

“Noise Pollution at Major Intersection in Jaipur City and its Mitigation Measures”

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Abstract: - Noise has become an increasingly important problem in urban life. Thanks to fast growing population of Jaipur, housing facilities are developing near highways. Increasing public awareness of the loss of amenity adjacent to the heavily trafficked highways has led to think about the matter of environmental pollution thanks to traffic. Among various environmental nuisances arising from traffic, road traffic noise contributes the foremost portion of the environmental pollution. The noise levels have exceeded the safe levels of human tolerance.

This study deals with the traffic noise surveys conducted on Jaipur six locations and three zones in Jaipur. The sites possess different land uses. The least bit six stations; traffic volume count and amplitude measurement with a display, noise sound meter, handy sound level meter were made. Noise levels were measured for duration of three hours on whole day this process will repeat for 15 days. A multiple correlation equation was obtained with the assistance of computer which describes relation of amplitude with traffic volume and logarithm of distance from the middle of road.

Whose land use pattern is sort of same; depict same style of models when analyzed separately. Noise levels are found high in residential and commercial areas, compared to agriculture lands. Average noise levels at any stations, show similarity with the amount calculated, using regression of y on x developed in present study.

Keywords: *Sound exposure level, Maximum force per unit area level, Minimum force per unit area level, Sound Meter.*

I. INTRODUCTION

Noise is becoming an increasingly important problem in urban life. It is one of the by products of the modern mechanized age and much of the noise, heard in cities, comes from machinery of one kind or another, principally from the various forms of transport-road, rail and air.

In the metropolitan and big cities, the traffic noise is a major constitution of the environmental pollution. In some of the big Cities, the noise levels have far exceeded the human tolerance levels.

Noise is defined as 'unwanted sound'. Noise is audible sound that causes disturbance, impairment or health damage. 'Noise' and 'sound' are terms often synonymous used when purely acoustical dimension is meant (e.g. noise level, noise indicator, noise regulation, noise limit, noise action plan, aircraft noise, road traffic noise, occupational noise, etc.). The link between exposure and outcome (other terms: endpoint, reaction, response) is given by reasonably well-established exposure-response. Manage noising is crucial for enhancing the living condition of a dwelling. Noise can be generated internally within a building noise from surrounding neighbor's voices, music or appliances and externally traffic noise from automobiles, buses, trains, aircraft, industrial activities or surrounding construction activities). Noises are transmitted through building materials from sound sources such as vehicular or foot traffic, banging, or objects being dropped to the floor and can also be associated with vibrations.

II. DESIGN OF PROPOSED WORK

The discussion presented above suggests that a requirement is required for a comprehensive investigation of the interactive relationships between traffic noise and its associated impact factors under uncertainties. Accordingly, within the context of such a requirement, the most objectives of the research are set as:

- I. Investigating the operation time of road pavement on traffic noise cherish various traffic flow conditions along highways, characterizing the variation of the empirical and theoretical relationships between traffic noise pressure and traffic flow resulting from the operation time of pavement for paved surface, and identifying the differences of traffic noise pressure on new and old highway pavements within the city via a series of field experiments.
- II. Exploring the variation in noise absorption properties of the new pavement in the early stage of the pavement's life through comparing the new field experimental data with those in previous experiments.
- III. Modeling dependence between traffic flow and traffic noise, from a view of statistics, through an entropy-copula method, within which the marginal distributions of traffic flow and traffic noise are

estimated through the principle of maximum entropy (POME) theory, and therefore the joint probabilities (including joint cumulative distribution functions (CDFs) and probability density functions (PDFs) are derived through the Gaussian and Student t copulas.

III. METHODOLOGY

The methods used included the utilization of meters to directly investigate the noise levels in numerous areas of the Jaipur and real-time work was performed to test the common systems followed within the noise reduction measurements. It had been made.

Today, pollution is an increasing environmental stressor. Noise maps are recognized because the most tool for assessing and managing environmental noise, but their accuracy largely depends on the sampling method used.

Sound level meter could also be a tool for turning physical properties of sound into numeric values. Psychological, physiological and subjective aspects can't be measured. A reverse curve appreciate the equal loudness curve at 40 phon is applied to the pressure (this is termed "A" frequency weighting). The resulting level is termed a-weighted sound level and is expressed in dB. Dissertation describes the road traffic noise surveys conducted on national highways passing through Jaipur. In past one decade, the population of Jaipur has grown in no time. Due to rising demands for housing, the JDA (Jaipur Development Authority) has decided to develop housing facilities near highways. The loss of amenity adjacent to highways has led to think about the assessment of noise near these highways.

