*Original Research Article……..*

**International Journal of Agricultural Invention**

**(online available at www.agriinventionjournal.com)**

*International Journal of Agricultural Invention* **2(1): 92-95: June, 2017**

**ISSN: 2456 – 1797 (P)**

# Noise level monitoring of different zone of Haridwar (Uttarakhand), India

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**ARTICLE INFO**

**Original Research article**
Received on March 27, 2017
Accepted on May 23, 2017

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**PUBLICATION INFO**
International Journal of Agricultural Invention (IJAI)
**RNI:** UPENG/2016/70091
**ISSN:** 2456-1797 (P)
**Vol.:** 2, **Issue:** 1, **Pages:** 92-95
**Journal Homepage URL**
*http://agriinventionjournal.com/*
**DOI:** 10.46492/IJAI/2017.2.1.21

**ABSTRACT**

In the present study, noise levels were measured in different zones within Haridwar city *viz*., industrial, residential, commercial and silence zone, on working day and non working day (Holiday of Sunday) in August 2016. The results show that the noise level of study sites is higher during the working day as compared to non working day, except residential zone. Keywords: Traffic, means of entertainment.

**KEYWORDS**

Environment, Pollution, Human

**HOW TO CITE THIS ARTICLE**

Kaushik, S., Saini, P., Kaushik, H. (2017) Noise level monitoring of different zone of Haridwar (Uttarakhand), India, *International Journal of Agricultural Invention,* 2(**1**): 92-95. **DOI**: 10.46492/IJAI/2017.2.1.21

Noise derived from the Latin word nausea, which means unwanted, unpleasant or unexpected sound. Noise is one of the important problem in various city which is generating by the human activities. It 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 (Panwar and Joshi, 2005). Various types of vehicles create a lot of sound in the environment, exposure of the traffic noise has a number of acute and chronic effect on human population and also disturb the quality of sleep and create interference with speech communication. High intensity of noise may damage the sensory hair cells of inner ear leading to irreversible hearing loss, (Sopan, T. and Pachpande, 2005). In various countries noise used for torturing the man for dangerous crimes in prehistoric time (S. Dawar). In India, noise pollution has become a major problem in various cities. In Delhi, the noise level in most places exceeds the permissible limit. Evidently, noise pollution has assumed alarming proportion affecting adversely the efficiency of various population, mental health and general quality of life. More even it is becoming a problem of law and order with the growing number of complaints to police and administration. Unless and until measures are taken a control the level of noise, the ongoing urbanization and industrialization may complicate the problem so much that it becomes incurable. It is reported that during pregnancy period noise pollution create a lot of problems in new born (Vidya Sagar and Nageshwar Rao, 2006). (Pachpande *et al*., 2005) have reported that about 84% teachers and 92% students have lost mild hearing power due to regularly exposed to highway traffic noise pollution. About 33 % of respondents housewives in Pakistan experienced severe sleep disturbance, fatigue and irritation due to community noise (Habibullah and Afsar, 2007). 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 developmental activities.

## MATERIALS AND METHODS

To make this study, four locations within the city of Haridwar were selected. I$^{st}$ was a residential area at Vivek vihar and Valmiki basti, II$^{nd}$ to represent the commercial area katehra bazar and main Bazar of Haridwar III$^{rd}$ to represent the industrial area, it was BHEL and SIDCUL and IV was silence zone, it was Gurulul Kangri university and ram krishna mission hospital at Haridawar. These sites have very difference from each other and have very wide difference in terms of human activities, round the clock. The ambient noise monitoring was carried out on working day and non-working day (Holiday of Sunday) in August 2016. Noise levels were measured for 18 hours of study between 1600- 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 (Tripathy, 1999) and standards of CPCB (Kudesia and Tiwari, 1994). According to 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 and Night time- 9 PM to 6 AM)**.**

$L_{10}$, $L_{90}$, Leq and Lnp were studied in the present study. Leq is defined as the average rate at which energy is received by the human ear during the period monitored. It can be estimated by assuming as Gaussian distribution of noise level using the following empirical equation:

$Leq = ½(L_{10}+L_{90})$ dBA……(1)

Where $L_{10}$ and $L_{90}$ indicate the level exceeding for 10% and 90% of the time recorded, respectively. Lnp is the noise pollution level which can be computed by using the following equation:

$Lnp = Leq + (L_{10}-L_{90})$ dBA……(2)

