

HORRIBLE EFFECTS OF NOISE POLLUTION

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Abstract : Noise pollution is the excessive noise that may harm the activity or balance of human being. The source of most noise worldwide is mainly caused by atmospheric noise/environmental noise/occupational noise such as industrial machines, transportation systems and indoor noise generated by machines (particularly in some workplaces), building activities, domestic appliances and music performances etc. The construction and industrial machineries frequently exposes its employees to hazardous noise levels and at the same time adds greatly to community noise. Noise may not be high enough to damage hearing (within buildings) and however the same have an adverse effect on general human health. Transportation contributes largely to environmental noise. The government of different countries has rules & regulations against the hazardous noise sources, but enforcement seems to be lenient. Noise laws and ordinances vary widely across the globe.

IndexTerms- atmosphericnoise,environmentalnoise,occupationalnoise.

I. Introduction: Noise pollution, also known as environmental noise, is the propagation of noise with harmful impact on the activity of human or animal life. The source of outdoor noise worldwide is mainly caused by machines, transport and transportation systems. Poor urban planning may give rise to noise pollution, side-by-side industrial and residential buildings can result in noise pollution in the residential areas. The main sources of noise in residential area are loud music and loud barking by domestic dogs. It can also be loud talking or shouting by humans although this last is less persistent. Noise pollution associated with household electricity generators is an emerging environmental degradation in many developing nations. The average noise level of 97.60 dB obtained exceeded the WHO value of 50 dB allowed for residential areas. Research suggests that noise pollution is the highest in low-income and racial minority neighbourhoods. Documented problems associated with urban environment noise go back as far as ancient Rome

High noise levels can contribute to cardiovascular effects in humans and an increased incidence of coronary artery disease. In animals, noise can increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and contribute to permanent hearing loss.^[7] While the elderly may suffer from cardiac problems due to noise, children to suffer much from it and can suffer permanent damage for life. According to the World Health Organization children are especially vulnerable to noise. Noise poses a serious threat to a child's physical and psychological health, including learning and behaviour.

II. Understanding Noise Pollution

Most of us are very used to the sounds we hear in everyday life. Loud music, the television, people talking on their phone, the traffic and even pets barking in the middle of the night. All of these have become a part of the urban culture and rarely disturb us. However, when the sound of the television keeps you from sleeping all night or the traffic starts to give you a headache, it stops becoming just noise and start turning into noise pollution. For many of us, the concept of pollution is limited to nature and resources. However, noise that tends to disrupt the natural rhythm of life makes for one solid pollutant.

By definition, noise pollution takes place when there is either excessive amount of noise or an unpleasant sound that causes temporary disruption in the natural balance. This definition is usually applicable to sounds or noises that are unnatural in either their volume or their production. Our environment is such that it has become difficult to escape noise. Even electrical appliances at home have a constant hum or beeping sound. 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.

III. Sound pollution measuring apparatus

A **sound level meter** is used for acoustic (sound that travels through air) measurements. It is commonly a hand-held instrument with a microphone. The diaphragm of the microphone responds to changes in air pressure caused by sound waves. That is why the instrument is sometimes referred to as a Sound Pressure Level (SPL) Meter. This movement of the diaphragm, i.e. the sound pressure deviation (pascal Pa), is converted into an electrical signal (volts V).

A microphone is distinguishable by the voltage value produced when a known, constant sound pressure is applied. This is known as the microphone sensitivity. The instrument needs to know the sensitivity of the particular microphone being used. Using this information, the instrument is able to accurately convert the electrical signal back to a sound pressure, and display the resulting sound pressure level (decibels dB SPL).

Sound level meters are commonly used in noise pollution studies for the quantification of different kinds of noise, especially for industrial, environmental and aircraft noise. The current international standard that specifies sound level meter functionality and performances is the IEC 61672-1:2013. However, the reading from a sound level meter does not correlate well to human-perceived loudness, which is better measured by a loudness meter. Specific loudness is a compressive nonlinearity that depends on level and also frequency, which can be calculated in a number of different ways.

IV. Sources of noise pollution

This type of pollution is so omnipresent in today's society that we often fail to even notice it anymore:

- Street traffic sounds from cars, buses, pedestrians, ambulances etc.
- construction sounds like drilling or other heavy machinery in operation
- airports, with constant elevated sounds from air traffic, i.e. planes taking off or landing
- workplace sounds, often common in open-space offices
- constant loud music in or near commercial venues
- industrial sounds like fans, generators, compressor, mills
- train stations traffic
- household sounds, from the television set to music playing on the stereo or computer, vacuum cleaners, fans and coolers, washing machines, dishwashers, lawnmowers etc.
- Events involving fireworks, firecrackers, loudspeakers etc.
- Conflicts generate noise pollution through explosions, gunfire etc. The dysfunctions, in this case, are likely caused by the conflict and insecurity and less by the noise pollution in itself, although that compounds stress levels too.

V. Effects of Noise Pollution on Wildlife and Marine Life

Our oceans are no longer quiet. Thousands of oil drills, sonars, seismic survey devices, coastal recreational watercraft and shipping vessels are now populating our waters, and that is a serious cause of noise pollution for marine life. Whales are among the most affected, as their hearing helps them orient themselves, feed and communicate. Noise pollution thus interferes with cetaceans' (whales and dolphins) feeding habits, reproductive patterns and migration routes, and can even cause hemorrhage and death.

