STUDY OF NOISE POLLUTION DURING GANESH UTSAV IN MUMBAI CITY

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ABSTRACT

The present paper deals with monitoring of Noise Pollution at different places of Mumbai City on the day of Ganesh immersion. During the present study the noise levels were measured with the help of sound measuring instrument by MPCB. The Noise Pollution is increasing considerably. By using sound measuring instrument noise levels are measured at different locations particularly during Ganesh immersion It was understood clearly from our study that the noise levels are elevated the main sources of noise pollution are loud speakers D.J., drums Major effects of noise pollution include interference with communication, sleeplessness and reduced efficiency Public education appears to be the best method as suggested by the respondents.

Keywords: Ganesh Festival, Leq dB (A), Area Source, Noise Pollution, Sound Level Meter

I INTRODUCTION

Every environmental pollution problem has roots in the past be it water , air or noise pollution and all these problems are becoming critical in the recent years due to rise in the use of modern technologies. Noise is an unwanted sound that may cause some psychological and physical stress to the living as well as non-living objects exposed to it. While celebrating the Ganesh utsav, Durga puja, Dipawali, party, weeding ceremonies or other religious festivals creating a minimum noise level which gives happiness and avoid adverse effects on human health. The increasing musical instruments, drums D.J. crackers are the main source of noise pollution. Ganesh is an important Hindu festival, in which now a days use is increasing day by day this causes a lot of noise and air pollution. The crackers contain dangerous chemicals The focus is to reduce noise and sound pollution that is intense during the festival days In the present paper an attempt has been made to study the sound levels during Ganesh Immersion. [1]

Noise can be define as an unwanted or undesired sound whereas environmental noise is any unwanted or harmful outdoor sound created by human activities that is detrimental to the quality of life of individuals.

The influence of excess noise on human body can be due to direct affects upon the auditory system, non-auditory physiological processes and on purely psychological mechanisms. Noise effect includes various impacts on mental and physical health and disturbance of daily activities which may affect sleep, conversation, lead to

perception of annoyance, cause hearing loss, instigate cardiovascular problems as well as affect human judgment and performance. [1]

The permissible limits of noise levels for different urban areas prescribed by the Noise Pollution (Regulation and control) Rules, 2000 are given in the table Permissible limits of Noise levels.

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 is reckoned from 6 A.M. To 10 P.M.

[2] Night time is reckoned in from 10 P.M. and 6 A.M.

[3] Silence zone is referred as areas within 100 meters around premises such as hospitals, educational institutions and courts. The Silence zones are to be declared by the Competent Authority.

[4] Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones. [1]

II METHODOLOGY OF THE SURVEY

The noise pollution monitoring was carried out only for 5 days. Noise level measurement was done from 18:00 hrs up to 24:00 hrs. The noise measurements were made at the fast response mode keeping in view the quickly changing nature of noise levels. All the measurements were done using recalibrated Sound Level Meters (Type II).

The monitoring was carried out at a distance from Ganesh Pandals, closer to the residential buildings. The main purpose of this exercise was to determine how the environment is disturbed and what effect it has on a normal human being residing in that area or closer to the area. Total 25 locations were covered under Mumbai city for present study. The noise levels were monitored with the help of sound meter. The standards of noise level were compared with that of the standard prescribed in Environmental Protection Rules, 1986 and standards of CPCB.

Generally 'Sound Level Meter' is an instrument used for measurement of sound (noise). This instrument measures the sound in approximately same way as human ear perceives it, i.e. in terms of pressure difference. Some sound level meters measures the noise as linear sound pressure level (SPL), while some directly as noise equivalent level (Leq). The instrument used for this survey directly measured the sound in terms of Leq.

2.1 Noise Level Measurement

In most cases, the sound and noise we hear are not steady. Apart from variation in tones, the magnitude or the sound pressure level of a sound or noise changes with time. The equivalent continuous noise level (Leq) is the sound pressure level of a steady sound that has, over a given period, the same energy as fluctuating sound in question.

It was calculated using following equation

$$L_{eq,T} = 10 \log \left(1/n \sum_{i=1}^{n} 10^{\frac{L_i}{10}} \right)$$

Where, L_i = levels observed at n equally spaced times during interval T.

In the present study, hourly and day wise L_{eq} has been calculated to compare the results obtained from various locations. [4] The data of various noise levels used for analysis is obtained from the Maharashtra Pollution Control Board (MPCB).

