

Induced Noise Pollution in the Vicinity of Urban Roadways – (Delhi): A Review

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Abstract— Noise can be defined as the level of sound which exceeds the tolerable limit and causes irritability. Uninterrupted exposure to immense limit of noise can cause intense stress on the nervous and auditory system. Prolonged exposure to enormous sound has been proved psychological and physical damage. Due of its displeasure and interference implications, noise effects the general well-being and adds up psychological stress of those disclosed to it. Noise is a big cause of irritation among the people. The major originators of noise are the noise of Industries, noise of Traffic & noise of Communities. Out of three parameters above, vehicular traffic noise is the source that affects the most. 70% of noise in traffic noise is contributed by vehicle noise. Exhaust systems and engine of vehicles, interaction between the vehicles, aerodynamic friction, road system, and vehicle interactions cause traffic noise. The road traffic noise model development is the main concern of the study.

Keywords— Bitumen, FHWA, UMTA, EPA, HUD.

INTRODUCTION

Animals, birds and other species have a mechanism to perceive sound. Sound is nothing but pressure variations (of specific frequency range) that travel in the media and are perceived by special organs such as ear. The frequency range perceived by a different species may be different. For example dogs can hear infrasonic as well as higher frequencies that are not heard by humans. Certain birds and other species have a different range of frequency of hearing. Several species of bats not only hear ultrasonics, but they also possess navigating mechanism through generating and hearing back the ultrasound pulses. They image objects through this NDT type of mechanism. It is likely that bees, dogs and certain other animals use the sound for communication. However human beings not only hear sound but can generate sounds through the vocal mechanism. They use sound for communication (coded transmission and reception).

Communication using sound is perhaps a boon in humans. The sounds were made and heard by humans to convey codes in primitive societies. The child's requirements are recognised by the mother through its sound expressions. Sounds are used as a prime means of communication, and also to denote expressions of joy & sorrow, anger & anguish and such other feelings. Apart from humans, beasts and birds also use sounds. The rhythmic music renders enjoyment, the symphony consoles the soul, the sound of joy is splendid and definite sounds are made to indicate win or success. There are several implications to the language of music and sound. So far so good, there are darker sides of the sound too.

MEASURING INSTRUMENT

Noise was measured using NL-42 sound meter, which are made for measuring in agreement with IEC standard. It uses diffused measurements of sound and meets standard-requirements.

Specifications

NL-42 Sound meter IEC class.

Main channel – (Main Processing)

Equivalent sound pressure level (Leq)

Exposure level – (LE)

Instantaneous pressure level – (Lp)

Maximum pressure level – (Lmax)

Minimum pressure level – (Lmin)

STUDY AREA

Delhi, which is the **National Capital Territory of Delhi (NCT)**, is a city, a union territory of India containing New Delhi, which is the - capital of India. It is bordered by Uttar Pradesh to the east and by Haryana on three sides. The NCT adds up to an area of 573 square miles (1,484 sq km). According to the 2012-census, Delhi city appropriate population was above 1.9 crores, the second-highest after Mumbai in India while the whole NCR's population was about 4.61 Crores. Delhi's urban area is considered now to expand ahead of the NCT - boundaries and adding the adjoining satellite-cities of Faridabad, Gurgaon, Sonapat, Ghaziabad and Noida in an area now called Central National Capital Region (CNCR) and had an approximated 2016 total population of over 2.6 crore people, who make it the second-largest urban area in the world according to UN (United Nations). As of 2016, the recent estimates of metro economy of its urban area, rated Delhi one of the two, the most or second-most productive metro city of India. Delhi is the second-prosperous city after Mumbai in India, with \$110 billion of a nominal economy for the full Union Territory, and is

household to 23,000 millionaires and 18 billionaires. Delhi has been colonized since the 6th century BCE continuously. Delhi has been serving as, capital of many empires, kingdoms during most of its past. Been conquered, raided and built many times, especially all along the middle ages. Among a many of cities spreaded across the urban region modernized Delhi is a cluster.

Following locations were observed for traffic noise:

S.no:	Location	S.no:	Location
1	Aali	7	Darya Gunj
2	Ali Pur	8	Zakir Nagar
3	Asola	9	Jamia Nagar
4	Aya Nagar	10	Canaught Place
5	Lajpat Nagar	11	Mahamaya Flyover
6	Karol Bagh	12	Pahargunj

Data Collection

- (1) The noise-level at each described location was noted for a duration of fifteen minutes.
- (2) In the described locations sound-level was noted either at the divider (Separator) or on bank of the road.
- (3) Sound-pressure-level was measured for three-times a day (i-e- morning, afternoon & evening) at a detailed location.
- (4) Type-C frequency is preferred in the sound-level instrument.

The following readings were taken:

- (a) LC.min, (b) LC.peak, (c) LC.eq.

Conclusion

1. It was noted that various sites recorded the sound pressure level to be admissible.
2. Near the New Delhi Railway Station and Pahargunj the sound level was same as the permissible limit of (85 dB), so special treatments should be made for depletion of noise.
3. The noise during evening was greater than morning, and noon. This is because of higher vehicular traffic running in the evening.
4. From t-Test hypothetical analysis it was found that, the means of noise level of morning and noon are significantly different or similarly the noise level in evening is more significant, than the morning and noon time.
5. By Analysis of variance it was clear that sound pressure levels during different hours of the day differ from each other.

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