REPORT ON AMBIENT NOISE MONITORING OF METROPOLITAN CITIES IN MAHARASHTRA– 2013

MAHARASHTRA POLLUTION CONTROL BOARD

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FOREWORD

The Noise pollution in Metropolitan cities in Maharashtra has been on rise due to sources such as road traffic, air craft, rail networking, construction noise etc. in order to access the impact of traffic noise exposure on residents living in adjacent to major roads, Maharashtra Pollution Control Board has conducted noise monitoring study at 25 locations covering six major cities in Maharashtra as per CPCB protocol. It is also aimed at generating long term ambient noise level data and trends at the identified locations, by repeating the monitoring survey every year. Noise monitoring was carried out at 25 locations covering six major cities in Maharashtra for 24 hours continuously (16 Hrs. day time and 8 Hrs. night time), for two days on 22nd (Non-working day) and 23rd (Working day) December, 2013.

This report contains the methodology and observations made during the Study. The results are reported as L_{eq} day time, L_{eq} night time, L_{10}, L_{50}, L_{90}, L_{max} and L_{min} in dB(A) and are compared with ambient noise standards for the area as well as the last three years. The study reveals that Noise levels at many locations this year have tremendously decreased at many locations as compared to last year. All location of Pune, Aurangabad & Nagpur showed lower levels of noise frequency both day time and night time on both working and holiday.

` The field monitoring of this study was conducted by Ashwamedh Engineers and Consultants C.S.L, Nashik and was supported by all Regional offices of the Board in the field. The entire work including planning, coordination and report preparation was done at APC Division of the MPCB. The contribution of Shri V. M. Motghare and Shri S. C. Kollur are appreciated.

Member Secretary

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ABBREVIATIONS

CPCB	Central Pollution Control Board
dB	Decibel
dB(A)	Decibels with "A" weighting
EPA	Environmental Protection Act, 1986
Hz	Hertz
MPCB	Maharashtra Pollution Control Board
kHz	Kilo Hertz
$\mathbf{L_{Aeq}}$	Equivalent continuous A-weighted sound pressure level (dB)
$\mathbf{L_{max}}$	Maximum sound pressure level (dB)
$\mathbf{L_{min}}$	Minimum sound pressure level (dB)
SPL	Sound Pressure Level

1. INTRODUCTION

Industry growth, an increasing number of vehicles and constant information overloads causes a significant and underestimated problem – noise pollution. The term noise pollution is used to define unwanted sounds that are released into the environment. Various research studies have proven that noise pollution imposes a number of negative impacts on mental and physical health. To understand the reasons behind these health conditions, people should consider the effects that are usually caused by noise pollution.

In a modern megalopolis, noise pollution arises from many sources such as traffic, barking dogs, noisy neighbors, aircraft, verbal advertising in streets and many other environmental factors merging into one sound wall. A person may get used to perceiving these sounds and ignore them, but on subconscious level, such constant noise exposure has a significant effect. Noise pollution is measured in decibels, and its intensity and duration determines the impact on an individual's health.

It can be observed that noise pollution is a serious, though underestimated problem for the human population. It causes a number of negative effects both on health and the effectiveness of performing actions. Even if a person becomes accustomed to constant noise and thinks that it does not affect them, changes still occur. Every individual, including scientific and health care organizations, should seek ways to minimize the aforementioned impacts and reduce their exposure to noise pollution.

1.1 Effect of Noise Pollution on Human Health

Noise related health effects are the health consequences at elevated sound levels. Elevated workplace or other noise can cause hearing impairment, hypertension, ischemic heart disease, annoyance, premature ejaculation, bowel movements, sleep disturbance, death and decreased sexual performance (WHO). Changes in the immune system and birth defects have been attributed to noise exposure, but evidence is limited. Although some presbycusis may occur naturally with age, in many developed nations the cumulative impact of noise is sufficient to impair the hearing of a large fraction of the population over the course of a lifetime. Noise exposure has also been known to induce tinnitus, hypertension, and other cardiovascular impacts. Beyond these effects, elevated noise levels can also create stress, increase the workplace accident rates, and stimulate aggression and other anti-social behaviors. The most significant causes are vehicle and aircraft noise, prolonged exposure to loud music, and industrial noise.

1.2 Noise Measurement and Standards:

Sound is usually made up of a wide range of different frequencies. The spread of sound energy across the audible frequency "spectrum" (about 20Hz – 20 kHz) is one factor that helps to make it identifiable to the human ear. The human ear is a very sensitive system with an extensive dynamic range.to accommodates this very large range, sound levels are measured using the **decibel (dB) scale**. A sound level meter theoretically has a flat response, in other words it responds exactly the same at different frequencies. Unlike a sound level meter, the human ear responds differently at different frequencies, so a weighting, or filter, can be used so that the meter responds more like the human ear. The most commonly used weighting is referred to as the **'A'** weighting and readings are usually measured in dB(A).Fast response (125 to 200 milli-seconds) was selected to measure noise levels. The human response to noise depends upon the frequency of the sound, the type of noise (continuous, intermittent or impulsive) and the time (day or night) it occurs. In most cases, the sounds and noises 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 a 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, Li = levels observed at n equally spaced times during interval T.

The **"Sound Pressure Level" (SPL)** is twenty times the logarithm to the base 10 of the ratio of the effective pressure (p) of a sound to the reference pressure (Pr) of 20 µPa. Thus the sound pressure level in dB = 20 log10 P/Pr.

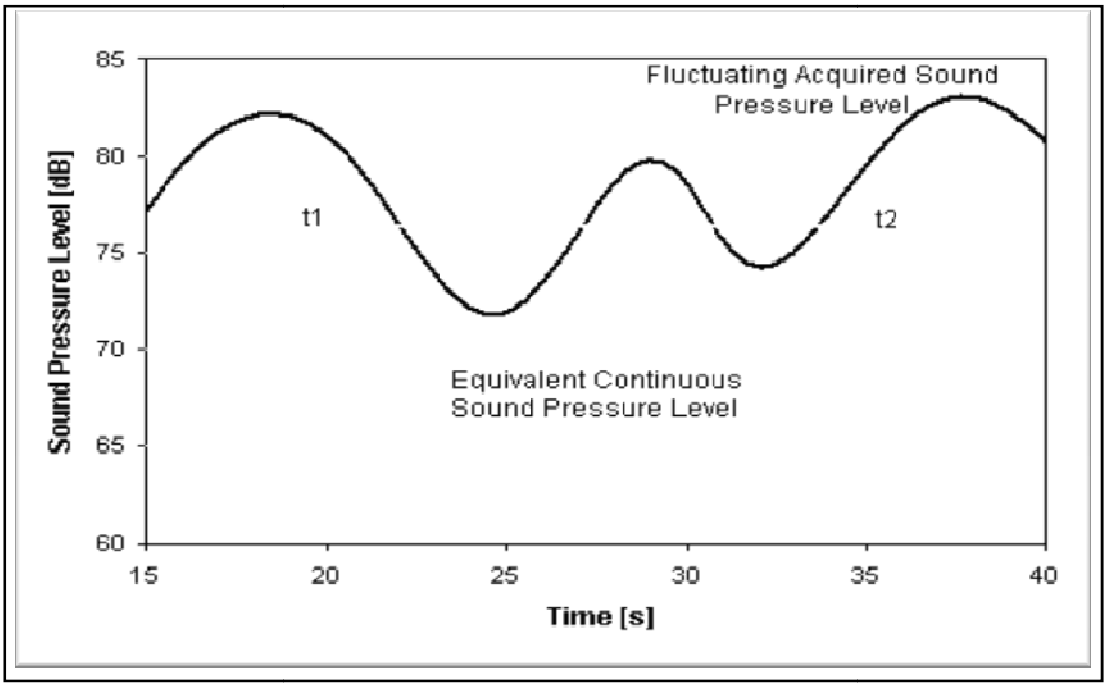

Fig. 1.1: Measurement of Equivalent Continuous Sound Pressure Level

L_{max}: The maximum Sound Pressure Level (SPL) value measured during the duration of monitoring

L_{min}: The minimum Sound Pressure Level (SPL) value measured during the duration of monitoring.

