molded; banded (semi inserts, semi-aural)

Earmuffs: over the head; neckband; hard hat; folding; push-to-listen; active attenuation; uniform attenuation; non-linear attenuation; impulse reduction

Issue #2— Hearing Protection

Q: Which HPD is best?

A: The one that people will wear *without modifying* the ENTIRE time they are in hazardous noise.

COMFORT is as important as attenuation

CSA Z94.2.02 Table 4: Selection of Hearing Protection Devices Based upon Grade and Noise Exposure in dBA, Presuming a Desired Effective Exposure when the Hearing Protection Devices Are Worn of L= 85 dBA

Recommended		
$L_{ex,8}$ (dBA)		Class
≤ 90		C
≤ 95		B
≤ 100		A
≤ 105		A
≤ 110	Dual*	
> 110	Dual+ †	

**Dual hearing protection required. Use a minimum of a Grade 2 or Class B earmuff and a Grade 3 or Class A earplug.
 †Dual hearing protection required. Also, it is recommended that exposure durations be limited, octave-band analyses be conducted for attenuation predictions, and twice-annual audiometry be provided to the affected individuals.*

Issue #2— Hearing Protection

What if a Worker refuses?

A: They can't. Regulation 7.7(2)

Workers in a posted noisy hazard area must wear hearing protection

But, what if a worker refuses?

A: They probably have a good reason.

Find out what it is.

Issue #2— Hearing Protection

Common Excuses:

- Can't hear warning signals.
- Can't hear my equipment.
- Can't hear my co-workers.
- It's not comfortable.
- It's too hot.
- I'm already deaf.
- I wear my hearing aids turned off instead.
- Nobody else is, my supervisor isn't.
- I didn't know I had to.
- I can't hear my music.

Issue #2— Hearing Protection

Common Excuses:

- Can't hear warning signals
- Can't hear my equipment
- Can't hear my co-workers

These are signs of **Overprotection**

- People tend to think "more is better".
 - Most common – Class A earplugs.
- Did you know: 95% of BC workers have Lex <95 dBA Lex? What Class of HPD *SHOULD* they wear?
- **Class B**
- **Uniform attenuation "musician's earplugs"**

Issue #2— Hearing Protection

Common Excuses:

- It's not comfortable.
- It's too hot.



Not all HPDs fit all ears or with other PPDs
Provide a **variety** of plugs and earmuff options. (CSA Z94.2 indicates at least 3 options).

Options with other PPD: Hard-hat attached, neck banded muffs.

Earplugs might be better option in heat.

Issue #2— Hearing Protection

Common Excuses:

- I'm already deaf.
- I turn my hearing aids off, they act as earplugs

Education!!

Specialty products: Amplification; non-linear attenuation; Push-to-Listen, etc.
Class B or C?

Issue #2— Hearing Protection

Common Excuses:

- Nobody else is.
- My supervisor isn't.

Education!

Address the issue of “safety culture”.

Explain risks of their job specifically.

Educate on risk assessment (amount of *time* in noise is a factor as well as the amount of noise!)

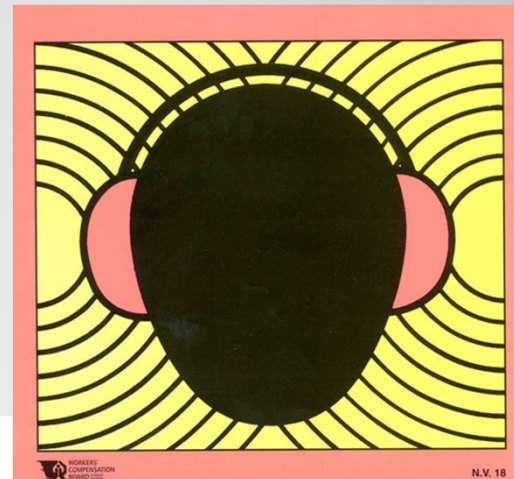
Issue #2— Hearing Protection

Common Excuses:

- I didn't know I had to.

Education and Training on risk of each job!

Signage. KISS principle.