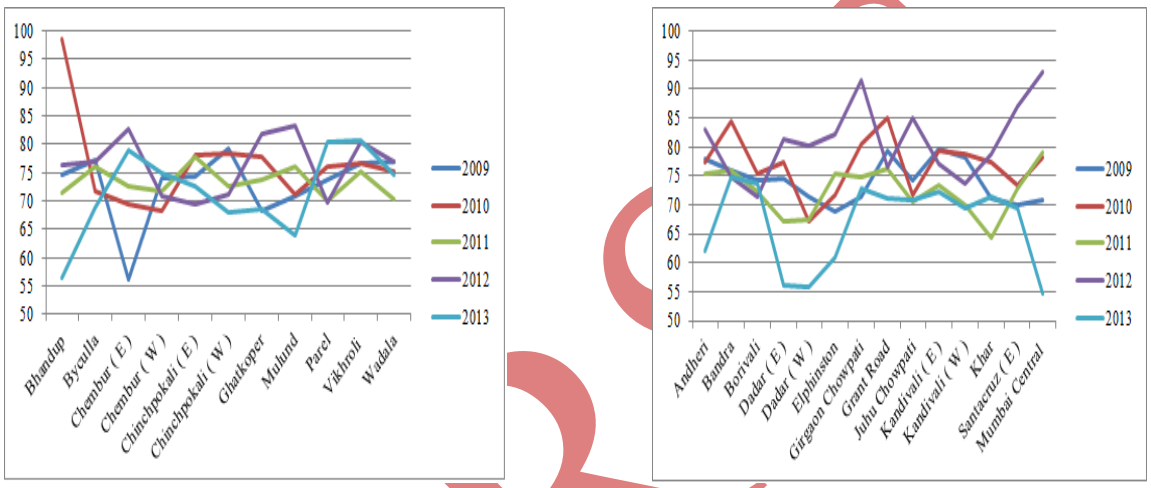


Fig 1: Line chart showing the Leq values at different locations (Central - Eastern suburban and western suburban) (Day 1)

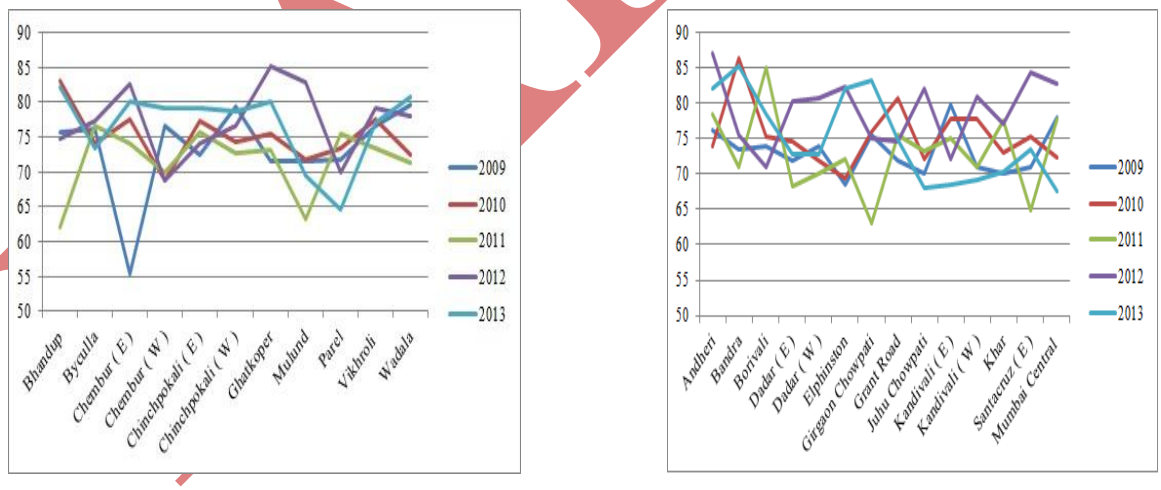


Fig 2: Line chart showing the Leq values at different locations (Central – Eastern suburban and western suburban) (Day 2)

