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NOISE POLLUTION

INTRODUCTION:

The word noise is derived from a Latin word 'Nausea' which means sickness in which one feels to vomit. Noise is perhaps one of the most undesirable by products of modern mechanized lifestyle. It is a very effective alarm system. A low sound is pleasant where as a loud sound is unpleasant and is commonly referred to as 'Noise'. It may not seem as insidious or harmful as the contamination of drinking water supplies from hazardous chemicals, but it is a problem that affects human health and well-being and that can also contribute to the general deterioration of environment quality. It can affect people at home, in their community, or at their place of work. Whether a given sound is as pleasant as music or as unpleasant as noise depends on its loudness, duration, rhythm and the mood of the person. But loudness is definitely the most significant criterion which converts sound into noise. Noise pollution is the result of modern industrialized urban life and congestion due to over population.

For many of us, the concept of pollution is limited to nature and resources. However, the noise that tends to disrupt the natural rhythm of life makes for one of the biggest pollutants. Our environment is such that it has become difficult to escape the noise. Even electrical appliances at home have a constant hum or beeping sound.

When people talk about the bad effects of urbanization most mention bad air, the traffic and lack of green spaces but we seldom mention noise pollution. This is something that has changes over time and we are now more aware of the fact that noise pollution represents a danger equally as much as other form of pollution.

This definition is usually applicable to sounds or noises that are unnatural in either their volume or their production. By and large, lack of urban planning increases the exposure to unwanted sounds. This is why understanding noise pollution is necessary to curb it in time.

Sound waves cause eardrums to vibrate, activating middle and inner organs and sending bioelectrical signals to the brain. The human ear can detect sounds in the frequency range of about 20 to 20000Hz, but for

most people hearing is best in the range of 200to 10000Hz.

Noise is unpleasant and unwanted sound. It is a physical form of pollution and is not directly harmful to the life supporting systems mainly air, soil and water. Its effects are more directly on the receiver i.e. man. It affects the peace of mind and invades the privacy of a human being. The importance of noise pollution as environmental problem is being recognised as the ill effects of noise on human health and environment are becoming evident with each passing day.

1. **OBJECTIVES:** The aim was to find out if noise pollution was above dangerous level.
2. Find out the levels of noise pollution in and around the site.
3. Find out the main sources of noise pollution in the area.
4. To ensure nuisance from noise and vibration does not occur.
5. Enclose noisy equipment.
6. Provide noise attenuation screens, where appropriate.
7. The noise pollution during festivals are a lot of materialistic loss, psychological problems to the people around.

Three prime objectives of this dissertation are –

I. To explain the importance of noise pollution in sustainable transportation planning.
II. To review various pathological and psychological effects of noise pollution.
III. To explain various mitigating measures for urban traffic noise pollution control in sustainable transportation planning.

TYPES OF NOISE POLLUTION: Even before taking a closer look at the various causes of noise pollution, let us first understand the two primary types of Noise.

1) MAN MADE NOISE- This refers to the noise created due to man-made activities. It can be anything from construction work, noise from the air, vehicular traffic, household noise, noise from pubs and bars, to name a few. Ranging from 30 to a whopping 140db, this from of noise is extremely harmful to humans.
2) ENVIROMENTAL NOISE- Environmental Noise refers to the kind of noise occurring from a range of environmental activities. This can be anything from the mating call of animals to the sound of thunderstorms that often go up to 140db.

Here's a breakdown of the different types of noise that affect us all.

1. CONTINOUS NOISE: - Continuous noise is exactly what it says on the tin: it's noise that is produced continuously, for example, by machinery that keeps running without interruption. This could come from factory equipment, engine noise, or heating and ventilation systems.

You can measure continuous noise for just a few minutes with a sound level meter to get a sufficient representation of the noise level. If you want to analyse the noise further, you need to look for a sound level meter with octave band analysis. Octave bands allow you to break the noise down into its separate frequencies. This information will tell you exactly what frequency is causing the noise. You my even want to investigate the noise with 1:3 octave band, which can provide even more detail about the frequency content of the noise measuring.

2. INTERMITTENT NOISE: - Intermittent noise is a noise level that increases and decreases rapidly. This might be caused by a train passing by, factory equipment that operates in cycles, or aircraft flying above your house.