## RESULTS AND DISCUSSION

### Case I: Festive Day

The minimum and maximum SPL were recorded 43.2 dB at 0600 hrs and 105.8 dB at 2100 hrs, respectively in the residential zone. On the other hand 48.3 dB at 0600 hrs and 95.3 dB at 1800 hrs were recorded for minimum and maximum SPL, respectively in the commercial zone. The minimum and maximum $L_{10}$ values were recorded 52.1 dB at 0600 hrs and 82.8 dB at 2100 hrs, respectively in residential zone. On the other hand in case of commercial zone, minimum and maximum values of $L_{10}$ were recorded 50.5 dB at 0600 hrs and 85.9 dB at 2100 hrs, respectively. The minimum and maximum values of $L_{90}$ in residential zone were recorded 51.3 dB at 0600 hrs and 94.4 dB at 2100 hrs, respectively. On the other hand minimum and maximum values of $L_{90}$ in commercial zone were recorded 54.3 dB at 0600 hrs and 85.1 dB at 2100 hrs. The minimum and maximum values of Lnp were recorded 52.5 dB at 0600 hrs and 76.1 dB at 2100 hrs, respectively in residential zone. In case of commercial zone, minimum and maximum values of Lnp were 48.6 dB at 0600 hrs and 86.3 dB at 2100 hrs, respectively. The minimum and maximum Leq values were recorded 51.7 dB at 0600 hrs and 88.3 dB at 2100 hrs, respectively in residential zone. On the other hand minimum and maximum values of Leq were 52.4 dB at 0600 hrs and 85.5 dB at 2100 hrs, respectively in commercial zone. The average noise levels during day time for residential and commercial zone were found 65.1 dB and 72.4 dB, respectively. While in the night time, the average noise levels for residential and commercial zone were found 82.2 dB and 79.2 dB, respectively.

### Case II: Non Festive Day

Among the observations on non festive day, the minimum and maximum SPL were recorded 42.8 dB at 0600 hrs and 69.8 dB at 1800 hrs, respectively in residential zone. On the other hand, value of minimum and maximum SPL in commercial zone were 45.6 dB at 2400 hrs and 85.0 dB at 1800 hrs, respectively. The minimum and maximum $L_{10}$ values recorded in residential zone were 49.5 dB at 0600 hrs and 60.2 dB at 1200 hrs, respectively. In case of commercial zone, minimum and maximum $L_{10}$ were recorded 48.7 dB at 0600 hrs and 75.3 dB 2100 hrs, respectively. The minimum and maximum values of $L_{90}$ in residential zone were recorded 49.8 dB at 2400 hrs and 58.8 dB at 0900 hrs, respectively. On the other hand, minimum and maximum values of $L_{90}$ in commercial zone were recorded 52.1 dB at 0600 hrs and 73.9 dB at 2100 hrs, respectively. The minimum and maximum values of Lnp were recorded 46.8 dB at 2400 hrs and 61.9 dB at 1200 hrs, respectively in residential zone. In case of commercial zone, minimum and maximum values of Lnp were 47.0 dB at 0600 hrs and 76.0 dB at 2100 hrs, respectively. The minimum and maximum Leq values were recorded 48.8 dB at 2400 hrs and 58.5 dB at 1200 hrs, respectively in residential zone. On the other hand, minimum and maximum values of Leq were 50.4 dB at 0600 hrs and 74.8 dB at 1800 hrs, respectively in commercial zone. The average noise levels during day time for residential and commercial zone were found 55.3 dB and 66.2 dB, respectively. While in the night time, the average noise levels for residential and commercial zone were found 50.7 dB and 55.2 dB, respectively. A few reports on the noise pollution by traffic, generator, musical instruments, machines etc. in

different cities of India by worker like Deka (2000) report that average noise level was 68 dB at residential area while 83 dB at commercial area in Guwahati city, which was 23.6% and 27.7% higher as compared to the standard limits of noise in residential and commercial zones, respectively. Pawar and Joshi (2005) have reported that the noise level of Ichalkaranji city was very high than prescribed limit of noise by the state pollution control board. Gangwar *et al.* (2006) reported that noise level in Bareilly meteropolitan city was slightly higher than the prescribed limit of the Central Pollution Control Board. Rampal and Raina (2007) assessed the Indoor noise level within university area of Jammu city and reported wide variations from place to place. Pathak *et al.* (2008) reported that traffic noise became main reasons of headache, high BP and other stresses amongst the exposed individuals in adjoining working places in Varanasi city. Gangwar and Joshi (2008) have assessed the noise level in Haridwar city during Baisakhi festival and also gave some remedial measures to mitigate noise pollution during various festive occasions in Haridwar city. In the present study, on the festive occasion, average noise during day period was 18.4% higher than the standard limits of noise in residential zone. While, it was 11.4% higher than standard limit of noise in commercial zone. The average noise during night period was 82.6% higher than the standard limit of noise in residential zone. While, it was 44% higher in commercial zone. On the other hand for non festive day, the average noise level during day period was 0.5% higher than standard limit of noise in residential zone. While, it was 1.8 % higher than standard limit of noise in commercial zone. The average noise during night period was 12.7% higher than the standard limit of noise in residential zone. While, it was 0.4% higher than the standard of noise in commercial zone.

