

Noise Pollution during Festive Season in Gorakhpur City, Uttar Pradesh, India

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ABSTRACT

The present study is about the noise pollution caused during the festivals of Dussehra and Diwali as compared to standard stipulated by Central Pollution Control Board (CPCB), New Delhi. It was found in the study that the areas which must be quite are also in the grip of noise. The celebrations and holidays which are meant for relaxing and enjoying are instead stressing due to noise pollution. The study was carried out at different locations with the help of Sound Level Meter to assess the day and night sound level during the festive season. The comparison with the routine non festive season has also been done. Gorakhpur city is one of the important cities of Uttar Pradesh. So an attempt has been made in the city of Gorakhpur to measure noise level during the festivals and few recommendations have been made to avoid them.

INTRODUCTION

Noise pollution is recognized as one of the important environmental concerns in urban areas of the country. It is more a problem because we are often used to it at the cost of peace and discipline and even sometimes health. Thus may not seem to be, but for sure it disturbs our whole system and often we become a cause and victim of it either knowingly or unknowingly. The noise pollution has negative effects on humans, birds, animals as well as property.

India is specially known for festivals. There are so many festivals celebrated. Specially in North Eastern part of Uttar Pradesh, month of October is considered in general a month of festivals because of the better weather and festivals like Dussehra, Diwali, eid, Chath etc falling

nearby in the starting or month end. The celebrations at its peak get the involvement of almost everyone. However, the point of concern is that today in modern generation celebration is all about being noisy. Excitement, exhilarations, and cheers go side by side but excess of anything is dangerous and when it comes to useless noise, definitely. There is always a negative impact of pollution somewhere, to somebody. Noise pollution has always been a problem irrespective of complaints reported or not, but recently there have been noted cases of revolt in the public due to it (like the case of quarrel reported by a national daily on 10th September, 2013 just before the violence of Muzzafarnagar, for the improper use of loudspeaker in Nangalamal Temple on 26th July, 2013 of Meerut district), which if neglected in future, may revoke more violence in the form of religious fight. As an initiative, the study has been done in Gorakhpur city (district of Uttar Pradesh, 265 Km east of capital Lucknow, between latitude 26°13'N and 27°29'N and longitude 83°05'E and 83°56'E situated on the basin of rivers Rapti and Rohini) to control this disastrous, slow poison: noise pollution.

METHODOLOGY

Noise Levels have been recorded by means of a *Precision Noise Level Meter of make 'Bruel and Kjaer, Denmark (2232)'*. The basic parts of a sound level meter include a microphone, amplifier, weighting networks and a display reading in decibel (one-tenth part of "bel", unit of sound). The data has been collected for overall 10 hours on the respective day at the selected sites. The time being selected the most prior ones: around 5a.m. to 6 a.m., 8a.m. to 9a.m., 9a.m. to 10 a.m., 10a.m. to 11a.m., 2 p.m. to 3p.m., 3p.m. to 4p.m., 5p.m. to 6p.m., 7p.m. to 8p.m. and 10p.m to 11p.m. The time has been selected so as to cover most part of the day, from calm mornings, rush hours, pleasant evening, to silent nights, as they should be respectively. Possibly, the readings have been taken from at least 1.5 m above the ground level, at the concerned hours for 10 minutes duration at fixed intervals of 15 seconds, so that gives about 40 readings for each observation hour. Further, calculations have been done using formula of Leq,

$$L_{eq} = 10 \log \sum_{i=1}^{i=n} 10^{L_i/10} \times t_i$$

where,

n = total number of sound samples

L_i = noise level of any i^{th} sample

t_i = time duration of i^{th} sample expressed as fraction of total time sample.

RESULTS AND DISCUSSION

The data had been collected on the occasion of Navratri for two days, on the occasion of Dussehra and Visarjan night. The sampling has been done in Diwali festival also. Prime locations have been chosen as observation sites so that the ambient noise of the whole city can be well estimated and cover all the zones respectively.

During Navratri the noise range at MMMEC observation site was from 61.12 to 90.85dB during day time, which was higher than the permissible limit of silent zone 50dB while during night was from 47 to 86.98dB higher than limit 40dB. In commercial areas also noise was higher than permissible limit of 65dB of day time and 55dB of night time, at Kunraghat ranging from 68.72 to 89.63dB in day and 56.2 to 83.63dB, at Mohaddipur from 82.75 to 97.11dB in day and 65.80 to 82.78dB in night. It can be said that the noise is more at night than day, highest being generally in the evening during 7-8p.m. due to the mix noise sources of loudspeakers, traffic, and gatherings. During Dussehra the noise rised even higher from 72.70 to 103.19dB and 98.45 to 106.55dB in day hours while from 74.67 to 96.18dB and 100.69 to 110.38dB in night hours when the *Visarjan* of *Durga Murti* were at peak near Gorakhpur Railway Station and Rustampur observation sites, respectively. The night noise was again more than day.