   We measure intermittent noise in a similar way to continuous noise, with a sound level meter. However, you also need to know the duration of each occurrence and the time between each one. To gain more reliable estimate of the noise level, you should measure over multiple occurrences to calculate an average. If you are using an integrating averaging sound level meter, this will make the calculate for you and present this in terms of an LAeq.

3. IMPULSIVE NOISE: - Impulsive noise is most commonly associated with the construction and demolition industry. These sudden bursts of noise can startle you by their fast and surprising nature. Impulsive Noises are commonly created by explosions or construction equipment, such as pile drivers, or your next-door neighbour doing some DIY on a Sunday morning.

   To measure impulsive noise, you will need a sound level meter or a personal noise dosimeter that can calculate peek values.

   Don't forget that even in an environment that is usually quiet, a single very loud noise can cause hearing damage, which is why it's important to measure peak levels alongside the average or Leq value. In most applications, peak will be measured using the C-weighting, so we should make sure that our sound level meter provides this.

4. LOW-FREQUENCY NOISE: - Low frequency noise makes up part of the fabric of our daily soundscape. Whether it's the low background hum of a nearby power station or the roaring of large diesel engines, we are exposed to low frequency noise constantly. It also happens to be hardest type of noise to reduce at source, so it can easily spread for miles around.

   For low frequency noise, you should be using a sound level meter with third octave band analysis, so you can analyse the low frequencies that make up the noise. You may also need to look at the C-weighted measurements, as this can show how much low frequency noise is present.

VARIOUS CAUSES OF NOISE POLLUTION ON HUMAN AND WILDLIFE:

INDUSTRIAL NOISE: - It is caused by machines used for the technological advancement. There exists a long list of sources of noise pollution including different machines of numerous factories, industrials mills. Textile mills, printing presses, engineering establishments and metal work etc. contribute heavily towards noise pollution. In industrial cities like Kolkata, Ludhiana, Kanpur etc., often the industrial zones are not separated from the residential zones of the city especially in the case of small-scale industries.

These operate from workshops located on the ground floors of the residential areas and cause annoyance, discomfort and irritation to the residents exposed to the noise that is inevitably produced. The situation is much better in modern planned cities like Chandigarh where the industrial area is kept away from the residential areas and both are separated from each other by a sufficiently wide green belt.

A) TRANSPORT NOISE: - Automobile revolution in urban centres has proven to be a big source of noise pollution. In addition to adversely impacting urban air quality, heavy automobile traffic creates seemingly unbearable noise pollution. Ever since industrial revolution doubling of Noise for every 10 years. Increasing traffic has given rise to traffic jams in congested areas where the repeated hooting of horns by impatient drivers pierce the ears of all road users.

Noise from airplanes constitutes an increasing serious problem in big cities like Delhi and Mumbai. Airport situated in the vicinity of population centres and the air planes pass over residential areas. Heavy trucks, buses, trains, jet planes, motor cycles, scooters, mopeds, jeeps – the list of vehicles is endless but the outcome is same- Noise Pollution.

more than twice the speed of sound. Supersonic plane is very noisy, and some believe its sonic booms harm the environment.

Animals such as whales use water to communicate with one another over great distances. Human-generated noises in ocean, such as engine noises by boats, may interfere with animal communication.

B) HOUSEHOLD: - The household is an industry in itself and is a source of many indoor noises such as the banging of doors, noise of playing children, crying of infants, moving of furniture, loud conversation of the inhabitants etc. Besides these are the entertainment equipment in the house, namely the radio, record player and television sets. Domestic gadgets like the mixer grinders, pressure cookers, desert coolers, air conditioners, exhaust fans, vacuum cleaner, sewing and washing machines are all indoor sources of noise pollution.

C) POOR URBAN PLANNING: - In most of the developing countries, poor urban planning also plays a vital role. Congested houses, large families sharing small space, fight over parking, frequent fights over basic amenities lead to noise pollution, which may disrupt the environment of society.

Noise pollution in urban settings may also be caused when residential properties and industrial buildings are in proximity. In situations like these, the noise from the nearby industrial property might hinder the basic well being of the individuals living in residential properties.

It doesn't just affect their sleep and hours of rest but also has an adverse effect on the development and well-being of children.

E) SOCIAL EVENTS: - Noise is at its peak in most of the social events. Whether it is marriage, parties, pub, disc or place of worship, people normally flout rules set by the local administration and create a nuisance in the area.
People play songs on full volume and dance till midnight, which makes the condition of people living nearby pretty worse. In markets, you can see people selling clothes via making a loud noise to attract the attention of people.

