

Status of Noise Pollution on Certain Traffic Places in Allahabad City, U.P., India

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Abstract: *The present paper deals with monitoring of Noise Pollution at different places of Allahabad City. Main source of traffic noise are the motors and exhaust systems of autos, small trucks, buses and motor cycles etc. Sound level meter was used to capture the noise level at different heavy traffic sites and timings in the city. Fifteen strategic noise locations were selected from the whole city on the basis of traffic load area. All the monitoring locations the total vehicular densities were found increasing with the passing of time during the day. The heavy vehicle percentage was found high during from 12 PM to 8 PM. Monitoring locations near to the railway stations have sound level less than 75 dB to greater than 85dB varies as per absence and presence of the train on platform. Major impact of noise pollution includes interference with communication, sleeplessness and enhances various health ailments which can reduce with help of present findings.*

Keywords: sleeplessness, ailments, pitch, audible, vehicular pollution

1. Introduction

Noise Pollution is a physical form of pollution that affects the receiver directly. Noise pollution is loud disturbing sound dumped into ambient atmosphere without caring for the adverse effect it may have. Noise or pollutant sound has a value of 80dB and above. Any type of unwanted sound is noise which creates discomfort. Sound which is pleasant to the ears, which is sweet to hear and which gives comfort like musical notes is defined as sound; while one, which is piercing and sore, which creates psychological stress is called as noise. It is usually defined as horrible loudness sound or sound without value that causes discomfort to the listener. Noise pollution is not only the problem of the advanced countries but it has started raising its unattractive head in the developing countries also. Sound is a form of energy which is emitted by a vibrating body and on reaching the ear causes the impression of hearing through nerves. Sounds produced by all vibrating bodies are not audible. The frequency limits of audibility are from 20Hz - 20,000Hz. Sounds of frequencies less than 20Hz are called infrasonic and greater than 20,000Hz are called ultrasonic. Audible 0 to 10, very quiet 11 - 30 dB, Quiet 31 - 50 dB, moderately loud 75 - 100 dB, uncomfortably noise 101 - 125 dB, and painful 126 dB and above. Noise pollution is one of the environmental hazards affecting human as well as climate in most urban areas of almost every country of world. Noise has become a very significant stress factor in the environment to the level that the term noise pollution has been used to signify the hazard of sound which penalty in the modern day development is immeasurable. Globally Studies have proved that a loud noise during peak hours creates fatigue, frustration and impairs brain activities, so as to reduce thinking and working capabilities.

Transportation, as a convenient and economical means of moving raw material and consumer goods from place to place, is growing at a faster pace than the general population. Noise from the motors and exhaust systems of heavy trucks provides the major portion of high way noise impact, and provides a potential noise hazard to the driver as well. Traffic on Indian roads is mostly mixed traffic

with wide variations of speeds along with wide other vehicular and traffic condition (Bandopadhyay, 2001). Details of various noise prediction models adopted for the prediction of high way traffic noise around the world (Bhattacharya, 1997). Even relatively low levels of noise affect human health adversely. It may cause hypertension, disrupt sleep and or hinder cognitive development in children. The effects of excessive noise could be so severe that either there is a permanent loss of memory or psychiatric disorder (Kiernan, 1997). USA has taken initiative to create sites where human caused noise pollution will not be tolerated (Geary, 1996).

2. Study Area

Allahabad is chosen for study area because it is one of the most populous cities in India and reflects both the modern and traditional infrastructure (roads, localities building, etc.) Moreover, their inhabitants represent a cross section of Indian culture. There are following study sites selected to observe noise status:

1. Aalopibag chungi- This place connected the town and village. This is the sensitive area for traffic and public
2. Fourt Chauraha- It is the busiest place of traffic & public during day time.
3. Bairahana Chauraha- It also connected the city and village.
4. Ram Bhag - This is so crowded and more sensitive area for traffic and public
5. Man Sarowar- place is in the centre of the city, so crowded, Automobiles, and other vehicles are the main source of generating noise pollution.
6. Ghanta Ghar - here noise level is less than other areas
7. Johnseganj - This is slightly connected with village and high noise level
8. Civil line subhas Chandra chauraha - comparatively low sound pollution
9. Civil line hanuman mandir - noise level is high and well developed area
10. Indira bhawan - This area is situated in civil line

11. High court – This is center position of Allahabad and it is also having rush
12. Katra (Ram Bhawan Churaha) – This area is main market area & highly polluted
13. Kachehari – high noise level and rush in after noon
14. Katra netram chauraha - this area is highly polluted during afternoon & evening because of main market area

15. Balsan chauraha – this is the sensitive area, highly polluted & main market area

All above places are well known for the noise pollution due to enough mass and traffic.



Figure 1: Base Map of the study area (Google Earth)

3. Methodology

To carried out noise status in different study sites in Allahabad city using with the sound level meter. Noise pollution survey was conducted in the study area at different timings for different duration. Sound level meter consists basically of a microphone and an electronic circuit including an attenuator, amplifier, weighting networks or filters and a display unit. The microphones convert the sound signal to an equivalent Electrical signal. The signal is passed through a weighting network which provides a conversion and gives the sound pressure level in dB. In this study, a noise sample size of 5 minute in each hour was taken at the selected location. Noise sample were collected in dB (A) scale at every 30 second interval (i.e. 2 counts per minute) or total 10 reading in one sample size. The continuous monitoring of noise level was observed from morning 6:00 AM to 08:30 PM daily. The sound level meter was mounted on a tripod at a height of 1.2m from the ground level. The result was tabulated in the sequence of maximum, minimum.



Figure 2: S.L.M.Show theReading in Decibal

4. Result and Discussion

During morning (6AM to 9AM) the average level of noise pollution was recorded highest (76.3dB) in Jhoansenganj area, while lowest level (71.3 dB) noise pollution was recorded in Ghantaghar area. In noon (12 PM to 4PM) the highest level of noise (86.3dB) was recorded in Bairahana chauraha area, whereas lowest level (80.6dB) of noise was recorded in Rambagh, area and Mansarowar. In evening (5PM to 10PM) the level of noise was highest (87.6dB) in Alopibhag chungi & Jhoansenganj, while lowest level (80.3dB) of noise was recorded in High court area & Rambagh.

At all the monitoring location the total vehicular densities were found increasing with the passing of time during the day. Now a day's it's so necessary to use the vehicles which are pollution free, with that all vehicles should be scrabrised. The heavy vehicle percentage was found high during afternoon and evening time from 12PM to 8PM. Among other monitoring locations the sound level was 75 dB when there were not any train on the platform while when train entre on the platform the sound level increased to 85-90dB. It can be observed from the table that the sound level of Allahabad railway station was 79 dB without train and when any train enters at the platform reading increased to 85dB. Commonly noise level increases during 9:00AM to 10:30AM & 5:00PM to 8PM. This occur because at this time office going people & Students & join the common people.

Table 1: Average Reading of Noise level in Decibel at various roads in study periods

S.N.	Place	N.L. in morning 6AM to 9:30AM	N.L. in afternoon 1PM to 3:30PM	N.L. in evening 5:30PM to 8:30PM
1	Alopibag Chungi	73	85	86.6
2	Fort Chauraha	73.3	84.6	85
3	Bairahana Chauraha	74.6	86.3	85.3
4	Ram Bag	75.6	80.6	80.3
5	Man Sarowar	72	80.6	86.3
6	Gantha Ghar	71.3	82.3	83.3
7	Johnsenganj	76.3	83.6	87.6
8	Civil line SCD/income tax	74	82.6	84.6
9	Civil line hanuman mandir	73.6	81.6	84.6
10	Indira bhawan	72.3	83.6	84
11	High court	73.6	85.6	80.3
12	Katra (Ram Bhawan Churaha)	74.6	84.3	85.3
13	Kachehari	74	84.3	82
14	Katra netram chauraha	74	85	84.3
15	Balsan chauraha	75.3	84.3	85.6

