Noise pollution

- Noise is unwanted sound. The word has been derived from Latine word “nausea” meaning noise. The sound is a wave of energy, consists of special kind of waves, which are usually transmitted through air in the form of pressure waves. These waves are received by hearing apparatus of animals including man transformed into electrical impulses in the ear and carried to brain which enable us to hear. The intensity of sound is measured in decibells (d=10 and Bell is the name of scientist Alfred Grahm Bell). Technically, a decibell (dB) is the amount of sound pressure. (Hearing is believing.) Source of Noise pollution: It may be natural, such as wind, thunder, movement of water or man made. The symbols man made civilization are Jet plane, vehicles, railway engines, factories generators, construction machinery, television, radio, public address systems have something common - it is the noise.

- Industrial noise, the most offending noise source are compressors, generators furnaces, looms, grinding mills, releasing valves etc. that are used in many industrial processes and are installed in partially or closed or open sheds. 80 – 120 dB noise level is common to most units which is hazardous. Domestic noise; Traffic noise,
Effect of noise pollution in man

Ambient air quality standards, as prescribed in environment protection third amendment rules 1989, noise level should lie between 50 – 75dB in day time and 40 – 70 at night time.

Limits for day & night given in dB

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<th>Day</th>
<th>Night</th>
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<tbody>
<tr>
<td>Industrial area</td>
<td>75</td>
<td>70</td>
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<tr>
<td>Commercial area</td>
<td>65</td>
<td>55</td>
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<tr>
<td>Residential area</td>
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<td>45</td>
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<tr>
<td>Silent zone</td>
<td>50</td>
<td>40</td>
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The mechanism of hearing

The hearing machinery of our body consists of three parts; the outer, middle and the inner ear. The outer ear comprises of two curled shell each on either side of the head and the tissues of thin membrane, about the diameter of pencil, tightly streched like a drum – head, which lies in between the outer and the middle ear.

The middle ear consists of hollow cavity barely large enough to hold five or six drops of water. A set of three tiny bones, The hammer, (malleus), anvil (incus) and strripus (stapes) span across the empty space. At one end of the chain the handle of hammer is connected to ear drums while towards the inner side strrips are fastened anoher membrane, an oval window about the size of pin-head. This membrane separates the middle ear cavity from the fluid and the canals which form the inner ear and control our sense of balance. Immersed in the fluid are numerous hair cells lining the inner air chamber.
The mechanism of hearing cont.
The sound waves funneled in the air canals, strike the ear-drums and make it vibrate. These vibrations travel along the bony chains (hammer, anvil, and stirrup) to the inner ear. These vibrations are translated into electrical impulses which are flashed along nearly 30,000 fibers of auditory nerve to the brain and we hear the sound. The hair cells are ciliary cells which line the inner ear canals and chambers, play an important part in picking up these vibrations.
The measurement of sound

The intensity of loudness is measured on a scale called decibel scale, or B-scale. It measures the loudness of sound in terms of relative units of energy, or power on a logarithmic scale in accordance with the response of the human ear. The scale starts from 0 dB, which is considered as the threshold of hearing—the faintest sound which a human can hear. A sound of 10 dB is ten times louder than 0 dB. A sound of 20 dB is $10 \times 10$ or 100 hundred times louder, of 30 dB $10 \times 10 \times 10$ or 1000 times, 40 dB $10 \times 10 \times 10 \times 10$ or 10,000 times while a sound of 50 dB $10 \times 10 \times 10 \times 10 \times 10$ or 100,000 times louder than the threshold of human hearing.

Alarm clock---70 – 80 dB.
Public library 30 – 40 dB, Jet planes taking off 140- 150 dB.
The effects of noise pollution

1. Loss of hearing: prolonged exposure to loudness can cause temporary or permanent loss of hearing; People working in noisy places often suffer from temporary hearing.

2. Sleep problems, insomnia, annoyance, hypertension, and physiological disorders, sweating, giddiness.

3. Optical system: dilation of pupils impairment of night vision and decrease in color perception etc. Prolonged exposure to such noise can lead to severe mental disorientation. Effects of noise pollution are endless. *According nobel Laureate Rober Koch*

   *Noise is the worst enemy of health*

   Prevention and control of noise pollution.

   1. Reduction of noise at its source of origin,
   2. Application of sound proofing techniques to muffle down the noise.
   3. Keeping residential localities free of noisy industries, busy highways, aerodromes etc.
   4. Enactment of strict legislation and its effective compliance.
The effects of noise pollution on wild life.

Wild life too have been affected by noise. Health status of several zoo animals viz deers, lions, rhinos, are known to be affected by noise. They appear dull and inactive. Several migratory birds have stopped resting in a habitat close to noisy cities. Grizzly bears, muskoxen and kangaroo rats in Malaysia have been affected by noise. They leave that habitat and move to calm places. This change of habitats alters their food habits, health and mating behavior.