While this may not seem like much at the outset, over time, it affects the hearing abilities of the individuals who are constantly exposed to these sounds.

F) CONSTRUCTION ACTIVITES: - Under construction activities like mining, construction of bridges, dams, buildings, stations, roads, flyovers take place in almost every part of the world.
These construction activities take place every day as we need more buildings, bridges to accommodate more people.

However, while this does help us to some degree, in the long run, the noise from construction activities hinders the hearing abilities of individuals exposed to this sound.

A part of it includes construction workers who participate in these activities, while another part of it consists of people who encounter these noises either from their homes or while traveling.

G) PUBLIC ADDRESS SYSTEM: - In India people need only the slightest of an excuse for using loudspeakers. The reason may be a religious function, birth, death, marriage, elections, demonstration, or just commercial advertising. Public system, therefore contributes in its own way towards noise pollution.

H) AGRICULTURE MACHINE: - Tractors, thrashers, harvesters, tube wells, powered tillers etc. have all made agriculture highly mechanical but at the same time highly noisy. Noise level 90db to 98db due to running of farm machines have been recorded in the state of Punjab.

I) DEFENCE EQUIPMENT: - A lot of noise pollution is added to the atmosphere by artillery, tanks, launching of rockets, explosions, exercising of military airplanes and shooting practices. Screams of jet engine and sonic booms have a defending impact on the ears and the extreme cases have been known to shatter the window panes and old dilapidated buildings.

J) CATERING AND NIGHTLIFE: - When the weather is good, restaurants, bars, and terraces spill outside. Late night parties continue with loud music and unnecessary noise made by the party mongers. These can produce more than 100db. The noise from pubs and clubs are also included.

K) ANIMALS' SOUND: -The noise made by animals cannot go unnoticed, particularly a howling or barking dog. These can produce noise around 60 to 80db.

Following are the examples of noise pollution:

- Unnecessary usage of horns
- Using loudspeakers either for religious functions or for political purposes
- Unnecessary usage of fireworks
- Industrial noise
- Construction noise
- Noise from transportation such as railway and aircraft

EFFECTS OF NOISE POLLUTION:

Noise Pollution effects many things and is everywhere nowadays. Loud music in churches, vehicles on the road, airplanes flying above horns, construction machines urban area. That's without mentioning the many sources of noise within your home including the TV, blending machine, washing machine, lawn mower etc.

Now that we have mentioned it, is getting used to noise a 'thing', really? If you would certainly realise that the noise you 'got used to' has been denying you lots of peace.

Besides jeopardising your peace, does noise pollution affect you in other way? According to the U.S. Environmental Protection Agency, noises that exceed 80 decibels are detrimental to our health. Children are affected by noises above 60 decibels. The decibel is the unit of measure for the intensity of sound waves and, in simple terms, any noise that dwarfs normal conversation between two people is most probably above 60 decibels.

Noise is generally harmful and a serious health hazard. It has far reaching consequences and has many physical, physiological as well as psychological effects on human being. It affects both health and behaviour. Unwanted sound (noise) can damage physiological health. Noise pollution is associated with several health conditions, including cardiovascular disorders, hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful and disturbing effects.

Across Europe, according to the European Environmental Agency, an estimated 113 million people are affected by road traffic noise levels above 55 decibels, the threshold at which noise becomes harmful to human health by the WHO's definition.

1) HEARING PROBLEM: - Any unwanted sound that our ears have not been built to filter can cause problems within the body. Our ears can take in a certain range of sounds without getting damaged. Man made noises such as jackhammers, horns, machinery, airplanes, and even vehicles can be too loud for our hearing range.
   Constant exposure to loud levels of noise can easily result in the damage of our eardrums and loss hearing, causing tinnitus or deafness. It also reduces our sensitivity to sounds that our ear picks up unconsciously to regulate our body rhythm.
2) PSYCHOLOGICAL ISSUES: -Excessive noise pollution in working areas such as offices, construction sites, bars and even in our house can influence psychological health.

Studies show that the occurrence of aggressive behaviour, disturbance of sleep, constant stress, fatigue depression, anxiety, hysteria and hypertension in humans as well as animals can be linked to excessive noise levels. The level of irritation increases with increased noise, and people tend to become less and less patient. These, in turn, can cause more severe and chronic health issues later in life.