Issue #2— Hearing Protection

Common Excuses:

- I can't hear my music (and I'm a musician, conductor, DJ)

There are “musician’s” earplugs – **uniform attenuation.**

Issue #2— Hearing Protection

Common Excuses:

- I can't hear my music (and I have a boring job, I like to listen to my iPod, the radio, etc)

Employer **MUST** decide policy around music and safety.

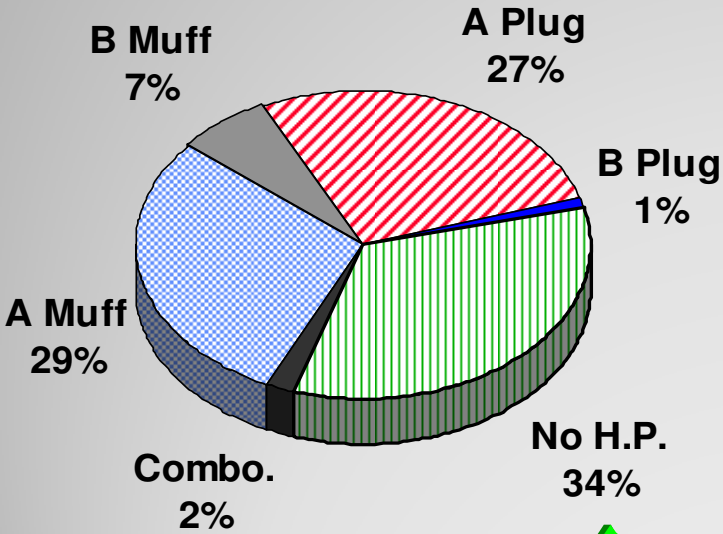
- Music can still be distracting!
- Must consider safety carefully.

- IF employer decide to allow use of MP3 players/iPods, there are options...
- 82dB limiters for the music, and attenuation >85 dB(A).
- Check the Specs
 - No standard re: limiters.

