admin
THE SOUTH CAROLINA
DEPARTMENT of ADMINISTRATION

Safety Program

Hearing Loss

1 in 10 have Hearing Loss

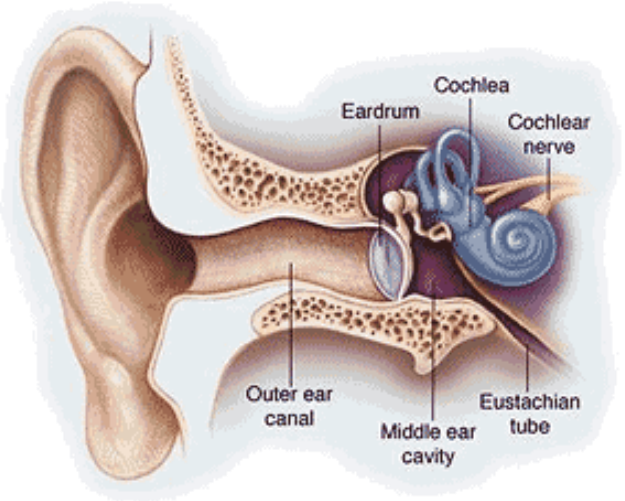
There is No Treatment, No Medicine, No Surgery, Not Even a Hearing Aid that Completely Restores Your Hearing Once Damaged

- **Causes**:
  - Disease
  - Age
  - Foreign Object
  - **Excessive Noise**
- **Typical Symptoms**
  - Gradual (usually develops over a period of several years)
  - Painless
  - Other Effects
    - Fatigue, Elevated Blood Pressure, Stress, Sleeplessness

Hearing Loss

When noise is too loud, it begins to kill the nerve endings in the inner ear

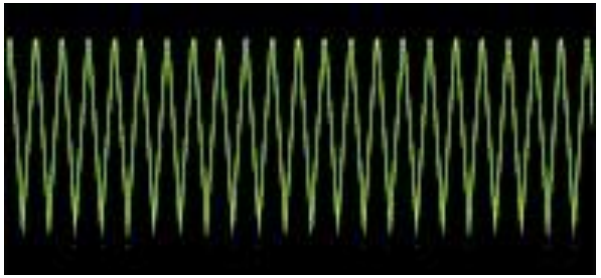
- **High frequencies are usually lost first** (reason why people have difficulty hearing the high pitched voices of women and children)
- **Sounds become distorted** (speech becomes difficult to understand even though it can be heard)



Noise Exposure

Sound is Measured in:

- Intensity (Loudness) – Decibels (dB)
- Pitch (Frequency) – Hertz (Hz)
  - Continuous (constant level over time)
  - Intermittent (levels vary over an area or start and stop)
  - Impact (sharp burst of sound, e.g., nail gun, hammer)



Steady

Impulse

The Best Hearing Can distinguish sounds from 20 Hz (lowest note on a large pipe organ) to 20,000 Hz (dog whistle).

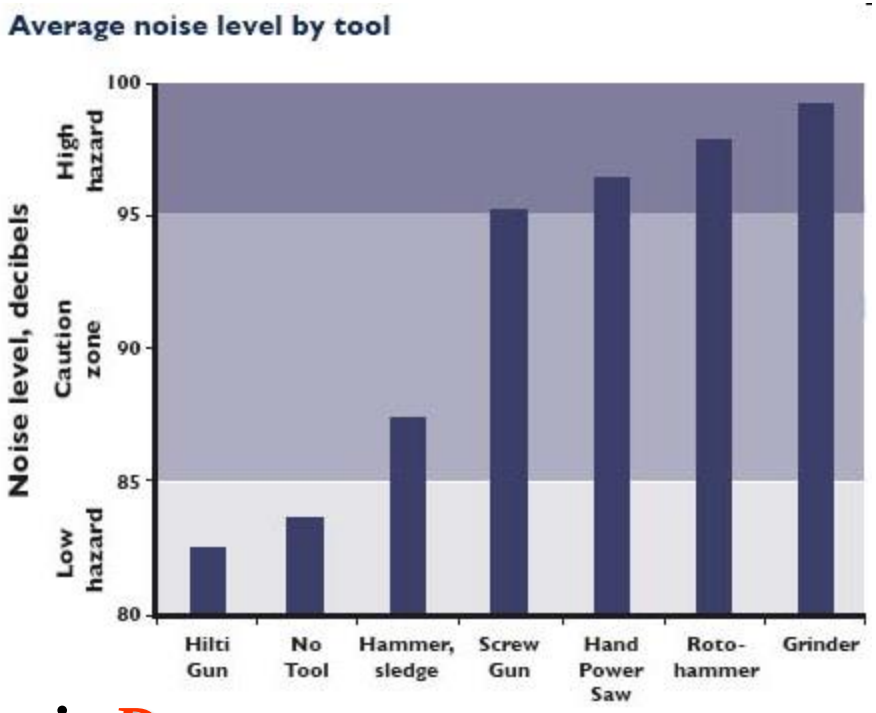
Human speech ranges from 300 to 4,000 Hz.

