

## ASSESSMENT OF NOISE QUALITY IN RAMANATHAPURAM- MUDHUKULATHUR AREAS (INDIA)

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### **Abstract**

*Noise is a prominent feature of the environment including noise from transport, industry and neighbours. An important part of noise assessment is the actual measurement of the noise levels. Continuous Leq measurement during day time (0600-2100 hr) was carried out in residential, commercial and silence zone location of Ramanathapuram-Mudhukulathur areas during June-December, 2005. The results show that the noise pollution in the city is wide spread throughout most of its area. The noise in this area is composite in nature. Public participation, education, traffic management, structural designing play a major role in noise management.*

**Keywords:** *Noise pollution, Ramanathapuram-Mudhukulathur, Traffic management.*

### **1. Introduction**

The perception of sounds in day-to-day life is of major importance for human well-being. Communication through speech, sounds from playing children, music, natural sounds in parklands, parks and gardens are all examples of sounds essential for satisfaction in everyday life. In the modern world, development InTechnology, commerce, communication and education has enhanced the urban growth both in developed and developing countries. With global urbanization, there have occurred many environmental problems causing pollution and environmental degradation. Out of many environmental problems, noise has emerged as one of major urban environmental pollution<sup>1,2</sup>. Environmental noise pollution has not been an entirely new phenomenon, but rather has been a problem that has grown steadily worse with time. Noise, defined as 'unwanted sound', is perceived as an environmental stressor and nuisance. Increasing noise exposure is today a serious problem for most cities and, high focus is currently put into monitoring and calculating actual noise exposure levels to understand the size of the actual problem.

Noise is a prominent feature of the environment including noise from transport, industry and neighbors. Transport noise is an increasingly prominent feature of the urban environment, making noise pollution an important environmental public health issue<sup>2,3</sup>. Noise pollution in urban cities is steadily increasing over the years<sup>4</sup>. Proportion of people exposed to noise is greatly increasing. This has direct and indirect affect to the people that can lead to the health hazard<sup>5</sup>. Some of the major health hazards caused by the noise as suggested by experts are permanent hearing loss, high blood pressure, muscle tension, migraine, headaches, higher

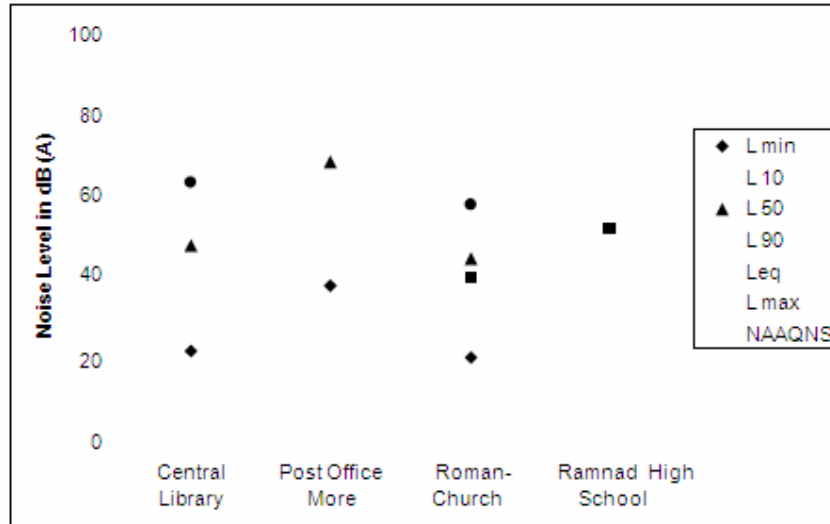
cholesterol levels, gastric ulcers, irritability insomnia, increased India, there were very few researches on noise pollution being carried out. Even such surveys conducted in the past have revealed that noise levels in urban areas are generally much higher than recommended standards<sup>8-11</sup>. The main purpose of this study is to monitoring and calculating actual noise exposure levels to understand the size of the actual problem and to develop fundamental database to assist in preparation of guideline for the noise pollution prevention and control aggression and psychological disorder<sup>5-7</sup>. In this area.

