PHYSICAL ENVIRONMENT: TOWARDS HEALTH CONSEQUENCES

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PHYSICAL ENVIRONMENT

• The physical environment comprises all the different factors of nature, including trees, lakes, the ocean.
  
  ► includes both outdoor and indoor surroundings.

• The quality of air for breathe, the water for drink, exposure to noise, harmful orgasms, radiation from the sun and other sources.

• Physical conditions that surround a person can influence person's health.
SOUND POLLUTION (NOISE)

• Unwanted sound heard by an individual.
• Scientifically, noise can be defined as any sound that is over 80 dB(A).
• Sound transmitted in waves and could travel through gas, liquid and solid.
• Sound contains energy.
• Sound possesses frequency and intensity.
INSTRUMENT TO MEASURE SOUND

• **Sound level meter** – It measures the sound pressure, so we get to know the intensity level of the sound in a place.

• **Octave stripe analysis** - An electronic filter to measure intensity and most frequent frequency of the noise.

• **Dosimeter** – To measure the total dose of noise being received by an individual in specific time period. It also can record level of sound pressure and time of the sound exposed to us.
FREQUENCY AND INTENSITY

• Frequency refers to number of complete wave cycles per second.
• The unit to represent frequency is Hertz (Hz)
• Intensity of the sound is referred to the energy that produces the sound by using 20 micropascal as base reference.
• Intensity is stated in decibel (dB).
FREQUENCY

Diagram 6.1a: Low Frequency

Diagram 6.1b: High Frequency
PHYSIOLOGY OF EARS

• OUTSIDE EAR
• MIDDLE EAR
• INNER EAR
Inside your ear

Sound is transmitted by your eardrum and three tiny bones to fluid in the inner ear. This movement is picked up by tiny hair cells and a signal is passed to the brain. It is these cells that are damaged by excessive noise causing deafness.
GROUPS OF NOISE

• Standard and continuous noise:
  *The intensity of the noise is constant. Changes in the intensity between Sound waves are less than 3 dB(A). For example, sound emitted from the weaver machine.*

• Noise fluctuation
  *Noise is a sound that fluctuates more than 3 dB(A) between peaks of a High sound wave with a low sound wave.*

• Impact sound or impulse
  *This noise has high intensity and short sound period. For example, gunshot sounds, hammering of steel and others.*

• Alternate noise
  *This noise would occur in specific times, such as sawing the woods with a sawing machine. Noise will be produced by the machine while sawing the woods, yet it will stop when the sawing process is not activated.*
GROUPS OF NOISE

Diagram 6.2a: Standard noise/continuous

Diagram 6.2b: Noise fluctuation

Diagram 6.2c: Alternate Noise
EFFECTS OF NOISE ON HUMAN

♣ Physiology changes
♣ Psychology disruption
♣ System auditory effect
  ► Acoustic trauma
  ► Permanent hearing lost
  ► Temporary hearing lost
EFFECTS OF NOISE ON HUMAN

• **Physiological Changes**
  Noise causes the increase of blood pressure, rate of inhaling, heartbeat, level of glucose, muscle contraction and also sweating.

• **Psychological Disturbances**
  Psychological disturbances occur due to the exposure of immeasurable noise. Various factors like adaptation to noise, behaviours and individual emotions.
  Noise would be over 55 dB(A), which would interrupt communications and concentrations.
EFFECTS OF AUDITORY SYSTEM

▼ Acoustic trauma
This condition is caused by high intensity sound like explosion and gunshot. This would result the tearing of eardrums, ossicles will be drawn out and organ of Corte will spoil.

▼ Temporary hearing loss
This condition is caused by physiological changes. Hearing ability would recover if the exposure to the noise is no longer than 14 hours.

▼ Permanent slight hearing loss
This would occur if being exposed to noise for a long duration. It can occur on workers who work in a place that send out a lot of noise.
THANK YOU