

Increasing Noise Pollution in SRTM University Campus Area of Vishnupuri, Nanded, (MH), India

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Abstract - This paper presents the results obtained in a different location in the Swami Ramanand Teerth Marathwada University (SRTMU) campus area of Nanded. **Objective:** Find out the reasons of increasing noise pollution as well as level of measurement carried out in the surrounding area of the university campus, Vishnupuri, Nanded. **Methods:** The ambient noise monitoring was carried out in the January 2018 to December 2018. Noise level of selected sites were monitored between 6:00 AM and 10:00 PM with the help of digital displayed "Sound level Meter TES-1350 A". The desired response of the sound level meter was set to A-weighting and "slow". **Results:** The monitoring of noise at selected sites in the study area has noticed the increasing noise pollution activities. The SRTM University Campus Area of Vishnupuri, Nanded was crossing the permissible limit which has been defined by CPCB with in the monitoring time period of day. **Conclusions:** Noise nuisance is a major by-product of increasing construction activity and increasing urban traffic as well as highway transportation. Thus, the explosion of population, rapid industrialization and noticed highest growth rate in vehicle population which made the traffic problems complicated. The extreme effects of noise pollution e.g. deafness and mental breakdown neither is ruled out. It interferes with sleep, concentration, communication, and recreation.

Key Words: Human Health, Noise Standards, Deafness, Noise Reduction, Noise exposure, Vishnupuri

1. INTRODUCTION

Environmental noise pollution, a form of air pollution, is a threat to health and well-being. It is more severe and widespread than ever before, and it will continue to increase in magnitude and severity because of population growth, urbanization, and the associated growth in the use of increasingly powerful, varied, and highly mobile sources of noise. It will also continue to grow because of sustained growth in highway, rail, and air traffic, which remain major sources of environmental noise. Noise is an unwanted, unpleasant and annoying sound acts as environmental pollutant in the atmosphere, which creates interference in communication and creates health problems (Agarwal and Swami, 2009). Noise pollution in urban areas and large cities has adverse effects on human health and wellbeing, from insignificant annoyance, such as disturbance to sleeping,

reading, speech communication, concentration of mental work, etc., to severe physiological and psychological damages (Belojevic et al., 2008). Recent research demonstrated that almost all the developing countries like India are facing tremendous threat to vehicular noise pollution (Agarwal and Swami, 2011). An American ecological expert predicts that if noise level continues at the present rate most people living in major metropolitan areas will be deaf in the year 2050. An international urban planner victor Gruen once called noise 'a slow agent of death' (Chandra 1999). The World Health Organization considered noise pollution as the third most hazardous pollution after air and water pollution (WHO 2005). Criminals avail this opportunity and involved in crimes during excessive noise (Knights 2008). It is an established fact that vegetation plays an important role in cleaning the atmosphere by absorbing certain toxic air pollutants from its surroundings and also abatement of noise pollution (Harju et al., 2002).

Nanded is the second largest city in the Marathwada region of Maharashtra, India, having an estimated population of 08 lakes plus at present. The objective of the present research was to show the increasing noise pollution activities in the different locations of SRTM University Campus area of the Nanded. After a general survey of the campus area of SRTMU Nanded with special reference to the noise level, 20 sampling sites were selected for detailed investigation. As per the standard guidelines of the Central Pollution Control Board (CPCB, 1998) for noise level monitoring, four area categories have been given, i.e. industrial, commercial, residential and silence zone. Out of the twenty sampling sites, fifty sampling sites belong to the silence zone, two sites to the residential area and three sites to the commercial area or newly developed urban area.

The Swami Ramanand Teerth Marathwada University includes the Main Gate, Admin (Main) Building, School of Life Sciences, School of Physical Sciences, School of Chemical Sciences, School of Earth Sciences, School of Language & Literature, School of Media Studies, School of Drama & Performing Arts, Faculty Quarters (Girls Hostel), School of Social Sciences, School of Management Studies, School of Computational Studies, School of Pharmacy, Faculty Quarters (Boys Hostel), Medical Collage, Govt Civil Hospital, Govt Civil Hospital Main Gate, SGGSC&T, Vishnupuri Campus and lastly Vishnupuri entrance gate of holy village Vishnupuri,

Nanded. Significant essential changes in the university have been observed. Due to migration of country faculties to urban areas for their jobs. Increasing number of circulating vehicles in university campus area by students as well as by staff members. Similarly, the increasing activities in civil construction in order to build new subdivisions for the new inhabitants in the campus area.