Noise Levels

Noise	dB
Loudest Possible Tone	194
Rocket Launch	180
12 Gauge Shotgun	160
Jet Engine @ Takeoff	140
Ambulance Siren	120
Chain Saw	110
Hand Drill	98
Hair Dryer	90
Telephone	80
Normal Conversation	60
Whisper	30

125 db or More Is Painful

85 dB or More May Cause Hearing Loss



Excessive Noise is *Dangerous*

If it is loud enough and lasts long enough, it can damage your hearing

Hearing Conservation

NOISE-INDUCED HEARING LOSS

- Permanent
- But 100% Preventable

Remove Any Element And Over Exposure To Noise Is Prevented

Reduce Loudness Or Duration And Exposure Is Reduced

Hearing Conservation

Prevention Measures

- Must be taken by employers and workers – Removing hazardous noise from the workplace
  - Engineering controls (installing a muffler or acoustic barrier)
  - Administrative Controls
    - Warning Signs
    - Less Time Exposed to Noise
  - PPE - Hearing protectors (ear plugs and ear muffs)

Priority of Health & Safety Controls

Hearing Conservation

When is Hearing Protection Required?

- When Communication is Difficult
  - If you must raise your voice in order to be heard by someone less than 2 feet away

- Above 85 decibels (Warning Signs Posted)

Hearing Conservation

OSHA's Occupational Noise Standard (29 CFR 1910.95):
Employer must provide hearing protection against the effects when exposure to the noise levels exceed:

dB	Time-Weighted Average (TWA)
90	8 Hours
95	4 Hours
100	2 Hours
115	15 Minutes
140	Not Permitted

Hearing Conservation

A **Work Site Noise Assessment Survey** Is Conducted To Determine If Hearing Protection Is Required For Specific Equipment Or Areas

Choose Hearing Protection

That's Right For You to *Reduce* Noise

Ear Plugs

Pre-Molded/Reusable

Expandable Foam

(NRR 20-30 dB)

Ear Band Caps

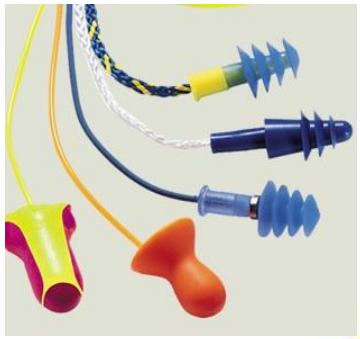
Ear Muffs

(NRR 15-30 dB)

Noise Reduction Rating (NRR) - an approximate dB reduction provided by the hearing protector in lab conditions

(Subtract 7 dB for approximate "real world" attenuation)

Choose Hearing Protection
That's Right For You to *Reduce* Noise



EAR PLUGS

Advantages:

- Small & Light weight
- Comfortable
- Various Sizes (Universal - S - M - L)
  - Custom Fitted
- Easy to Use with Other Safety Equipment
- Better Noise Reduction Rating than Ear Muffs

Disadvantages:

- May Work Loose & Need Re-Insertion
- Need Training for Proper Fit
- Frequently Soiled
  - ***WASH Your Hands*** Before Inserting

EAR PLUGS - Disposable

For a good fit, use the Roll, Pull and Hold Method

(1) Roll the plug into a small diameter

(2) Reach around the back of your head, and gently pull your ear back and up

(cont.)

