Article 2

Noise Pollution: A Reality in Public Places

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ABSTRACT

Noise being considered as one of the prominent factors for the pollution which affects the well-being of human beings, animals, and plants. It may stimulate the geological factors which may trigger catastrophes or disasters. The ecology can be impacted with the interference of noise. The effect as well as the consequence of the noise, which are generated from men-machinery effects. This is an effort to find out various pros and cons existing and passed in the area of noise pollution is tried to be brought out through this article.

Key terms used:

Noise, disasters, ecology, urbanisation.

1.INTRODUCTION

The high levels of noise and the implication of the noise levels on the environment is highly recommended to study (Nandi and Dhatrak 2008; Nelson et al. 2005; Rabinowitz 2000; Themanna and Masterson 2019; Ashly S and Anilkumar B 2016). Till date the research activities are focussing on a pre-set condition, which are inclusive of closed system such as factories, industrial clusters or even in an atmosphere of joyful moments which are in particular trigger during a football or cricket matches in a stadium full of crowd. No study or effects are not concentrated on the ill effects to the fellow viewers or even the inhabitants near to the perimeter of the stadium.

The concern is not only to be restricted to the football or cricket stadiums, as the festivals or processions (religious or political) or even the vehicular traffic and the subsequent noise generated may affect the well-being of the organisms. The earlier studies have identified that exposure to loud noise for more duration can damage the hair cells of the cochlear in the inner ear leading to irreversible sensorineural hearing loss (Azizi 2010; Basner et al. 2014; Hong et al. 2013; Nandi and Dhatrak 2008). There is need to study as well as to focus on the unforeseen or even unknown causes of the secondary health issues which might be the aftereffects of the unattended or unnoticed noise related scenarios. There are laws and guidelines which stipulates the limits or even exposure limits. The compliance is a questionable matter where the failure, if any can be compounding towards law makers. However, the responsibility of

fellow citizens cannot be omitted. This study tries to bring out exposure limits as well as dose levels in public places and the chances of potential health hazards.

1.1 SOURCES OF NOISE

A major source of noise in the city is from traffic from the motors vehicles, horn (honking) processions related to political parties and festivals in religious institutions. Further to note, noise from the roadway is generated by commercial activity, construction. Noise levels and its threats may depend on the type of infrastructure, density of vehicles, climate variations. Further sources are stadiums, shopping malls, mobility hubs etc.

2.METHODOLOGY

The permissibility to the area for acceptance or limits can be done through noise assessment, which is the actual measurement of the noise levels. In consideration to the convenience, the Android supported Sound meter application released by Splend Apps is used for the study and the accuracy and authenticity is checked with the measurement taken with portable precision digital sound meter, model TSI QUEST SOUND DETECTOR SD-200 , manufactured by TSI Inc, USA, with measuring range 40-130dB with 0.1dB resolution. The sound level meter was calibrated before taking the measurements according to the user manual. Continuous sound level measurements during daytime (0800–2000 hrs.) was carried out in Ernakulam and Aluva city areas. The noise level in Ernakulam city and Aluva city were observed during different time intervals at different selected locations. The study locations were identified and measurements were taken at Commercial establishments and Educational and Hospitals were silent zones to be observed. The measurement areas include near to Metro Railway Station, Pulinchuvadu, Traffic Junctions including High Court, General Hospital Ernakulam, Bus Stand, Kaloor, Palarivattom round about, Edapally Junction, Cochin University Junction, Pump Junction, Aluva, Hotel in Pump Junction, Aluva Town Hall, Medical College Ernakulam.

Noise measurements using the application were taken using the prescribed procedure stipulated in the manual of the Sound Pressure Level meter. The results were noted in at the spot of measurement. The measured noise levels are compared with the limits as mentioned in the WHO standards / Central Pollution Control Boards. Industrial, commercial, shopping and traffic areas, indoors and outdoors (70 dB A - 110 dB A) for base 24 hour. Since the measured decibel using the application is 10 dB lower to the TSI QUEST sound detector, the measurements indicated in Table-1 is added with 10 dB(A) measurement to the actual readings.

