

## ASSESSMENT OF NOISE LEVELS DURING DEEPAWALI FESTIVAL IN INDORE CITY – A CASE STUDY

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### *ABSTRACT*

*There are different categories of sounds from the natural to the man made. Sound can be loud, quiet and of different notes or pitches. Humans normally hear sound frequency between 20 Hz and 20,000 Hz. Noise is an unwanted sound. Noise Pollution has now been recognized as one of the type of pollution that affects the quality of life. Man made sound contribute largely to noise pollution. Present study deals with the trend and status of noise generated during an important festival Deepawali. The results obtained at all the selected study locations were recorded higher sound levels than the prescribed safe limit of Central Pollution Control Board of India.*

*Keywords: Noise levels, Deepawali festival, Standard noise levels, etc.*

### **INTRODUCTION**

Noise pollution is a significant environmental problem in many urban areas. Noise is an unwanted, unpleasant and irritable sound that may cause some psychological and physiological stress to human beings exposed to it (Patel. Nitinkumar L. and Bhave Prashant P., 2014; Niharika Shivhare. 2017). The World Health Organization considered noise pollution as the third most hazardous pollution after air and water pollution. It causes significant health effects, such as heart problems, change in social behavior and quality of life. In India, the problem caused by noise pollution is increased during celebration, festival, marriage or religious functions. Indian festivals are traditionally celebrated with song and dance in large groups, using musical instruments, drums etc. (N. Singh and S.C. Davar, 2004; WHO, 2005, WHO, Environmental health criteria of noise.12, 1980, Shirin Imam, Niharika Shivhare & Anita Gour, 2018).

Deepawali is an important Festival of India known as festival of lights. It falls in the month of October or early November. It marks the victory of Lord Rama over Ravana and celebrated in the honour of Lord Rama's return to

Ayodhya after Fourteen Years of exile. Deepawali celebration is accompanied with the bursting of loud noise firecrackers, lighting and playing loud speakers (Patel, Nitinkumar L. and Bhawe Prashant P., 2014, Agarwal, S., Yadav, S, 2013).

The metropolitan city Indore is a commercial and industrial centre of Madhya Pradesh and lies in the heart of Malwa Plateau. Indore covers an area of 3831 sq km with a total population of the district 32,72,335 (2011 census) with the density of 9,718 per sq. Km. It is bounded by N latitudes 22°31' and 23°05' and E longitudes 75°25' and 76°15'. Indore city is divided into 12 zones and 85 wards by Indore Municipal Corporation, Indore (Shivhare, N., Khan, S., Patel, N., Joshi, A., & Dutt, B. 2017).

## MATERIALS AND METHOD

Noise pollution monitoring during Deepawali Festival has been carried out on the day of Laxmipujan to Bhaidooj i.e. from 19-10-17 to 21-10-17 continuously for 24 hours. Continuous noise monitoring was done to find out maximum and minimum noise level during day time as well as night time. Noise standards for ambient noise level during day and night are different (Table 1); hence noise levels were measured accordingly as follows:

Day shift from 06:00 Hrs. to 22:00 Hrs

Night shift from 22:00 Hrs. to 06:00 Hrs.

**Table 1: Ambient noise standards (cpcb 2000).**

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

## STUDY AREA:

Noise monitoring was done at eight different locations considering the two locations each from different categories of area viz. Industrial, Commercial, Residential and Silence Zone (Niharika Shivhare. 2017). The detailed description of locations is given in Table 2

**Table 2 Study Locations**

Sr. No.	Category	Sample Code	Location Name	Location
1	Industrial	A1	Sanwer Road	22.778563, 75.849822
2		A2	Kila Maidan	22.742178, 75.848086
3	Commercial	B1	Kothari Market	22.719983, 75.862465
4		B2	Malwa Mill	22.734155, 75.875069
5	Residential	C1	New Palasia	22.727838, 75.886320
6		C2	Vijay Nagar	22.752294, 75.893733
7	Silence Zone	D1	Residency Area	22.705679, 75.883901
8		D2	Bombay Hospital	22.754497, 75.903933

Pre-calibrated Sound Level Meters (Type II) were used for the monitoring. All the measurements were made at fast response mode using 'A' filter, keeping in view the quickly changing nature of noise levels.