The noise in Diwali on 03.11.13 ranged from 57.73 to 100.68dB in day hours and 56.57 to 106.67dB in night time greater than the permissible limits of residential area of 55dB. It was noisier after 7p.m. than during day due to fire crackers. The noise in Diwali differs from Dussehra in way that it is instant and random in the former while continuous in the latter.

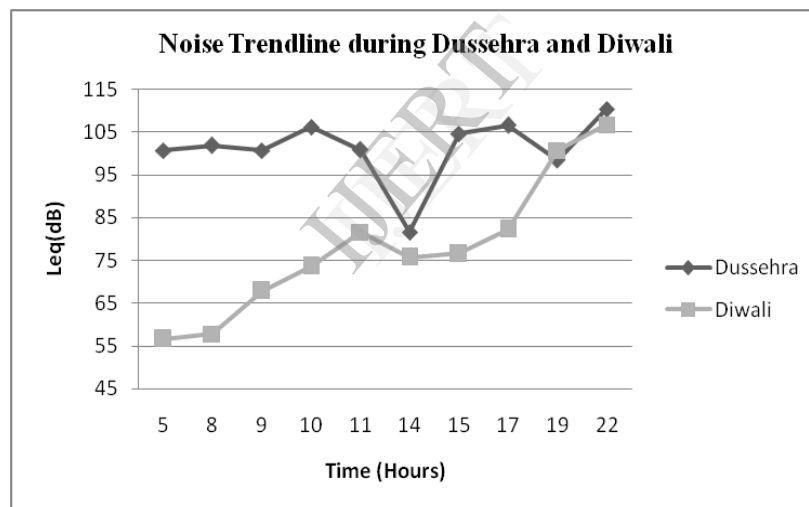


Figure 1: Trendline of Noise Levels during Dussehra and Diwali

The noise levels during festive were definitely higher than the regular days, moreover the discussion remains incomplete unless the noise levels are compared with the permissible limits.

The percentage exceed of the max. noise level with the limit has been shown in the table followed.

