PREVENTING HEARING LOSS IN THE WORK PLACE

PRESENTOR:
DR. JODI HABERSTOCK Au.D., BC-HIS
Quiz....Which of the following is loud enough to cause Hearing Loss?

A. Lawn mower
B. Power tools
C. Child’s toy
D. MP3 players
E. Stereo
F. TV sound systems
G. Blender/food processor
H. Hair dryer

**ALL**

CAN CAUSE HEARING LOSS
Quiz...Which of these activities can cause Hearing Loss?

A. Playing sports
B. Watching a sporting event
C. Concerts
D. Dance clubs or bars
E. Health clubs or aerobics classes
F. Auto racing events
G. Fireworks displays
H. Motorcycle riding/motor-cross racing
I. Snowmobiling
J. Shooting firearms

ALL CAN CAUSE HEARING LOSS
Hearing loss is the most common occupational health problem in Canada and United States.

30 million workers in the United States are exposed to potentially hazardous noise and/or toxicants (Ototoxic) at work.

30 million Americans have hearing loss. One in three developed their hearing loss as a result of exposure to noise.
Loud noise can be very damaging to hearing.

Both the level of noise and the length of time you listen to the noise can put you at risk for noise-induced hearing loss.

Noise levels are measured in decibels, or dB for short. The higher the decibel level, the louder the noise.

Sounds that are louder than 85 dB can cause permanent hearing loss.
Noise-induced hearing loss typically occurs slowly, over a long period of time.

In most cases, Noise-induced hearing loss is painless.

Hearing loss affects your ability to understand speech.

It can also affect your social and emotional well-being.

Noise Induced Hearing loss is preventable
Loud noise can increase fatigue and cause irritability.
Noise can reduce the ability to pay attention to tasks. This is a concern at the workplace when it comes to workers' safety: The ability to detect faulty equipment operation or warning signals can be reduced.
Noise can also reduce productivity.
Noisy backgrounds can make understanding conversation difficult.
Loud noise can also cause other physical problems, such as:

- High blood pressure
- Increased or abnormal heart rate
- Upset stomach
- Insomnia or difficulty sleeping (even after the noise stops).
One of the side effects of Noise Induced Hearing Loss is **Tinnitus**.

Tinnitus is a ringing sound in the ears or head.

Tinnitus can also be described as a buzzing, chirping, whooshing, or crackling sound.

Brief episodes of Tinnitus often appear after noise exposure.

Tinnitus serves as a warning sign that you have been exposed to noise that is too loud.
It is important to understand how we hear and how loud noise can hurt your hearing.

- The loud sound is collected by the ear as sound waves.
- The sound waves travel down the ear canal toward the ear drum.
- If the sound is loud enough, it can dislodge the tiny bones of the middle ear.
How We Hear

- The loud sound passes through the middle ear and travels to the inner ear.
- The inner ear houses the cochlea or the “hearing organ.”
- The cochlea has rows of hair cells and is filled with fluid.
- Loud sounds disrupt and damaged the hair cells in the cochlea.
- Only healthy hair cells can send electrical impulses to the brain.
How We Hear

- It is in the brain that the sound is understood and interpreted.
- Hair cells damaged by loud sound cannot send the impulse to the brain for interpretation.
- Intense brief noises, like a firecracker or an explosion, can damage hair cells, as can repeated exposure to high levels of noise.
- Once the hair cells are damaged, there is no current treatment to repair them.
Hair Cells

Healthy

Damaged
Just to be clear...

Cochlea Hair

Not These
How Do I Know When Noise Is Dangerous?