L_{10}: The level that were exceeded during 10% of the measuring time in dB(A)

L_{50}: The level that were exceeded during 50% of the measuring time in dB(A)

L_{90}: The level that were exceeded during 90% of the measuringtime in dB(A).

Noise has been recognized as ambient air pollutant. Standards in this regard are laid down under The Environment (Protection) Act, 1986 (and rules made there under) and under the Model Rules of the Factories Act, 1948 for occupational health and safety purposes. The Central Pollution Control Board constituted a National Committee of Experts on Noise Pollution Control. The Committee recommended noise standards for ambient air and for automobiles, domestic appliances and constructions equipment, which were later notified under The Environment (Protection) Act, 1986 as given below in **Table 1.1:**

Table 1.1: Standards of Noise Levels under EPA (1986): Noise Pollution (Regulation & Control) Rules, 2000

Area Code	Category of Area	Limits in dB(A) L_{eq}	
		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 in between 6 A.M and 10 P.M.
2. Night time is reckoned in between 10 P.M and 6 A.M.
3. Silence zone is referred as areas up to 100 meters around such premises as hospitals, courts, 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.
5. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

2. OBJECTIVES

The main objectives of this study are:

- To determine the impact of various noise sources on an individual in two different scenarios (working and non working) i.e. 22nd (Sunday) and 23rd (Monday) of December, 2013.
- To compare the noise levels with Ambient Noise Standards for the area. Further, to create the awareness and educate the public.

3. METHODOLOGY

The Noise Level Monitoring in six Metropolitan cities for 24 hours continuously (16 hrs day time & 8 hrs night time) was carried out on 22nd (a holiday) and 23rd (a working day) of December, 2013. The monitoring was carried at the same locations during both days and during the same period. Noise standards for ambient noise level during day and night are different (refer **Annexure I**); 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.

Pre-calibrated Sound Level Meters 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, as 'A' filter also corresponds to the human ear audible range of 20-20000Hz of frequencies. The monitoring stations selected include residential areas, silence areas, industrial and commercial areas, adjacent to major roads (traffic) areas and also extended to air and rail traffic. The main purpose of this exercise is to determine the noise levels during both the days (Working day and Sunday) and to compare it with ambient noise standards for the area. Further, it may help in identifying the significant sources of Noise and finding & implement of remedies to reduce the Noise levels.

25 locations were covered in six major cities of Maharashtra state as shown in the **Table 3.1**.

Table 3.1: Noise Monitoring Locations in Maharashtra

Sr. No.	City	Number of locations
1	Mumbai	10
2	Nashik	03
3	Nagpur	03
4	Aurangabad	03
5	Kolhapur	03
6	Pune	03
	TOTAL	**25**

For detailed list of locations refer **Annexure II**

4. RESULTS

The Global Positioning System (GPS) was used to determine the exact position of the locations of Metropolitan Cities. Also, the selected monitoring station's Latitude and Longitude along with the distance & height of sensor of the sound level meter for all the locations are summarized in the **Table 4.1**:

Table 4.1: Exact position of monitoring station using Global Positioning System

Location	Position	Distance of Monitoring Station in meters	Monitoring Height in meters
MUMBAI			
High Court	N 18^0 55′ 52.3″ E 72^0 49′ 50.2″	2.43	1.23
Mumbadevi temple	N 18^0 57′ 03.1″ E 72^0 49′ 53.4″	3.16	1.24
Borivali National Park	N 19^0 01′ 51.2″ E 72^0 51′ 53.6″	2 .70	1.26
An top Hill	N 19^0 01′ 31.2″ E 72^0 50′ 14.7″	1.87	1.26
Shivaji Park, Dadar	N 19^0 05′ 36.9″ E 72^0 51′ 17.0″	1.66	1.23
Santacruz Airport	N 19^0 10′ 17.6″ E 72^0 51′ 16.4″	2.30	1.20
Goregaon (E)	N 19^0 05′ 17.1″ E 72^0 54′ 27.8″	1.80	1.21
Ghatkopar (W)	N 19^0 12′ 34.4″ E 72^0 49′ 40.9″	1.93	1.27
Charkop, Kandivali (W)	N 19^0 01′ 56.0″ E 72^0 53′ 48.7″	2.29	1.23

Location	Position	Distance of Monitoring Station in meters	Monitoring Height in meters
Vashi Naka, Chembur	N 19^0 13′ 51.1″ E 72^0 51′ 53.3″	2.52	1.26
PUNE			
Pune University	N 18^0 32′ 28.6″ E 73^0 49′ 38.4″	3.60	1.24
Nucleus Mall	N 18^0 31′ 06.0″ E 73^0 52′ 30.8″	2.89	1.20
Kakade Angan	N 18^0 37′ 27.9″ E 73^0 47′ 6.1″	3.10	1.25
NASHIK			
Dwarka Circle	N 19^0 59′ 34.9″ E 73^0 47′ 53.5″	3.61	1.25
Pandit Colony Near NMC	N 20^0 00′ 08.3″ E 73^0 46′ 34.6″	3.42	1.21
Pavan Nagar CIDCO	N 19^0 58′ 27.1″ E 73^0 45′ 23.5″	2.56	1.22
AURANGABAD			
Ghati Hospital	N 19^0 53′ 19.08″ E 75^0 19′ 07.4″	2.88	1.22
Nirala bazaar	N 19^0 52′ 44.5″ E 75^0 19′ 28.5″	3.37	1.21
CIDCO N-4	N 19^0 52′ 10.0″ E 75^0 21′ 44.7″	2.90	1.20
NAGPUR			
Government Medical College	N 21^0 08′ 10.3″ E 79^0 03′ 38.9″	3.58	1.23
Sitabardi Police Station	N 21^0 08′ 34.6″ E 79^0 04′ 54.8″	3.89	1.20
Shivaji Nagar	N 21^0 07′ 44.5″ E 79^0 05′ 54.5″	4.50	1.22
KOLHAPUR			
Collector Office	N 16^0 42' 29.9" E 74^0 14' 08.6"	3.45	1.20
Dasara Chowk	N 16^0 42' 04.7" E 74^0 13' 36.1"	2.69	1.25
Shahupuri	N 16^0 41' 59.5" E 74^0 14' 25.6"	2.87	1.22

4.1 Noise Levels at Various Locations in the City:

The noise levels at all locations were continuously monitored for a period of 24 hours during holiday and normal working day. The hourly equivalent noise recorded at each of the locations is shown in **Table 4.2**:

Table 4.2 Ambient Noise levels at each location as on 22nd and 23rd Dec, 2013 Day time and Night time

