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## Safety Program



# Hearing Loss



**1 in 10 have Hearing Loss**

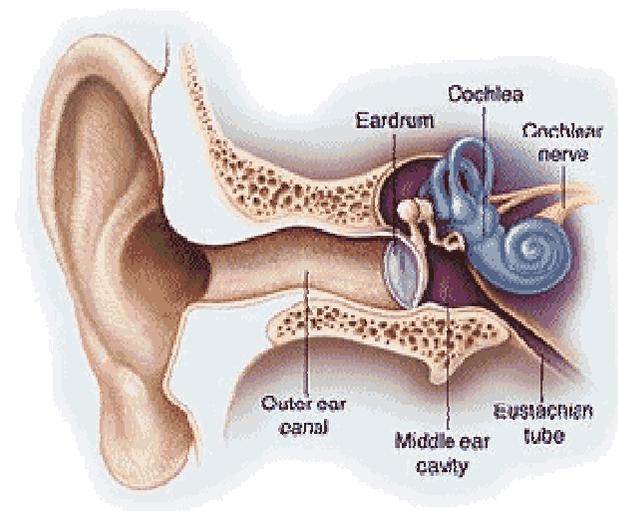
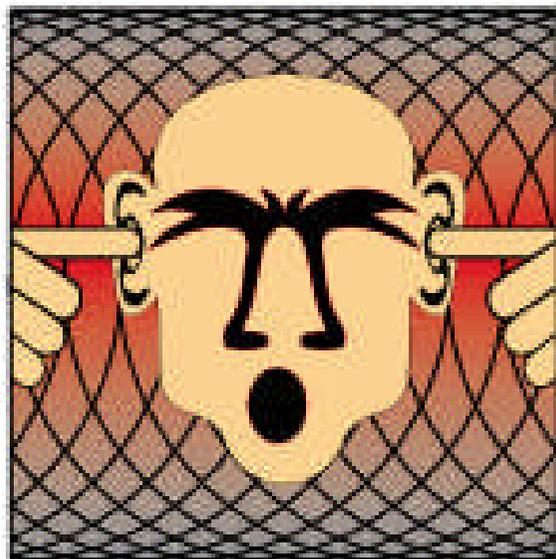
**There is No Treatment, No Medicine,  
No Surgery, Not Even a Hearing Aid  
that Completely Restores Your  
Hearing Once Damaged**

- **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)



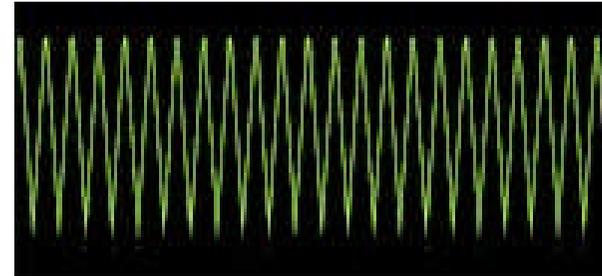
# Noise Exposure

Sound is Measured in:

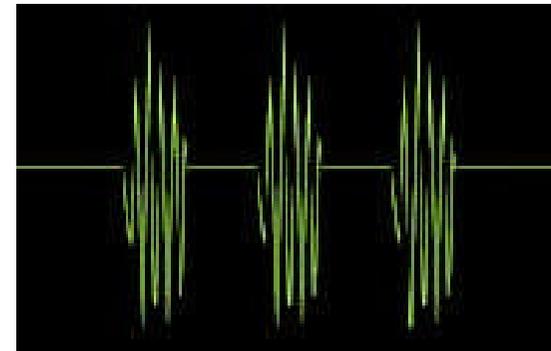
- Intensity (Loudness) – Decibels (dB)
- Pitch (Frequency) – Hertz (Hz)
  - Continuous (constant level over time)
  - Intermittent (levels vary over an area or start and stop)
  - Impact (sharp burst of sound, e.g., nail gun, hammer)

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.