Fig. 1 Showing the Different Sampling Locations of Schools in University campus Area

2. MATERIALS AND METHODS

This research article represents the results obtained in a study area shows the increasing noise pollution in the respective area of the SRTM university Nanded. The noise level measurements were carried out in different selected campus area of university. The ambient noise monitoring was carried out in the January 2018 to December 2018. Noise level of selected sites were monitored between 6:00 AM and 10:00 PM with the help of digital displayed "Sound level Meter TES-1350 A".

The desired response of the sound level meter was set to A-weighting and "slow". Noise-level monitoring has been done in free-flowing traffic condition four times a day, i.e. 6-7 A.M., 10-11 A.M., 5-6 P.M. and 9-10 P.M. According to the (Sommerhoff 2004) data, collection and agglomeration is one of the important elements in the assessment and management of urban noise. Noise level was measured at a height of 1.5 m (Jamrah et al.,2005) by a sound level meter (Sound level Meter TES-1350 A), an instrument which responds to sound in approximately the same way as the human ear and gives reproducible measurement of sound level (Mato and Mufuruki, 1999).

Noise level monitoring

Noise reading was collected a daily for a period of one year (2018). Noise level of selected sites was monitored between 8:00 AM and 9:00 PM with the help of digital displayed "Sound level Meter TES-1350 A". The instrument was calibrated internally by the internal sound level calibrator before making measurements. The desired response of the sound level meter was set to A-weighting and "slow". Noise

reading was collected from fifty departments of SRTM University campus area of Nanded. That belongs to silence zones. Another three sampling sites belongs to urban or traffic area which is covered in commercial area. And two more sampling sites has been selected from residential area. The Noise reading was done in the height of 1.5-2 m above the ground. The following guidelines or standards of CPCB (1998) are used for comparison in current research.

Table 1: Noise standards as given by the Central Pollution Control Board (CPCB, 1998)

Area Code	Category of Area	Limits in dB(A) Leq *	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note:

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 meters around hospitals, educational institutions and courts. The silence zones are zones which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

3. RESULT AND DISCUSSION

In the present study, we observed that the increasing number of new divisions in SRTM University campus area are affected by noise pollution. The noise level on day has ranged between 67 to 76 dB (A) in all the educational intuitions (Government medical college and Government medical hospital), School or departments in the university (School of Life Sciences, School of Earth Science, School of Chemical Science, School of Physical Science, School of Comers and Management, School of Computational Science, School of Social Science, School of Educational Sciences, School of Fine and performing arts, School of Languages & literature, and School of Pharmacy) and Engineering collage these are all include in silence zone.

The commercial zone has selected the three locations includes (Main Gate Road Highway, Govt Civil Hospital Main Gate and Vishnupuri entrance gate) and it noticed highest and lowest values as 79 to 85 dB (A). Lastly the Commercial area included the faculty quarters (Girls Hostel) and faculty quarters (Boys Hostel) respectively. They noticed the minimum value of noise was 76 and 77 dB as maximum. The

results of noise monitoring in the SRTMU campus Nanded has been summarized in Table 2 and Table 3.

In case of silence zone, the average noise level 50 Leq is required. It was observed that the noise level of the study sites was higher when compared to recommended limits of noise. The results of noise monitoring in the SRTM University campus area has been shortened in average in Table 2 plot of the mean values in different zones is given in Fig. 2. The actual results have been calculated and shown after the statistical analysis in table 3 and graph 3.

Table 2: Noise monitoring in the Nanded city

Sr. No.	Sampling Sites	Noise (dB)	
		Day	Night
1	Main Gate Road Highway	79	52
2	Admin (Main) Building	73	50
3	School of Life Sciences	73	52
4	School of Physical Sciences	69	49
5	School of Chemical Sciences	74	52
6	School of Earth Sciences	73	51
7	School of Language & Literature	73	50
8	School of Media Studies	75	53
9	School of Drama & Performing Arts	76	56
10	Faculty Quarters (Girls Hostel)	76	51
11	School of Social Sciences	74	54
12	School of Management Studies	73	49
13	School of Computational Studies	75	50
14	School of Pharmacy	73	53
15	Faculty Quarters (Boys Hostel)	77	53
16	Medical Collage	76	56
17	Govt Civil Hospital	67	45
18	Govt Civil Hospital Main Gate	83	53
19	SGGSCE&T, Vishnupuri Campus	75	54
20	Vishnupuri entrance gate	85	63

In the present study, we observed that due to increasing of population and urbanization, residential and commercial areas are affected by noise pollution. Reported 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 than CPCB. (Deka et al. 2000) The minimum and maximum sound pressure level ranged between 72.86 and 109.70 dB in residential zone and 53.12 and 108.33 dB (A) in commercial zone of Moradabad city. (Chauhan et al. 2010)

Similar results also find that the noise level in Bareilly Metropolitan City was slightly higher than the prescribed limit of the Central Pollution Control Board. (Gangwar et al.

