Detection And Reduction of Noise Pollution in Buildings in Palayam

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***Abstract*— Noise pollution is an unwanted or harmful sounds in terms of health and quality of life, resulting from human activities. In recent years, excessive noise causes not only discomfort, but also observed that when people are exposed to sound waves at high intensities for long periods of time, they lose their health.**

Method of reduction of noise pollution is done by designing insulation projects to increase the ability to absorb sound like wall insulation, floor and ceiling insulation, vegetation which can scatter the sound waves and absorb the noise levels, and by including noise barrier.

Keywords—Noise pollution

i. INTRODUCTION

Noise pollution is a problem increasingly acknowledged by authorities and governments around the globe. Noise in buildings are a common grievance among public. Excessive noise in public reduces the intelligibility of speech and impairs communication, causing annoyance, irritation, and fatigue and reducing the quality and safety of healthcare. Noise health effects are the physical and psychological health consequences of regular exposure to consistent elevated sound levels. Elevated workplace or environmental noise can cause hearing impairment, tinnitus, hypertension, ischemic heart disease, annoyance, and sleep disturbance. Changes in the immune system and birth defects have been also attributed to noise exposure.

Although age-related health effects (presbycusis) occur naturally with age, in many countries the cumulative impact of noise is sufficient to impair the hearing of a large fraction of the population over the course of a lifetime. Noise exposure has been known to induce noise-induced hearing loss, tinnitus, hypertension, vasoconstriction and other cardiovascular adverse effects. Chronic noise exposure has been associated with sleep disturbances and increased Incidence of diabetes. Noise pollution on construction sites can potentially contribute to poor quality of life. The wider effects of construction site noise pollution include structural damage to buildings, decreased property value, loss of productivity and social impacts such as sickness.

ii. SCOPE OF STUDY

Noise pollution and its effect on human health and his welfare is recently considered as an important and vital issue which encourages scientists and interested agencies all over the world, such as World Health Organization (WHO), to conduct more researches concerning assessmentof its levels and harmful effects

These impacts may lead to more serious health problems, such as stroke and ischemic heart disease, that can result in a heart attack. Reducing the levels of noise can reduce these adverse health impacts. Reducing noise pollution and protecting quiet areas in cities also has an economic benefit..

iii. OBJECTIVE

1. To evaluate the noise levels in buildings in Palayamcity, Trivandrum.
2. To investigate the variation of the noise levels from the standards prescribed by Central Pollution Control Board (CPCB) .
3. To determine the various mitigation measures to eliminate or reduce the noise

excellent style manual for science writers is [7].

iv. MATERIALS AND METHODOLOGY

The noise pollution datas for various buildings in Palayam city is determined using a device called sound level meter.

A. *Collection of noise pollution data*

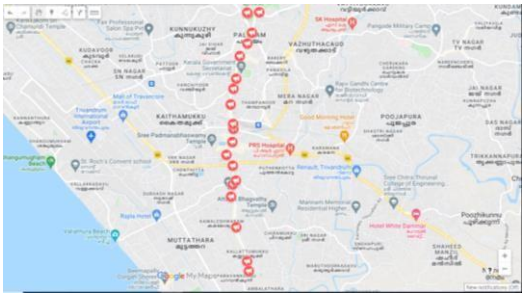
The datas collected using sound level meter during morning and evening peak hours. The peak hour noise values during morning (8:30 – 10:30 am) and evening (4:30
– 6 : 30 pm) in these areas are collected for 2 weeks

A sound level meter will measure sound pressure level and sound meter application displays the noise volume in decibels (dB).

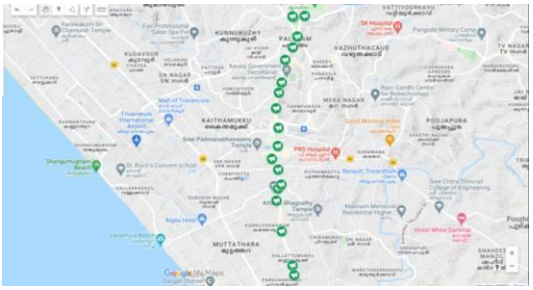
TABLE I.