* If you have to raise your voice to be heard **DANGEROUS**
* You can't hear someone 3 feet away from you **DANGEROUS**
* Speech around you sounds muffled or dull after you leave the noisy area **DANGEROUS**
* You have pain or ringing (TINNITUS) in your ears after exposure to noise **DANGEROUS**
Barn Noise

- Working with pigs exposes the handler to situations involving high decibel noise
- Hearing protection should be worn when noise levels exceed 85 decibels.
<table>
<thead>
<tr>
<th>Source of Noise</th>
<th>Decibel Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swine Barn Nursery</td>
<td>66-69 dB</td>
</tr>
<tr>
<td>Swine Barn Gestation</td>
<td>95-104 dB</td>
</tr>
<tr>
<td>Swine Feeding</td>
<td>121-133 dB</td>
</tr>
<tr>
<td>Ventilation Fan</td>
<td>65-77 dB</td>
</tr>
<tr>
<td>Chainsaw</td>
<td>115 dB</td>
</tr>
<tr>
<td>Hammer mill</td>
<td>94 dB</td>
</tr>
<tr>
<td>12 Gauge Shotgun</td>
<td>135 dB</td>
</tr>
</tbody>
</table>

Source: Centre for Agricultural Medicine, 1997
So What Should I Do?

- Wear hearing protection.
- Cotton will not work.
- Hearing protection can be purchased at drugstores, hardware stores, or sports stores.
- Custom earmolds can be made to fit your ears by an audiologist.
- Learn how to correctly insert the earplugs, earmuffs and earmolds for the best noise reduction.
Earplugs

* **Earplugs** are placed *into* the ear canal so that they totally block the canal.
* They come in different shapes and sizes, or they can be custom-made by taking an impression of the ear.
* Earplugs can reduce noise by 15 to 30 decibels (dB) depending on how they are made and fit.
Earmuffs fit completely over both ears.

They must fit tightly so that sound is blocked from entering the ears.

Like earplugs, muffs can reduce noise 15 to 30 dB depending on how they are made and fit.
Combination

* **Earplugs and earmuffs** can be used together to achieve even greater sound reduction.
* Use of earplugs and earmuffs is recommended when noise exposure is particularly high.
Custom Earplugs

- Impressions are taken of the ears by a licenced Audiologist or HIS.
- Available in a variety of shapes, colours and materials.
- Durable and comfortable.
- Variety of uses.
- Cost (-)
The choice is a very personal.

It depends on a number of factors including level of noise, comfort, and the suitability of the hearing protector for both the worker and his environment.

Important—the hearing protector should provide the desired noise reduction.

If the noise exposure is intermittent, ear muffs are more desirable, since it may be inconvenient to remove and reinsert earplugs.

Where hearing protection in all situations where you are exposed to noise—not just at work.
VARIOUS EARPLUGS

Legend

<table>
<thead>
<tr>
<th></th>
<th>Lab Fit</th>
<th>Real World</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-A-R Foam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultra Fit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-51R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Flange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custom Molded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Noise Reduction
IF YOU REMEMBER ANYTHING... NRR

* NRR stands for **NOISE REDUCTION RATING**.
* It is the amount of noise that is dampened or reduced by the hearing protection.
* It is found on all hearing protection packaging.
How to Care for your Hearing Protection

* Follow the manufacturer's instructions.
* Check hearing protection regularly for wear and tear.
* Replace ear cushions or plugs that are no longer pliable.
* Replace earmuffs when head bands are so stretched that they do not keep ear cushions snugly against the head.
* Use a soft brush to clean the ear pads of the Earmuffs.

Source: Canadian Centre for Occupational Health and Safety [www.ccohs.ca](http://www.ccohs.ca)
Occupational hearing loss usually is caused by noise however, exposure to some commonly used chemicals can increases the risk of hearing loss, particularly in noisy workplaces.

Workers exposed to some chemicals suffer "ototoxic" effects.

Ototoxic means that the chemical causes damage to both the hearing and balance systems.
Some Ototoxic Chemicals

- Benzene
- Carbon disulfide
- Carbon monoxide
- Ethylbenzene
- Hydrogen cyanide
- Lead
- Mercury
- n-Hexane
- Solvent mixtures
- Styrene
- Trichloroethylene
- Toluene
- Xylene

All of these are found in fuels and plastics, as thinners for paints, lacquers and dyes, in detergents, medicines, perfumes, fabric and paper coatings, printer’s ink, spray surface coatings and insect repellents.
Any Questions?
Dr. Jodi Haberstock Au. D
Registered Audiologist

Carlton Trail Hearing Clinic
2995 2nd Ave West
Prince Albert, SK
S6V 5V5
306.922.0003

jh@carltontrailhearingclinic.com