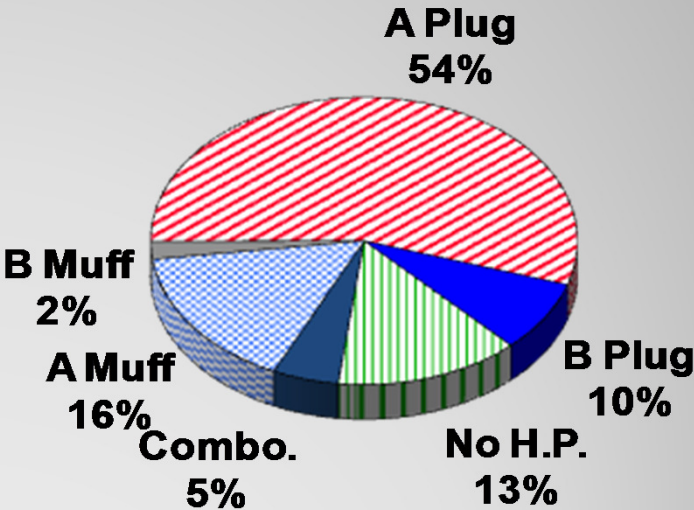


Hearing Protection Use --All Industry

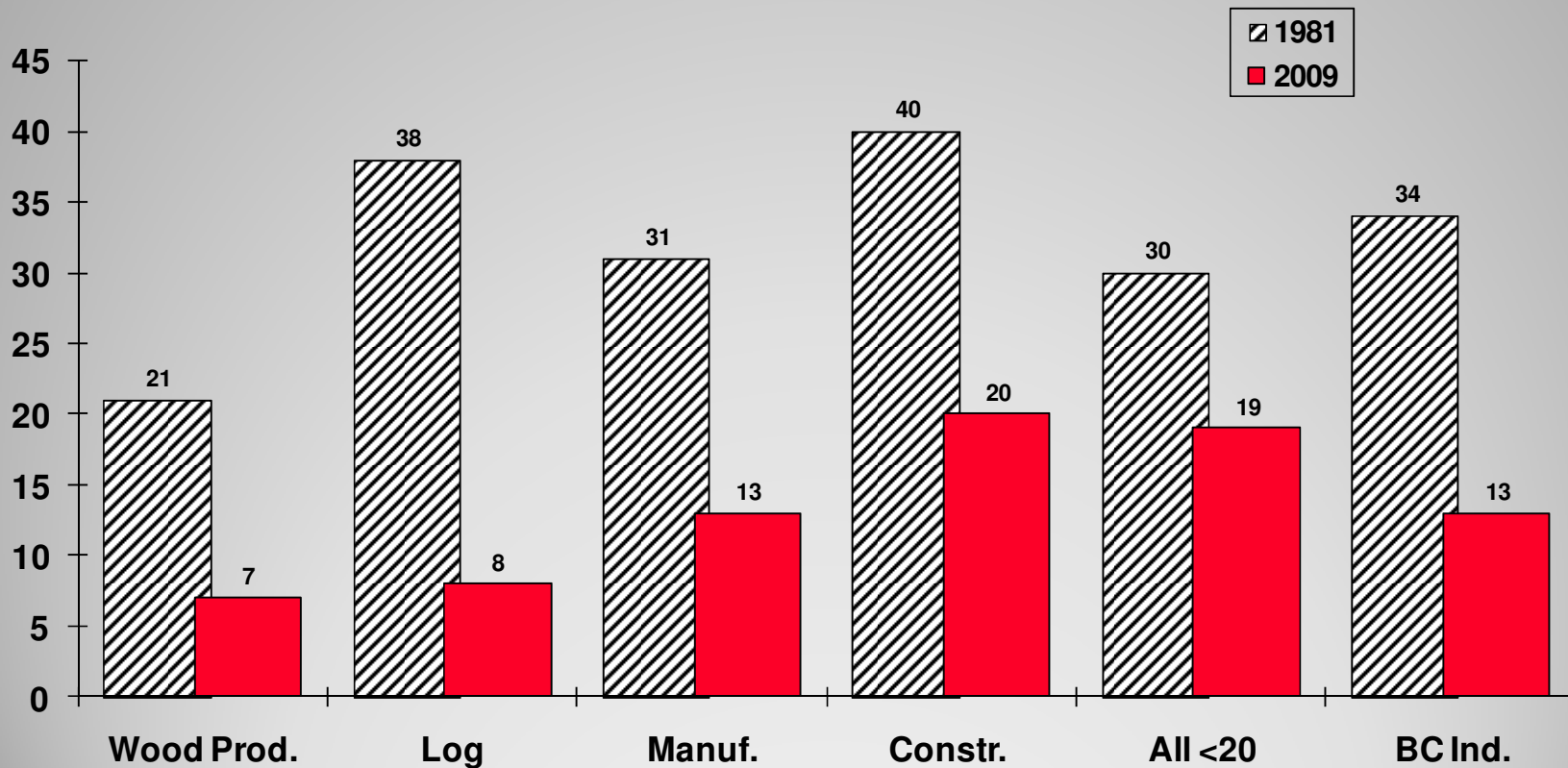
1981



2009



Hearing Protection Non-Use Young workers (<20 years)



HPD: True or False?