Other than marine life, land animals are also affected by noise pollution in the form of traffic, firecrackers etc., and birds are especially affected by the increased air traffic.

VI. Male ornaments and habitat deterioration

Anthropogenic noise arising from urbanization and traffic influences the transmission of auditory sexual signals and restricts acoustic communication. A good example of this is the song of great tits *Parus major* that is masked by human-induced low frequency noise in urban areas. Slabbekorn and Peet found that birds that nest at noisy locations have to sing with a higher minimum frequency to prevent their song from being masked.

Underwater noise pollution from shipping can similarly influence communication in aquatic environments. For instance, noise from ferry boats lies within the most sensitive hearing range of the Lusitanian toadfish *Halobatrachus didactylus*. Vasconcelos and coworkers found the noise to increase the auditory threshold of the toadfish. This hampered the ability of the fish to detect acoustic signals from conspecifics. Since the auditory signals are essential during agonistic encounters and mate attraction, ferry boat noise could influence mate choice in the species. Similarly, Foote and coworkers found acoustic communication in whales to be restricted by the engine noise of whale watcher boats. To adjust for the anthropogenic noise, whales increase the duration of their primary calls in the presence of boats.

VII. Human Diseases Caused by Noise Pollution

Whether we realize we are subjected to it or not, noise pollution can be hazardous to our health in various ways.

- **Hypertension** is, in this case, a direct result of noise pollution caused elevated blood levels for a longer period of time.
- **Hearing loss** can be directly caused by noise pollution, whether listening to loud music in your headphones or being exposed to loud drilling noises at work, heavy air or land traffic, or separate incidents in which noise levels reach dangerous intervals, such as around 140 dB for adult or 120 dB for children.
- **Sleep disturbances** are usually caused by constant air or land traffic at night, and they are a serious condition in that they can affect everyday performance and lead to serious diseases.
- **Child development.** Children appear to be more sensitive to noise pollution, and a number of noise-pollution-related diseases and dysfunctions are known to affect children, from hearing impairment to psychological and physical effects. Also, children who regularly use music players at high volumes are at risk of developing hearing dysfunctions. In 2001, it was estimated that 12.5% of American children between the ages of 6 to 19 years had impaired hearing in one or both ears
- Various **cardiovascular dysfunctions.** Elevated blood pressure caused by noise pollution, especially during the night, can lead to various cardiovascular diseases.
- **Dementia** isn't necessarily caused by noise pollution, but its onset can be favoured or compounded by noise pollution.
- **Psychological dysfunctions** and noise annoyance. Noise annoyance is, in fact, a recognized name for an emotional reaction that can have an immediate impact.

VIII. Social and Economic Costs of Noise Pollution

The World Health Organization estimates that one out of three people in Europe is harmed by traffic noise. More than the purely medical effects of noise pollution on the individual, there is a significant social and economic impact. Since noise pollution leads to sleep disturbance, it affects the individual's work performance during the day, it leads to hypertension and cardiovascular disease and costs the health system additional time and money, and it negatively affects school performance in children.

IX. Importance of the environment

It is astonishing how inappropriate our living environments are for life at any age. But with increasing age, both "normal" changes and age-associated illnesses interact with the environment in ways that can be extremely negative. Poor lighting and poor signage each make it impossible for people to find their way. Noise pollution (a bane of today's society) often takes the form of background noise and makes the partially hearing-impaired individual unable to comprehend conversations. Clutter and complications in the environment increase the likelihood of falling, fearfulness, and inability to get around. Familiar, convenient, well-lit surroundings with the right acoustics could improve the functionality of all individuals, especially as they age. Ironically,

the settings in which clinicians assess patients are frequently appalling environments in relation to these characteristics, and the situation is compounded by the anxiety that many individuals feel in a clinical setting. Clinicians are frequently asked to assess a person's cognitive capabilities (and functional capacity) in conditions very unlike those in which the person lives. This is why the home circumstances must be assessed, or at least known about, for decisions to be made about home safety and the appropriateness of the environment to which a patient's discharge is planned. Doctors' offices are not designed for older patients either. Tables are too high, even dangerous, and the corridors may be threatening, lacking the handholds that should be on the walls.

The environment of nursing homes is unspeakably inappropriate in many cases. It is well known that a calming, quiet, soothing environment with healthy reminiscences, well-lit, warm and welcoming, and home-like, really does help to calm behavioral and emotional disturbances in those with and without dementia. So why are nursing homes designed to look like rather unwelcoming convenience stores? Where are the carpeting and drapes? Why does everyone need to be harassed by loud alarms that are intended only to alert nurses to patients in danger? Clinicians should speak out, rather than merely respond with increasing doses of psychotropic medications for patients who may in part be merely suffering from the chronic disruption of an aggressive and noisy environment.

X. Tips for Avoiding Noise Pollution

- Wear earplugs whenever exposed to elevated noise levels
- Maintain a level of around 35 dB in your bedroom at night, and around 40 dB in your house during the day
- If possible, choose your residential area as far removed from heavy traffic as you can
- Avoid prolonged use of earphones, especially at elevated sound levels
- If possible, avoid jobs with regular exposure to elevated sound levels

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