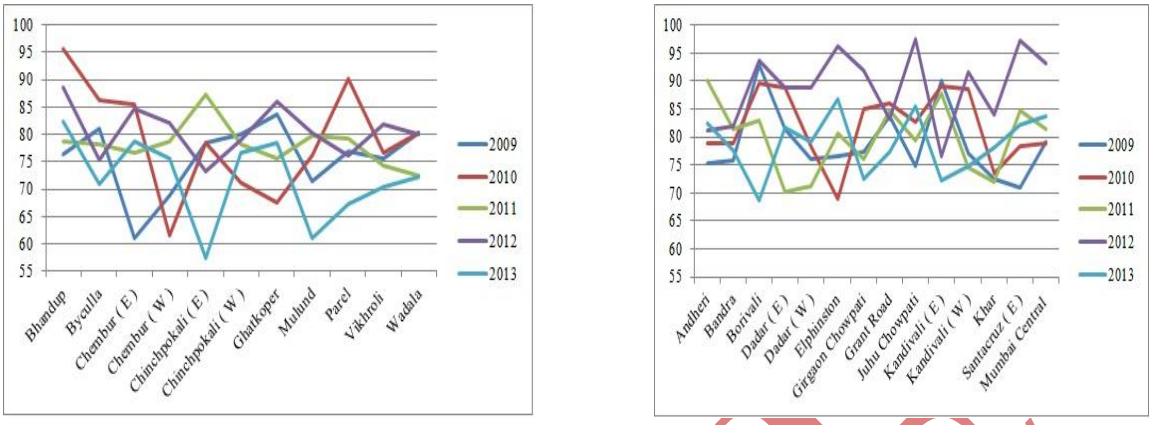


Fig 3: Line chart showing the Leq values at different locations (Central - Eastern suburban and western suburban) (Day 5)

III RESULTS AND DISCUSSION

It was observed that the level of Noise Pollution during Ganesh immersion is much higher when compared with the standard limits. The sound levels recorded at different locations in Mumbai City which are shown in the location 1 to 11 (central and eastern suburban) and 1 to 14 (western suburban). At all the locations the observed sound levels were above the permissible limit in2012 but seen to decrease in 2013 during the Ganesh Festival.

When compared with the noise levels observed during the Ganesh festivals of earlier years, we did not see significant change or reductions of noise at Mumbai. This indicates lack of support of people in making Ganesh festival free from noise pollution or at least less noisy in successive years owing to increasing mass awareness.

Noise pollution is emerging as an environmental problem in Mumbai and also other parts of India. This can cause negative impact on public health and welfare. Considering the above aspects, we can conclude that noise dominates the spectrum of environmental noise. The noisy area especially above 70dB (A) should take precautionary measures in order to avoid noise induced health effects.

Table 1: Leq difference at various stations with reference to 2013 (Central and Eastern suburban)
Fig 4: Line chart showing the Leq difference at different locations (Central and Eastern suburban) (Day 1)

	With reference to year 2013 (Day 1st)				
Sr.No	Location	2009	2010	2011	2012
1	Bhandup	-18	-41.9	-14.8	-19.9
2	Byculla	-8.4	-2.9	-7.2	-8
3	Chembur (E)	22.7	9.3	6.3	-3.7
4	Chembur (W)	0.8	6.5	3	4
5	Chinchpokali (E)	-1.6	-5.4	-5	3.2
6	Chinchpokali (W)	-11.3	-10.2	-4.4	-3
7	Ghatkoper	0.3	-9.1	-5.1	-13.2
8	Mulund	-7.1	-7.4	-12.1	-19.3
9	Parel	6.4	4.2	10.3	10.6
10	Vikhroli	3.9	3.9	5.6	0.2
11	Wadala	-2.3	-0.6	4.4	-2.2

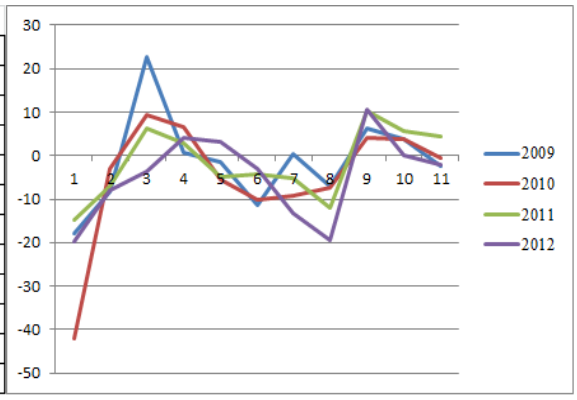


Table 2: Leq difference at various stations with reference to 2013(Western suburban)
Fig 5: Line chart showing the Leq difference at different locations (Central and Eastern suburban) (Day 1)

	With reference to year 2013 (Day 1st)				
Sr. No.	Location	2009	2010	2011	2012
1	Andheri	-16	-15.4	-13.3	-21
2	Bandra	-1.1	-9.7	-1.1	0.1
3	Borivali	-0.6	-1.7	1.3	2.4
4	Dadar (E)	-18.4	-21.3	-11.3	-25.3
5	Dadar (W)	-15.5	-11.3	-11.6	-24.5
6	Elphinston	-8	-10.8	-14.4	-21.3
7	Girgaon Chowpati	1.4	-7.6	-2	-18.7
8	Grant Road	-8.2	-13.8	-5	-5.3
9	Juhu Chowpati	-3.3	-0.7	0.3	-14.1
10	Kandivali (E)	-7.1	-6.9	-1.1	-4.8
11	Kandivali (W)	-9	-9.6	-0.7	-4.4
12	Khar	0.4	-5.9	7.1	-7.5
13	Santacruz (E)	-0.5	-4.1	-3.5	-17.5
14	Mumbai Central	-16.2	-23.6	-24.5	-38.3