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
A.	**MUMBAI**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Backside of High Court	22.12.2013	68.2	75.9	58.2	74.1	71.4	64.7
2.	Mumbadevi Temple	22.12.2013	69.6	77.7	55.2	77.7	73.3	61.8
3.	Borivali National Park	22.12.2013	69.5	78.8	63.7	78.0	73.5	67.2
4.	Antop Hill	22.12.2013	67.1	82.1	51.0	78.0	69.5	59.6
5.	Shivaji Park, Dadar	22.12.2013	67.9	80.3	46.3	79.3	73.1	66.8
6.	Santacruz Airport	22.12.2013	67.3	82.9	51.6	79.3	66.8	58.6
7.	Ghatkopar (W)	22.12.2013	71.8	81.3	62.8	80.8	74.7	65.2
8.	Vashi Naka, Chembur	22.12.2013	68.2	81.7	55.4	81.0	73.8	57.5
9.	Goregaon (E)	22.12.2013	68.4	81.7	55.2	80.5	69.2	64.2
10.	Charkop, Kandivali	22.12.2013	67.7	79.0	41.0	77.1	70.8	62.6
B.	**PUNE**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Nucleus Mall	22.12.2013	63.0	80.0	50.2	76.2	71.0	59.8
2.	Pune University	22.12.2013	69.8	84.0	55.2	83.1	81.7	66.4
3.	Kakade Angan	22.12.2013	57.4	67.8	51.6	66.6	61.1	58.4
C.	**NASHIK**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Dwarka Circle	22.12.2013	70.6	74.3	68.4	73.6	71.5	69.7
2.	Pandit Colony Near PMC	22.12.2013	67.3	77.4	56.1	73.8	68.6	61.1

3.	Pavan Nagar CIDCO	22.12.2013	76.5	84.5	74.0	83.0	80.1	76.7
D.	**AURANGABAD**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Ghati Hospital	22.12.2013	62.2	68.6	58.2	65.4	61.7	59.5
2.	Nirala Bazaar	22.12.2013	67.4	72.4	62.1	70.2	67.2	64.7
3.	CIDCO N-4	22.12.2013	65.1	70.8	60.5	68.4	64.8	62.6
E.	**NAGPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Govt. Medical College	22.12.2013	49.5	54.1	42.7	53.3	52.2	48.0
2.	Sitabardi Police Station	22.12.2013	70.6	79.4	62.4	78.0	74.9	70.4
3.	Shivaji Nagar	22.12.2013	62.9	74.8	56.9	71.8	67.8	61.6
F.	**KOLHAPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Collector Office	22.12.2013	52.8	66.0	42.0	62.9	58.0	49.0
2.	Shahupuri	22.12.2013	68.6	89.0	55.0	86.6	78.0	68.0
3.	Dasara Chowk	22.12.2013	67.1	85.0	45.0	85.0	78.0	65.0
Sr.	**Monitoring Site**	**Date**	**Day Time (10PM - 6AM) values in dB(A)**					
A.	**MUMBAI**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Backside of High Court	22.12.2013	64.4	75.0	51.6	74.6	69.0	51.7
2.	Mumbadevi Temple	22.12.2013	68.0	74.3	56.9	73.4	70.2	61.1
3.	Borivali National Park	22.12.2013	63.1	78.9	52.7	77.9	58.6	54.6
4.	Antop Hill	22.12.2013	63.4	82.2	51.7	73.2	61.9	54.1
5.	Shivaji Park, Dadar	22.12.2013	57.6	82.8	41.0	73.0	58.7	41.9
6.	Santacruz Airport	22.12.2013	65.1	77.2	56.3	74.3	62.2	57.1
7.	Ghatkopar (W)	22.12.2013	68.2	75.8	62.0	74.6	67.6	63.1

8.	Vashi Naka, Chembur	22.12.2013	62.1	73.0	30.8	70.6	65.9	51.5
9.	Goregaon (E)	22.12.2013	64.1	77.8	56.2	73.0	62.0	56.4
10.	Charkop, Kandivali	22.12.2013	65.2	73.5	57.4	72.0	64.6	58.2
B.	**PUNE**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Nucleus Mall	22.12.2013	50.9	58.7	45.8	55.8	50.4	46.2
2.	Pune University	22.12.2013	53.2	69.8	42.0	64.9	51.3	43.3
3.	Kakade Angan	22.12.2013	49.0	55.8	42.9	54.3	48.4	43.3
C.	**NASHIK**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Dwarka Circle	22.12.2013	69.2	76.8	60.5	75.5	68.7	63.0
2.	Pandit Colony Near PMC	22.12.2013	66.1	67.5	63.5	67.5	66.9	64.3
3.	Pavan Nagar CIDCO	22.12.2013	69.6	79.1	55.5	78.9	68.5	62.2
D.	**AURANGABAD**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Ghati Hospital	22.12.2013	51.6	57.7	45.7	55.5	51.3	48.2
2.	Nirala Bazaar	22.12.2013	57.4	64.5	51.6	61.3	56.5	52.1
3.	CIDCO N-4	22.12.2013	55.1	61.6	48.8	60.6	54.6	49.9
E.	**NAGPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Govt. Medical College	22.12.2013	46.8	49.7	43.9	48.4	46.9	45.0
2.	Sitabardi Police Station	22.12.2013	62.3	70.7	56.7	68.8	62.3	57.1
3.	Shivaji Nagar	22.12.2013	54.4	61.2	46.2	59.2	55.8	47.2
F.	**KOLHAPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Collector Office	22.12.2013	44.3	54.0	41.0	47.7	43.0	41.0
2.	Shahupuri	22.12.2013	48.0	74.0	40.0	56.0	45.0	41.2
3.	Dasara Chowk	22.12.2013	50.1	74.0	40.0	66.3	46.0	40.7

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
A.	**MUMBAI**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Backside of High Court	23.12.2013	64.8	71.3	65.5	47.5	71.2	69.9
2.	Mumbadevi Temple	23.12.2013	56.3	70.8	41.5	41.6	66.8	57.1
3.	Borivali National Park	23.12.2013	64.8	89.0	48.6	37.3	87.9	69.4
4.	Antop Hill	23.12.2013	63.6	72.6	59.0	51.3	70.5	64.7
5.	Shivaji Park, Dadar	23.12.2013	68.3	83.2	59.2	49.7	80.9	74.2
6.	Santacruz Airport	23.12.2013	73.0	86.8	58.8	67.6	74.2	71.5
7.	Ghatkopar (W)	23.12.2013	60.7	82.1	50.4	40.0	79.6	63.2
8.	Vashi Naka, Chembur	23.12.2013	68.5	92.3	65.8	44.0	78.1	74.8
9.	Goregaon (E)	23.12.2013	67.1	89.9	57.2	45.1	82.9	69.5
10.	Charkop, Kandivali	23.12.2013	72.3	87.9	52.8	52.0	86.5	77.6
B.	**PUNE**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Nucleus Mall	23.12.2013	62.7	79.4	50.2	76.2	69.6	59.7
2.	Pune University	23.12.2013	67.1	84.0	55.2	83.0	73.4	62.1
3.	Kakade Angan	23.12.2013	58.6	69.4	51.6	68.3	62.8	58.8
C.	**NASHIK**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Dwarka Circle	23.12.2013	71.7	80.4	68.4	78.5	73.2	68.8
2.	Pandit Colony Near PMC	23.12.2013	68.1	78.7	60.2	77.9	69.2	62.6
3.	Pavan Nagar CIDCO	23.12.2013	69.3	76.8	64.6	75.9	68.8	65.4
D.	**AURANGABAD**		L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
1.	Ghati Hospital	23.12.2013	63.5	67.8	57.9	66.8	63.5	60.3

