

# Assessment of Noise Level in Different Zones of Haridwar City of Uttarakhand State, India

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**Abstract:** In the present study, noise levels were measured in four different zones within Haridwar city viz., industrial, residential, commercial and silence zone, on working day and non-working day (holiday of Sunday) in August 2009. The results show that the noise level of selected zones within city is higher during the working day as compared to non-working day, except residential zone. The noise level during day period was 18.9%, 8.3% and 28.8% higher on working day as compare to non working day, respectively for industrial, commercial and silence zone. The noise during night time was 8.2%, 5.9% and 3.8% higher on working day as compare to non working day, respectively in the industrial, commercial and silence zone. While in the residential zone, the average noise was 2.09% and 2.6% higher on working day as compare to a non working day, respectively to day and night time. [New York Science Journal 2010;3 (4):109-111].(ISSN:1554-0200).

**Keywords:** Traffic, means of entertainment, small scale industries, human activities.

## 1. Introduction

Human activities viz., urbanization, transportation and celebration of a variety of festivities are the main cause of noise, being faced at global level, besides a number of industrial and developmental activities. Mbuligwe (2004) have pointed out the small scale industries as a major source of environmental noise pollution, which have an ability to disturb the locality within the periphery of 140 metre. The noise pollution is not harmful only for human being but it is also health hazard to all living beings. Even the non living things are not left unaffected by high intensity of noise (Pawar and Joshi, 2005).

High intensity of noise may damage the sensory hair cells of inner ear leading to irreversible hearing loss. The continuous exposure to heavy noise may result in loss of hearing, stress, high blood pressure, loss of sleep (Singh and Davar, 2004). More over it is becoming a problem of law and order with the growing number of complaints to police and administration. It is reported that during pregnancy period noise pollution creates a lot of problems among the new borns (Vidya Sagar and Nageshwar Rao, 2006).

## 2. Materials and Methods

To make this study, four different type of zones viz. industrial zone (Haridwar Industrial Area), commercial area (Ranipur More), residential zone (Vivek Vihar) and silence zone (Gurukula Kangri University) were selected within Haridwar city. The ambient noise monitoring was carried out on working day (normal day) and non-working day (holiday of Sunday) in the first week of August, 2009.

These selected sites are quite close to each other, but offer a wide difference in terms of human activities, round the clock. Noise levels were measured for 18 hours of study between 0600- 2400 hrs with the help of Sound Level Meter. Ambient sound levels were compared with that of the standards prescribed in Environmental Protection Rules, 1986 (vide Tripathy 1999) and standards of CPCB (vide Kudesia and Tiwari 1994).

According to prescribed noise standards, the limits of noise level in industrial area are 75 dB and 70 dB for day and night period, respectively. In case of commercial area, the standard limits of noise are 65 dB and 55 dB respectively for day and night period. For residential area, the limits of noise are 55 dB and 45 dB respectively for day and night period. On the other hand for silence area, the standard limits of noise are 50 dB and 40 dB respectively for day and night period (Where, Day time- 6 AM to 9 PM & Night time-9PM to 6 AM)

## 3. Results

(a) **Case I : Working Day-** The minimum and maximum SPL were recorded 52.0 dB at 0600 hrs and 81.9 dB at 1200 hrs, respectively in the industrial zone. In case of commercial zone, the minimum and maximum SPL values were 51.5 dB at 0600 hrs and 85.1 dB at 1800 hrs, respectively. For the residential zone, the minimum and maximum SPL were recorded 50.0 dB at 2400 hrs and 69.2 dB at 0900 hrs, respectively. On the other hand 49.8 dB at 2400 hrs and 79.2 dB at 1200 hrs were recorded for minimum and maximum SPL, respectively in the silence zone. The average noise levels during day time for industrial, commercial, residential and silence zone

were found 70.6 dB, 71.8 dB, 62.1 dB and 66.6 dB, respectively. While in the night time, the average noise levels for industrial, commercial, residential and silence zone were found 59.2 dB, 59.6 dB, 54.5 dB and 52.0 dB, respectively.

**(b) Case II: Non working Day-** Among the observations on non working day, the minimum and maximum SPL were recorded 50.3 dB at 2400 hrs and 69.8 dB at 1200 hrs, respectively in industrial zone. In case of commercial zone, the minimum and maximum SPL values were 50.3 dB at 0600 hrs and 75.1 dB at 1800 hrs, respectively. For the residential zone, the minimum and maximum SPL were recorded 50.2 dB at 0600 hrs and 69.0 dB at 1800 hrs, respectively. On the other hand 49.5 dB at 2400 hrs and 60.2 dB at 1800 hrs were recorded for minimum and maximum SPL, respectively in the silence zone. The average noise levels during day time for industrial, commercial, residential and silence zone were found 64.4 dB, 66.3 dB, 63.4 dB and 51.7 dB, respectively. While in the night time, the average noise levels for industrial, commercial, residential and silence zone were found 54.7 dB, 56.3 dB, 55.9 dB and 50.1 dB, respectively.

#### 4. Discussion

Various researchers have worked on noise pollution by traffic, generator, musical instruments, machines etc. in different cities of India as well as abroad. Pelli and Farrell (1999) studied the reduction method of noise pollution through controlling the source of noise. Deka (2000) monitored the noise quality of Guwahati city and reported that average noise level was 68 dB at residential area while 83 dB at Commercial area, which was 23.6% and 27.7% higher as compared to the standard limits of noise in residential and commercial zones, respectively. Bodhe et al (2006) monitored the impact of noise from rail car depot on residential areas. Gangwar et al (2006) reported that noise level in Bareilly Metropolitan City was slightly higher than the prescribed limit of the Central Pollution Control Board. Hasan (2006) described the impact of noise pollution on health of living being and also suggested the management to control noise pollution.

In the present study, the average noise level was higher on working day as compared to non working day, except in the residential zone. The noise level during day period was 18.9%, 8.3% and 28.8% higher on working day as compare to non working day, respectively for industrial, commercial and silence zone. The noise during night time was 8.2%, 5.9% and 3.8% higher on working day as compare to non working day, respectively in the industrial, commercial and silence zone. In case of residential zone the average noise was 2.09% and 2.6% higher on working day as compare to a non working day, respectively to day and night time.

It was also observed that the noise of industrial zone is in the standard limit. But the other three zones of

Haridwar city cross the standard limit of noise. During day time the average noise was 10.5%, 12.9% and 33.2% higher as compared to standard limit, respectively to commercial, residential and silence zone. On the other hand, during night time the average noise was 8.4%, 21.1% and 30% higher as compare to standard limit, respectively to commercial, residential and silence zone. We can easily surmise by the present study that if this is the condition of such small town then the condition of big cities during the festive and non festive occasions may be very serious.

#### 5. Recommendations

The industrial noise can be minimized through controlling source of noise, precluding the propagation, amplification and reverberation of noise, isolating the workers. Evidently, reduction of noise at the source is the most rational method of noise control.

In case of community noise, the traffic volume should be reduced by diversion of traffic, and use of horn should be banned. There should be plenty of trees and bushes in open spaces, houses and lanes. The awareness programme should be initiate to aware people about the adverse effect of noise pollution.

#### 6. Conclusion

As mentioned earlier, noise is the sound that is unwanted by the listener. It is awareness and rational action that offer a visible alternative to the continued misuse of our environment. It is only an aware citizenry that can play a vital role in environmental preservation and refuse to countenance the despoliation of the air surroundings. The media have an important role to play in environment education, conservation and sustainable developments. So, it is the need of hour to control the noise pollution by mutual understanding and cooperation.

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