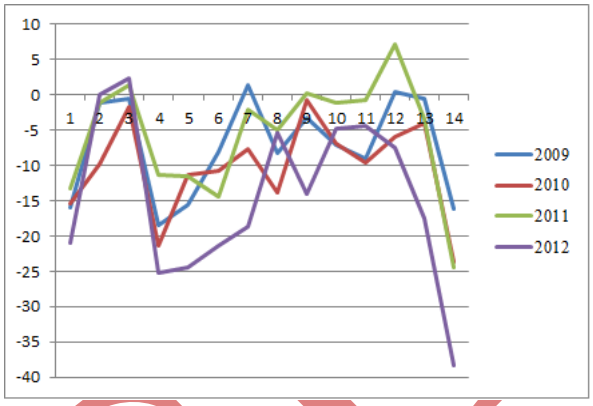


Table 3: Leq difference at various stations with reference to 2013 (Central and Eastern suburban)
Fig 6: Line chart showing the Leq difference at different locations (Central and Eastern suburban) (Day 2)

	With reference to 2013 (2nd day)				
Sr.No	Location	2009	2010	2011	2012
1	Bhandup	6.3	-0.9	20	7.4
2	Byculla	-2.8	-0.7	-3.4	-4
3	Chembur (E)	24.6	2.5	5.9	-2.6
4	Chembur (W)	2.6	10.5	9.2	10.3
5	Chinchpokali (E)	6.7	1.8	3.4	5
6	Chinchpokali (W)	-0.7	4.5	6	2.1
7	Ghatkoper	8.6	4.5	6.9	-5.2
8	Mulund	-2	-2.2	6.3	-13.4
9	Parel	-7.2	-8.8	-10.7	-5.3
10	Vikhroli	0.6	-0.4	3.7	-1.9
11	Wadala	1.1	8.2	9.3	2.6

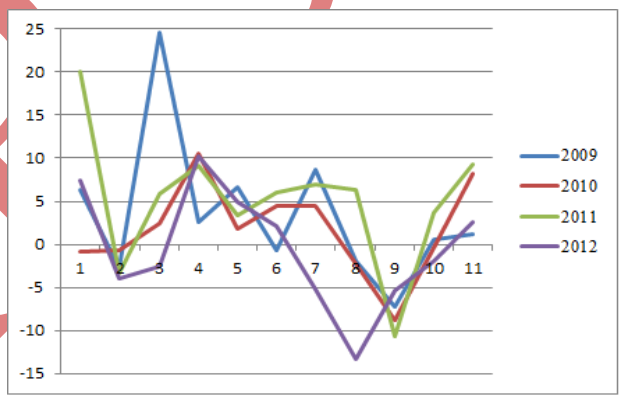


Table 4: Leq difference at various stations with reference to 2013 (Western suburban)
Fig 9: Line chart showing the Leq difference at different locations (Western suburban)

	With reference to 2013 (2nd day)				
Sr. No.	Location	2009	2010	2011	2012
1	Andheri	5.9	8.3	3.7	-4.9
2	Bandra	11.7	-1.2	14.1	9.7
3	Borivali	4.5	3.1	-6.7	7.5
4	Dadar (E)	0.8	-1.9	4.6	-7.4
5	Dadar (W)	-1.2	0.8	2.6	-8.1
6	Elphinston	13.5	12.6	10	-0.2
7	Girgaon Chowpati	7.8	7.3	20.3	8.3
8	Grant Road	3	-5.8	-0.6	0.2
9	Juhu Chowpati	-2	-4.2	-5.3	-14.1
10	Kandivali (E)	-11.3	-9.3	-6.5	-3.6
11	Kandivali (W)	-2	-8.6	-2	-11.9
12	Khar	0.1	-2.8	-7.3	-7
13	Santacruz (E)	2.3	-1.9	8.5	-11
14	Mumbai Central	-10.5	-4.7	-10.2	-15.1

