Noise pollution:

It may be defined as " the unwanted, unpleasant or disagreeable sound that causes discomfort for all living beings"

Noise is a physical form of pollution and it is not directly harmful to the life supporting systems namely, air, water and soil. Its effects are more directly on the receiver i.e. man.

Two important physical properties of sound are Frequency and intensity.

Pitch : It is the human perception of sound frequency. Human being can hear only sounds ranging from 20 to 20,000 Hz (Hertz or cycles per sec is the measure of sound frequency). The range of frequencies of human speech is 20 to 3000 Hz which is best heard by humans. Sounds too high in frequency (> 20,000Hz) is called ultrasound.

Loudness : It is the human perception of sound intensity. It is measured in decibel (dB) [deci: ten, bel: the logarithmic ratio of any two acoustical intensities]

One decibel is the smallest change of sound intensity which an average healthy human ear can perceive, i.e. the least audible sound is 0 dB.

Noise Standards Recommended by CPCB Committee

(Central Pollution Control Board)

Area Code	Category of Area	Noise level in dB (A)	
		Day	Night
(A)	Industrial	75	70
(B)	Commercial	65	55
(C)	Residential	55	45
(D)	Silence Zone	50	40

(i) Industrial Sources: Industrialization has introduced lot of noise making machines, exposing the environment to noise pollution. Textile mills, printing press, engineering establishments and metal works contribute heavily towards noise pollution.

(ii) Transport Vehicles: Automobile like cars, motorcycles, scooters, jeeps, heavy trucks etc. and automobile horns are the main source of noise pollution in and around cities. Aero planes and jet planes produce very loud noise during landing and takeoff.

(iii) Household: Crying of children, moving of furniture and banging of doors are the main source of indoor pollution. Entertainment equipments like television, radio, tape recorders and domestic gadgets like the mixer-grinder, vacuum cleaner and washing machines also contribute to the indoor noise pollution.

(iv) Public Address Systems: Loudspeaker used in religious places, elections, birthday and marriage functions or commercial advertisements spread the noise to far away places.

(v) Agricultural Machines: Use of tractors, thrashers, harvesters, and tube wells, powered tillers have made usually quiet fields noisy

(vi) Defence Equipments: Noise from artillery, tanks, rockets and explosions have a deafening impact on the ears. Such noises, sometimes, are so loud that they shatter window and old buildings.

Effects of Noise:

Noise may not be visibly harmful but can cause serious health hazards. The effects may be physical, physiological and psychological.

(i) Physical effects:

(a) Human ears have sensory cells for hearing. If these cells are subjected to repeated sounds of high intensity, they can become permanently damaged leading to impairment of hearing.

(b) The sensory cells, the eardrums can also be permanently damaged by a sudden loud noise such as an explosion. In other words depending upon the level and duration of exposure the effects may be temporary or permanent shifting of the hearing threshold, impairment of hearing and finally total deafness.

(ii) Physiological Effects:

(a) Headache by expanding of blood vessels of the brain.

(b) Narrowing of arteries, fluctuation in arterial blood pressure, decrease in heart output, and pain in the heart.

(c) Eye-strain, impairment of night vision, decreases in rate of colour perception.

(d) Lowering of concentration and memory

(e) Muscular strain and nervous breakdown.

(f)Brain is also adversely affected by loud and sudden noise as that of jet and aero plane noise etc.

(iii) Psychological Effects:

(a) Depression and fatigue, which considerably reduces the efficiency of a person.

(b) Insomnia as a result of disturbed sleep.

(c) Straining of senses.

(d) Emotional disturbances.

Control of Noise Pollution:

(1) Control at receiver's end: For people working in noisy installations, ear-protection aids like ear plugs, ear-muffs, noise helmets, headphones etc. must be provided to reduce occupational exposure.

(2) Suppression of noise at source:

(a) Designing, fabricating and using quieter machines to replace the noisy ones.

(b) Proper lubrication or oiling and better maintenance of machines.

(c) Installing noisy machines in soundproof chambers.

(d) Covering noise producing machine parts with sound absorbing materials to check noise production.

(e) Placing the vibrating machines, on a layer of damping materials (rubber, neoprene, cork or plastic) for vibration damping.

(f) Using silencers to control noise from automobiles exhausts and convey systems with ends opening into the atmosphere.

(3) Acoustic Zoning: Increased distance from the noise source and the receiver will be able to reduce the effect of noise. Noisy industrial areas, bus terminals, railway stations and aerodromes should be should be away from the residential areas. Silence zones should be enforced near hospitals and educational institutions.

(4) Sound Insulations at Construction Stages:

(a) Since sound travel through the cracks that get left between the door and the wall this space should be packed with sound absorbing materials.

(b) Sound insulation can be done by constructing windows with double or triple panes of glass and filling the gap with sound absorbing materials

(5) Planting Trees: Planting green trees and shrubs along roads, hospitals, and educational institutions etc. will help noise reduction to a considerable extent.

(6) Legislative Measures: Strict legislative measure should be enforced to control Pollution