LOCATION	8:00 AM – 12:00 PM			12:00 PM-5:00 PM			5:00 PM-8:00 PM		
	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max
ERNAKULAM SOUTH	51	80	105	59	89	113	63	89	115
HIGHCOURT JUNCTION	51	77	96	60	91	113	53	75	98
GOVERNMENT HOSPITAL	36	76	96	43	90	113	57	81	105
CHILDRENS PARK	52	78	96	61	92	113	61	92	113
KALOOR BUS STAND	66	97	115	60	89	105	69	101	119
PALARIVATTOM CIRCLE	63	96	110	62	84	99	71	105	121
EDAPPALY JUNCTION	67	96	113	65	89	101	65	92	109
EVM SKODA CUSAT JUNCTION	49	69	92	73	75	89	45	68	89
PULINCHODU METRO STATION	50	75	94	63	76	93	51	71	90
ALUVA PUMP JUNCTION	60	82	110	53	73	94	62	74	105
ALUVA TOWN HALL	55	77	98	49	72	90	51	75	91
St. JOSEPH SCHOOL CHUNANGMVELY	45	69	89	49	71	92	43	65	91
ICRA MASJID MEDICAL COLLEGE EKM	50	76	98	59	81	101	61	88	116

Table 1 Mean value of digital sound level meter reading

3.RESULTS AND DISCUSSIONS

3.1 RESULTS

It has been specified, during the surveys, that the noise levels detected in all the industries are much above the 80 dBA that is specified in the regulations. Almost all people in this area who commutes during these hours are disturbed due to the noise and the continuous impact of loud noise will wear down the hair cells inside the inner ear, which causes the change in the hearing capabilities. This is known as Temporary Threshold Shift, which may recover during the cause of time, with false impression that the impacted personals are all right.

If there are regular exposures to loud noise in the case of people who are working in the shops, hotels, learning institutes, the cleaning staffs near this area, this will destroy the hair cells or nerves in the ear which causes Permanent Threshold Shift (PTS) or permanent hearing loss. The people who are affected by these will not be able to realize that they are having hearing loss because this type of hear loss occurs gradually and the damage caused cannot be repaired or rectified.

The main findings of the study of noise in the above areas will produce health effects such as stress, frustration, sleep disturbance, difficult to concentrate in the daily activities, increasing the level of blood pressure and also the rhythm of heart beats which can lead to the cardiovascular diseases. As discussed above due to the prolonged noise which are well above the standards mentioned, can lead to temporary and permanent hearing losses. Some of the symptoms of these defect are mentioned below,

Primary symptoms, due to the noise in this area can be classified as

- Pain around or inside the ear
- Irritation or discomfort down the side of face, neck, or shoulder.
- Nausea or vomiting
- Unsteadiness

- Secondary symptoms, due to the noise in these areas include:
    - Headaches
    - Fatigue
    - Loss of balance due to problem in ear drum.
    - Nervousness.

3.2 DISCUSSION

The noise pollution will affect the people with exposure, would have symptoms like headache, nausea, etc which would aggravate the conditions of stress, temporary hear loss and cardio vascular system and reduction in hearing ability. The effect due to noise to be controlled by introducing sound barriers, forestation / planting trees, giving more importance to the usage of electric vehicles through legislation. The following control measures are mentioned below to consider the possibility of most effective mitigation measures.

- Examine, identify and eliminate the source of loud noise which the commuters and individuals working in this area are exposed as far as possible.
- If the above measure is not achievable, then the level of noise in this area who are exposed must be minimized by using engineering control measures, administrative control measure or by providing the personal hearing protectors.
- Noise barriers can be installed along the walls of hospitals, educational institution, which is best solution to reduce the sound pollution caused due to the vehicle movement.
- Legislative measures should be adopted along the sensitive zone like hospitals, high court by banning horns, limiting the number of vehicles etc.
- Plants and trees should be planted along the roads and highways which can reduce the noise pollution substantially.
- Efficient traffic management must be carried out.

- Reduce the speed of the vehicle in these areas can reduce the noise due to heavy breaking of buses, and heavy vehicles.

The entry of heavy vehicles including trucks during the working hours in the main part of cities may be restricted, which on the other way can lead to traffic congestion lead to higher noise level.

4. CONCLUSION

The noise assessment of the locations indicated that the noise levels in the area are progressing at a very fast rate with increasing population and heavy traffic. Noise levels obtained at different locations of the cities are appeared to be crossing the limits prescribed by the WHO.

The collected data and the results prove that on all assessed roads, junctions, commercial establishments, hospital zones, educational institutions are having higher noise limits than the permissible prescribed by CPCB /WHO. Even in the silent zones have exceeded the permissible norms of 50 dB (A).It was expected that the higher noise levels in the junctions / cities are due to fast and unsegregated urbanisation, which caused the more inflow of people from different regions. It is anticipated that the noise environment of the study area may cause great threat to the health of inhabitants in long term. Hence, a proper and strict law enforcement and thereby continual regulation is to be followed by the statutory bodies of the State.

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