## REFERENCES


Bhat, S. (2003) India Together: Noise Pollution and the law in India, pp. 1-6. file://H:\noise.law.htm.

Vidya Sagar, T. and Nageshwara Rao, G. (2006) Noise pollution levels in Visakhapatnam city (India), *Journal of Environ. Science and Engg.*, 48 (**2**): 139-142.

Pachpande, B. G., Patil, R. D., Girase, M. R. and Ingle, S. T. (2005) Assessment of hearing loss in school teachers and students exposed to highway traffic noise pollution, *J. Ecophysio. Occupl. Hlth.*, 5 (**1-2**): 123-126.

Habibullah, S. and Afsar, S. (2007) Effects of community noise on urban population, *Pak. J. Med. Res.* 46(**4**): 98-102.

Mbuligwe, S. E. (2004). Levels and influencing factors of noise pollution from Small –scale Industries (SSIs) in a developing country. Env. Manage., **33** (5): 830-839.

Knights, S. (2008) Sacred Space and the City: Religious Buildings and Noise Pollution, *Harvard I. L. J.* Online, **49**: 50-55.

Vecchi, R., Bernardoni, V., Cricchio, D., Alessandro, A.D., Fermo, P., Lucarelli, F., Nava, S., Piazzalunga, A. and Valli, G. (2008) The impact of fireworks on airborne particles, *Atmospheric Environment.* 42(**6**): 1121-1132.

Tripathy, D. B. (1999) Noise Pollution. A.P.H. Publishing Corporation, New Delhi.

Kudesia, V. P. and Tiwari, T. (1994) Noise Pollution and its Control. Pragati Prakashan, Meerut.

Deka, S. (2000) Study on noise pollution in different areas of Guwahati city, Assam, India. Indian J. Environ. & Ecoplan. **3**(3):633-636.

Pawar, C. T. and Joshi, M. V. (2005) Urban development and sound level in Ichalkaranji city, Maharashtra, *Indian J. Environ. and Ecoplan.*, 10(**1**): 177-181.

Gangwar, K. K., Joshi, B. D. and Swami, A. (2006) Noise pollution status at four selected intersections in commercial areas of Bareilly Metropolitan city, U. P., *Him. J. Env. and Zool.*, **20**(1): 75-77.

Rampal, R. and Raina, M. (2007) Assessment of Indoor Noise Level in University of Jammu, Jammu, *Indian J. of Environ. and Ecoplan.*, 14(**3**): 521-524.

Pathak, V., Tripathi, B. D. and Mishra V. K. (2008) Evaluation of traffic noise pollution and attitudes of exposed individuals in working place. Atmospheric Environment, 42(**16**): 3892-3898.

Banerjee, D. and Niyogi, B. K. (2007) Assessment of Noise Pollution in Asansol during Kali Puja festival, *Indian J. Environ. and Ecoplan*., 14(**3**): 517-520.

Gangwar, K. K. and Joshi, B. D. (2008) Assessment of Noise pollution during Baisakhi festival in Haridwar City, In: Environmental Pollution and Toxicology (Joshi, B. D., Joshi, P. C. and Joshi, N. Eds), APH, Publishing Co-orporation, pp. 207-215.

Pulikesi, M., Karthikeyan, P., Sai, R. L., Ramamurthi, V. and Sivanesan, S. (2006) Exceedences of noise level during festival day-Diwali. http://eco-web.com/editorial/061026html.

Agarwal, M. M. (2006) Ambient noise level during Diwali festival. Our Earth. Vol- December: 18. Continuous noise causes an increase in the Cholesterol level resulting in permanent constriction of Blood vessels, which increase the priority of Heart attacks (Bhat 2003).

**Manuscript received on March 27, 2017, Accepted for publication on May 23, 2017**