



Assessment of noise level status in commercial units of samba town, J&K

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Abstract

The present study has been conducted to assess the status of noise levels in different commercial units of Samba District.. The noise levels of Tea shops, Sweet shops, Medical shops, Karyana stores, Restaurant, Bus Stand etc were measured using Sound Level Meter(Data logger model:407764A).The results showed that noise levels at maximum commercial units were above the permissible limits as prescribed by CPCB. Maximum noise level of 77.4±4.9 dB (A) was recorded at Commercial units with traffic flow rate up to 1600/hrs. and minimum of 69±0.2 dB (A) at Commercial units with traffic flow rate up to 500 /hr. Also, maximum indoor noise level of 81.7±5.1 dB (A) was recorded at teashops located on National Highway with traffic flow rate up to 1600/hr. The execution of an appropriate management strategy for limiting noise pollution on affected sites is recommended.

Keywords: Environmental, Noise pollution, Human health, Samba, commercial units

Introduction

Noise is considered as the continuous stressor and slow poison for human beings .Rapid urbanization is the main cause of huge increase of vehicular population in the Indian cities and towns. Recent research demonstrated that almost all the developing countries like India are facing tremendous threat of vehicular noise pollution (Agarwal and Swami, 2011). Noise is one of the weights less pollutants which make major interference in normal communication and health The World Health Organization (WHO) recognized noise as one of the major pollutant right after air and water. Many surveys addressing the problem of noise pollution in many cities throughout the world have been conducted (Li *et al.*, 2002, Morillas *et al.*, 2005, Lebedowska, 2005, Ali and Tamura, 2003). Fast growing vehicle population in town in the recent years, has resulted in considerable increase in traffic on roads causing alarming noise pollution. Keeping in mind the above information, present study was conducted to review the noise pollution status of commercial units of samba town located at different sites with different traffic flow rate.

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Materials and Method

To assess the noise levels in various commercial units of Samba town of Samba District, the noise levels of Teashops, Sweet shops, Karyana shops, Medical shops, Restaurants and Bus stops located at different sites having different traffic flow of study area were measured. The noise levels were recorded thrice a day i.e., Morning period (0800-1000), Noon period (1200-1400) and Evening period (1800-2000).During each sampling of noise, 20 readings of SPL (Sound Pressure Level) were recorded at an interval of 30 seconds in a period of 10 minutes with the help of Sound Level Meter (Data logger model: 407764A).From the observed readings of SPL (Sound Pressure Level), outdoor and indoor Leq (Equivalent Noise Level) were calculated:

$$Leq = 10 \log \left(\sum_{i=1}^n f_i 10^{L_i/10} \right) \text{ dB (A)}$$

Where,
f_i=fraction of time for which the sound level persists.

i=time interval.

n=number of observations.

L_i=sound intensity.

The calculated data of outdoor and indoor Leq at various sites were compiled to calculate average



values .The average values were tabulated and also represented in form of histogram.

Results and Discussion

In recent years, the fast growing vehicle population has resulted in considerable increase in traffic on roads causing alarming noise pollution which is ultimately causing both auditory and non-auditory effects on on man and other living organisms.The critical analysis of the compiled values of indoor leq levels (0800-2000 hrs.) of different Commercial sites having different traffic flow rates of samba revealed the maximum indoor noise level of 81.7±5.1 dB(A) at teashops located on National Highway with traffic flow rate up to 1600/hr. and minimum of 65.0±6.2 dB(A) at sweet shops located in Commercial-cum Residential Area with traffic flow rate up to 1000/hr. . The compiled average indoor Leq (10 minutes) of commercial units at Samba (0800-2000 hrs.) showed maximum values

of 76.7±5 dB(A) with traffic flow rate up to 1600/hrs. and minimum value of 69±0.2 dB(A) with traffic flow rate up to 500 /hr. respectively. The critical analysis of the compiled average values of outdoor noise levels revealed that maximum and minimum outdoor noise levels were 91.2±6.7 dB(A) at National Highway with traffic flow rate upto1600/hr. and 69.9±4.4 dB(A) at residential area with traffic flow rate upto 300/hr respectively. It is evident from the study that the city is suffering from severe noise pollution due to the vehicular traffic. Industrial units at Samba are also contributing to this noise problem. Mainly noise pollution in Samba is attributed towards congested traffic area, unplanned road network, construction of silence zone in the main area of the city, unplanned urban sprawl etc. Moreover, as national highway passes through Samba, so noise produced by the continuous stream of vehicles is also one of the factors leading to noise pollution.