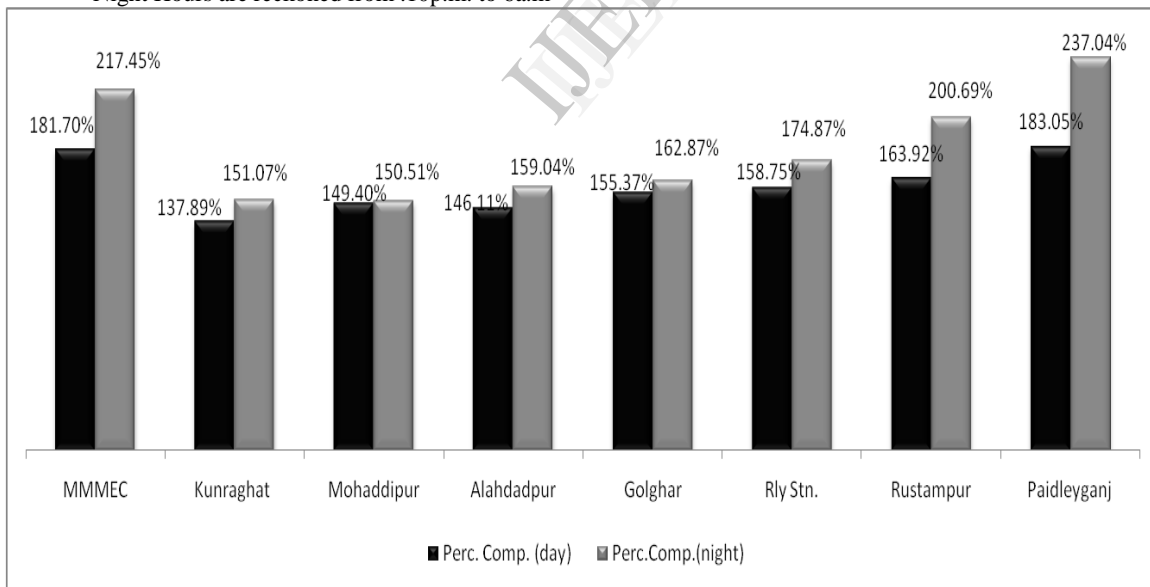
Table 1: Results of Festive season

| Site | Occasion | Range of Noise Levels in dB | | Max. Permissible limit accord. to CPCB (dB) | | Difference | | Comparison of Max. Noise level with CPCB limit in % | | |
|------|--------------|-----------------------------|--------------|---|-------------|------------|-------|---|-------------|--------|
| | | Day Hours | Night Hours | Day hours | Night hours | Day | Night | Day Hours | Night Hours | |
| 1 | MMMEC | Navratri | 61.12-90.85 | 47.00-86.98 | 50 | 40 | 40.85 | 46.98 | 181.70 | 217.45 |
| 2 | Kunraghat | Navratri | 68.72-89.63 | 56.20-83.09 | 65 | 55 | 24.63 | 28.09 | 137.89 | 151.07 |
| 3 | Mohaddipur | Navratri | 82.75-97.11 | 65.80-82.78 | 65 | 55 | 30.11 | 27.78 | 149.40 | 150.51 |
| 4 | Alahdadpur | Navratri | 76.08-94.97 | 86.73-87.47 | 65 | 55 | 29.97 | 32.47 | 146.11 | 159.04 |
| 5 | Golghar | Navratri | 70.17-100.99 | 66.13-89.58 | 65 | 55 | 35.99 | 34.58 | 155.37 | 162.87 |
| 6 | Railway Stn. | Dussehra | 72.70-103.19 | 74.67-96.18 | 65 | 55 | 38.19 | 41.18 | 158.75 | 174.87 |
| 7 | Rustampur | Dussehra | 81.60-106.55 | 100.69-110.38 | 55 | 45 | 41.55 | 55.38 | 163.92 | 200.69 |
| 8 | Paidleyganj | Diwali | 57.73-100.68 | 56.57-106.67 | 55 | 45 | 45.68 | 61.67 | 183.05 | 237.04 |

✓ * ___ %=(Max. Leq/Permissible Noise Limit)x100

✓ Day Hours are reckoned from 6a.m. to 10p.m.

✓ Night Hours are reckoned from .10p.m. to 6a.m

**Figure 2: Comparison Chart of Festive season**

- Nights are as noisier as day.
- The noise during Dussehra and Diwali are generally expected to be more but as much as 217.45% and 237% of the permissible limits at night time is not accepted at all.
- The sources of noise pollution were mainly loudspeakers, the cause being indiscipline and chaos in the people.

The noise levels during festive season show nominal increment on some days while a large variation on other as compared to the noise levels at the same sites on routine days. The noise levels at night show more increment than the the day hours.

Table 2: Relative Comparison with Noise Levels on Routine Days

| | Site | Max. of Noise Levels on Festive days in dB | | Max. of Noise Levels on Regular days in dB | | Difference | |
|---|--------------|--|-------------|--|-------------|------------|-------------|
| | | Day Hours | Night Hours | Day Hours | Night Hours | Day Hours | Night Hours |
| 1 | MMMEC | 90.85 | 86.98 | 77.73 | 69.97 | 13.12 | 17.01 |
| 2 | Kunraghat | 89.63 | 83.09 | 77.85 | 70.81 | 11.58 | 12.26 |
| 3 | Mohaddipur | 97.11 | 82.78 | 85.95 | 72.24 | 11.16 | 10.54 |
| 4 | Allahdadpur | 94.97 | 87.47 | 89.70 | 74.24 | 05.27 | 13.23 |
| 5 | Golghar | 100.99 | 89.58 | 86.56 | 74.74 | 14.43 | 14.84 |
| 6 | Railway Stn. | 103.19 | 96.18 | 89.63 | 69.82 | 13.56 | 26.36 |
| 7 | Rustampur | 106.55 | 110.38 | 79.75 | 73.98 | 26.80 | 36.40 |
| 8 | Paidleyganj | 100.68 | 106.67 | 98.47 | 82.09 | 02.21 | 24.58 |