The main purpose of noise monitoring was to find out the impact of noise generated during Deepawali by various activities like bursting fire crackers, Sound systems, Music Systems, etc. on human being and disturbance made in environment.

## RESULTS AND DISCUSSION

The results of noise monitoring during festive period of Deepawali has been summarized in Table 3 to 5.

**Table 3 Noise levels at different locations on 19-10-2017**

Sr. No.	Category	Sample Code		Sound Levels Leq dB (A)		19-10-2017
				Min	Max	
1	Industrial	A1	Day	81.9	92.6	
			Night	77.4	85.4	
2		A2	Day	82.8	94.3	
			Night	77.9	81.6	
3	Commercial	B1	Day	78.4	86.5	
			Night	68.2	76.5	
4		B2	Day	79.2	88.6	
			Night	64.4	75.1	
5	Residential	C1	Day	71.2	83.2	
			Night	62.8	72.6	
6		C2	Day	73.8	81.2	

		Night	63.1	69.3	
7	Silence Zone	D1	Day	66.2	73.1
			Night	57.3	66.9
8		D2	Day	63.1	73.8
			Night	56.2	68.4

**Table 4 Noise levels at different locations on 20-10-2017**

Sr. No.	Category	Sample Code		Sound Levels Leq dB (A) 20-10-2017	
				Min	Max
1	Industrial	A1	Day	76.7	89.4
			Night	67.1	81.2
2		A2	Day	77.6	85.8
			Night	66	82
3	Commercial	B1	Day	65.5	81.8
			Night	65.8	74.5
4		B2	Day	68.3	81.9
			Night	63.1	76.7
5	Residential	C1	Day	67.9	79.7
			Night	57.1	67.1
6		C2	Day	67.6	77.5
			Night	58.8	69.3
7	Silence Zone	D1	Day	54.5	62.2
			Night	41.9	54.1
8		D2	Day	53.9	68.5
			Night	44.8	53.4

**Table 5 Noise levels at different locations on 21-10-2017**

Sr. No.	Category	Sample Code		Sound Levels Leq dB (A) 21-10-2017	
				Min	Max
1	Industrial	A1	Day	77.7	87.4
			Night	64.2	80.2
2		A2	Day	77.6	82.8
			Night	65.6	80.3
3	Commercial	B1	Day	65.5	81.8
			Night	62.5	74.5
4		B2	Day	68.7	81.4

		Night	63.1	73.7	
5	Residential	C1	Day	67.1	76.4
			Night	57.2	67.1
6	Residential	C2	Day	66.6	77.4
			Night	57.9	67.4
7	Silence	D1	Day	54.5	62.2
			Night	42.7	54.6
8	Zone	D2	Day	54.3	66.5
			Night	41.8	53.1

In the present study, we observed that highest noise level were observed on the festival day at all the stations and for all the categories may be due to firecrackers. The maximum sound level in silence zone was recorded 73.8 dB may be due to increased traffic movement also.

## CONCLUSION

During the present study the noise levels observed were found to have a range bound trend, which remained same for study period. The noise levels observed to be much higher than the permissible standard for the noise in the residential area.

## RECOMMENDATIONS

The monitoring locations consist of areas belonging to residential, commercial and sensitive zones. The noises so produced during the festival are area source, so it is very hard to locate one particular high noise emitting source. To counter this problem following steps can be taken,

- Proper supervision is required to make sure that cracker manufacturers/sellers following the noise standards set for crackers.
- Making people more aware about the effects of noise pollution.
- And to make sure that all existing laws, such as the time limit on the use of firecrackers

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