

Lesson At A Glance

Length	1 hour
Learning Objectives	<p>Students will:</p> <ul style="list-style-type: none"> • describe the immediate and long term consequences of loud noise • identify factors that relate to hearing loss
Teaching Strategies	<ul style="list-style-type: none"> • video • cooperative groups • questioning • group presentations
Equipment/Instructional Aids	<ul style="list-style-type: none"> • flipchart/whiteboard • Student Handouts (photocopy for class) • 2 videos (order from WCB if not included in package) • VCR / TV monitor
Assessment Strategy	<ul style="list-style-type: none"> • worksheet activity • presentation

Lesson Breakdown

5 min.	Introduction - Hearing Loss Facts
40 min.	Video Learning Activity - "The Hearing Video"
15 min.	Learning Activity - The Inner Ear
5 min.	Optional - "The Walkman Generation" Video

Purpose

This module is designed to help students understand the immediate and long term consequences of noise damage to the ear.

Learning Objectives

Students will be able to:

- describe the immediate and long term consequences of loud noise
- identify factors that relate to hearing loss

Duration

1 hour

Instructional Materials



Order videos by contacting the Student WorkSafe Program at (604)276-3100 or 1-888-621-7233

Video

1. The “Hearing” Video (16 min.)
2. “Walkman Generation” Video (6 min. - optional)

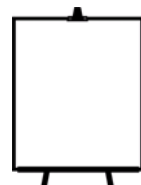
Student Handouts

(photocopy for students)

1. Hearing Video Discussion Questions
2. 2 Photos of Inner Ear
3. Walkman Generation Viewing Guide

Equipment

1. VCR / TV
2. White board or flipchart
3. Markers



Note to Teacher



Noise Induced Hearing Loss

Loud noise can cause a permanent hearing loss. Research from industry and on animals indicates that prolonged exposure to sound over 85 dB can cause permanent hearing impairment. The more intense the noise, the less exposure needed to receive a damaging dose. In our society, it is also commonplace for recreational and workplace sounds to be at damaging levels.

This module on noise induced hearing loss was designed to address this problem by providing education and motivation for students to protect their hearing throughout their life. Core concepts include:

- What is the hazard?** (noise)
- What is the effect?** (hearing loss)
- How do you protect or prevent?** (avoid or reduce exposure, use hearing protection devices e.g. earmuffs)

Hearing Loss in the Classroom

Research shows that 6 per 1000 school children have some degree of hearing loss. Hearing loss can be from various causes such as ear disease (e.g. ear infections), congenital (born with it), or trauma (e.g. head injury). Some students with hearing loss are assisted by hearing aids.

For those students with a hearing loss, it is very important that they don't lose any additional hearing due to noise damage. Their hearing protection needs may be more specialized than those of someone with normal hearing. Their audiologist or WCB Hearing Conservation section are good resources for them to get expert advice on hearing protection.

For more information:

Noise and Your Hearing and the *Occupational Health and Safety Regulation (Part 7 Noise)* are WCB publications available through WCB Publications and Videos.

Contact the WCB Hearing Conservation Section:
276-3136 or toll free
1-888-621-7233, local 3136.

Or visit www.worksafebc.com

Introduction

Comment



Here are some facts:

Research shows that 6 per 1000 school children have some degree of hearing loss. 25% of young adults entering the BC workforce have early stages of noise induced hearing loss.

We are about to see a video called the “Hearing Video”. The video will explain the anatomy of the ear, how we hear sounds and the type of damage caused by loud sounds or music.

Video Learning Activity - 40 min.

Assign each student the letter A, B, C or D. (Try to ensure there are equal numbers of students who are the letter A, B C and D).

Distribute Student Handout #1 to students. Assign students the quadrant question on the handout (A to D) that matches the letter (A, B, C or D) assigned to them and have students focus on their quadrant question while watching the video.

Name _____		Date _____	
The Hearing Video Discussion Questions			
<p>A. Hearing damage from hazardous noise is permanent.</p> <p>Agree Disagree</p> <p>Observations:</p>	<p>B. Noise hazard depends on the loudness of the sound and the length (time) of exposure.</p> <p>Agree Disagree</p> <p>Observations:</p>	<p>C. Rule of thumb: at arm's length, if you have to speak loudly for someone to hear you over normal music it could be at hazardous loudness levels.</p> <p>Agree Disagree</p> <p>Observations:</p>	<p>D. There are many types of hearing protection to choose from; to protect your hearing you need to make sure hearing protection devices fit you and are used properly and consistently.</p> <p>Agree Disagree</p> <p>Observations:</p>
Grade 7 Hearing Protection Student Handout #1			

Show video (“The Hearing Video” - 16 min.)