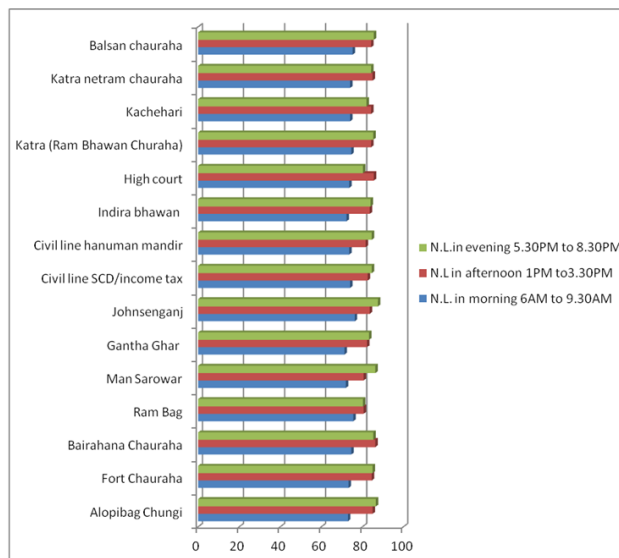


Figure 3: Pattern of Average Reading of Noise level at various roads in study periods

Table 2: Noise Pollution Levels high-low at Various Sampling location

S.N.	Place	Minimum	Maximum
1	Alopibag Chungi	73 dB	86.6 dB
2	Fort Chauraha	73.3 dB	85 dB
3	Bairahana Chauraha	74.6 dB	86.3 dB
4	Ram Bhag	75.6 dB	80.6 dB
5	Man Sarower	72 dB	86.3 dB
6	Gantha Ghar	71.3 dB	83.3 dB
7	Jonsenganj	76.3 dB	87.6 dB
8	Civil line SCD/income tax	74 dB	84.6 dB
9	Civil line hanuman mandir	73.6 dB	84.6 dB
10	Indira bhawan	72.3 dB	84 dB
11	High court	73.6 dB	85.6 dB
12	Katra (Ram Bhawan Churaha)	74.6 dB	85.3 dB
13	Kachehari	74 dB	84.3 dB
14	Katra netram chauraha	74 dB	85 dB
15	Balsan chauraha	75.3 dB	85.6 dB

5. Conclusion

There were 15 study sites selected to study the status of noise pollution in Allahabad city. The level of noise was differing from various study sites.

During study period it was observed that the overall highest noise level is recorded during afternoon due to the densities of heavy vehicle increased during this time, while on the other hand the level of noise is reduced during morning because only lighter vehicle runs on the roads in this time. Present investigations showed that all selected

location the maximum noise limits were ranging between 71.3 dB to 87.6 dB which was almost 1.5 times than the permissible limits for commercial zone. This variation of sound from 70dB to 120dB may have moderate to very severe effects on human health such as, poor concentrations, stress, cardiovascular illness and many more. It is very essential to control noise at source, along the transmission path and at receivers end by using the remedial measures. According to WHO report to the UN conference on environment of all environmental problems, noise is the easiest to control. There is need to conduct human health survey for further study and betterment of human life as well as environmental rest.

References

- [1] Banyopadhyay, S. N. (2001); Traffic Flow Analysis through Computer Simulation models .journal f The Institute of Engineers, pp 82-84.
- [2] Bhattacharya, (2002); R&S Efforts in Prediction of Highway Traffic Noise. Jr. of The Institution of Engineers (India), pp 65-68.
- [3] Geary, James (1996); Saving the sounds of silence. New Scientist, 13 April: 45
- [4] Kiernan, Vincent: (1997), Noise pollution robs kids of languages skills. New Scientist. May10: 5