3) PHYSICAL PROBLEM: - The physical manifestation of noise pollution is the effect on hearing ability. Repeated exposure to noise may result in temporary or permanent shifting of the hearing threshold of a person depending upon the level and duration of exposure.

   Noise pollution can cause headaches, high blood pressure, respiratory agitation, racing pulse, and, in exposure to extremely loud, constant noise, gastritis, colitis, and even heart attacks may occur.

   Human ears have sensory cells for hearing. If these cells are subjected to repeated sounds of high intensity before they have an opportunity to recover fully, they can become permanently damaged leading to impairment of hearing. Besides the sensory cells, the delicate tympanic membrane or the eardrums can also permanently damage by a sudden loud noise such as a explosion.

4) COGNITIVE ISSUES & BEHAVIORAL CHANGES: - Noise affects brain responses and people's ability to focus, which can lead to low performance levels over time. Like other sound waves, too much noise when it goes to the brain leads to lower response rates as well as making the mind dull. It is also poor for memory, making it hard to study. The studies have shown that school children living near railway stations or airports have problem in learning.

5) SLEEPING DISORDERS: - While it may not seem like much at this point, excessively high levels of noise are likely to hamper your sleeping pattern, thereby leading to irritation and uncomfortable situations.

   Without a goodnight's sleep, you might experience multiple problems related to fatigue. This will affect your performance in the office as well as at home. It is therefore recommended to take a sound sleep to give your body proper rest. If a certain noise is disturbing your sleep, take an actionable measure to reduce it. While in some instances, it is completely unavoidable; there are other instances (like noise from TV or gadgets) that can be easily avoided by making good lifestyle changes.

   Interestingly, our ears need rest for 16 hours and even more to makeup for two hours and even more to makeup for two hours of exposure to 100db.

6) CARDIOVASCULAR ISSUES: - Blood pressure levels, cardiovascular disease, and stress related heart problems are on the rise.

   Studies suggest that high intensity noise causes high blood pressure and increases heartbeat rate as it disrupts the normal blood flow.

   Since bringing these rates to a manageable level depends on our understanding of noise pollution, we need to be wary of the ill effects and tackle these situations mindfully.

7) TROUBLE COMMUNICATING: - High decibel noise can put trouble and affect free communication between people. This may lead to misunderstanding, and you may

get difficult understanding the other person. Constant sharp noise can give you a severe headache and disturb your emotional balance.

8) EFFECTS ON WILDLIFE: - Wildlife faces far more problems than humans because of noise pollution since they are more dependent on sound. Animals develop a better sense of hearing than use since their survival depends on it.

Noise can have a detrimental effect on animals, increasing the risk of death by changing the delicate balance in predator or prey detection and avoidance, and interfering the use of the sounds in communication, especially in relation to reproduction and the navigation. These effects then may alter more interactions within a community through indirect effects. Acoustic overexposure can lead to temporary or permanent loss of hearing.

European robins living in urban environments are more likely to sing at night in place with high levels of noise pollution during the day, suggesting that they sing at night because it is quieter, and their message can propagate through the environment more clearly, The same study showed that daytime noise was a strongest predictor of nocturnal singing than night time light pollution, to which the phenomenon often is attributed. Anthropogenic noise reduced the species richness of birds found in Neoptropical urban parks.

Zebra finches become less faithful to their partners when exposed to traffic noise. This could alter a population's evolutionary trajectory by selecting traits, sapping resources normally devoted to other activities and thus leading to profound genetic and evolutionary consequences.

Underwater noise pollution due to human activities is also prevalent in the sea. Cargo ships generate high levels of noise due to propellers and diesel engines. The noise pollution significantly raises the low frequency ambient noise level above those caused by wind. Animals such as whales that depend on sound for communication can be affected by the noise in various way. Higher ambient noise levels also cause animals to vocalize more loudly, which is called the Lombard effect. Researchers have found that humpback whale's song lengths were longer when low frequency sonar was activated nearby.

Noise pollution may have caused the death of certain species of whales that beached themselves after being exposed to the loud sound of military sonar. Even marine invertebrates, such as crabs, have been shown to be negatively affected by ship noise. Larger crabs were noted to be negatively affected more but the sounds than smaller crabs. Repeated exposure to the sounds did lead to acclimatization.

A recent study published in biology letters found that human created noise affects a wild range of animals. The ill effects of excessive noise begin at home. Pets react more aggressively in households where there is constant noise.