2006) and Juned et al., (2013) the increasing noise pollution in the different parts of the Nanded city. The basic reason of increasing noise pollution was increasing urbanization and construction activities in the research area.

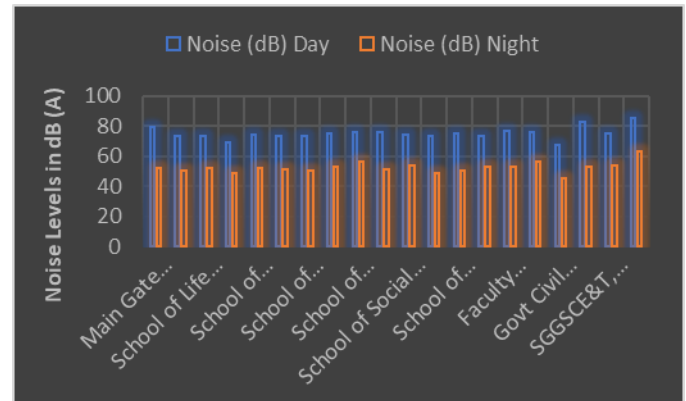


Fig. 2: Average observed values of Noise pollution in campus area of SRTM University, Vishnupuri, Nanded

Table 3: Detected Noise values at SRTM University Campus Area, Vishnupuri, Nanded (MH)

Category of Area	Sampling Sites	Limits in dB(A) Leq *	
		Day Time	Night Time
Commercial area	03	62	53
Residential area	02	56	43
Silence Zone	15	53	38

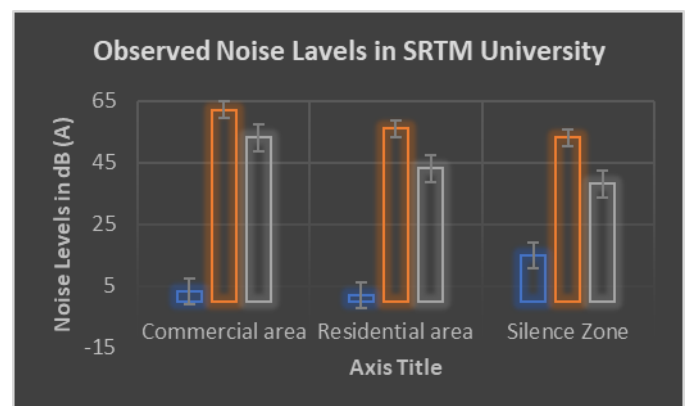


Fig. 3: Average observed Noise Levels in campus area of SRTM University, Vishnupuri, Nanded

4. CONCLUSIONS

This study was carried out to evaluate the noise pollution levels in SRTM University campus area of Nanded city. The focus was on three major selected areas fitting to silence, commercial and residential area. Investigation revealed that noise level at all three areas of city residential, silence and commercial exceeded the Government of India developed noise (Regulation and Control) Rules, 2000. Hereafter, the

present status of noise pollution in the municipal possibly attitudes a severe health risk to the populations.

Now we seem unable to make the connection between noise and disease, despite the evidence, and despite the fact, which we all recognize, that our cities are flatteringly more polluted with noise. Noise represents an important public health problem that can lead to hearing loss, sleep disruption, cardiovascular disease, social handicaps, reduced productivity, impaired teaching and learning, absence, increased drug use, and accidents. It can damage the ability to enjoy one's property and leisure time and increases the frequency of antisocial behavior.

Noise adversely affects general health and well-being in the same way as does chronic stress. It adversely affects future generations by degrading residential, social, and learning environments with resultant economic losses. The extreme effects e.g. deafness and mental breakdown neither is ruled out. It interferes with sleep, concentration, communication, and recreation.

ACKNOWLEDGEMENT

We are thankful to the School of Earth Sciences, School of Chemical Sciences, Swami Ramanand Teerth Marathwada University, Nanded for providing laboratory and library facilities.

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