

Working with Albert

NOISE EXPOSURE DEMONSTRATION MODEL

**READ THIS PAGE COMPLETELY BEFORE
TOUCHING ANYTHING ELSE**

– HANDLE WITH CARE –

**This demonstration model contains
fragile components.**

Contents

The case contains several resources and components. Please confirm that you have all the pieces upon receipt. If anything is missing contact CASA **IMMEDIATELY**.

- One mannequin bust with a permanently attached cable extending from the left shoulder.
 - Please remember that all clothing/accessories on “Albert” must be returned (\$250).
- One sound level meter permanently attached to the cable coming from the mannequin (\$300).
- One power source (transformer) for the sound level meter (\$15).
- One instruction booklet for operation of the sound level meter—a quick reference guide is also included (\$2.50).
- One CD—A Better Understanding of Hearing (\$10).
- One Lesson Plan/Hands-on Activity (\$5).
- One shipping case with security lock (\$500).

**THE BORROWER OF THIS EQUIPMENT IS FINANCIALLY RESPONSIBLE
FOR ANY DAMAGE OR LOSS (\$1500).**

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CASA | ACSA
CANADIAN AGRICULTURAL SAFETY ASSOCIATION
ASSOCIATION CANADIENNE DE SÉCURITÉ AGRICOLE

www.casa-acsa.ca

Sound Level Meter

QUICK REFERENCE GUIDE

This is a fragile instrument DO NOT allow children or unauthorized persons to handle it.

This meter is not calibrated for regulatory measurements, however it does provide approximate sound level readings for display purposes.

Please use this meter with the enclosed power source to ensure proper functionality. Plug the power source into a 120 volt outlet and then insert the small plug into the meter.

SETTINGS

The sound level meter has been pre-set for your convenience. Should the settings be changed, these are the recommended settings.

- **Front**
 - Orange button on the front in the ON position.
- **Right Side Panel**
 - Top switch in the lower position.
 - Alarm switch in the high position.
- **Rear Panel**
 - Left slide switch should be in the middle (60–110 range).
- **Front Display**
 - Bottom center of the screen should have "A" displayed—this is frequency weighting. If you must change it press the A/C button on the Rear Panel until A appears.
 - Bottom center of the screen to the left of the "A", "S" should appear—this is the response rate of the meter, indicating the meter will respond to noise to average quickly changing sound levels. If you must change it, press the F/S button on the Rear Panel until S appears.
 - Bottom right side of the screen, 85.0 dB sound will appear under the word LIMIT. If the sound level being monitored exceeds 85.0 dB the four windows at the top of the front of the meter will flash RED and OVER will flash at the top of the screen, indicating that the safe noise exposure level has been exceeded. If this value is different press the ↑ or ↓ on the Rear Panel until 85.0 appears as the LIMIT.
 - When three dashes - - - appear in the centre of the screen, this indicates that the sound level is below 60.0 dB.

**THIS IS A DELICATE INSTRUMENT PLEASE HANDLE IT WITH CARE.
REPORT ANY CONCERNS OR DAMAGE TO CASA IMMEDIATELY.**

Excessive Noise Exposure from PERSONAL LISTENING DEVICES

Learning Objectives

After completing this station, participants should be able to:

1. Understand how noise induced hearing damage occurs.
2. Recognize warning signs of excessive noise exposure.
3. Make informed decisions about being exposed to excessive noise from personal listening devices.

Safety Requirements

1. Sanitize the mannequin's "ear" immediately following the removal of a participant's "ear bud" from the mannequin.
2. Do not permit the volume of the personal listening device to exceed 90.0 decibels (dB) if one of the ear buds is in the participant's ear and the other ear bud is in the mannequin's ear.

Age-Appropriateness

This lesson is appropriate for participants of all ages.

Suggested Instructors

Anyone with a basic understanding of how we hear can deliver this presentation. Key presenters could be: audiologist, audiometric technician, nurse, nurse practitioner, nursing student, physician, health educator, occupational health and safety professional, and science/biology teacher.

Activities/Demonstrations

The purpose of this demonstration is to show participants that personal listening devices such as an MP3 player can produce sound levels that exceed a safe threshold of hearing. This type of exposure can result in permanent noise induced hearing loss.

**REFER TO HOW THE EAR
WORKS FOR ADDITIONAL
BACKGROUND ON HEARING
AND NOISE EXPOSURE.**



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Presentation Outline

I. Introduction/Capture Their Attention

- A. Introduce yourself and tell them about your role or experience with noise exposure.
- B. Find out about your audience. Ask questions:
 - Do they often use ear buds for privately listening to music?
 - Do they ever set the volume level above the halfway point on the device?
 - For how long do they continuously listen to their ear buds?
 - Do they use their ear buds while doing activities that produce loud noise such as using a lawn mower?

II. Discussion Points

A. Basics

- Sound is an energy source.
- If our bodies are exposed to too much energy, injury results.
- The human ears are delicate and can be permanently damaged.
- Noise from multiple sources increases the sound pressure on our hearing system.

B. Hearing Loss

- Hearing loss can occur as a result of:
 - Disease.
 - Physical injury such as a blow to the ear.
 - Exposure to high noise levels.
 - Natural aging.

C. Warning Signs

- Difficulty hearing normal conversation with continuous background noise.
- Asking people to repeat themselves.
- Family asking you to turn down the volume on the television.
- Finding the volume too loud on the radio in the morning when you start up your vehicle or equipment.

