



Intensity of Noise Pollution in Morena City Madhya Pradesh, India

Tomar Vinayak Singh¹ and Dadoriya N.S.²

¹Dept. of Zoology, Govt. Nehru Degree College Sabalgarh, Morena, MP, INDIA

²Dept. of Environment Science, Govt. P.G. College, Morena, MP, INDIA

Available online at: www.isca.in

Received 10th April 2013, revised 20th April 2013, accepted 10th May 2013

Abstract

Noise pollution is a new type of pollution; it is an inevitable part of modern civilization. Now-a-days crowded city, mechanical means of transport, new devices of recreation, amusements and entertainments are polluting the environment. Noise is a normal phenomenon of life, which is deemed to be one of the most effective alarm systems in man's physical environment. Man will also agree that whistling hooting of horns, shrieking of loudspeaker installed at a plays of worship and songs and marriage and birth day parties or function, rumbling of machines and aeroplanes etc are the inevitable part of the modern civilization. But all these are continuously disturbing human peace and tranquility. Therefore, noise is an important pollution of environment and is hazardous or a serious threat to the quality of the environment. Now a days noise pollution has penetrated in every aspects of modern civilization or modern life. It is a serious threat or grave threat to the environmental health

Keywords: Inevitable whistling, rumbling, shrieking, hazardous etc.

Introduction

Morena is located at 26.30^o N 78.00^o E. It has an average elevation of 177 meters (580 feet). Geographically Morena is an interesting place as Madhya Pradesh touches two neighboring states i.e. Rajasthan and Uttar Pradesh here. Morena touches Dhaulpur (Rajasthan) in North – West and Pinahat (Agra, Uttar Pradesh) in North- East. The neighboring districts are Bind, Gwalior, Shivpuri and Sheopur. The district has widely dispersed population of 1,965,137 as of 2011 (Census)¹. Morena is fifth district in state in density of population after Bhopal, Indore, Jabalpur, and Gwalior.

Many medium and small scale industries are located in this town. It is also an important commercial centre. Many educational institutions (school and colleges) are also present in this town. Hence this town supports a large number of floating populations along with its own. The number of automobiles also increases every year due to growing population and urbanization. All these human activities affect the environment and cause various type of pollution in the presents study, the extent of noise pollution at selected places in Morena city during peak hours have been assessed.

Several studies are available on noise pollution in many places. They all reported existence of high noise levels due to automobiles in those places. No such study is available for Morena city and hence this present study was undertaken.

Material and Methods

The study conducted on noise pollution in Morena District on Different zones during the April 2012.

Materials: Noise measurements were carried out in “A” weight age using the sound level meter (SLM), SL 4010, F = 72752 made in Taiwan.

The standards of noise level were compared with that of the standards prescribed in Environmental protection Rules, 1986 and standards of CPCB².

Noise Level Standards: The CPCB has notified ambient air quality standards for noise (which has been Included as an air pollutant under section 20 of the amended Air Act of 1987)³. The permissible noise levels in commercial, residential, and silence Zone during day time are given in table 1. The day time is from 6:00 AM to 9 P.M. Silence zone is defined as an area up to 100 m around such premises as hospitals, educational institutes, and courts. The silence zone is to be declared by competent authority. Use of vehicular horns, loud speakers, and bursting of crackers are to be banned in such zones.

Table-1
Ambient noise standards prescribed by CPCB

S. NO.	Area	Standard day time 6 A.M. to 9
1	Commercial area	65
2	Residential area	55
3	Silence zone	50

Methods: The instrument was placed at a height of about 1.2 meter above the ground. Care was also taken to ensure that no reflections took place near the instrument.

In each zone, adequate numbers of observation were made at each observation site, nine different locations were considered and at each location, ten readings were taken with one minute interval between two subsequent readings. From these observations, L_{35-80} , L_{50-100} and L_{80-130} were calculated. Noise levels were measured on Different Places which represented the Different zone. Saliense zones represented the Govt. Hospital; Govt. Girls College, and Govt. P.G. College Morena, Residential zone represented the Railway station, Main Market and Bus stand.



Study area map

Results and Discussion

Noise Studies Conducted in Different Zones of Morena city: In developing Morena city had been unplanned and haphazard resulted in many environmental hazards, one of the growing threats in noise pollution. Which are damaging human health like a silent killer? The impact of noise varies form zone to zone

depending on the source of emission. There are commercial zone, Silence zone and Residential zone recently conducted surveys of noise pollution in different places of Morena are illustrated. Comparison of nose level in dB (A) at Commercial zone, Silence zone and Residential zone is given with average value and standard Deviation (table 11).