Steady



Impulse

# Noise Levels

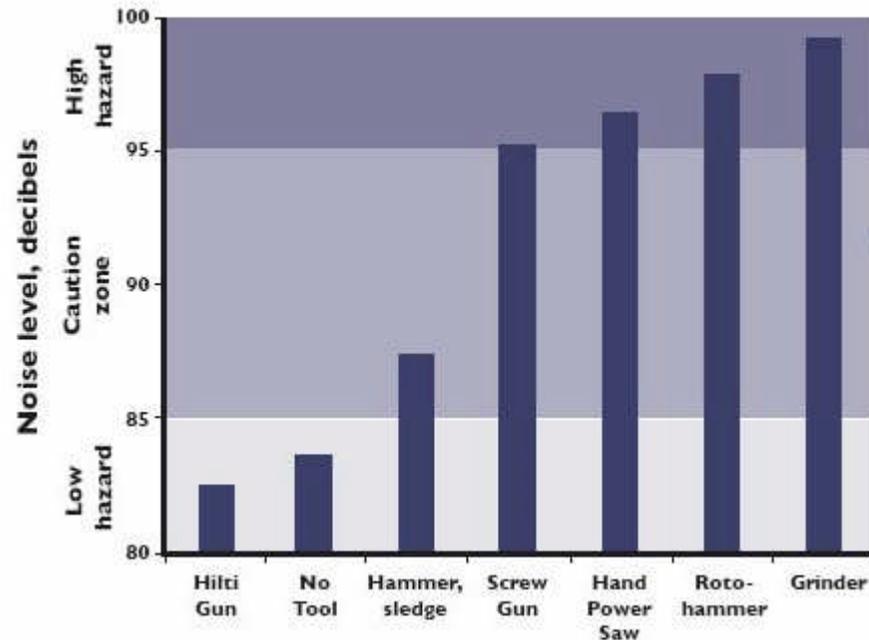


**125 db or More  
Is Painful**

**85 dB or More  
May Cause  
Hearing Loss**

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

Average noise level by tool



**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)



# 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)



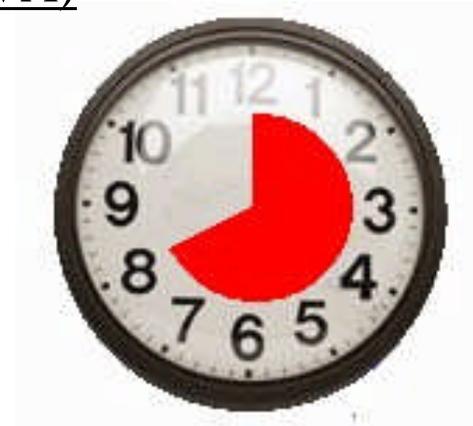
# Hearing Conservation

## **OSHA's Occupational Noise Standard (29 CFR 1910.95):**

Employer must provide hearing protection against the effects when exposure to the noise levels exceed:



<u>dB</u>	<u>Time-Weighted Average (TWA)</u>
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



### Expandable Foam

(NRR 20-30 dB)



### Pre-Molded/Reusable



### 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

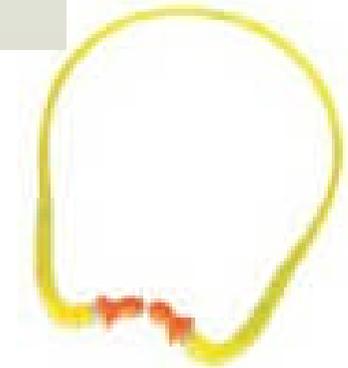
## EAR PLUGS

### 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

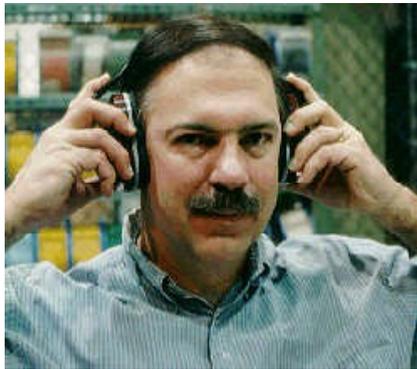
## Hearing Aids $\neq$ Hearing Protection