EAR PLUGS - Disposable

(3) Insert the plug well into the ear canal and hold in place for a few seconds while it expands and forms a good seal

Incorrect

Correct

EAR PLUGS

Pre-Molded

- **Reach around the back of your head, and gently pull your ear back and up**

- **Work the plug well into the ear canal using a circular motion**

- **Once inserted, wait a few seconds to make sure the plug is securely fitted into your ear**

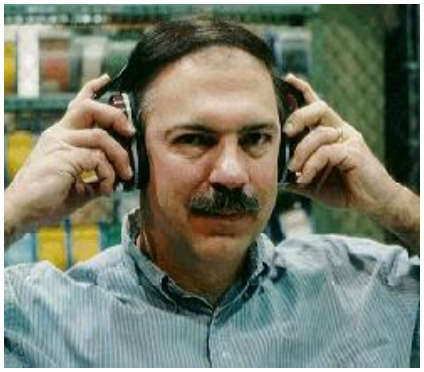
Choose Hearing Protection That's Right For You to *Reduce* Noise

Hearing Aids ≠ Hearing Protection

- **Hearing Aids Do Not Block Out Enough Sound for Most Workplace Noise**
- **Some Hearing Aids Can Actually Increase the Noise Level at the Ear**
- **Just Turning Off the Hearing Aids Will Not Prevent Further Hearing Loss From Noise Exposure**
- **Use Ear Muffs Over Hearing Aid**

Choose Hearing Protection
That's Right For You to *Reduce* Noise

EAR MUFFS



Advantages:

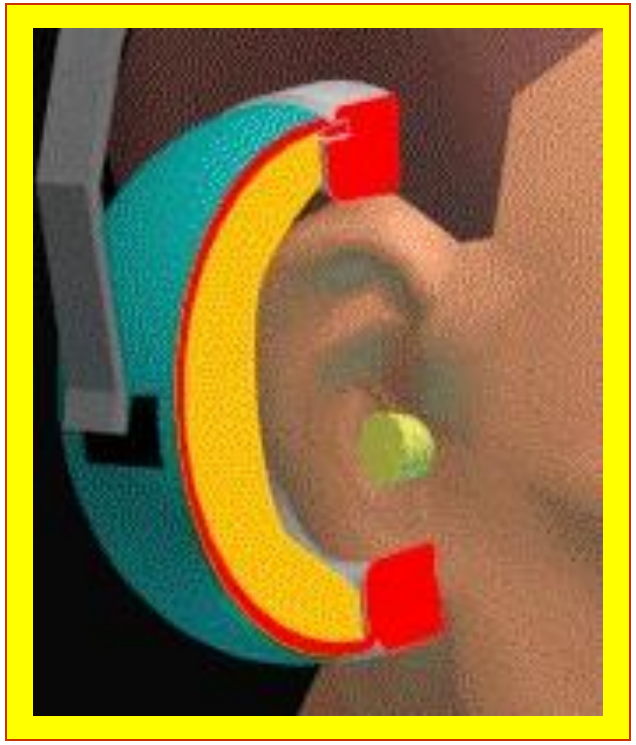
- Easy for Supervisors to Monitor
- One Size Fits All
- Fits Better for Longer

Disadvantages:

- May Fit Tight
- Uncomfortable, Especially When Warm
- Problems Fitting With Other Safety Equipment
- May Not Be As Effective As Ear Plugs

Effectiveness Is Limited by the Seal Around Your Ear

- Seal Affected by Glasses & Facial Hair



Both Ear Plugs ***<u>and</u>*** Ear Muffs Should Be Used In Noisy Work Environments **Over 105 dB**

Choose Hearing Protection
That's Right For You to *Reduce* Noise

HEARING BAND CAPS

- Advantages Similar to Ear Plugs & Muffs
- Built-In Light-Weight Suspension
- Can Be Worn in Various Ways

Wear Your Hearing Protection

Half of the Workers Wearing Hearing Protectors Receive Half or Less of the Noise Reduction Potential of Their Protectors ***Because These Devices***