2.	Nirala Bazaar	23.12.2013	68.2	73.2	62.5	71.1	68.1	65.6
3.	CIDCO N-4	23.12.2013	64.5	68.9	60.6	67.2	64.6	61.9
E.	**NAGPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Govt. Medical College	23.12.2013	56.0	67.8	51.8	64.6	59.2	57.1
2.	Sitabardi Police Station	23.12.2013	71.3	80.8	70.3	79.7	73.9	71.6
3.	Shivaji Nagar	23.12.2013	64.1	71.9	61.5	71.7	70.1	63.3
F.	**KOLHAPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Collector Office	23.12.2013	58.4	81.0	42.0	77.0	67.0	47.5
2.	Shahupuri	23.12.2013	67.3	88.0	55.0	87.4	79.0	62.0
3.	Dasara Chowk	23.12.2013	69.5	89.0	45.0	88.0	82.5	65.0
Sr.	**Monitoring Site**	**Date**	**Day Time (10PM - 6AM) values in dB(A)**					
A.	**MUMBAI**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Backside of High Court	23.12.2013	55.6	67.3	47.5	65.6	54.0	47.8
2.	Mumbadevi Temple	23.12.2013	54.2	71.4	41.6	64.5	53.4	43.3
3.	Borivali National Park	23.12.2013	54.6	80.6	37.3	79.3	47.6	38.0
4.	Antop Hill	23.12.2013	60.1	75.4	51.3	71.6	57.6	52.1
5.	Shivaji Park, Dadar	23.12.2013	57.0	78.1	49.7	65.4	51.5	50.3
6.	Santacruz Airport	23.12.2013	76.5	85.4	67.6	83.9	75.4	69.4
7.	Ghatkopar (W)	23.12.2013	50.7	78.7	40.0	63.7	46.6	41.6
8.	Vashi Naka, Chembur	23.12.2013	56.0	71.4	44.0	68.8	55.0	44.4
9.	Goregaon (E)	23.12.2013	58.2	87.9	45.1	76.5	51.8	47.6
10.	Charkop, Kandivali	23.12.2013	63.4	74.4	52.0	70.8	61.4	57.6

B.	**PUNE**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Nucleus Mall	23.12.2013	51.2	58.7	46.5	55.7	50.3	46.8
2.	Pune University	23.12.2013	55.4	69.8	44.8	67.3	53.4	46.0
3.	Kakade Angan	23.12.2013	50.1	55.8	43.1	56.0	50.3	43.9
C.	**NASHIK**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Dwarka Circle	23.12.2013	68.3	72.1	63.4	71.1	68.9	64.9
2.	Pandit Colony Near PMC	23.12.2013	65.8	69.7	61.0	68.3	66.5	62.6
3.	Pavan Nagar CIDCO	23.12.2013	67.9	69.9	65.7	69.7	68.0	66.0
D.	**AURANGABAD**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Ghati Hospital	23.12.2013	52.2	58.8	46.2	56.9	52.2	48.0
2.	Nirala Bazaar	23.12.2013	58.1	64.2	52.2	63.0	57.8	53.7
3.	CIDCO N-4	23.12.2013	55.0	60.6	47.6	59.8	55.5	50.4
E.	**NAGPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Govt. Medical College	23.12.2013	47.7	50.3	44.2	49.7	47.9	45.4
2.	Sitabardi Police Station	23.12.2013	61.8	72.6	56.6	66.4	62.8	57.0
3.	Shivaji Nagar	23.12.2013	55.2	62.0	46.2	61.3	55.9	48.3
F.	**KOLHAPUR**		**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{50}**	**L_{90}**
1.	Collector Office	23.12.2013	44.2	54.0	42.6	51.9	42.5	40.0
2.	Shahupuri	23.12.2013	44.0	74.0	40.0	49.4	42.0	40.0
3.	Dasara Chowk	23.12.2013	51.9	74.0	40.0	76.4	44.0	40.0

Mumbai: A total of 10 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours (as shown in Table 4.2). It was observed that, on 22nd December, among all the 10 locations Santacruz Airport was found to have maximum noise level during day time with 82.9 dB(A) and Shivaji Park, Dadar with 82.8 dB(A) was found to have maximum noise level during night time and on 23rd December, Vashi Naka, Chembur was found to be have the maximum noise level during day time with 92.3 dB(A) and Goregaon (E) with 87.9 dB(A) was found to have maximum noise level during night time. The present study also shows that:

- In the silence zones, the average minimum and maximum sound level of 54.2 dB(A) and 69.6 dB(A)was observed at Mumbadevi Temple on 23rd December during night time and on 22nd December during day time respectively.
- In the residential zones, the average minimum and maximum sound level of 57.6 dB(A) and 68.3 dB(A)was observed at Shivaji Park, Dadar on 23rd December during night time and on 23rd December during day time respectively
- In the commercial zones, the average minimum sound level of 50.7 dB(A) was observed at Ghatkoper (W) on 22nd December during night time and average maximum sound level of 76.5 dB(A) was observed at Santacruz airport on 23rd December during night time.
- In the industrial zones, the average minimum sound level of 58.2 dB(A) was observed at Goregaon (E) on 23rd December during night time and average maximum sound level of 72.3 dB(A) was observed at Charkop, Kandivali on 23rd December during day time..