Sound level meters are divided into two categories: Class 1 and sophistication 2. There's a difference in performance between these classes. Performance specifications and test methods of sound level meters are laid out in the international standards IEC 61672 series. Two performance categories, Class 1 and sophistication 2, are per the quality. Basically, specifications for sophistication 1 and sophistication 2 sound level meters have the identical design goals and differ within the tolerance limits. Tolerance limits for sophistication 2 specifications are greater than, or up to, those for sophistication 1 specification.

IV. RESULT AND DISCUSSION

Selection of sites: - Three areas and six sites were selected to monitor traffic noise. With the help of noise levels, traffic noise was recorded in sensitive areas selected as the study area. The sound level is recorded in the sound level meter. Noise levels were recorded at 6

sites for approximately 12 hours. Noise levels were recorded for 6 days from Monday to Sunday. The corresponding noise level, the noise exposure level and the noise index, all noise parameters were calculated. These appear in six different positions on the table.

Average Data of Sound Level for All Six Place

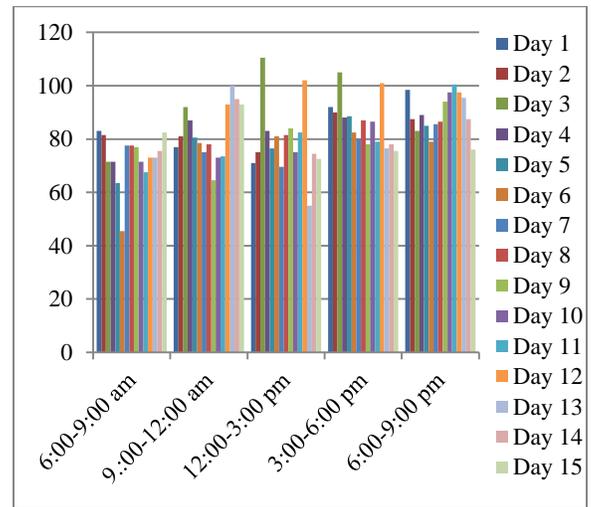


Fig. 1: Average Data of Sound Level at Gourav Tower Road for 15 Days

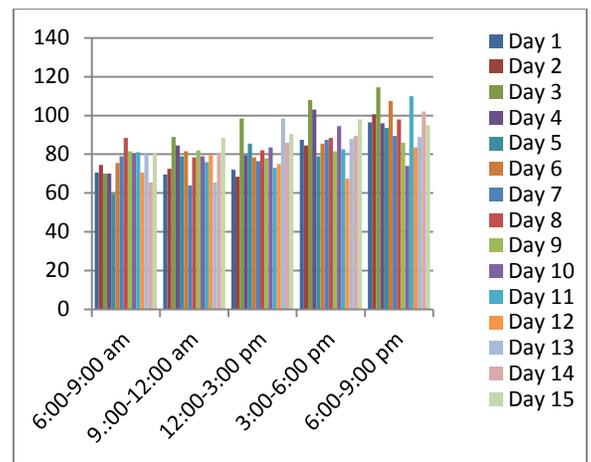


Fig. 2: Average Data of Sound Level at Subodh College for 15 Days

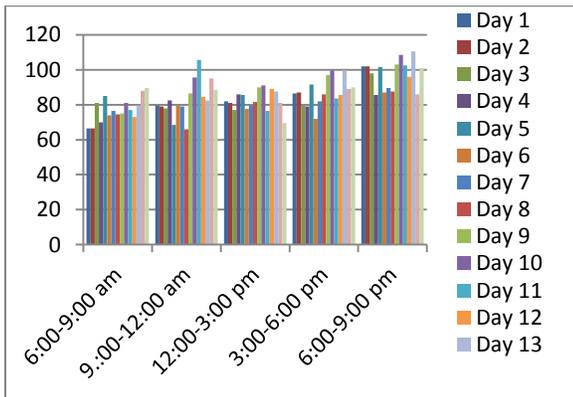


Fig. 3: Average Data of Sound Level at SMS Hospital for 15 Days

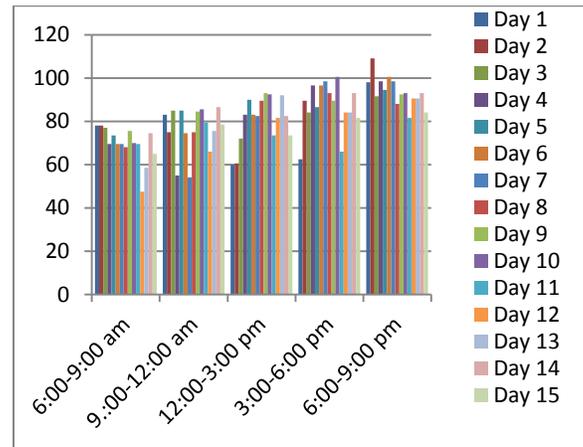


Fig. 6: Average Data of Sound Level at Sitapura (Residential Zone) For 15 Days

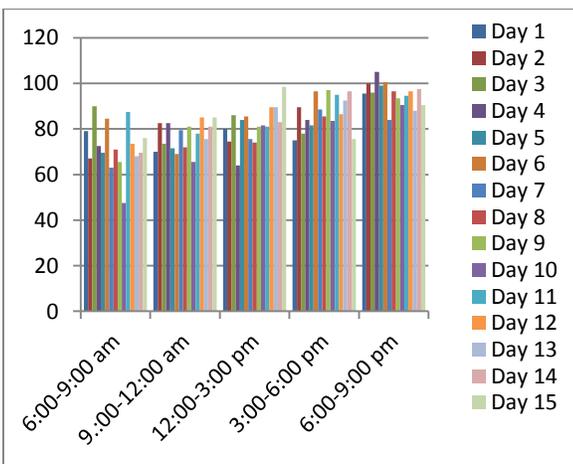


Fig. 4: Average Data of Sound Level at Sitapura (Industrial Zone) For 15 Days

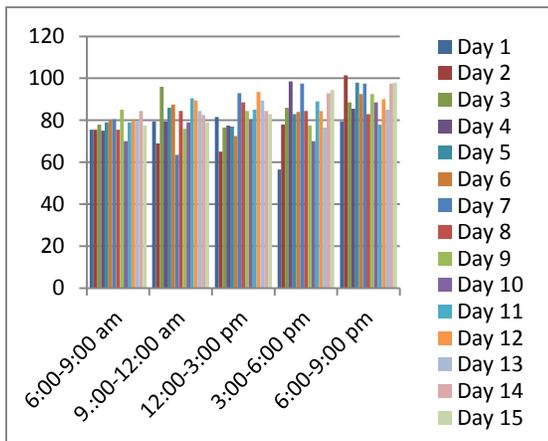


Fig. 5: Average Data of Sound Level at Amarpali Circle for 15 Days

V. CONCLUSIONS

In this study, an effort has been made to observe traffic and average noise levels and to develop graph between noise levels and 15 days for important locations like industrial, residential, commercial, hospitals etc. The following conclusions can be readily drawn by the on side collected data:

- All Six stations are fixed in commercial, residential and industrial zones in the Jaipur.
- Noise levels are higher in residential and commercial areas, compared to agricultural land use areas.
- The noise levels increase with increase in traffic volume, observed at the same point.
- The high intensity of sound produced by machines in various industries, mills, and factories are the major causes of industrial noise pollution. Engineering companies, printing presses, textile mills, and metal works immensely generate noise pollution.