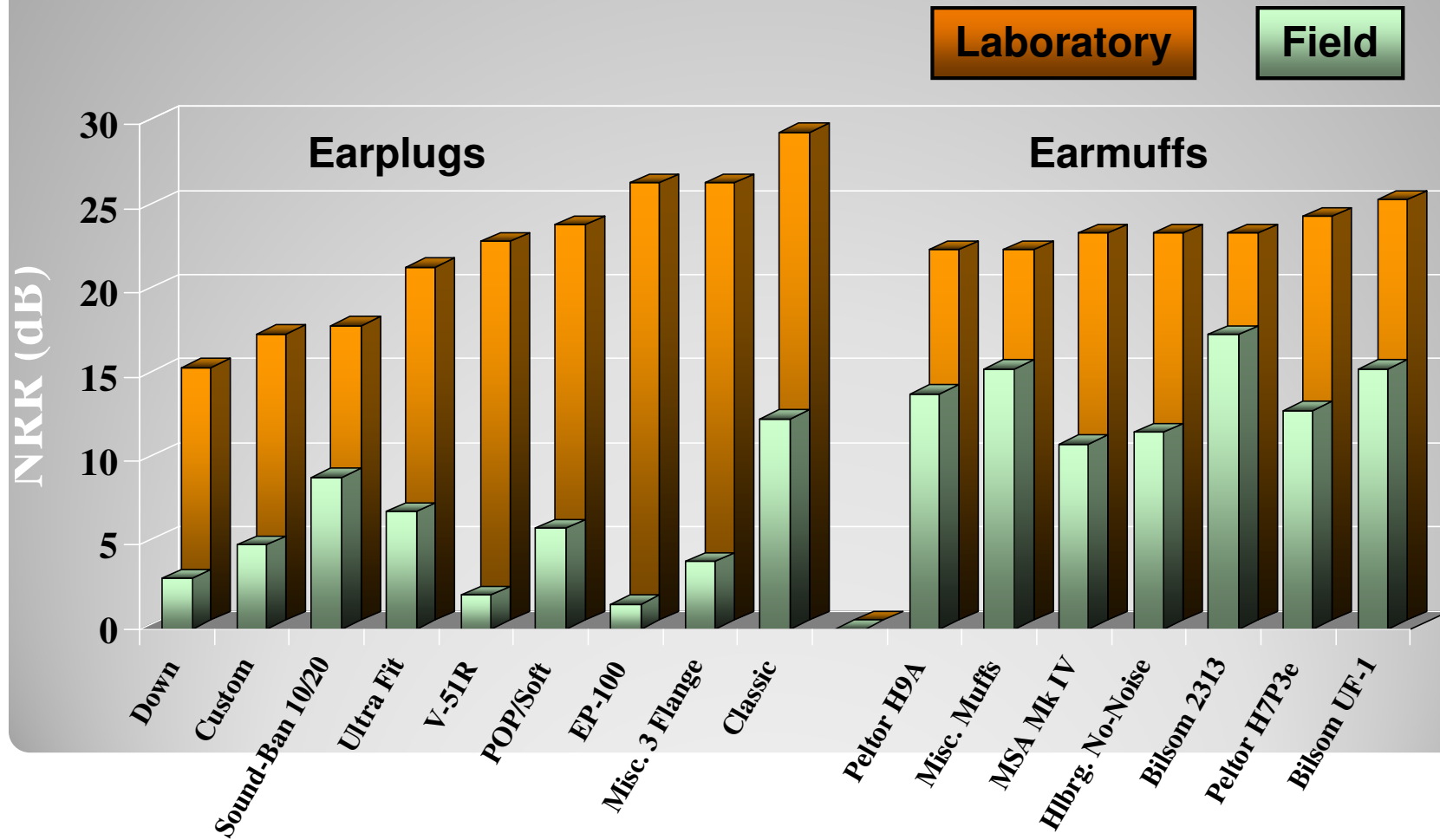
- Earmuffs are better hearing protectors than earplugs.
- Higher attenuating hearing protection is better than lower (i.e, Class A better than Class B).
- If you wear hearing protection, you can't hear people talking to you.

They're All False!!

1. According to hearing test data, both earplugs and earmuffs are equally effective.
2. Class A HPDs have more sound attenuation, but Class B HPDs have enough to be as effective as Class A in many situations. (<95dBA Lex)
3. In many situations HPDs HELP you hear speech in noise.

There are options to help you hear speech (specialty products)

Laboratory Versus Field Performance



HPD Proposed Rating Change

- EPA has proposed change to NRR rating system
- CSA is reviewing all aspects of a Hearing Conservation Program – including HPDs and the rating system.
- HPD manufacturers creating Field-Estimation Measurement Systems. (CSA? ANSI?)
- Stay tuned...

Take-Away Points

- Hearing Loss has significant costs: Socially and Financially.
- Education is NECESSARY. Risk recognition (cause and effect of NIHL) is key.
- Tools/Resources to help assess risk (Noise Level Measurements)
- If someone is not wearing HPDs, there is a good reason –
 - Find out what it is; Address it.

Sources of Information

- **WorkSafeBC website** (➡ Safety at Work ➡ Hearing Loss Prevention)
- **Me.**
 - Sasha.Brown@worksafebc.com



**ONIHL is PERMANENT and
PREVENTABLE**

How do we hear?



What does noise do to the Inner Ear?