- **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

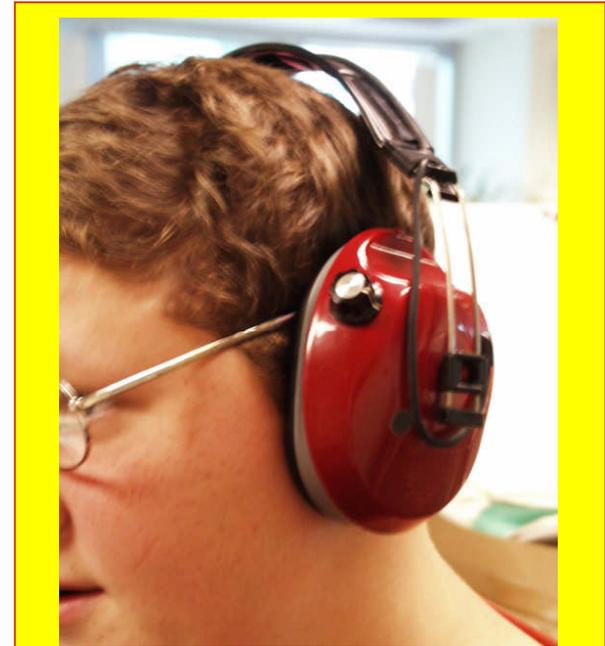


### **Advantages:**

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

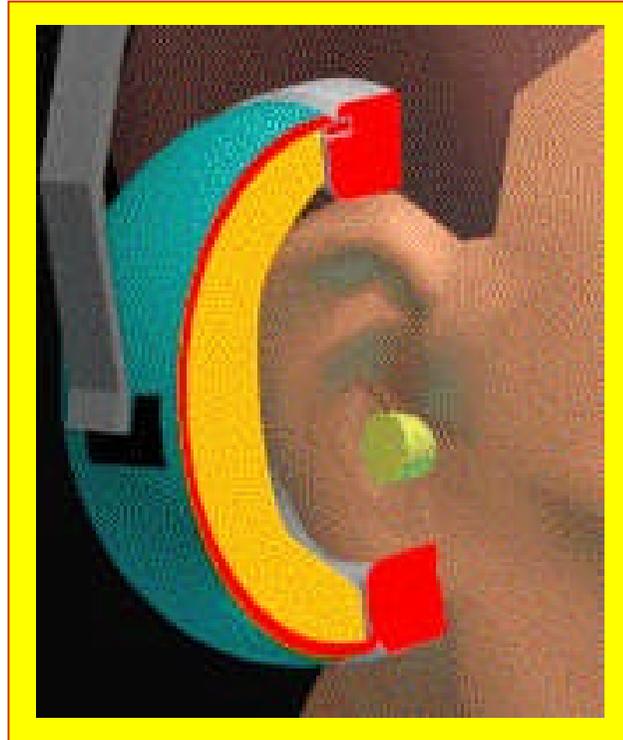
### **Disadvantages:**

- 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 and Ear Muffs  
Should Be Used In Noisy Work  
Environments **Over 105 dB**

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

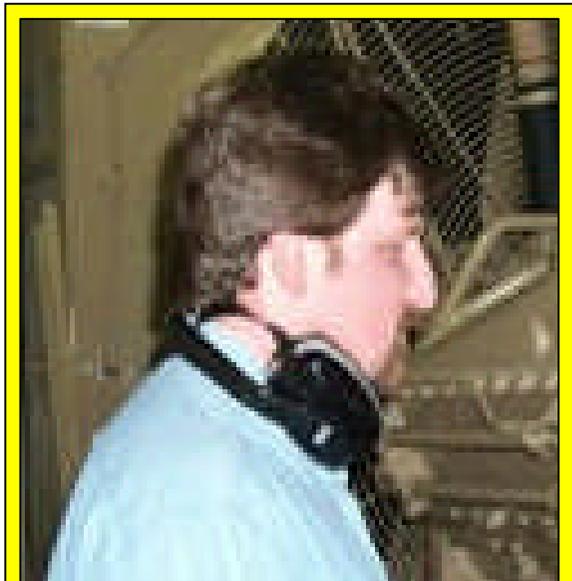
## HEARING BAND CAPS



- 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*



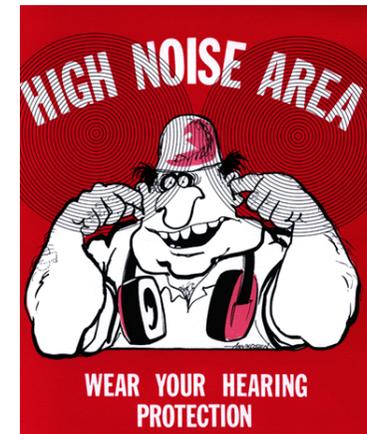
**It won't protect you if it is around your neck!!!**

- **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**





# 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 they become torn or stiff, discard them and get a new pair

## •EAR MUFFS

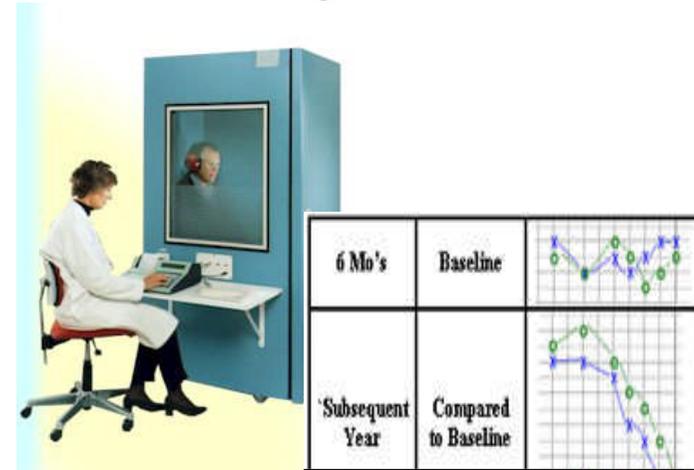
- If they become soiled
  - Wash with a mild soap solution
  - Rinse with Water
  - Dry with a soft towel
- If damaged (cracked cups), have repaired or get a new pair



# 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 ( $\geq 10$ 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



**Hearing  
Protection**



**Questions ?**

Contact SC BCB Safety

- Holly Bockow 737-2311
- Bernie Lee 737-2315