**Table 1: Basic characteristics of the noise monitoring sites at Ramanathapuram-Mudhukulathur areas**

Ca	Monitoring sites	Characteristics
Sil en	Central Library	Institutional area
	Post Office More	Hospital, and school area
	Roman church	Institutional area
	RamnadHigh School	Mixed area
Re sid	Bharathinagar	Human settlement
	Pattinamkattan	Human settlement
	Bus stand	Human settlement
Co	Supermarket	Shopping area
	kenikarai	Shopping area
	Aranmanai	Shopping area
	Mudhuvai Market	Shopping area

## 2. Material and Methods

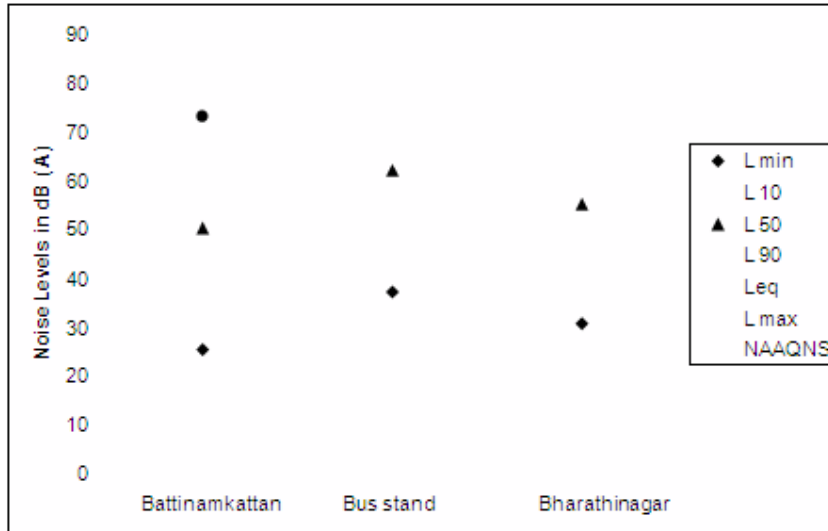
An important part of noise assessment is the actual measurement of the noise levels. The noise equivalent level (Leq) was measured continuously at each monitoring sites (Table 1) using sound level meter (model LUTREN, SL-4001). The sound level meter was calibrated before taking the measurement according to the user manual. The 'A' weighted network was used as it corresponds very closely to a person's hearing sensitivity. Continuous Leq measurement during day time (0600-2100 hr) was carried out in residential, commercial and silence zone location of Ramanathapuram-Mudhukulathur areas june-December2013The Leq result of each location was statistical analysis and the results are presented in terms of average L<sub>10</sub>, L<sub>50</sub> and L<sub>90</sub> for different areas of the study area.



**Fig. 1 :Noise levels at silence zone compared with standard at Ramanathapuram-Mudhukulathur areas during June-December, 2013.**