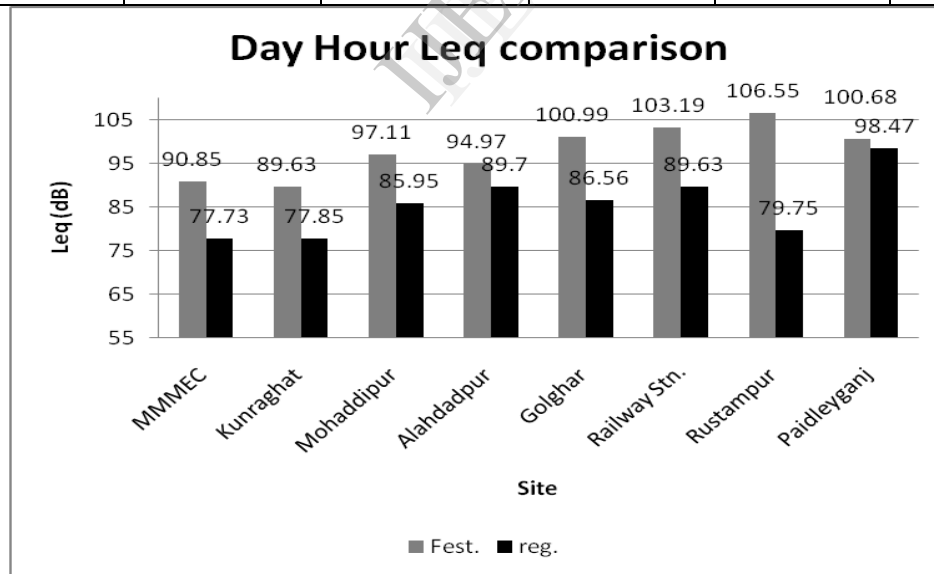


Figure 3: Leq Comparison of Festive day hours with the Routine day hours

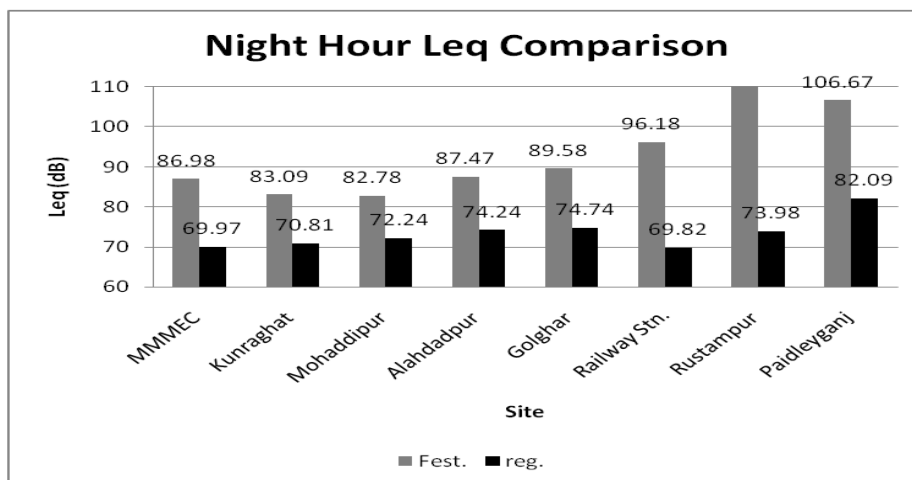


Figure 4: Leq Comparison of Festive night hours with Regular night hours

CONCLUSIONS

The life without celebrations would be horrible, they are must. However, celebrations neglecting the basic rules and discipline of life are of no use. The loudspeakers, traffic and public assemblies are all part of celebrations but their use in society must not be at the cost of peace and sustainable environment. The happening celebrations of one should not be disturbance for others. The study concludes that the noise pollution is the negative side of these celebrations and therefore must be under full control. Our government and we must bring this noise pollution to an end for our own peace. With these thoughts and results following recommendations are being made.

1. The unlawful use of loudspeakers by the persons in disguise of religious aspects or other reasons without permission should be heavily penalized.
2. The excess use of loudspeakers during festive season should be banned to avoid any invitation to disaster. There should be more restrictions.
3. A committee can be organized to maintain the peaceful environment in the city, with the anonymous public complain system and penalize whosoever against it.
4. Apart from the above official measures, proper awareness must be spread among the people, about the negative impacts of noise pollution and the legislative rules, through schools, engineering and other educational institutions. This can be further supported by other communication means of entertainment like radio etc, thus teaching people to be in discipline the first thing being taught to a child.
5. Technically, the noise pollution can be controlled by advancing the automobile horn system and public traffic system by using sensors etc.
6. More research and development seems to be needed in this area, followed by more and more surveys.

Often neglected, noise pollution adversely affects the human being leading to irritation, loss of concentration, loss of hearing etc. Intentionally or unintentionally, each one of us contributes to noise pollution, because most of our day-to-day activities generate some noise which affects the innocent birds and animals as well. It can be observed that they behave abnormally on the festive seasons due to the noise from crackers and loudspeakers. Hence, controlling the noise pollution is impossible unless each one of us is aware about it. The upcoming celebrations and festivals can be more

about enjoyment, gatherings and fun so that they may be relaxing instead of stressing. Our celebration and spirituality must not prove to be disturbance for anyone because *celebrations are not all about noise.*

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