D. Prevention

- Recognizing the excessive noise can cause permanent hearing damage.
- Turning down the volume.

III. Demonstration Notes

- Set up the sound level meter as per the instructions.
- Discuss with the participants potential of hearing damage from personal listening devices.
- If a laptop computer is available use the enclosed DVD **A Better Understanding of Hearing** to demonstrate to participants how the ear works and how noise induced hearing damage can occur.
- Using an MP3 player with headphones, (sanitize the ear buds) insert one of the ear buds into the mannequin's ear and ask a participant to insert the other ear bud into their ear and set the volume on the player to a level that they would like to listen to the music at.

CAREFULLY MONITOR THIS PROCESS SO THAT THE MP3 PLAYER VOLUME DOES NOT EXCEED 90.0 dB.

- Discuss with the participants the risk of noise exposure. Use the table **Noise Level (dBA) Maximum Exposure Time per 24 Hours**.
- Use the **Noise Levels** sheet to discuss with participants typical examples of sound sources.

Demonstrating Effectiveness of HEARING PROTECTION DEVICES

Learning Objectives

After completing this station, participants should be able to:

1. Understand how noise induced hearing damage occurs.
2. Recognize warning signs of excessive noise exposure.
3. Make informed decisions about the selection and use of hearing protection.

Safety Requirements

Do not permit anyone to be exposed to sound levels exceeding 90.0 decibels (dB) during your presentation.

Age-Appropriateness

This lesson is appropriate for participants of all ages.

**REFER TO HOW THE EAR WORKS FOR
ADDITIONAL BACKGROUND ON HEARING
AND NOISE EXPOSURE.**

Suggested Instructors

Anyone with a basic understanding of how we hear can deliver this presentation. Key presenters could be; audiologist, audiometric technician, nurse, nurse practitioner, nursing student, physician, health educator, occupational health and safety professional, and science/biology teacher.

Activities/Demonstrations

With a relatively constant sound source such as a small portable radio, you will demonstrate to the participants the effectiveness of various types of personal hearing protection.

Presentation Outline

I. Introduction/Capture Their Attention

- A. Introduce yourself and tell them about your role or experience with noise exposure.
- B. Find out about your audience. Ask questions:
 - Have they ever experienced a ringing sound while in a quiet environment such as at night?
 - In the morning when they get into their vehicle or equipment do they have to turn down the volume on the radio because it is too loud?

- Do they know someone who has difficulty hearing and continually asks you to repeat yourself or speak up?
- Do they have difficulty having a conversation when there is constant background noise such as at a social function or with equipment operating in the background?
- What impact do they think not being able to hear might have on their personal lives and their ability to work?

II. Discussion Points

A. Basics

- Sound is an energy source.
- If our bodies are exposed to too much energy, injury results.
- The human ears are delicate and be permanently damaged.
- There are various ways to control the amount of noise you are exposed to.

B. Hearing Loss

- Hearing loss can occur as a result of:
 - Disease.
 - Physical injury such as blow to the ear.
 - Exposure to high noise levels.
 - Natural aging.

C. Warning Signs

- Difficulty hearing normal conversation with continuous background noise.
- Asking people to repeat themselves.
- Family asking you to turn down the volume on the television.
- Finding the volume too loud on the radio in the morning when you start up your vehicle or equipment.

D. Prevention

- Recognizing the excessive noise can cause permanent hearing damage.
- Attempting to control excessive noise at the source such as installing a new muffler on the equipment.
- Creating a noise barrier such as keeping the door/window closed on the tractor cab to limit noise infiltration into the cab.
- When purchasing new equipment or tools selecting the one that produces the lowest noise level.
- Selecting the most effective personal hearing protection for noise levels you will be exposed to and using that personal protective equipment consistently.

III. Demonstration Notes

- Set up the display mannequin with a constant sound source nearby so that the sound level meter will be registering a sound level in the range of 55 to 75 dB and the display screen is visible to the participants.
- If a laptop computer is available use the enclosed DVD **A Better Understanding of Hearing** to demonstrate to participants how the ear works and how noise induced hearing damage can occur.
- Discuss what type of hearing protection is most effective—cotton balls, insert foam plugs, insert flanged plugs or muffs.
- Take a cotton ball and loosely insert it into the mannequin's ear canal, ask the participants to make a mental note of the sound level meter reading then remove the cotton ball.
- Take a foam plug and demonstrate to the participants the correct method of forming it and then insert it into the mannequin ear canal, ask the participants to make a mental note of the sound level meter reading then remove the foam insert.
- Repeat the process with a hearing protection muff and ask the participants to make a note of the sound level meter reading then remove the muff.
- Take a molded flange insert and carefully insert it into the mannequin's ear canal, ask the participants to make a note of the sound level meter reading. Without removing the ear plug now place the muff over the ear of the mannequin and again take note of the sound level reading.
- Discuss with the participants the effectiveness of each of the types of hearing protection. Note that hearing protection packing has a NRR (Noise Reduction Rating) number. This is the decibel level of noise reduction that the hearing protector can offer under ideal conditions.
- Discuss with the participants the importance of selecting hearing protection that can effectively reduce your noise exposure below 80 dB as well as being comfortable enough to wear that you will continue to wear it when in a noisy environment.
- Discuss with the participants the risk of noise exposure. Use the table **Noise Level (dBA) Maximum Exposure Time per 24 Hours**.
- Use the **Noise Levels** sheet to discuss with participants typical examples of sound sources.