

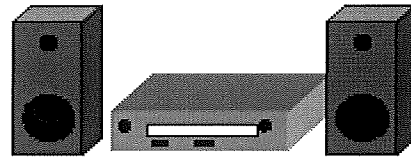
## Hearing Conservation

### What is Noise?

- Noise can be defined as any unwanted or unpleasant sound.
- You can be exposed to excessive noise:
  - at home
  - in public
  - at work.

### How you are affected by noise depends on:

- Loudness and frequency of the sound.
- Length of exposure
- Your age and health.



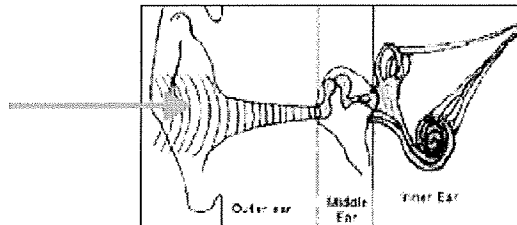
### Temporary hearing loss can occur from short exposure to loud sounds.

- But your hearing recovers after noise stops.

### If the level of noise is high and long enough permanent hearing loss can occur.

### How do we hear sounds?

- The source sends out sound waves that enter your outer ear.
- The middle ear turns these sounds into vibrations.
- The inner ear turns these vibrations into nerve impulses which travel to the brain.



### Sound is measured by its frequency and intensity.

- The Frequency is the pitch (high or low) of a sound.
- High frequency sound causes more damage than low frequency.
- The Intensity is the loudness of a sound.
- Loudness is measured in decibels (dB).

The chart below shows the loudness in decibels of common noises.

<u>Sound</u>	<u>dB.</u>
Jet Plane	140
Gunshot Blast	140
Automobile Horn	120
Sandblasting	120
Pneumatic Drill	100
Average Factory	80-90
Noisy Restaurant	80
Conversational Speech	66
Soft Whisper	30

There are several types of noise:

**Wide band:** Noise that is distributed over a wide range of frequencies, such as:

- General noise at a factory
- Noise emitted by a combustion engine

**Narrow band:** Noise that is restricted to a narrow range of frequencies such as:

- Power tools
- Fans
- Electric motors

**Impulse noise:** Noise that is composed of temporary “beats” in an on and off pattern such as:

- Jack hammer
- Air pumps

**How can noise hurt you?**

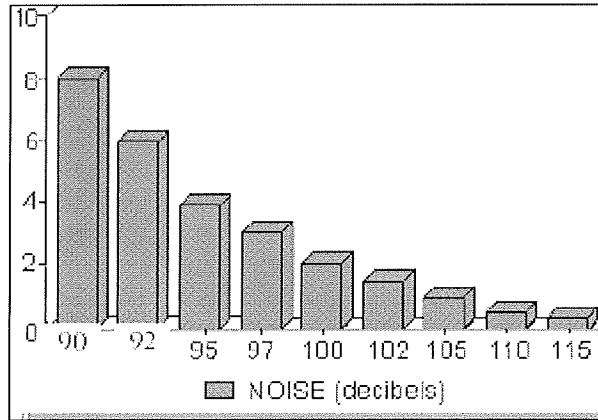
- Noise injuries are often overlooked because there is no visible damage.
- Long-term exposure to noise can cause permanent hearing loss.
- Noise exposure has been linked to other health problems.

**If you become “used to” loud noises at work, you may have suffered hearing loss.**

## Hearing Loss

### When can hearing loss occur?

Hearing loss can occur with exposure to noise over a period of time. This chart shows the levels of noise that can cause damage over different periods of time.



The left side of the chart shows that hearing loss can occur from exposure to noise levels of 85 dB. over an 8 hour period.

The right side of the chart shows that hearing loss can occur from exposure to noise levels of 115 dB. for as little as 15 minutes.

### What can I do to protect my hearing?

- If you are exposed to noise levels with a TWA of above 85 dB., you should wear hearing protection.
- TWA = Time Weighted Average, which is a calculation based on the average noise level you are exposed to over an 8 hour period.

## Hearing Protection

### What protection is available?

#### Earmuffs

- Resemble stereo headphones. The soft plastic cushions, filled with foam or liquid, should form a good seal against noise. If you wear glasses with wide temples, you may want to choose another type of protector.
- If you're exposed to very loud noise, you can wear earmuffs and plugs together.
- Care for the muffs by cleaning the cushions with a damp rag when they become soiled. Check the cushions often, and replace them if they're stiff, worn, cut or torn. Don't modify your muffs in any way – you're only hurting your ears.



#### Disposable plugs

- Placed inside the ear canal to block out noise. They are commonly made of an expandable foam. One size fits most everyone. They roll up into a thin cylinder for insertion. Once they're inside your ear canal, they expand to form a good seal.
- Keep the plugs as clean as possible by inserting them with clean hands. Always inspect them before reinsertion. If they are damaged or dirty, throw them away. Periodically, check to be sure the fit is still snug.



#### Reusable plugs

- Preformed to fit the ear. They are usually made of a flexible rubber or silicon. They may be flanged or cone-shaped and are often joined by a cord so they're not easily lost.
- Reusable plugs can be worn safely for 1-6 months or more depending on the type. They should be replaced as soon as they become hard, torn or deformed.
- Inspect and clean them often with warm soapy water. Rinse well. Store them in the case supplied by the manufacturer.