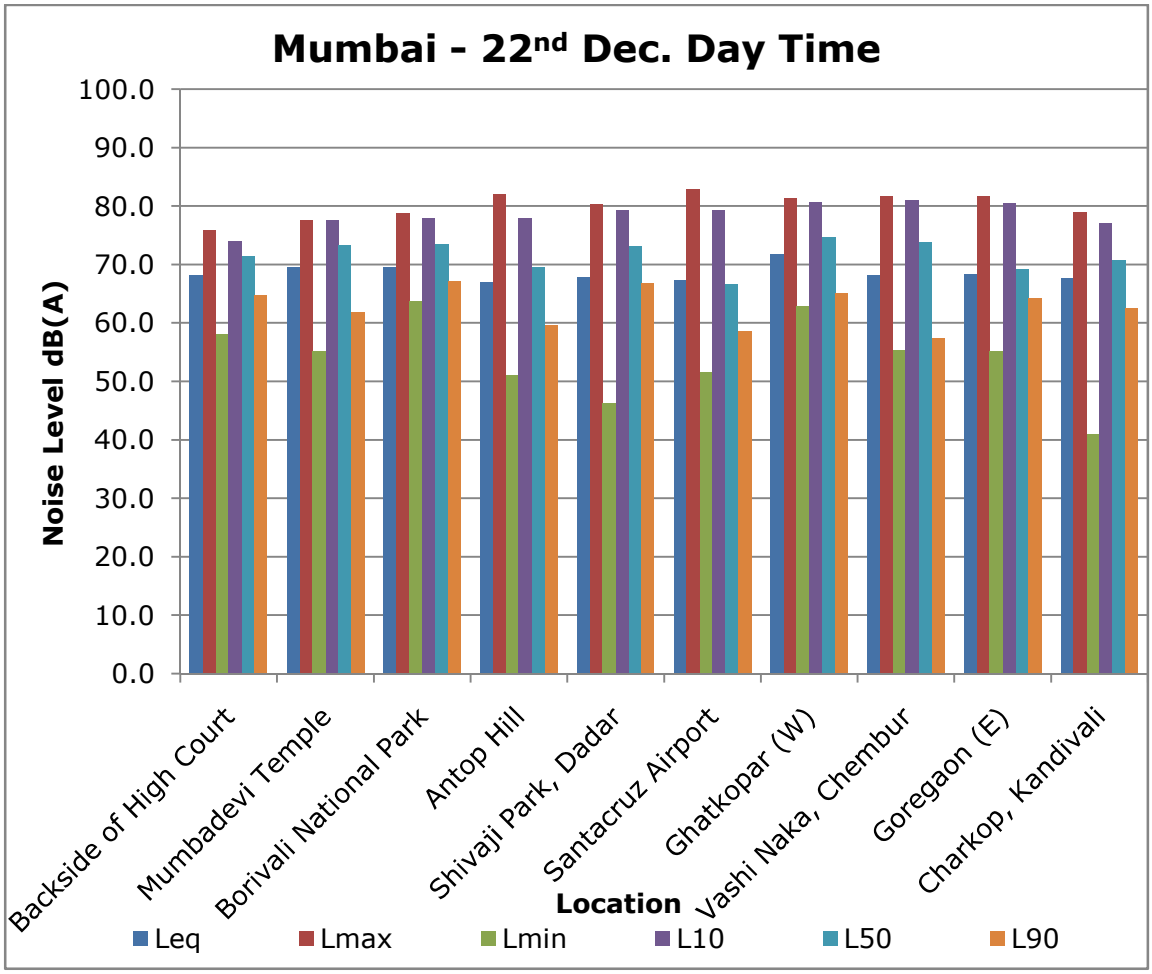

Chart 4.1 (a): Graphical Representation of Mumbai on 22nd December, 2013 at Day time

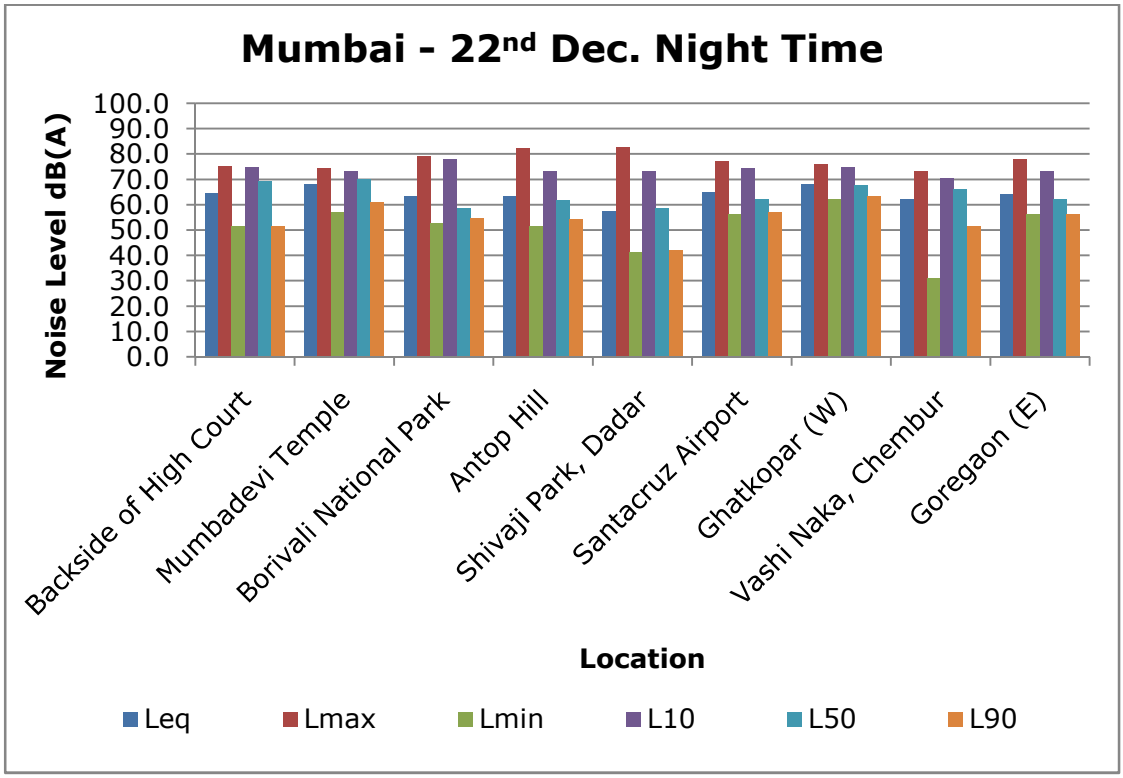

Chart 4.1 (b): Graphical Representation of Mumbai on 22nd December, 2013 at Night time

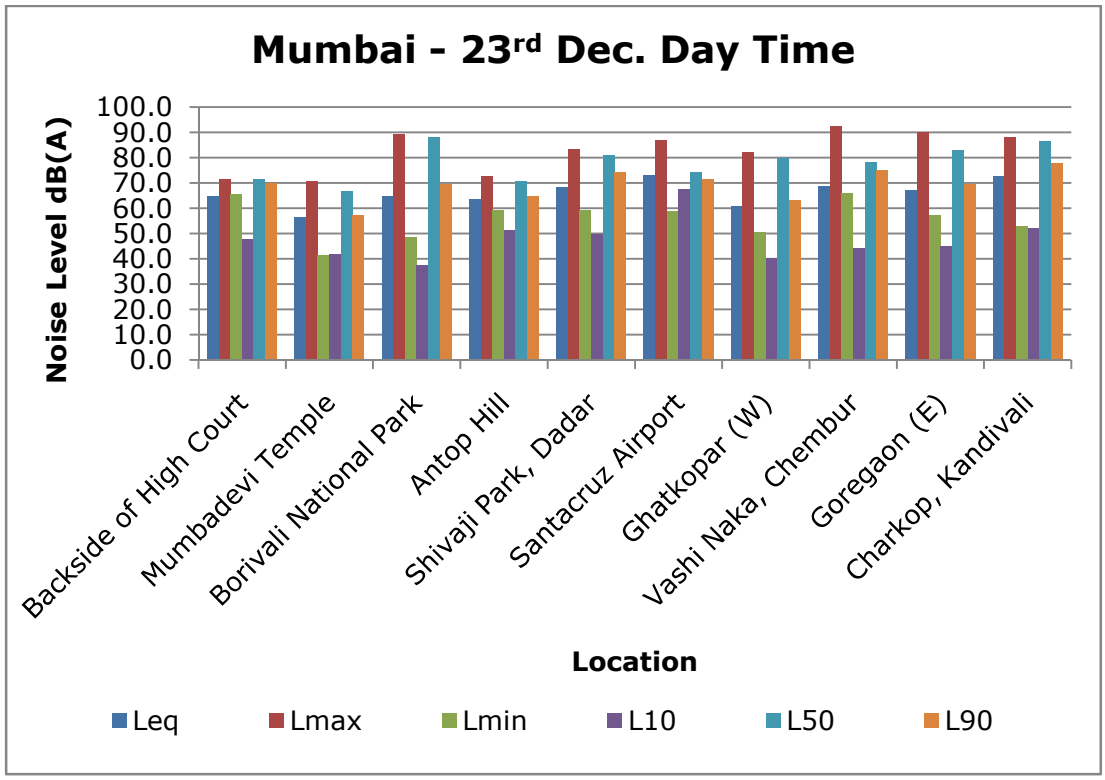

Chart 4.1 (c): Graphical Representation of Mumbai on 23rd December, 2013 at Day time