The become disoriented more easily and face many behaviour problems. In nature, animals may suffer from hearing loss, which makes them easy prey and leads to dwindling populations. Others become inefficient at hunting, disturbing the balance of the eco system.

Several reasons have been identified relating to hypersensitivity in invertebrates when exposed to anthropogenic noise. Invertebrates have evolved to pick up sound,

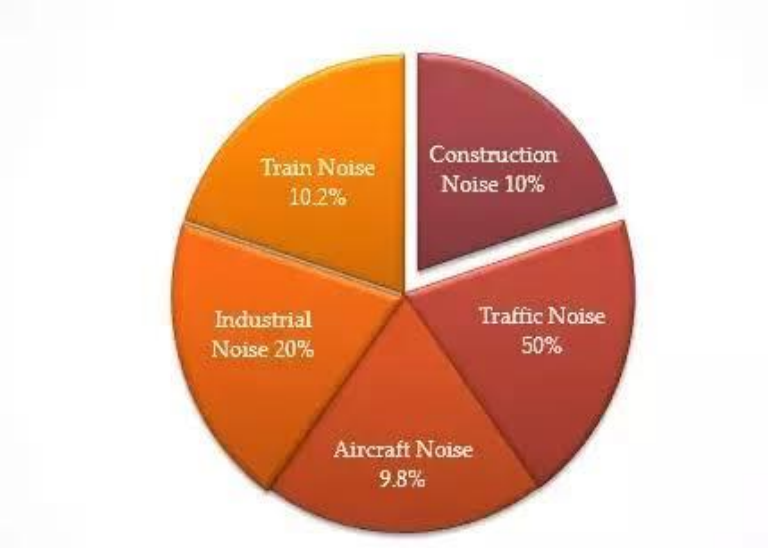
and a large portion of the physiology is adapted for the purpose of detecting environmental vibrations. Antennae or hairs on the organism pick up particle motion. Anthropogenic noise created in the marine environment, such as pile driving and shipping are picked up through particle motion; these activities exemplify near field stimuli. The ability to detect vibration through mechanosensory structures is most important in invertebrates and fish. Mammals also, depends on pressure detector ears to perceive the noise around them. Therefore, it is suggested that marine invertebrates are likely perceiving the effects of noise differently than marine mammals. It is reported that invertebrates can detect a large range of sounds, but noise sensitivity varies substantially between each species. Generally, however, invertebrates depend on frequencies under 10kHz. This is the frequency at which a great deal of ocean noise occurs.

Therefore, not only does anthropogenic noise often mask invertebrate communication, but it also negatively impacts other biological system functions through noise induced stress. Another one of the leading causes of noise effects in invertebrates is because sound is used to multiple behavioural contexts by many groups. This includes regularly sound produced or perceived in the context of aggression or predator avoidance. Invertebrates also utilize sound in the courtship process. For these reasons, one can infer that the opportunity for noise in marine ecosystems may have the potential to impact invertebrates just as much, if not more, than marine mammals and fish.

9) <u>EFFECTS ON SPECIES DEPENDING ON MATING CALL</u>: - Species that depend on mating calls to reproduce are often unable to hear these calls due to excessive man-made noise.

As a result, they are unable to reproduce and cause declining populations. Others require sound waves to locate and find their way when migrating.

Disturbing their sound signals means they get lost easily and do not migrate when they should. To cope up with the increasing sound around them, animals are becoming louder, which may further add to the pollution levels. This is why understanding noise pollution can help us lower the impact it has on the environment.



NOISE EFFECTS ON HUMAN BEINGS

Noise Hazards

Permanent hearing loss

Neurol- humoral stress response destruction of artifacts

Noise Nuissance

Efficiency

Mental Stress

Frusstration

Taste Interference

Irritability

Comfort

Sleep Interference

Communication

Invasion of Privacy

Damage of artefacts

Habit of talking loudly

Enjoyment

Concentration

Interference

Meditation

Recreational

Temporary hearing loss

Noise Pollution Level and its Harmful Effects:

LEVEL (IN db)	EFFECTS
Up to 23…….	No disturbance
30-60…….	Stress, tension, psychological (illness, heart attack) effects especially at upper range.
60-90……..	Damage to health, psychological and vegetative (disturbance in stomach gall function, pains in muscles, high blood pressure, disturbance in sleeping)
60-120……	Damages to health and ontological (ear diseases) effects
Above 120……	Painful effects in long run.