Table1:Avg indoor values of Leq (10 minutes) dB (A) of commercial units of Samba Town (0800-2000hrs)

Sites	Tea Shops	Sweet shops	Medical shop	Karyana store	Restaurant
Commercial units with traffic flow rate upto 1600/hr	81.7±5.1	81.6±4.1	73.3±8.2	75.6±5.1	70.6±4.9
Commercial units with traffic flow rate up to 1000 /hr	75.1±6.9	65.0±6.2	68.9±2.1	75.1±1.8	
Commercial units with traffic fow rate upto 500 /hr			69.2±7.4	68.8±7.4	
Commercial units with traffic fow rate upto 300/hr	69.7±2.8			68.7±1.3	

Table 2: Average indoor and outdoor Leq (10 minutes) dB(A) of commercial units at Samba (0800-2000 hrs.)

	Indoor	Outdoor
Commercial units with traffic flow rate up to 1600/hr.	76.6±5 (70.6-81.7)	91.2±6.7 74.7-96.8
Commercial units with traffic flow rate up to 1000 /hr.	71±0.5 (65.4-75.1)	72.98±6.1 64.4-85.7
Commercial units with traffic flow rate up to 500 /hr.	69±0.2 (68.8-69.2.)	81.2±7.9 (69.1-88.2)
Commercial units with traffic flow rate up to 300/hr.	69.2±0.7 (68.7-69.7)	69.9±4.4 (63.0-75.3)



Assessment of noise level status in commercial units

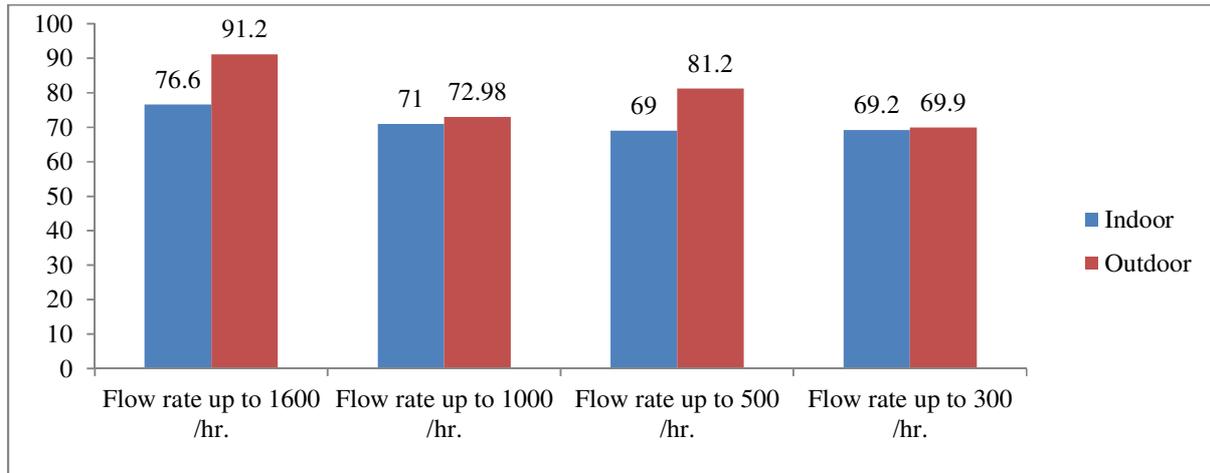


Figure 1: Average indoor and outdoor Leq (10 minutes) dB(A) of commercial units at Samba (0800-2000 hrs.)

The analysis of average indoor and outdoor Leq during 800-2000hrs of different commercial units revealed that there is positive correlation ($r=$) between noise levels and traffic flow at all sites of study area. During the study it was observed that in most of the areas, the noise level is exorbitant across the town except for some places. Higher levels of noise have detrimental effect. The effects of excessive noise could be so severe that either there is a permanent loss of memory or a psychiatric disorder (Singh and Dev., 2010). Noise also could lead to human annoyance, reduces life quality, performance and might affect health and physiological well-being. Thus, there is a need to aware and educate the citizens about the rising noise pollution. Road arboriculture i.e. planting trees by the side of road & shrubs on road divider help in reducing the noise pollution, as they act as

barrier to the sound propagation. Disseminating a key message that control of noise at individual level mixed with a dose of punitive regulatory action can tackle the problem of noise pollution to a great extent.

Conclusion

- 1 .The present study revealed that all the sampling sites are affected by the traffic noise.
2. Maximum indoor and outdoor Leq (10 minutes) dB(A) were at commercial units located at National Highway which has more traffic flow rate as compared to other sites .
- 3 The noise level at all the sites under study have exceeded the acceptable limits as laid down by Central Pollution Control Board.
4. Higher the volume of traffic, higher are the value of the Leq (10 minutes) dB(A) .

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