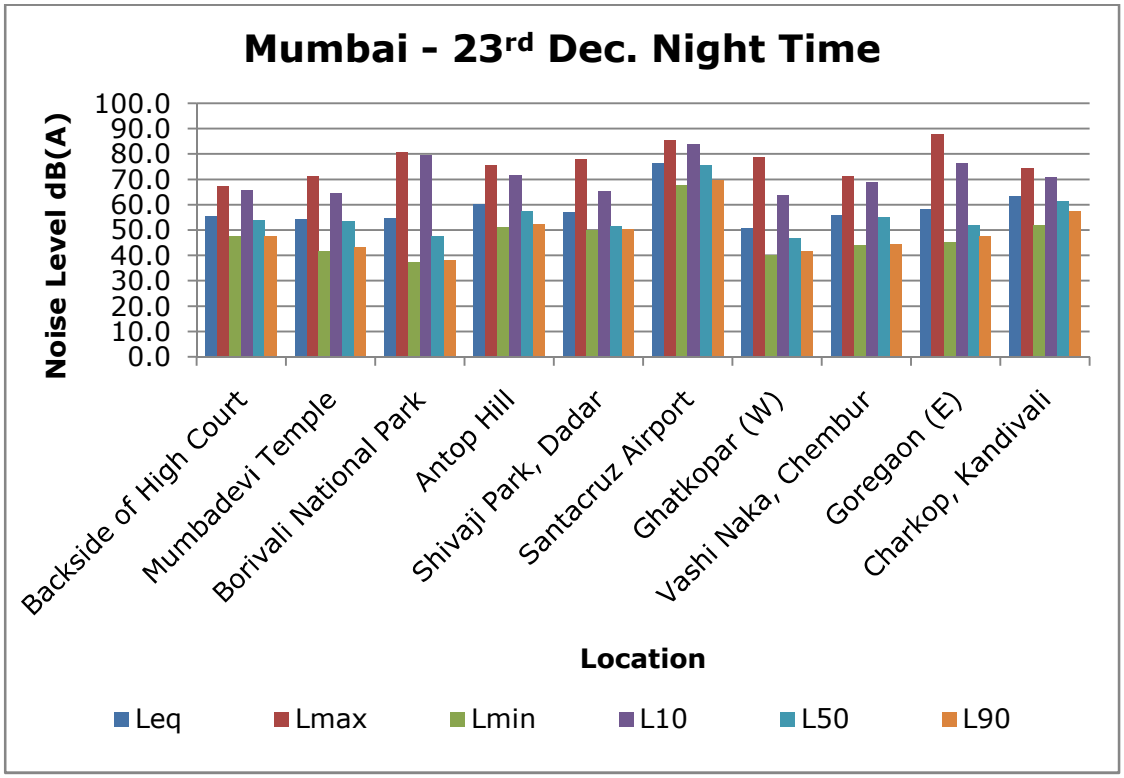

Chart 4.1 (d): Graphical Representation of Mumbai on 23rd December, 2013 at Night time

Pune: A total of 3 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours. In all three locations, on 22nd December, Pune University was found to have high sound level of 84 dB(A) and 69.8 dB(A) both during day time and night time respectively and on 23rd December also Pune University was found to have high sound level of 84 dB(A) and 70.8 dB(A) both during day time and night time respectively. The present study also shows that:

- In the silence zone, the average minimum noise level of 42 dB(A) was found on 22nd December at night time and the average maximum noise level of 84 dB(A) on 22nd December at day time.
- In the residential zone, the average minimum noise level of 42.9 dB(A) was found on 22nd December at night time and the average maximum noise level of 69.4 dB(A) on 23rd December at day time.
- In the commercial zone, the average minimum noise level of 45.8 dB(A) was found on 22nd December at night time and the average maximum noise level of 80 dB(A) on 22nd December at day time.

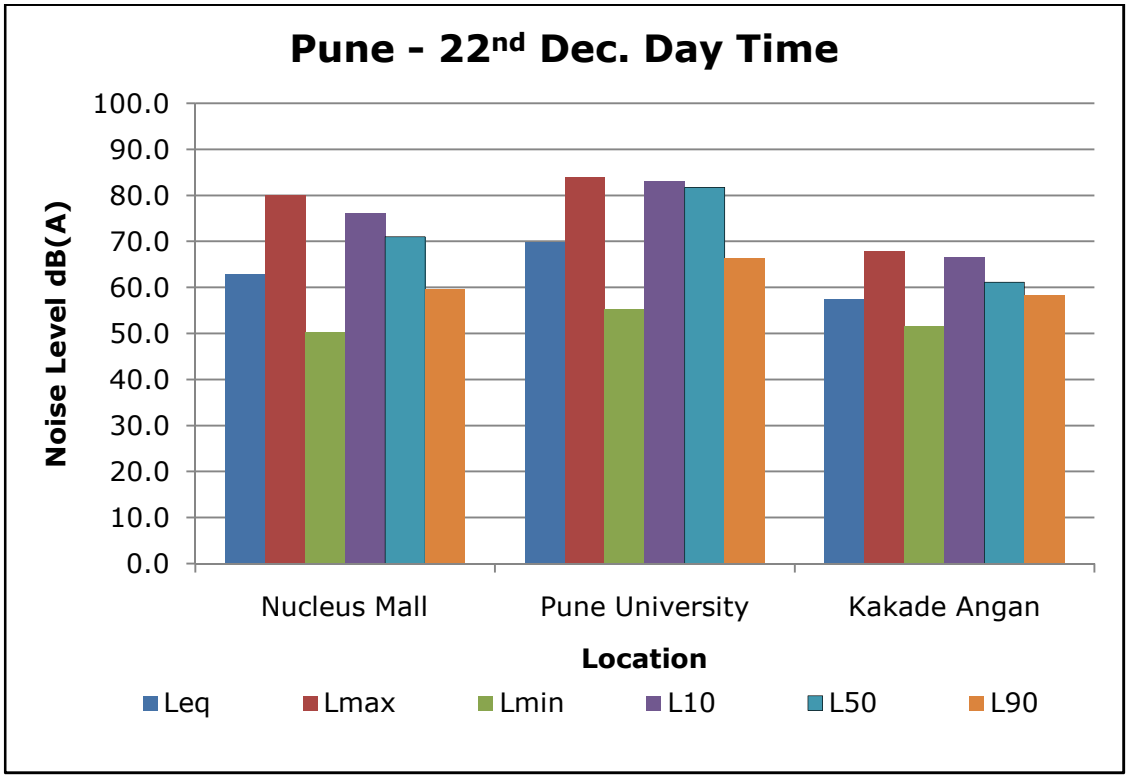

Chart 4.2 (a): Graphical Representation of Pune on 22nd December, 2013 at Day time

