

Noise Pollution - A Case Study in Mehdiapatnam area in Hyderabad

B.Japamala Rani

*Department of Mathematics
St. Ann's College for Women
Mehdiapatnam, Hyderabad, India*

Sirisha David

*Department of Chemistry
St. Ann's College for Women
Mehdiapatnam, Hyderabad, India*

Abstract- The urban environmental quality of many urban areas is deteriorated by the increase in the number of vehicles, infrastructure and population. Noise pollution is adversely affecting millions of people as it is damaging physiological and psychological health. In this paper a study of noise patten in mehadipatnam region of Hyderabad has been done in high traffic flow peak hours and less traffic peak hours at different time intervals in working days and weekends or holidays. It has been found that most of the noise is generated due to horns of vehicles since more number of vehicles are added every day, Education has to be given on the levels of noise in those areas to improve the quality of urban.

Keywords – Noise pollution, physiological, traffic, vehicles

I. INTRODUCTION

Sound is defined as atmospheric or air borne vibration perceptible to the ear. Noise is unwanted or undesired sound. The Sound which causes harm to others is called noise without regard of its characteristics. Noise is one of the most pervasive pollutants. A musical clock may be nice to listen during the day, but may be irritant during sleep at night. Noise by definition is “sound without value” or “any noise that is unwanted by the recipient. Noise in industries such as stone crushing and cutting, steel forgings, loud speakers, shouting of hawkers, selling by wares, movement of heavy transport vehicles, railways and airports leads to irritation and an increased blood pressure, loss of temper, decrease in work efficiency, loss of hearing[1] which may be first temporary but can become permanent in the noise stress continuous.

II. SOURCES OF NOISE POLLUTION

A. Source and Noise Intensity –

Noise levels are measured in terms of decibels (dB). W.H.O (World Health Organization) has prescribed optimum noise level as 45 dB by day and 35 dB at night. The Sound above 80dB is hazardous.

Table -1 Experiment Result

S.No	Source	Intensity of Noise produced
1	Quiet Conversation	20-30 dB
2	Loud Conversation	60 dB
3	Lawn Mower	60-80 dB
4	Aircraft noise	90-120 dB
5	Beat music	120 dB
6	Motor Cycle	105 dB
7	Radio music	50-60 dB
8	Traffic Noise	60-90 dB
9	Heavy Truck	90-100 dB
10	Jet Engine	140 dB
11	Space Vehicle launch	140-179 dB

B. Effects of noise pollution on Human health –

Table -2 Typical range of noise

S.No	Range of Decibel	Effects
1	Below 65 dB	Tolerable
2	65 dB	Annoyance-Nervous Effects
3	80 dB	Annoying/irritating
4	88 dB	Hearing disorder if prolonged exposure
5	90 dB	Many years of exposure-permanent hearing loss
6	100 dB	Short periods-temporary impairment: prolonged-irreparable damage to auditory
7	110 dB	Discomfort & Organs may cause hearing loss
8	120 dB	Causes the pain in the inner ear
9	135 dB	Painful
10	150 dB	Instantaneous hearing loss

The most notable physical effect of noise exposure is loss of hearing. Noise Induced Hearing Loss (NIHL) affects children, adolescents, young adults and older adults. Because of noise pollution, hearing loss is appearing much earlier in life. Noise not only affects hearing, it affects other parts of the body and body systems.