Learning Activity - continued

<p>C.</p> <p>Rule of thumb: at arm's length, if you have to speak loudly for someone to hear you over noise/music it could be at hazardous loudness levels.</p> <p>Agree Disagree</p> <p>Observations:</p> <p>Random response.</p> <p>Key point:</p> <ul style="list-style-type: none">• signs of hearing damage after exposure to hazardous noise include ringing or buzzing in ears and sounds seem muffled	<p>D.</p> <p>There are many types of hearing protection to choose from; to protect your hearing you need to make sure hearing protection devices fit your ears and are used properly and consistently.</p> <p>Agree Disagree</p> <p>Observations:</p> <p>Random response.</p> <p>Key points:</p> <ul style="list-style-type: none">• use <u>whenever</u> exposed to hazardous noise• key to consistently using hearing protection means wearing whichever type is comfortable and fits well
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The Inner Ear Learning Activity - 15 min.



Comment

The intensity of vibration or loudness is measured in units called “decibels” (dBA).

For hearing damage to occur, there would have to be 8 hours of exposure to noise at 85 dBA.

For example, a soft whisper registers about 20 dB while an air raid siren measures as high as 140 decibels.

Learning Activity - continued

Comment

Hearing protection provides a “hearing loss” for loud sounds so that they are no longer loud enough to permanently damage the hearing.

Ask

What are some types of ear protection?

Responses

- ear plugs
- ear muffs
- canal plugs



Ask

How do we hear sounds?

Explain

Sound waves move down the ear canal and through the ear drum and middle ear. Then the sounds are picked up by the nerve endings or hair cells in the inner ear. The nerve endings send the message along the hearing nerve to our brain. The brain tells us what we are hearing.

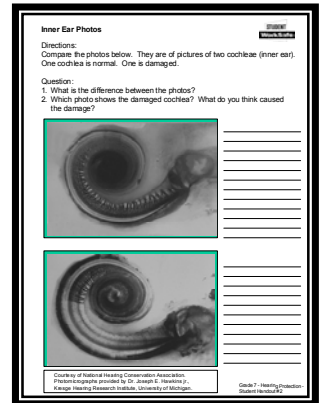
Learning Activity - continued

Distribute Student Handout #2 - Photos of Inner Ear.

Ask students to complete the handout questions.

What is the difference between the photos?

What do you think caused the damage?



Teacher’s Answer Key

- The hair cells or nerve endings of one inner ear (bottom photo) have been destroyed
- This was caused by noise damage. This damage is permanent and invisible (gradual with no pain or bleeding)

Comment (optional)

We are now going to see a video called the “Walkman Generation”. This video reinforces the importance of protecting your hearing from loud music or noise.



Walkman Generation - 6 minutes

Distribute Student Handout #3 - The Walkman Generation Viewing Guide.

Ask students to complete Student Handout #3. Have class discussion on the discussion questions. Refer to answer key on the following page.

Name _____ Date _____

The Walkman Generation Viewing Guide

A. What are some sounds that could be a hazard to your hearing?
Observations: _____

B. What are some signs that your hearing is being damaged?
Observations: _____

C. How does noise damage your ears?
Observations: _____

D. How can you protect your hearing from hazardous noise?
Observations: _____

©2007 Hearing Protection, Student Handout #3

Walkman Generation Viewing Guide

Teacher's
Answer
Key

A. What are some sounds that could be a hazard to your hearing?

Observations:

Answers from video could include:

- walkman, portable stereo
- boom cars
- concerts
- music/band

B. What are some signs that your hearing is being damaged?

Observations:

Answers from video could include:

- sounds seem muffled
- ringing or noises in the ears (tinnitus) after exposure

C. How does noise damage your ears?

Observations:

Answers from video could include:

- destroys hair cells/nerve endings in the inner ear

D. How can you protect your hearing from hazardous noise?

Observations:

Answers from video could include:

- turn down volume
- use hearing protection
- avoid (e.g. go away, close door, windows, etc.)

Conclusion

Conclude / Reflect

Let's review the following points:

- hearing damage from hazardous noise is permanent
- noise hazard depends on loudness of sound and length (time) of exposure
- at arm's length, if you have to speak loudly for someone to hear you over noise/music, it could be at a hazardous loudness level
- protect your hearing by properly using hearing protection devices

Remember, use the Hazard Recognition strategy to ensure a safe workplace. See It (is the loud noise/music at an unsafe level), Think It (what can happen (permanent loss of hearing)), Do It (use hearing protection to prevent hearing loss).