NOISE CONTROL: The Hierarchy of controls concepts is often used to reduce noise in the environment or the workplace. Engineering noise controls can be used to reduce noise propagation and protect individuals from overexposure. When noise controls are not feasible or adequate, individuals can also take steps to protect themselves from the harmful effects of noise pollution. If people must be around loud sounds, they can protect their ear with hearing protection. In recent years, Buy Quiet programs and initiatives have arisen in an effort to combat occupational noise exposures. These programs promote the purchase of quieter tools and equipment and encourage manufacturers to design quieter equipment.

The sound tube in Melbourne, Australia is designed to reduce roadway noise without detracting from the area's aesthetics.

Noise from roadways and other urban factors can be mitigated by urban planning and better design of roads. Roadway noise can be reduced by the use of noise barriers, limitation of heavy vehicles, use of traffic controls that smooth vehicle flow to reduce breaking and acceleration, and tire design. An important factor in applying these strategies is a computer model for roadway noise, that is capable of addressing local topography, meteorology, traffic operations, and

hypothetical mitigation. Costs of building in mitigation can be modest, provided these solutions are sought in the planning stage of a roadway project.

Aircraft noise can be reduced by using quitter jet engines. Altering flight paths and time of day runway has benefited residents near airports.

Noise definitely affects the quality of life. It is therefore important to ensure the mitigation or control of noise pollution. Noise pollution can be controlled

- At source level- Can be done by i) Designing and fabricating silencing devices in air craft engines, automobiles industrial machines and home appliances, ii) By segregating the noisy machines
- During Transmission- Can be achieved by adding insulation and sound proofing to doors, around industrial machinery, Zoning urban areas to maintain a separation between residential areas and zones of excessive noise.
    a) Acoustillite: made up of compressed wood pulp, wood fibres and is available in the form of tiles.
    b) Acoustical blanket: Prepared from mineral wool or glass fibres
    c) Hair Felt: Consists of wool fibres, Coarse Cotton Fibres
    d) Fibre glass
    e) Cork Carpet: Prepared out of pieces of corks treated with linseed oil and it used for converting floors.
    f) Acoustic Plaster: Mainly consists of gypsum in the form of plaster.
- Protecting the exposed person
- By creating vegetation cover – Plants absorb and dissipate sound energy and thus act as Buffer Zone. Trees should be planted along highways, schools and other places.
- Planting vegetation to absorb and screen out noise pollution – Trees can act as a noise barrier
- Through law
    a) Silence zones must be created near schools, hospitals
    b) Indiscriminate use of loudspeaker at public places should be banned/ restricted by laws
    c) Restriction on unnecessary us e of horns and vehicles plying without silencers
    d) Restrictions on aircraft flight at midnight

Permissible Ambient Noise Level in Different Areas

Area	**Code category**	**Day Time (db) (6 to 9 AM)**	**Night Time (db) (9 to 6 PM)**
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

a) The Air (prevention and control of pollution) Act, 1981
b) The motor Vehicles Act, 1988
c) Indian Penal Code- Sections 268 & 290

- Through education – We Indians are Noisy people. Every occasion, it may be religious or family functions or elections; we used to celebrate with noise. Educating the people that noise is a pollutant, not a part of our routine life.

WHO agrees that awareness of noise pollution is essential to beat this invisible enemy. As of now, there are not many solutions to reduce sound pollution. However, governments can help in the following ways:

- Establishing regulations that include preventive and corrective measures.
- Governments can take measures such as protecting certain areas, parts of the countryside, areas of natural interest, city parks, etc. to ensure noise management and reduce noise pollution.
- The mandatory separation between residential zones and sources of noise, like airports.
- Creating pedestrian areas where traffic is not allowed to enter other than offload goods at certain times.
- Fines for exceeding noise limits.
- Other ways to battle noise pollution are by controlling the sound levels in clubs, bars, parties, and discos.
- Removal of public loudspeakers is another way in which pollution can be countered.
- Again, better urban planning can help create 'No Noise' zones, where honking and industrial noise is not tolerated.
- Replacing traditional asphalt with more efficient options can also help reduce traffic noise by up to 3db.