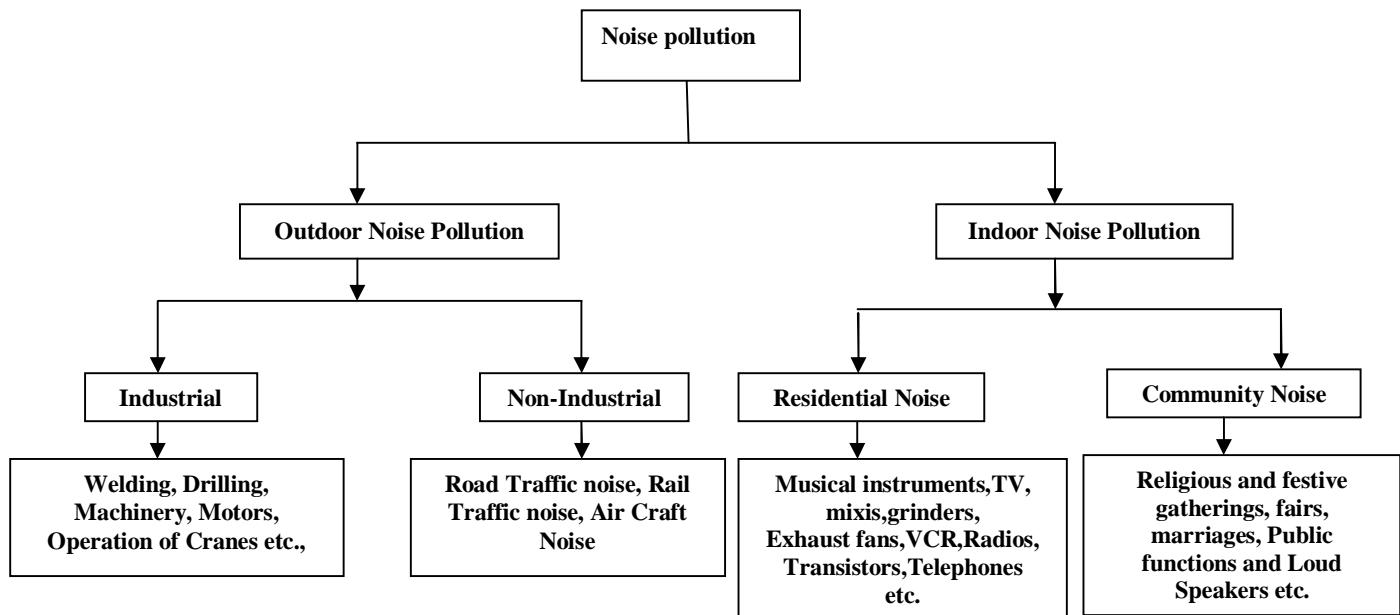


Figure 1. Classification of Noise Pollution

Noise is both a public health hazard and an environmental pollutant. Many of its effects are well known and many of its effects continue to unfold through research. The World Health Organization (WHO) has documented seven categories of adverse health effects of noise pollution on humans which are: hearing loss, speech interference, sleep disturbance, cardiovascular and physiological effects, mental health disturbance, impaired task performance and negative social behavior and annoyance.

Taking all these factors into consideration present study focuses on analysis of noise pollution in Mehdipatnam region with following objectives:

1. Evaluation and analysis of noise pollution in Mehdipatnam in different seasons in residential and commercial zones.
2. Creating awareness among the public by publishing in Journals, news papers.

III. METHODS AND MATERIALS

Study area: Mehdiapatnam is a major suburb in Hyderabad, India. It provides connectivity to the Rajiv Gandhi International Airport through the PV Narasimha Rao expressway from major suburbs like Banjara Hills, Amberpet, Begumpet, Kukatpally, Nampally etc... It derives its name from “Nawab Mehdi Nawaz jung” who lived and owned the area during the Nizam’s rule.

The main source of noise pollution in Mehdiapatnam depends upon the road conditions, the number of vehicles using the road, the kinds of vehicles using the road.



Figure 2. Digital Sound level meter



(a)



(b)



(c)



(d)



(e)

Figure 3. (a) RythuBazar 1 (b) RythuBazar 2 (c) Outside St. Ann's College (d) Inside St. Ann's College (e) Residential Zone

IV. EXPERIMENT AND RESULTS

The instrument used for the collection of data is sound level meter (model: EF1324098). The data of noise level were collected at different places of Mehdiapatnam at the day and the evening of three seasons of 2015-16. The sound level meter was placed at least 5 meter away from the source. Reading was taken for 15 minute and mean reading were recorded as shown in the figure shown below and graphical analysis is done for noise levels for two zones at day and evening.