Sl No	*Location*	*Morning Peak hr (dB)*	*Evening peak hr(dB)*
1	SBI Nanthancode	75.66	80.5
2	Neethi Medical Store	76.9	80.42
3	Mascott Hotel	70.1	75.2
4	Bata	78.6	84.32
5	Saphalyam Complex	73.2	77.64
6	Canara Bank	72.9	76.45
7	West Side	78.7	84.1
8	Allen Solly	73.9	79.1
9	Premier Towers	79.2	82.6
10	Sri chithra Home	72.3	80.6
11	SAJ Luciya	73.5	76.4
12	Buhari Hotel	80.2	86.4
13	Unison Towers	86.1	89.3
14	MS Complex	75.9	84.7
15	AL Salam Plaza	65.8	78.1
16	Subhash Trade Links	80.9	87.2
17	Sweet Rani Bakers	78.2	89.5
18	Gem Pearl Arcade	76.4	90.2
19	Attukal Shopping Complex	72.3	86.5
20	ARS Towers Over Bridge	78.3	84.7

Morning Peak hour



Evening peak hour



B. ANALYSIS AND COMPARISON WITH STANDARDS

The permissible limit of noise levels in various types of buildings prescribed by central pollution control board is represented below.

TABLE II.

Areacode	*Category of area*	*Limits in daytime (dB)*	*Limits in nighttime (dB)*
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silent zone	50	40

C. COMPARISON

The following table shows the comparison of obtained noise pollution data with CPCB standards.

TABLE III.

Sl No	*Location*	*Category*	*Morning Peak hr (dB)*	*Evening peak hr(dB)*	*CPCB Standard*
1	SBI Nanthancode	Commercial	75.66	80.5	> 65 dB
2	Neethi Medical Store	Commercial	76.9	80.42	> 65 dB
3	Mascott Hotel	Commercial	70.1	75.2	> 65 dB
4	Bata	Commercial	78.6	84.32	> 65 dB
5	Saphalyam Complex	Commercial	73.2	77.64	> 65 dB
6	Canara Bank	Commercial	72.9	76.45	> 65 dB
7	West Side	Commercial	78.7	84.1	> 65 dB
8	Allen Solly	Commercial	73.9	79.1	> 65 dB
9	Premier Towers	Commercial	79.2	82.6	> 65 dB
10	Sri chithra Home	Residential	72.3	80.6	> 55 dB

SlNo	*Location*	*Category*	*Morning eak hr(dB)*	*vening peak hr(dB)*	*CPCB Standard*
11	SAJ Luciya	Commercial	73.5	76.4	> 65 dB
12	Buhari Hotel	Commercial	80.2	86.4	> 65 dB
13	UnisonTowers	Commercial	86.1	89.3	> 65 dB
14	MS Complex	Commercial	75.9	84.7	> 65 dB
15	L SalamPlaza	Commercial	65.8	78.1	> 65 dB
16	Subhash Trade Links	Commercial	80.9	87.2	> 65 dB
17	veet RaniBakers	Commercial	78.2	89.5	> 65 dB
18	em PearlArcade	Commercial	76.4	90.2	> 65 dB
19	Attukal Shopping Complex	Commercial	72.3	86.5	> 65 dB
20	ARS Towers Over Bridge	Commercial	78.3	84.7	> 65 dB

The permissible limit of noise pollution in residential and commercial buildings are 45 – 55 db. There is visible variation in the obtained values when comparing with the CPCB standards. It shows that most of the buildings are subjected to noise pollution.

D. REDUCTION MEASURES

The various measures for the reduction of noise pollution inbuildings can be done by the following methods:

- Upgradation of insulations of walls.
- Acoustic wall panels
- Installation of rugs and carpets
- Fixing wall hangings
- Sound absorption ceiling tiles
- Window shutters
- Sealing of cracks and edges.
- Use of cavity partition.
- Installation of high-quality storm windows
- Add central conditioning
- Add furniture to fil the floor space.
- Limiting the speed and sound horns

E. CONCLUSION

This study has examined the distribution of noise at various buildings in Palayam in Trivandrum Corporation. In this study, it was found that the average sound levels measured at almost all the buildings were above the permissible limit as prescribed by CPCB which is primarily due to increasing transportation and marketing activities in the study area. It can be deducted that noise pollution either directly or indirectly affects in a simultaneous manner, the subjective perception of noise, emotion, physiology, and experience of noise inside and outside the buildings. Hence suitable remedial measures need to be adopted in every building accordingly to isolate the noise from reaching the public in the form of noise barriers.

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vi. REFERENCES

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