Noise pollution

What is noise?

Noise means unwanted or unpleasant sound that causes discomfort and irritation to human beings. Noise pollution thus means unpleasant sound in the atmosphere causing health hazards like sleeplessness, annoyance, stress and fright. The major sources of noise pollution are jet planes, traffic, music played during the marriage parties or other occasions and industries. It is a growing nuisance especially in the cities. However, noise pollution is subjective since a particular source of noise may be irritating for few while pleasing for others. It is a different type of pollution since its effects are transient (once the noise stops, the atmosphere is free from it). In other words, noise is a controllable pollutant.

How to Measure Noise?

Intensity of noise is measured in decibel units (dB). The scale of decibel unit is logarithmic and not mathematical. The scale starts from 0 dB, which is the threshold of hearing. It represents the faintest sound that we can hear. Every increase of 10dB represents a ten-fold increase. Increase from 0 to 10 dB means sound louder by 10 times; whereas an increase to 20 dB means 100 time louder than 0dB. Likewise, 30dB means 1000 times more than 0dB and this way scale moves logarithmically. The intensity of noise level varies greatly with the distance from sources. As the distance from the sources increases, noise levels decrease. For example, normal traffic movement on a road has a noise level of around 45-50dB and for a person standing on the roadside the noise level is around 40-45dB, whereas for a person sitting in the car on the road, the level is around 70 dB. At an exposure to 45-50 dB noise levels, a person can not sleep. The pain starts in the ear at around 120dB. Not only is the distance from the source but period of exposure is also important. Noise (decibel) is generally measured with filters that emphasize sound in certain frequencies. The filter *A* is most frequently and the noise is represented as dBA. The filter C is used to measure low-frequency sounds like bass in an amplified music.

Major Sources of Noise

The major contributors to the problems of high noise are :

- Domestic gadgets like vacuum cleaners, mixers, coolers, generator sets
- Loud speakers, public address system and music systems
- Transport vehicles like buses, trucks, rail, airplanes etc.
- Industrial activities, construction activity
- Commercial establishments
- Agricultural operations including mechanical devices like pumps, harvesters, and tractors.
- Community functions like Jaagrans, kirtans, music shows, etc.
- Increased population, urbanization and industrialization coupled with increase in number of motor vehicles including cars, buses, trucks, motor cycles, rails, airplanes, etc.

Harmful Effects of Noise Pollution

Noise affects human health in a number of ways. These include both direct as well indirect effects. Direct effects include annoyance, irritability, sleeplessness, and interference with communication, performance effects, effects on social behaviour and hearing loss and health effects. Health effects of noise include heartburn, indigestion, ulcers, changes in blood pressure (resulting in high blood pressure), and possibly heart disease. Persons living near the railway stations, airports and those having a continuous exposure to rail, airplanes are more prone accidents, have increased headaches, rely more on sleeping pills, more irritable and easily frustrated due to distraction caused by noise. It results in mental illness. They require increased medical care and show general physical fatigue and show less responsive behaviour. Indirect effects include increased health cost, decreased property values (especially near railway stations, airports, industrial areas) Continuous or prolonged exposure to noise levels of 80-85dB or more can cause deafness. Exposure to a noise of around 1000dB can cause permanent loss of hearing power. Supersonic airplanes cause sonic boons which are more harmful than continuous noise. These can damage glass windowpanes and may fasten the heart beat of human foetus.

Noise Levels of Routine activities In the normal day-to-day life, noise levels vary greatly with the type of routine activity. Noise levels of some routine activities are as under:

Activity	**Decibels (dB) (approximate value)**
Heart beat	12
Normal talking	40
Normal traffic	40-45
Truck / bus	80
Heavy traffic	80-85
Shouting	100
Sub-way train / train	100
Horns / pressure horns	120
Jet takeoff	120
Jet plane takeoff	150
Launching of space rocket	160-190

Permissible Limits As per the Ministry of environment and Forests, Government of India *(EPA Notification G.S.R. 1063(E), dt. 26th Dec., 1989)* ambient permissible standards has been set for the noise levels in different establishments during day as well as night times. These have been set under the *Environment (Protection) Act 1986* and are as under:

	dB(A)	**dB(A)**

	Day time 6.00AM to 9.00 PM	Night time 9.00 PM to 6.00AM
Industrial area	75	70
Commercial zone	65	55
Residential area	55	45
Silence zone (Hospitals, educational institutes, and courts)	50	40

How to Protect Oneself From Noise

Noise pollution is not like other forms of pollutions. We can avoid it by reducing the source or moving away from the source. The best approach is to protect from noise and reduce the noise sources. In this way we can remove noise pollution. Some of the measures in this direction are :

- Wearing of earplugs at noisy places
- Keep the homes free from noise by having heavy curtains on windows, acoustical tiles on the walls and ceilings
- Purchase of less-noisy generator sets, pumps, vacuum cleaners and air conditions, blowers etc.
- Use of music systems at lowest possible noise / sound levels
- If possible, use the earphones to avoid noise disturbance to others
- Avoid using pressure horns and other such equipments on the automobiles
- Automobiles should be kept in good conditions and repaired so as to reduce noise levels.

Laws Governing Noise Pollution

Besides controlling the noise at the source and protecting one from the noise, the Union Government has made some rules and regulations for controlling the noise pollution. Even in the Indian Penal Code noise pollution has been included as a nuisance under IPC sections 268 and 290. Now the noise pollution is been dealt under the Air Pollution in the Air Pollution Control Act and *The Environment (Protection) Amendment Rules 2003*. The government of India has enacted *The Noise Pollution (Regulation and Control) Rules 2000* which have even been amended in 2002. According to these rules, then use of loud-speakers and public address systems has been prohibited and these can be used only with the prior permission of competent authority. Further, no such systems can be used between 10.00 PM to 6.00Am except in the close doors. Ambient noise standard were notified in 1989. Even the standards have been set for the noise level of the crackers (as per the notification number G.S.R. 682(E), dated 5th October) in 1999, vehicular noise standards in 1990 and again in 2003. Likewise, there have been standards for the use of petrol or kerosene generators.