Commercial Zone: All the places under commercial zone recorded higher noise level at maximum site. The average noise level at Railway station ranged between at 76.8 to 78.0 dB (A). The noise level at Main market noise level was recorded between 79.2 to 82.1 dB (A). And noise level at Bus stand was recorded between 69.5 to 81.3 dB (A) table 2, 3 and 4. At Railway station, the arrival and departure of trains, movement of carrier carets and announcement loudspeakers on platforms generate the noise. Shopkeepers and vendors who spend most of the time in these places are exposed to these high level noise and hence will have problems associated with noise pollution. At the Bus stand movement of the two wheelers, heavy loaded vehicle, three wheelers and four wheelers are the cause of noise pollution.

Silence Zone: Noise levels recorded in all the sites of silence zone exceeded the prescribed standard level of 50 dB (a). All those places, selected under silence zone had noise level above the permissible limit set by CPCB. The average noise level at Govt. Hospital ranged between at 69.3 to 70.7 dB (A). The noise level at Govt. Girls college was recorded between 66.8 to 71.1 dB (A). And noise level at city Govt. P.G. College was recorded between 71.0 to 75.8 dB (A) table 5, 6 and 7. These high noise levels will cause adverse health effects and aggravate the problems of the patients. The students in the educational institutes will get distracted and lose their concentration and interfere with the studies of student community in the campus.

Table-2

Noise levels in commercial zone at railway station, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	78.4	72.1	75.5	74.9	77.9	73.5	77.3	80.1	78.6	79.3	76.8	72.1	80.1
2	74.8	78.9	81.1	80.2	78.3	74.7	76	76.6	79.4	75.1	77.5	74.7	81.1
3	76.7	80.7	72.2	77.8	79.9	74.4	79	80.1	78.1	80.7	78.0	72.2	80.7

Table-3

Noise levels in commercial zone at main market, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	87.4	81.8	75.5	84.9	85.7	78.9	80.2	73	83.5	84.2	81.5	73	87.4
2	90.6	89.3	70.5	89.2	75.1	78.6	76.9	94.6	78.6	77.2	82.1	70.5	94.6
3	89.7	78.9	83.3	80.4	73.4	80.1	80.6	73.2	75.9	76.1	79.2	73.2	89.7

Table-4

Noise levels in commercial zone at bus stand, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	63.4	68.6	66.5	73.7	68.8	71.6	67.3	70.9	72.2	71.5	69.5	63.4	73.7
2	74.2	73.3	71.5	64.8	72.4	70.2	70.7	71.9	72.8	68.9	71.1	64.8	74.2
3	95.7	75.5	78.1	80.1	102.1	71.6	72.6	79.9	78.2	79.5	81.3	71.6	102.1

Residential Area: The prescribed limit for the residential area is 55 dB (B) during the time period (6:00 A.M. to 9:00 P.M.). All the selected places of the residential zones in Morena recorded high value than 55 dB. Only at police line Morena less value (54.6) was recorded at site (vii) than prescribed limit for

residential area 55 dB (A). All the places had values that ranged Between 68.1 to 70.8 dB (A) at Jiwaji Ganj Morena, 72.4 to 74.8 dB (A) at police line and 73.9 to 75.0 at Housing board colony Morena table 8, 9 and 10.

Table-5
 Noise levels in Silence zone at Govt. Hospital, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	68.4	60.9	64.6	67.2	65.4	60.5	67.5	64.6	62.6	70.4	65.2	60.5	70.4
2	70.3	68	64.9	72.2	72.5	71	67.4	74.3	65.1	66.9	69.3	64.9	74.3
3	72.5	71.2	68.3	71.8	71	68.9	69.1	71.4	72.6	70.3	70.7	68.3	72.6

Table-6
 Noise levels in Silence zone at Govt. Girls College, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	67.2	71.6	72.1	72.4	66.3	54.6	70.9	66.2	62.8	63.5	66.8	54.6	72.4
2	62.2	69.5	70.3	66.7	71.2	66.4	64.9	70.5	73.7	66.2	68.2	62.2	73.7
3	76.5	72.4	70.2	69.7	70.1	66.3	66.6	73	72.6	73.3	71.1	66.3	76.5

Table-7
 Noise levels in Silence zone at Govt. P.G. College, Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	66.9	74.8	73	70.6	78.2	78.8	76.9	81.6	81.9	74.8	75.8	66.9	81.9
2	81	73.4	59.5	65.3	68.8	75.6	81	78.1	65.1	69	71.7	59.5	81
3	74.7	70.5	61.3	62.2	69.8	75.7	73.6	76.6	79	66.6	71.0	61.3	79

Table-8
 Noise levels in residential zone at Jiwaji Ganj Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	72.3	75.9	69.9	71.3	68.2	68.1	69.5	75.1	71.9	64.3	70.7	64.3	75.9
2	69.3	68.2	73.1	62.6	81.7	64.5	65.6	69.9	67	65.2	68.1	62.6	81.7
3	68.3	70	69.9	70.4	69.8	71.4	65.2	78.4	72.6	72.2	70.8	65.2	78.4

Table-9
 Noise levels in residential zone at Police line Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	68.9	64.3	83.9	70	78.8	77.7	76.2	73.5	64	67	72.4	64	83.9
2	75.1	84.2	74.1	76.1	72	78.8	73.5	54.6	63.7	81.5	73.3	54.6	84.2
3	76.4	72.7	77.2	68.8	77.7	82.6	85.4	66.6	69.1	71.3	74.8	66.6	85.4

Table-10
 Noise levels in residential zone at Housing Board Colony Morena (M.P.)