On a personal level, everybody can help to reduce the noise in the following ways:

- Keep checking the surrounding noise levels and limit the sounds that you produce.
- Stay in a green neighbourhood full of trees as they are known to reduce the sound levels from 5 to 10db.
- Reduce noise in homes by lowering the volume of the radio, music system and the television.
- Avoid very noisy leisure activities and also going to areas that are too noisy.
- Doing your housework at the recommended time also makes a difference.
- Use proper noise absorbents in machines that make too much noise.
- Listening to music with headphones is also a good step forward.
- Use earplugs when you are in a noisy area because it lowers the overall noise of the surroundings.
- Try alternative means of transport such as bicycles or electric vehicles instead of taking the car.

Get your vehicle checked regularly and lubricate it properly that it doesn't produce too much noise.

In the case of new buildings. You can insulate your home with noise- absorbing materials.

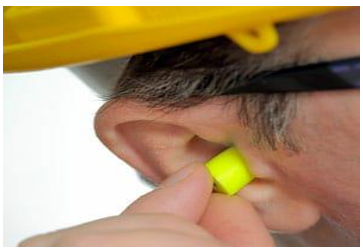
Turn Off Appliances at Home and offices

We can turn off home and office appliances when not in use such as TV, games, computers et. It can create unnecessary stress on ears. We can save electricity also when we turn them off.

Shut the Door when using noisy Machines

We can shut the door after we turn on dishwashers or washing machines for rooms where it is kept or we can turn them on before leaving the house so that overlapping of exposure to loud noises can be reduced

Use Earplugs



Use of earplugs or earmuffs can bring down loud noises to a manageable level. Earplugs are small inserts that fit into our ear canal. And earmuffs fit over the entire outer ear to form an air seal keeping ears safe from loud noises.

Lower the volume

We can listen to songs, radios, TVs in lower volume when listening from headphones or speakers.

Stay away from Noisy area

Noise producing industries, airports, vehicles should be far from residential areas as it is very dangerous for infants and senior citizens.

Follow the limits of Noise level

Community law should check the use of loudspeakers, outdoor parties as well as political public announcements.

Control Noise level near sensitive areas

There should be control on noise level (Silent zones) near schools, hospitals. Place noise limits boards near sensitive areas.

Go Green by planning trees

We can plant more trees as they are good noise absorbents. According to studies, it can reduce noise by 5 to 10 decibels Db around them.

Create Healthy noise to eliminate unwanted noise

If we can't eliminate unwanted noise coming from outside then we can create healthier noise such as music, singing birds or waterfalls in homes or offices.

Use Noise absorbents in noisy machineries

We can check for pieces of machinery which are creating noise due to vibrations and put some noise absorbents to reduce noise.

Use Proper Lubrication and Better maintenance

We can use proper lubrication as well as better maintenance of machines to reduce noise pollution and improve efficiently. It reduces friction between movable parts and helps to reduce noise.

Noisy Authorities about Disobedience of Noise Rules

We can notify government agencies if someone is not following rules and regulation regarding noise levels.

Regularly checking noise levels

Regularly checking noise level in an industrial complex and indoor to keep noise level within the limit. It is necessary to control the noises created around us. It is necessary to aware people around us through various mediums. We can start from ourselves to spread awareness about noise pollution and its effects on human and the environment. Limit for noise at daytime is 55 db and in the night it is 30db to avoid health effects.

Governments are taking steps to reduce noise pollution in mostly all countries which is a very good sign.

CURRENT TRENDS: In the last years the interest of the scientific community toward the determination of uncertainty due to the intrinsic variability of the measurand was increased. Some authors, such as Paviotti and Kephalopoulos in performed investigations on the noise measurement uncertainty, focusing on road traffic acquired data and estimating long term environmental noise indicators. Considering that the environmental noise is composed of many independent acoustical signals generated from different acoustic sources and that often they are affected by special events that are not characteristic of the acoustic environment under observation, new techniques were proposed in. They are based on the “outlier” detection rules for obtaining a “purified” representative noise signal and then on the consecutive application of computer code, developed by using algorithms based on bootstrap methods. This allows to treats acoustical dataset with no restrictions in terms of time behaviour and sound pressure levels statistics properties. With the resampling procedures, the distributions can be considered as approximations of the true distributions of the measured and thus a good approximation of the distribution of the relevant statistics, such as the mean value and the standard deviation. The method, at the moment, was proved to be successfully applicable to the case of traffic noise measurement that

represents one of the most relevant noise sources in the life environment and will be in the next future tested on different dataset representative of different acoustic climates.