- The noise levels decrease with increase in distance from noise source i.e. as one walks away from road; noise is reduced, provided the same traffic volume is flowing on the road.

Sound Level at Gourav Tower Road for 15 Days

- In the commercial zone (GOVER TOWER AND WTP) the noise level are 110.5 dB more than the limit have given by the CPCB which was 65dB.
- There have present more people and vehicles and motor that is produced the high noise level in the afternoon time then morning.

Sound Level at Subodh College for 15 Days

- At Subodh College the noise level are 114.5 dB more than the limit have given by the CPCB which is 60-65dB.
- There have present more people and vehicles and motor that is produced the high noise level in the evening time then morning.
- Traffic control on this location applied on 9 am to 3pm because of working hours of institute and maximum level of noise is 91.5 dB on 12pm to 3 pm.

Sound Level at SMS Hospital for 15 Days

- At SMS hospital which required silent zone the noise level is 110.5 dB more than the limit have given by the CPCB which is 50-40 dB.
- Traffic control on this location required to redesign the traffic route.

Sound Level at Sitapura (Industrial Zone) For 15 Days

- In the Industrial zone (Sitapura) the noise level are 110.5 dB more than the limit have given by the CPCB which is 70-75 db.

Sound Level at Amarpali Circle for 15 Days

- There have present more people and vehicles and motor that is produced the high noise level in the evening time then morning.
- In the commercial zone and residential (Amarpali Circle) the noise level are 101.5 dB more than the limit have given by the CPCB which is 65 dB.

Sound Level at Sitapura (Residential Zone) For 15 Days

- At Residential zone (Sitapura) the noise level are 109 dB more than the limit have given by the CPCB which is 75-70dB.
- There have present moments of heavy vehicles and motor that is produced the high noise level in the evening time then morning.

VI. FUTURE SCOPE OF THE WORK

The noise pollution in industries could be used to produce electricity and certain low voltage machine. To get a clear insight of the problem and to develop analytical models, it is therefore, need of hour that further research work should be done on noise measurement, analysis and abatement measures. Within available time, it was tried to assimilate maximum observations possible on traffic &

noise survey. But due to lack of time and unavailability of a team to record speed & traffic observations; many parameters have to be omitted which would have strengthened analytical presentation of work. The noise pollution in runway could be used to produce electricity.

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