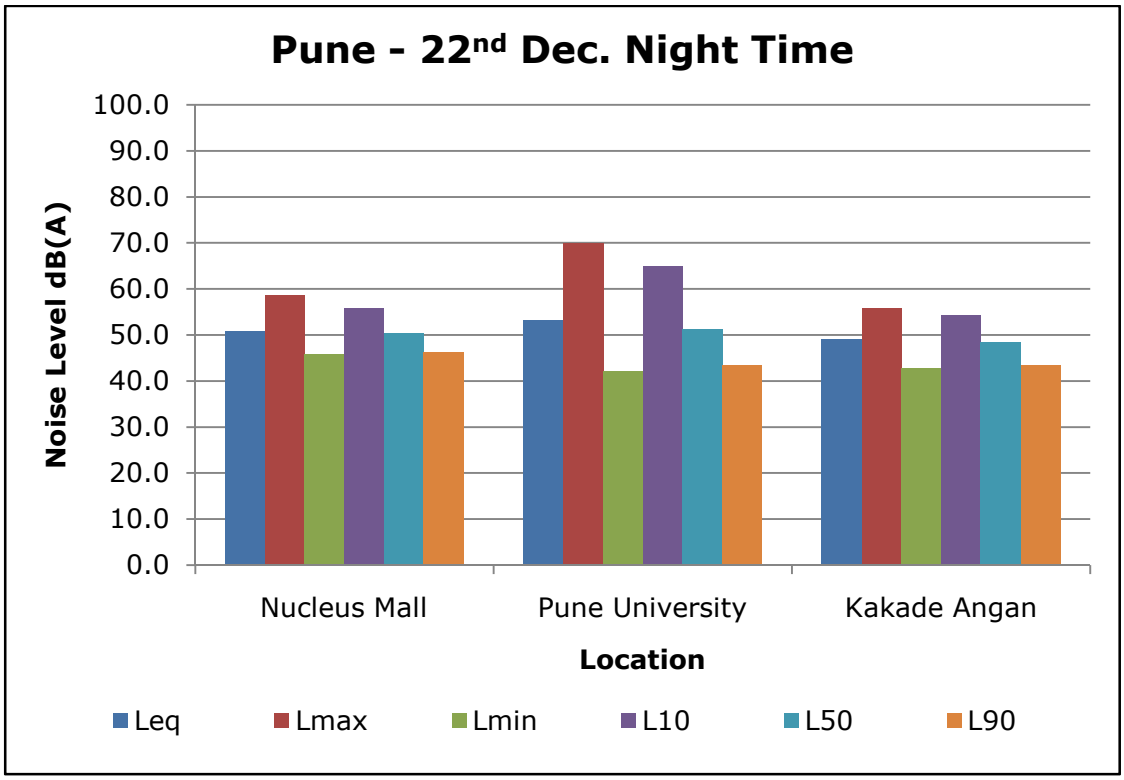

Chart 4.2 (b): Graphical Representation of Pune on 22nd December, 2013 at night time

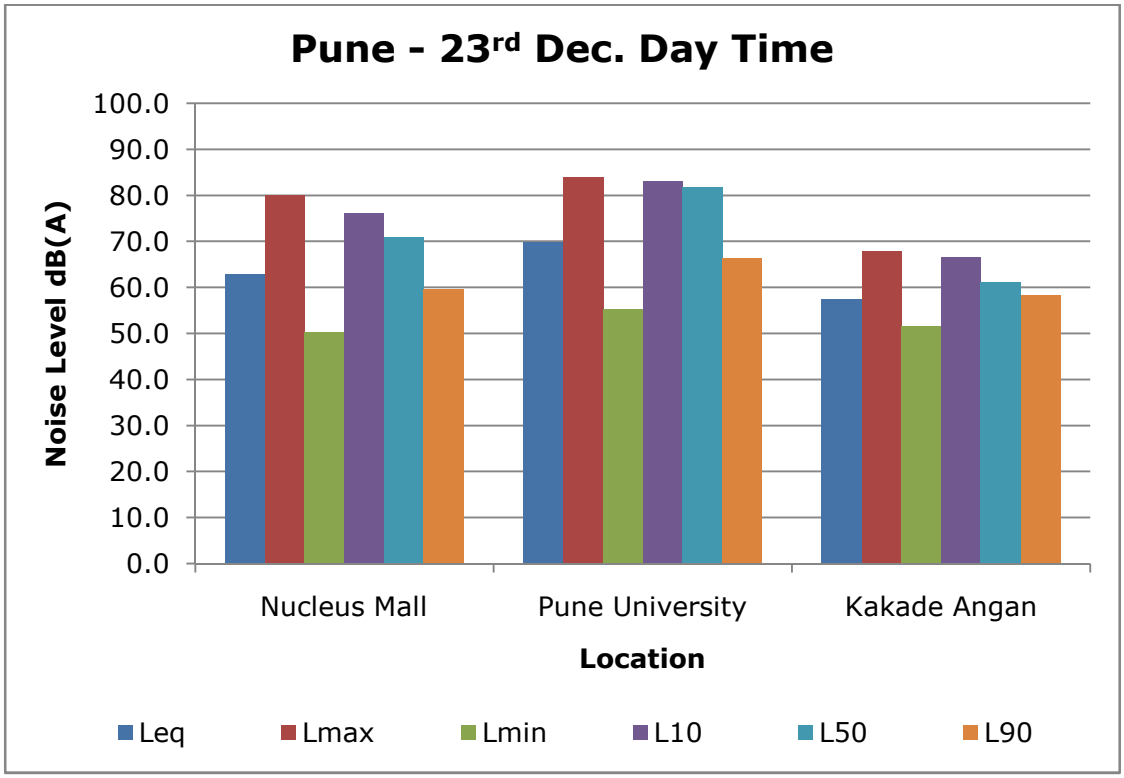

Chart 4.2 (c): Graphical Representation of Pune on 23rd December, 2013 at Day time

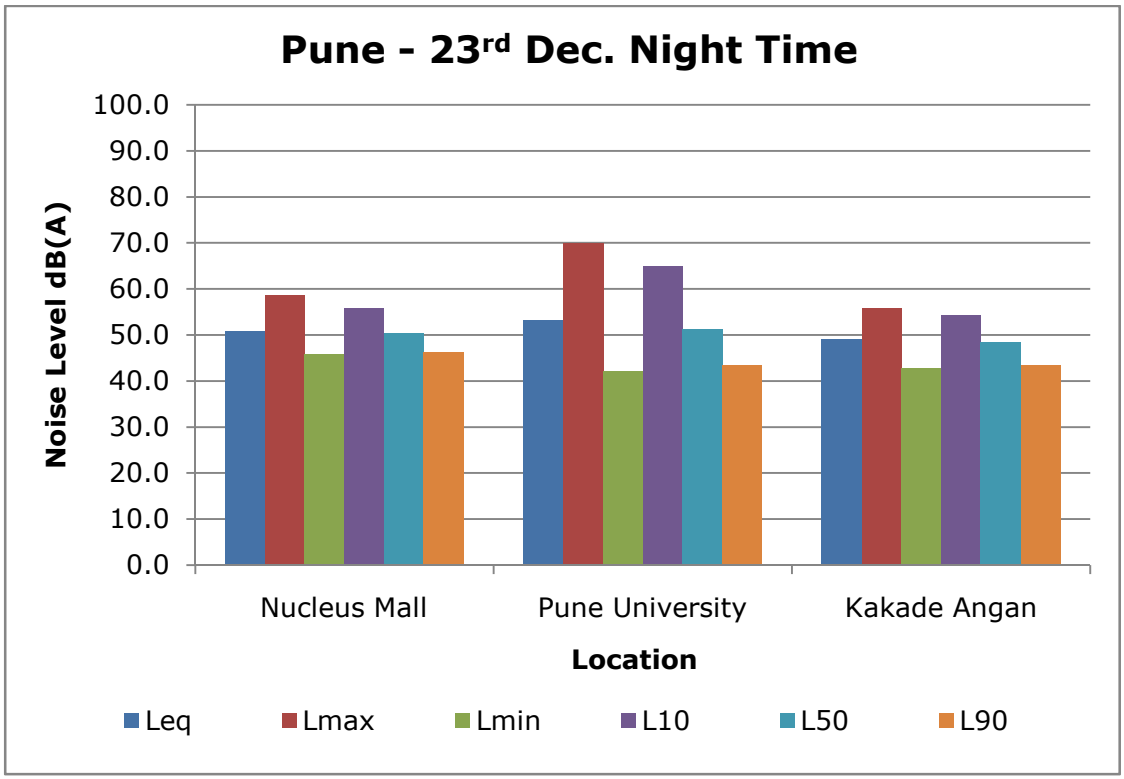

Chart 4.2 (d): Graphical Representation of Pune on 23rd December, 2013 at Night time