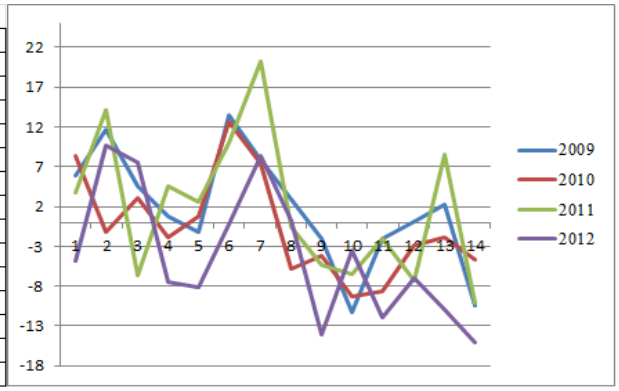


Table 5: Leq difference at various stations with reference to 2013(Central and Eastern suburban)
Fig 8: Line chart showing the Leq difference at different locations (Central and Eastern suburban) (Day 2)

	With reference to year 2013 (Day 5th)				
Sr.No	Location	2009	2010	2011	2012
1	Bhandup	5.8	-13.3	3.6	-6.3
2	Byculla	-10	-15.2	-7.1	-4.3
3	Chembur (E)	17.8	-6.7	2.1	-5.8
4	Chembur (W)	6.6	13.9	-3.2	-6.6
5	Chinchpokali (E)	-20.9	-21.1	-29.8	-15.7
6	Chinchpokali (W)	-3.4	5.4	-1.5	-2.3
7	Ghatkoper	-5.1	11.1	3.1	-7.4
8	Mulund	-10.4	-15.1	-18.8	-19.4
9	Parel	-9.6	-22.8	-11.9	-8.7
10	Vikhroli	-5.2	-6.1	-3.9	-11.3
11	Wadala	-7.9	-7.9	-0.1	-7.8

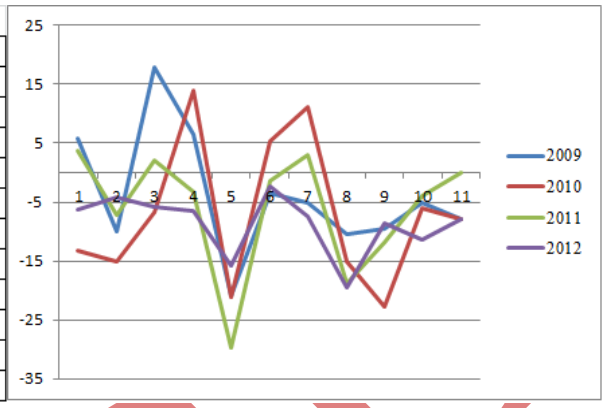
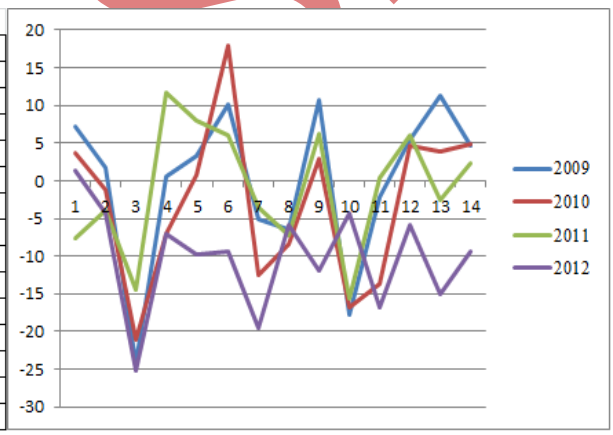


Table 6: Leq difference at various stations with reference to 2013 (Western suburban)
Fig 9: Line chart showing the Leq difference at different locations (Western suburban)

	With reference to year 2013 (Day 5th)				
Sr. No.	Location	2009	2010	2011	2012
1	Andheri	7.1	3.7	-7.7	1.3
2	Bandra	1.8	-1.2	-3.9	-4.4
3	Borivali	-24.3	-21.1	-14.4	-25.1
4	Dadar (E)	0.5	-7	11.6	-7.1
5	Dadar (W)	3.2	0.8	7.9	-9.7
6	Elphinston	10.2	17.9	6.1	-9.4
7	Girgaon Chowpati	-5	-12.6	-3.6	-19.5
8	Grant Road	-6.4	-8.5	-7.3	-5.8
9	Juhu Chowpati	10.7	2.9	6.3	-12
10	Kandivali (E)	-17.8	-16.8	-15.6	-4.3
11	Kandivali (W)	-2.2	-13.6	0.4	-16.8
12	Khar	5.5	4.7	6	-5.9
13	Santacruz (E)	11.3	3.8	-2.5	-15.1
14	Mumbai Central	4.6	4.8	2.3	-9.4



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