CONCLUSION:

It is clear that roads have definite effects on wildlife populations for a variety of reasons including habitat fragmentation, runoff, pollution, visual disturbance and increased mortality. Owing to the consistent and pervasive nature of noise and its apparent or at least potential widespread effects, it is clearly an area that needs to be addressed. Indeed, in many cases it appears that noise may have a significant effect on both numbers of individuals, species diversity and breeding.

Invertebrates are too poorly studied at present for any definitive conclusions. Some significant use of roadside areas by some species is indicated, but there are also many other species that should be investigated. Although sparse, the studies that have looked at the response of fish would suggest that normal traffic noise would not be sufficiently great to disturb those species that have been looked at so far. Roads do provide a barrier to the movement of reptiles and amphibian; however, the effect of noise is less clear. Recent work suggesting that vehicles noise can arouse toads from their burrows is of concern since this could affect survival and is one area that could be looked at in a series of controlled studies where sound levels and the associated behavioural response are more systemically studied.

Successful noise management should be based on the fundamental principles of precaution, the polluter pays and prevention. The noise abatement strategy typically starts with the development of noise standards or guidelines, and the identification, mapping and monitoring of noise sources and exposed communities. A powerful tool in developing and applying the control strategy is to make use of modelling. These models need to be validated by monitoring data. Noise parameters relevant to the important sources of noise must be known. Indoor noise exposures present specific and complex problems, but the general principles for noise management hold. The main means for noise control in buildings include careful site investigations, adequate building designs and building codes, effective means for addressing occupant complaints and symptoms, and building diagnostic procedures.

Noise control should include measures to limit the noise at the source, to control the sound transmission path, to protect the receiver's site, to plan land use, and to raise public awareness. With careful planning, reduced. Control option should take into account the technical, financial, social, heath and environmental factors of concern. Cost benefit relationships, as well as the cost effectiveness of the control measures, must be considered in the context of the social and financial situation of each country. A framework for a political, regulatory and administrative approach is required for the consistent and transparent promulgation of noise standards.

Noise management should:

a. Start monitoring human exposures to noise.

b. Have health control require mitigation of noise emissions. The mitigation procedures should take into consideration specific environments with multiple noise sources, or which may amplify the effects of noise; sensitive time periods, such as evenings, nights and holidays; and groups at high risk, such as children and the hearing impaired.
c. Consider noise consequences when making decisions on transport system and land use planning
d. Introduce surveillance systems for noise related adverse health effects.
e. Assess the effectiveness of noise policies in reducing noise exposure and related adverse health effects, and in improving supportive “soundscapes”.
f. Adopt these Guidelines for Community Noise as long-term targets for improving human health.
g. Adopt precautionary actions for sustainable development of acoustical environments.

Noise pollution is a major problem in India. The government of India has rules and regulations against firecrackers and loudspeakers, but enforcement is extremely lax. Awaaz Foundation is a non- governmental organization in India working to control noise pollution from various sources through advocacy, public interest litigation, awareness, and educational campaigns since 2003. Despite increased enforcement and stringency of laws now being practiced in urban area, rural area are still affected. The supreme Court of India had banned playing of music on loudspeakers after 10pm. In 2015, The National Green Tribunal directed authorities in Delhi to ensure strict adherence to guidelines on noise pollution, saying noise is more than just a nuisance as it can produce serious psychological stress, However, implementation of the law continues to remain poor.

In Conclusion, it is evident that people are less conscious about noise pollution. The causes of noise pollution are mainly the activities that take place within n environment. The impacts of noise pollution are rarely experienced but they can be serious. Hearing loss is a major consequence of noise pollution. Generally, noise pollution should be taken seriously just as other pollutions.

Higher levels of noise are hazardous and it is also difficult to make them escape in a closed environment. The increased levels of noise pollution in the environment have made it an urgent need to create awareness about the causes, effects, and prevention of noise pollution. The higher level of noise should be reduced at home and also at a workplace. People should be educated about the hazards of noise pollution; let’s all make it our responsibility to prevent the environment from further noise pollution and make the earth a better place to live in.

There is no doubt that some volume of noise is necessary for our life. But it is also a truth that we due to our own misuse noise pollution as on date is a growing environmental concern which needs immediate remedies in place. People have been found suffering from ear ailments and the ecology as well has been affected. It is high time that we implement the preventive measures available to us in order to reduce noise pollution. Or else, tomorrow the future generations may suffer from permanent hearing related diseases and the ecology shall be affected beyond repair.

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