A. Selected seasons for study–

1. Environmental noise pollution has been conducted in the Mehdiapatnam during 3 seasons
2. Rainy Season (July – August) (01/07/2016-23/08/2016)
3. Winter Season (December – February) (23/12/2015 -13/02/2016)
4. Summer Season (March – May) (23/03/2016-09/04/2016)

After analysis of noise Pollution in the selected region, the project proposal objective is to create awareness by conduction of awareness camps among children and people of Mehdiapatnam. The project also proposes the certain strategies for controlling noise pollution. Calixto model, Traffic noise models and Techniques of linear regression and different prediction models will be utilized and best model will be incorporated in our study.

B. Selection of timings and days–

Noise level was measured on Monday, Wednesday and Saturday, on two working days and a non working day. The Schedule selected during the day time and evening was as follows. Mornings: 8:00 - 10:00 afternoon: 12:00-2:00 and evening: 5:00-7:00 on both working days and on weekend day to gather total overview of noise level data of a whole week.

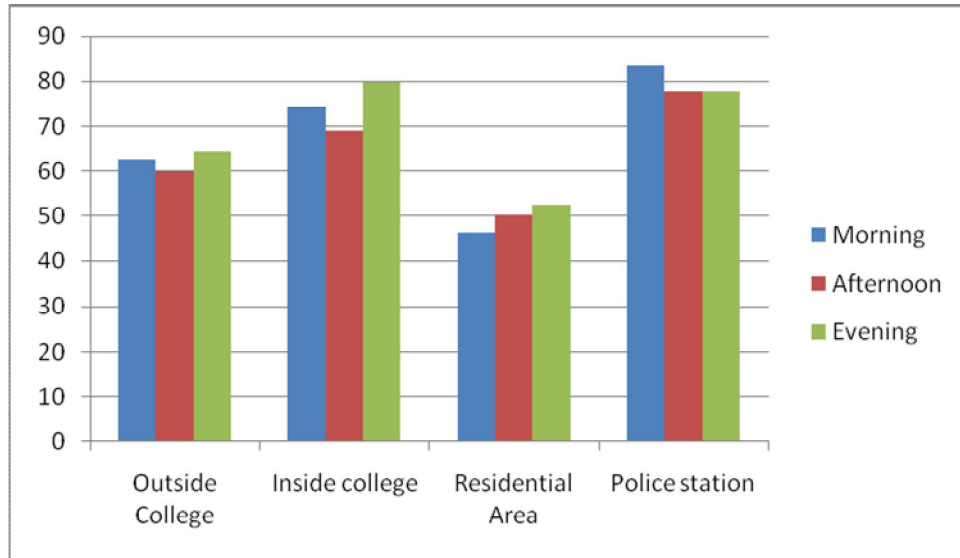


Figure 4. Noise measurement in winter season

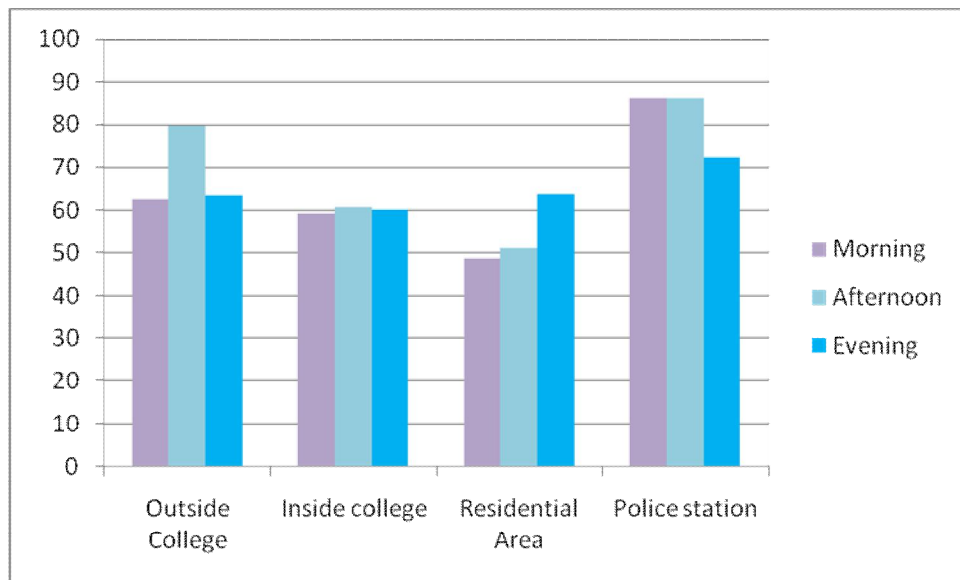


Figure 5. Noise measurement in summer season

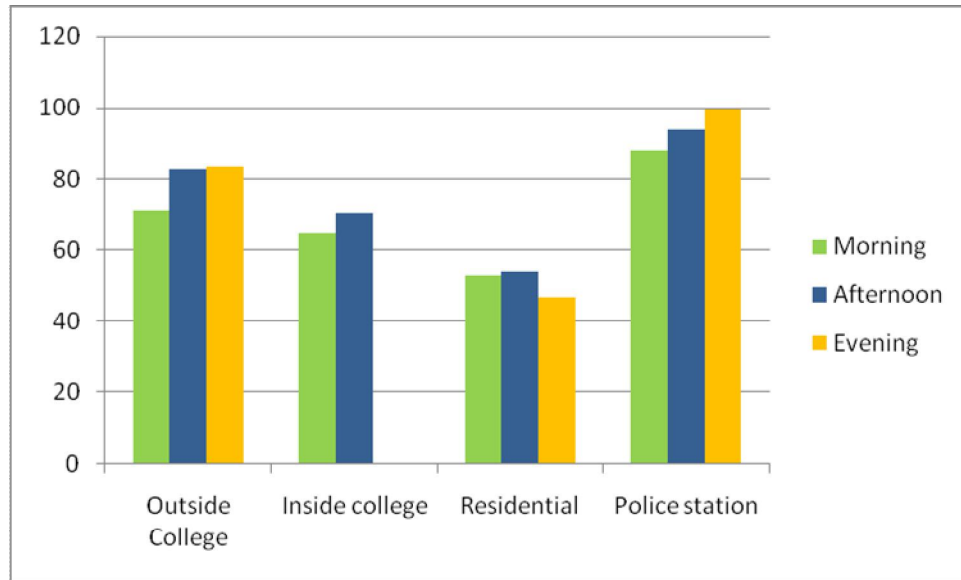


Figure 6. Noise measurement in rainy season

C. Comparison among four study areas–

After analyzing sound level values in different areas of mehdipatnam in different seasons it is being observed with high value of sound level at police station & rythu bazaar region, average noise level at the regions varies from 60-90 dBA.

D. Noise parameters at different locations–

It is observed that values of noise higher at mehdipatnam police station & rythubazar. It is obvious because of the constant movement of buses and all other private vehicles at these locations.

V. CONCLUSIONS AND FUTURE SCOPE

Through the results obtained in the study, it is evident that the city is suffering from severe noise pollution due to vehicular traffic and industries. This is due to congested traffic areas, unplanning for noise pollution, unplanned urban sprawl, no construction of silence zones in these areas.

1. Noise pollution can be minimized by
2. Limitation of speeds of vehicle
3. Creation of silence zones
4. Use of traffic controls efficiently.
5. Alteration of road way surface structure

In this work periodic noise level meter was used and noise levels has been calculated manually. Accuracy of data may be improved by using continuous noise level meter.

This study is done for uninterrupted free flow traffic. But the nature of noise level may vary in different traffic flow condition. Therefore traffic flow condition may be considered in future study.

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