S.N.	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean	Minimum	Maximum
1	72.1	74.1	84.8	79	71	66.9	75.3	71.6	73.4	71.5	74.0	66.9	84.8
2	60.9	68.4	73.5	85.4	75.2	93.2	77.7	74.3	70.4	60.2	73.9	60.2	93.2
3	69.5	66.2	78.4	93.4	72.2	71.3	81.1	71.3	72.7	74	75.0	66.2	93.4

(Standard sound limit in Commercial Zone is 65dB, Residential Zone is 55 dB and Silence Zone is 50 dB)

Table-11
 Comparison of noise level in dB (A) at Commercial zone, Silence zone and Residential zone

Commercial zone Average dB (A)			Silence zone Average dB (A)			Residential zone Average dB (A)		
Railway station	Main market	Bus stand	Govt. Hospital	Govt. Girls college	Govt. P.G. college	Jiwaji Ganj	Police line	Housing Board colony
76.8±2.5	84.5±4.4	69.5±3.0	65.2±3.1	60.8±5.3	75.8±4.5	70.7±3.3	72.4±6.3	74.0±4.7
77.5±2.2	82.1±7.7	71.1±2.6	69.3±3.1	68.2±5.3	71.7±6.9	68.1±5.4	73.3±8.2	73.9±9.6

Conclusion

The honking of air horns, flow of ill maintained vehicles, poor road conditions and encroachments found on road sides that cause traffic congestion were found to be the reasons for high noise levels in Morena. Unfortunately the patients in General hospital and the Students educational institutions are exposed to very high noise levels. This will cause adverse health effects on patients and /or aggravate their illness in general hospital. The students I educational institutions will also suffer from these high noise levels. Residential areas are not exceptional form the exposure to high noise levels. Thus it is imperative for the authorities to take the following necessary steps to prevent this important town form the menace of noise pollution. i. Ban on use of pressure horn should be strictly implemented. Police Department may be assisted by NGOs students and General Public. ii. Mandatory annual inspection of public and private vehicles may be introduced and Motor Vehicle Examiner may be directed to carry out Noise tests on vehicles and affix fitness certificate thereof. iii. Blowing of horns at Bus/Wagon/Taxi stands may by ban. iv. Zebra crossing may be introduced in all cities and masses may be educated for its appropriate use. v. All kinds of workshop may not be allowed in residential areas. vi. Wherever needed, environment laws may be formulated for modified as the case may by or effective implementation of these recommendations.

References

1. Tripathy D.B., Noise pollution, A.P.H. Publishing Corporation, New Delhi, India, (1999)
2. Sharma B.K., Kaur H., Environment Chemistry, Krishna Prakashan Mandir, (1994)
3. C.P.C.B., Pollution Control Acts, rules, and notifications issued there under. Pollution Control Series, PCL/2/1992 (I) New Delhi, (1995)
4. Bhattacharya C.C., Jain S.S., Singh S.P. and Parida, M.R&D, efforts in prediction of highway traffic noise, *J Insst Engrs India (Environ Engng Div)*, **83**, 7-13 (2002)
5. Chakraborty D., Santra S.C., Mukherjee A.L., Roy B. and Das P., Road traffic noise in Calcutta metropolis, India .ind, *J.Environ. Hlth.*, **44**, 173-180 (2002)
6. Naik Shrikanta and Purohit K.M., Studies on noise pollution levels in residential areas at Bondamumba of Rourkela industrial complex, *Polln Res*, **22(3)**, 433-438 (2003)
7. Pawar C.T. and Joshi M.V., Urban development and sound level in Ichalkaranji city, Maharashtra, *Indian J.Environ. & Ecoplan*, **10(1)**, 177-181 (2005)
8. Gangwar K.K., Joshi B.D. and Swami A., Noise pollution status at four selected intersections in commercial areas of Bareilly Metropolitan city, U.P. Him, *J.Env. & Zool*, **20(1)**, 75-77 (2006)
9. IPCC Climate change., Impacts, Adaptation and Vulnerability ibid, (2007)
10. District statistical book published by district planning and statistic office Morena –M.P. (2011)