



2.5 NOISE POLLUTION

Definition

Noise pollution is defined as, "the unwanted, unpleasant (or) disagreeable sound that causes discomfort for all living beings."

Unit of Noise (Decibel)

The sound intensity is measured in decibel (dB), which is one tenth of the longest unit Bel. One dB is equal to the faintest sound, a human ear can hear.

Noise level

Normal conversation sound ranges from 35 dB to 60 dB. Impairment of hearing takes place due to exposure to noise of 80 dB (or) more. Noise above 140 dB becomes painful.

2.5.1 Types and sources (causes) of noise

It has been found that environmental noise is doubling every 10 years. Generally noise is described as,

1. Industrial noise.
2. Transport noise.
3. Neighbourhood noise.

1. Industrial Noise

Highly intense sound (or) noise pollution is caused by many machines. There exists a long list of sources of noise pollution including different machines of numerous factories, industries and mills. Industrial noise, particularly from mechanical saws and pneumatic drill is unbearable and is a nuisance to public.

Recently, it has been observed by the Institute of Oto-Rhino Laryngology, Chennai that enormously increasing industrial pollution has damaged the hearing of about 20% workers. **Example:** In the steel industry, the workers near the heavy industrial blowers are exposed to 112 dB for eight hours and suffer from the occupational pollution.

2. Transport Noise

The main noise, comes from transport. It mainly includes road traffic noise, rail traffic noise and air craft noise. The number of road vehicles like motors, scooters, cars, motor cycles, buses, trucks and particularly the diesel engine vehicles have increased enormously in recent years.

That is why, this form of pollution is gaining importance, especially in large and over crowded towns and cities. According to experts, the noise level in most of the residential areas in metropolitan cities is already hovering on the border line because of vehicular noise pollution.

A survey conducted in metropolitan cities has shown that noise level in Delhi, Bombay and Calcutta is as high as 90 dB. Inhabitants of cities are subjected to this most annoying form of transport noise which gradually deafen them.



Neighbourhood Noise

This type of noise includes disturbance from household gadgets and community. Common noise makers are musical instruments, TV, VCR, radios, transistors, telephones, and loudspeakers etc., Ever since the industrial revolution, noise in environment has been doubling every ten years.

2.5.2 Effects of Noise Pollution

1. Noise Pollution affects human health, comfort and efficiency. It causes contraction of blood vessels, makes the skin pale, and leads to excessive secretion of adrenalin hormone into blood stream which is responsible for high blood pressure. Blaring sounds have known to cause mental distress, heart attacks neurological problems, birth defects and abortion.
2. It causes muscles to contract leading to nervous breakdown, tension etc.,
3. These adverse reactions are coupled with a change in hormone content of blood, which in turn increase the rate of heart beat, contraction of blood vessels, and dilation of pupil of eye.
4. It affects health efficiency and behaviour. It may cause damage to heart, brain, kidneys, liver and may also produce emotional disturbances.
5. The most immediate and acute effect of noise is the impairment of hearing which diminishes by the damage of some part of auditory system. When exposed to very loud and sudden noise acute damage occurs to the ear drum. Prolonged exposure to noise of certain frequency pattern will lead to chronic damage to the hair cells in the inner ear.
6. In addition to serious loss of hearing due to excessive noise, impulsive noise also causes psychological and pathological disorders.
7. Ultrasonic sound can affect the digestive, respiratory, cardio vascular systems and semicircular canals of the internal ear. The rate of heart beat may also be affected. It may decrease (or) increase depending on the type of noise.
8. Brain is also adversely affected by loud and sudden noise as that of jet and aeroplane noise etc. People are subjected to Psychiatric illness.
9. Recently it has been reported that blood is also thickened by excessive noises.

2.5.3 Control (or) Preventive measures of noise pollution

1. Source Control

This may include source modification such as acoustic treatment to machine surface, design changes, limiting the operational timings and so on.

2. Transmission Path Intervention

This may include containing the source inside a sound insulating enclosure, construction of a noise barrier (or) provision of sound absorbing materials along the path.

3. Receptor control

This includes protection of the receiver by altering the work schedule (or) provision of personal protection devices such as ear plugs for operating noisy machinery. The measure may include dissipation and deflection methods.



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4. **Oiling**
Proper oiling will reduce the noise from the machines.
5. Planting trees around houses can also act as effective noise barriers.
6. Different types of absorptive materials can be used to control interior noise.

2.5.4 Other Preventive measures

Noise can be reduced by prescribing noise limits for vehicular traffic, ban on honking of horns in certain areas and creation of silent zones near schools and hospitals and redesigning of buildings to make them noise proof. Other measures can involve reduction of traffic density in residential areas and giving preferences to mass public transport system. **Table 2.6: Ambient Noise Level dB.**

Zone	Day-time	Night-time
Silent zone	50	40
Residential zone	55	45
Commercial zone	65	55
Industrial zone	70	70