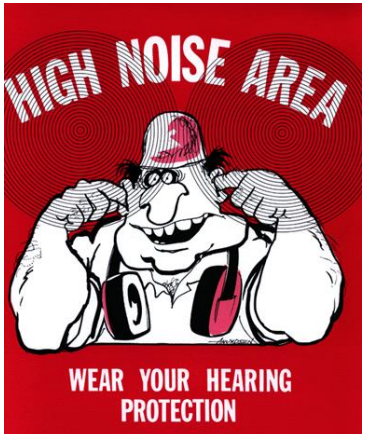
It won't protect you if it is around your neck!!!

- **Not Worn Continuously**

  If Hearing Protection is Not Worn for Just 1 Hour of an 8-Hour Workday, Hearing Protection is reduced 70%

  (So A 30 dB Hearing Protector Would In Effect Only Provide 9 dB of Protection – Not Much Better Than Cotton or Tissue Stuffed in Your Ears)

- **Do Not Fit Properly**



Wear Your Hearing Protection

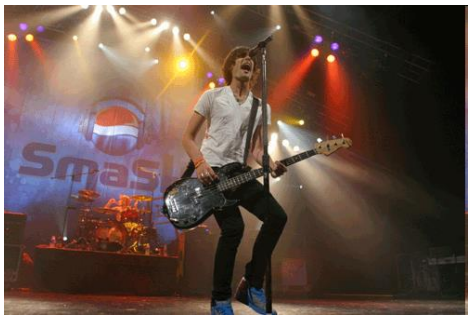
Noise Exposure Is

Cumulative

It Is The Noise

- At Work
- ***AND*** at Home
- ***AND*** at Play

Must Be Counted in the Total Exposure During Any One Day



Hearing Protection – Maintenance Care

When Not in Use, Store Hearing Protectors in a Clean, Cool, Dry Place

FOAM PLUGS

- **If they become soiled, torn or stiff, discard them and get a new pair**

PRE-MOLDED PLUGS

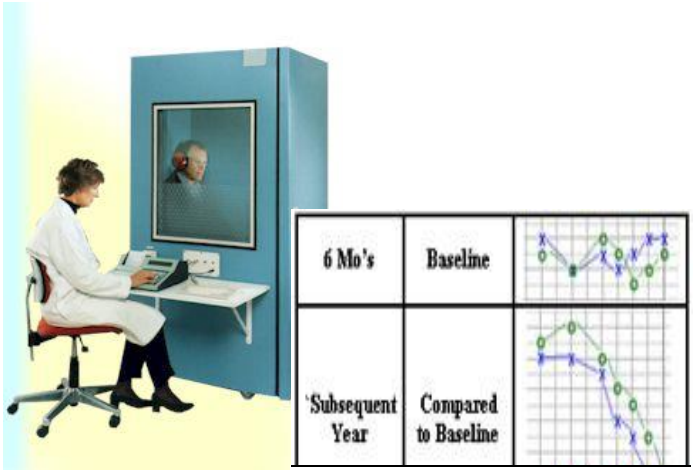
- **If they become soiled**
  - **Wash with a mild soap solution**
  - **Rinse with Water**
  - **Dry with a soft towel**
- **If the become torn or stiff, discard them and get a new pair**

- **EAR MUFFS**
  - **If they become soiled**
    - **Wash with a mild soap solution**
    - **Rinse with Water**
    - **Dry with a soft towel**
  - **If damaged (cracked cups), have repaired or get a new pair**

Hearing Conservation Program

Audiometric Testing:

- When Exposure Exceeds OSHA Limit
- Baseline for Reference
- Annual
- Assures Hearing Protection is Adequate
- Age-Adjusted



If Tests Reveal Hearing Loss (≥**10** dB in Higher Pitches in Either Ear), **the Affected Employee**:

- Must Be Informed
- Must Wear Hearing Protectors (> 85 dB for 8-hour TWA)
- Referred to an Ear, Nose and Throat Physician (otolaryngologist or otologist) for:
  - Larger Losses of Hearing
  - The Possibility of Ear Disease

Questions ?

Contact SC BCB Safety

- Holly Bockow 737-2311