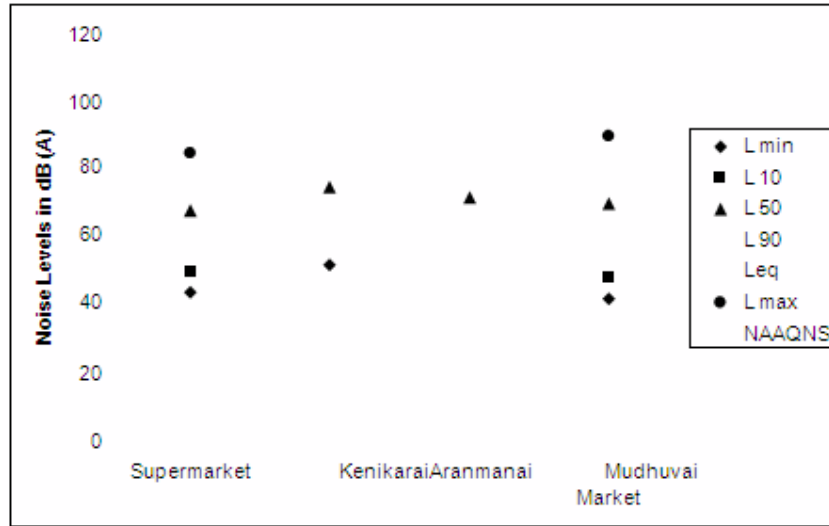
### 3. Results and Discussion

In order to get the impressions of noise pollution resulting from activities undertaken within the Ramanathapuram-Mudhukulathur areas, noise level surveys were carried out at different areas. The study area is classified into three zones, each of them with a particular noise emission limits. The locations covering silence, residential and commercial zones and their results are discussed here. In the Ramanathapuram-Mudhukulathur areas the main contributor of noise are transportation, community and religious activities. The noise data collected from various silence zone locations consisting of educational institutions, hospitals and religious locations. The  $L_{eq}$  values ranged from 40-75 dB(A), exceeding the standard values 50 dB(A) as shown in the Fig. 1. The minimum and maximum noise level was 20.5 and 75 dB(A) at Roman church and Ramnad High School the noise level exceeded 73.5 dB (A) at 90 % of the observed time. Noise pollution from community activities and religious purposes is a growing environmental problem. The noise levels at residential locations of Ramanathapuram-Mudhukulathur areas, varied from 25-85.5 dB(A). The maximum  $L_{eq}$  value was recorded at Bus stand. The maximum  $L_{90}$  was also observed at Bus stand (Fig. 2). According to World Health Organization (WHO) guidelines, an indoor noise level of less than 30 dB (A) is required to ensure that the restorative process of sleep takes place effectively<sup>12</sup>. It is worth pointing out that in hot climates like Ramanathapuram-Mudhukulathur area, where the majority of the residents leave windows open for the purpose of facilitating natural ventilation, indoor and outdoor noise levels are practically the same.



**Fig. 2: Noise levels at residential zone compared with standard at Ramanathapuram-Mudhukulathur areas during June-December, 2013.**

In India the growth of industrial, commercial and residential areas is unplanned, unstructured and unzoned. This leads to housing being built alongside factories and industries, increasing the risk of exposures to high noise levels. Rapid and unplanned development often results in growing levels of air and noise pollution, more pollution-related health problems, lost working days and economic disfunction. Apart from the silence and residential zones, noise pollution from road traffic in commercial area is a big problem in Indian urban centers. The noise measurements at commercial centres were also carried out to assess the impact on the community. The minimum level of 42 dB(A) was observed at Mudhukulathur Market and the maximum 98 dB(A) was recorded at Roman church(Fig. 3).The observed noise level at Ramanathapuram-Mudhukulathur areas are compared with other studies carried out in different parts of India and it was found that, other urban areas also faced the similar trend of noise pollution (Table 2). Thus there is a need to aware and educate the citizens about the rising noise pollution, health effects. Disseminate a key message that control of noise at individual's level will control noise pollution. There are many legal provisions to control or check the noise pollution. Many laws and acts have been amended to prevent the noise pollution but implementation of these laws is in vein.Road traffic is a major source of noise in urban areas with far-reaching and wide range effect to human. India as a developing country, traffic noise pollution occurs seriously in its urban and suburban areas. Noise interferes in complex task performance, modifies social behavior and causes annoyance. Studies of occupational and environmental noise exposure suggest an association with hypertension and cardiovascular disease. Further research is needed examining the possible health consequences of adaptation to noise



**Fig. 3: Noise levels at commercial zone compared with standard at Ramanathapuram-Mudhukulathur areas during June-December, 2013.**

**Table 2 : Comparison of noise levels with other studies in India**

City name	Silence Zone	Residential zone	Commercial zone
Burdwan <sup>a</sup>	60.0-90.0	--	69.0-110.0
Coimbatore <sup>b</sup>	47.2-80.4	30.6-83.6	40.0-96.4
Lucknow <sup>c</sup>	--	67.7-78.9	74.8-84.2
Visakhapatnam <sup>d</sup>	43.0-60.0	45.0-77.0	70.0-90.0
Ramnad-	20.5-78.5	25-80.5	42.0-98.0

a : Datt, et al., (2006)

b : Thangadurai, et al., (2005) c : c: Kisku, et al., (2006)

d : Vidyasagar and Rao, (2006) e : This study

**4. Conclusion**

The people staying inNoise pollution is emerging as an noisy area especially above 70 dB(A) should Environmental problem in Ramnad - Mudhukulathur take precautionary measures in order to areas and also other parts of avoid noise induced hearing loss. India. This can cause negative impact on Undoubtedly, there is a need for further public health and welfare. Considering the research to clarify this complex area, above aspects, we can conclude that traffic including better measurement of noise dominates the spectrum of exposure and health outcome.

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