Nashik: A total of 3 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours. It was observed that, on 22nd December, among all the locations Pava nagar was having the highest noise level at both day time and night time with 84.5 dB(A) and 79.1 dB(A) respectively. On 23rd December, Dwarka Circle was found to be have highest noise level both at day time night time with 80.4 dB(A) and 72.1 dB(A) respectively. The present study also shows that:

- In residential zone, the average minimum sound level of 65.8 dB(A) was observed at Pandit Colony during night time on 23rd December and average maximum sound level of 76.5 dB(A) was observed at Pavan Nagar and CIDCO during day time on 22nd December.
- In commercial zone, both the average minimum sound level of 68.3 dB(A) and average maximum sound level of 71.7 dB(A) was observed at Dwaraka Circle at night time on 23rd December.

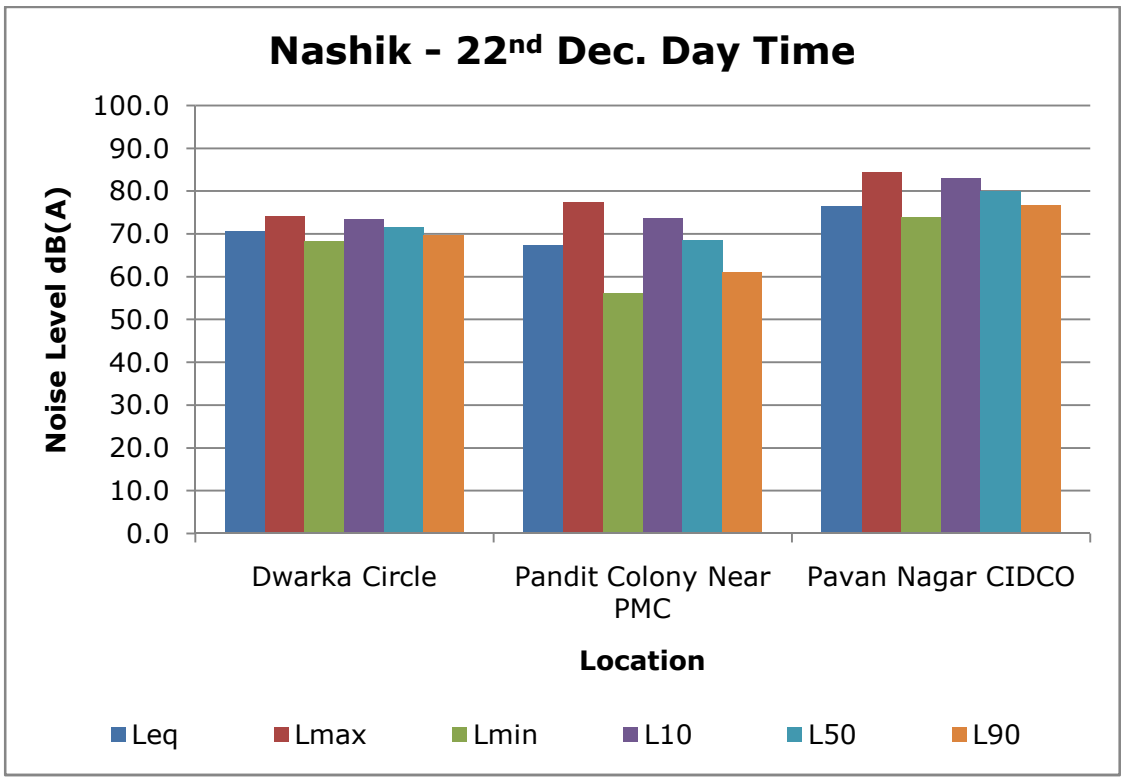

Chart 4.3 (a): Graphical Representation of Nashik on 22nd December, 2013 at Day time

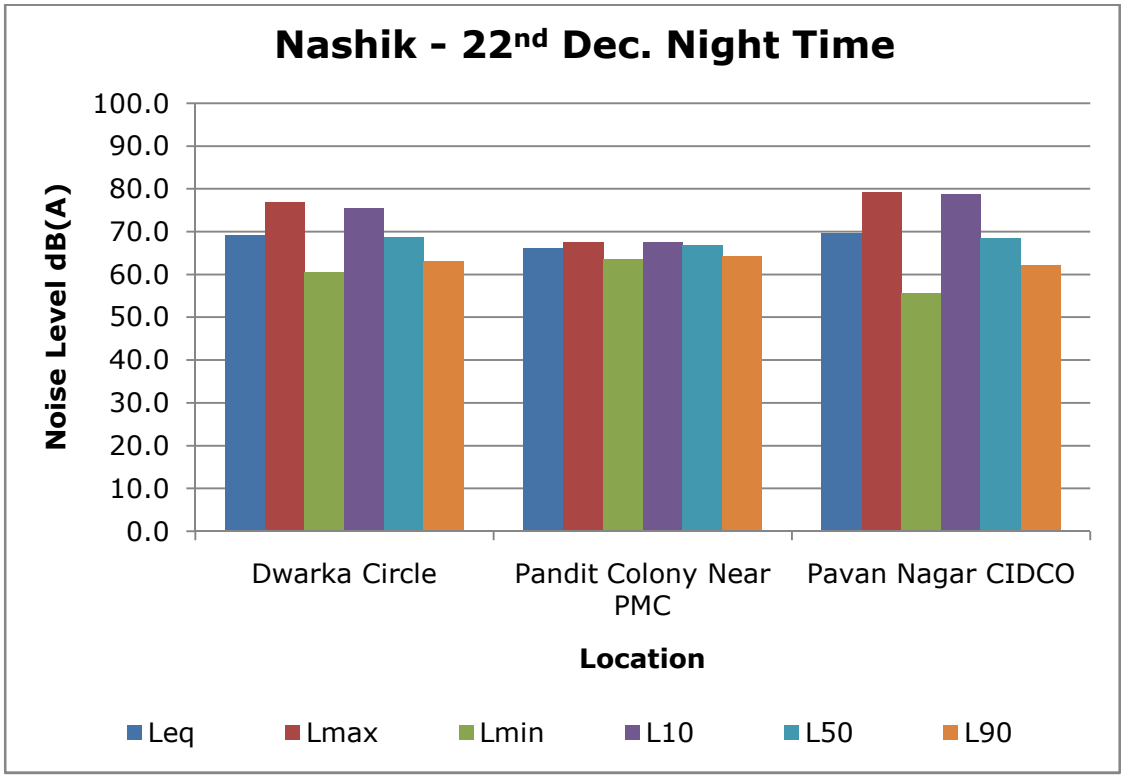

Chart 4.3 (b): Graphical Representation of Nashik on 22nd December, 2013 at Night time

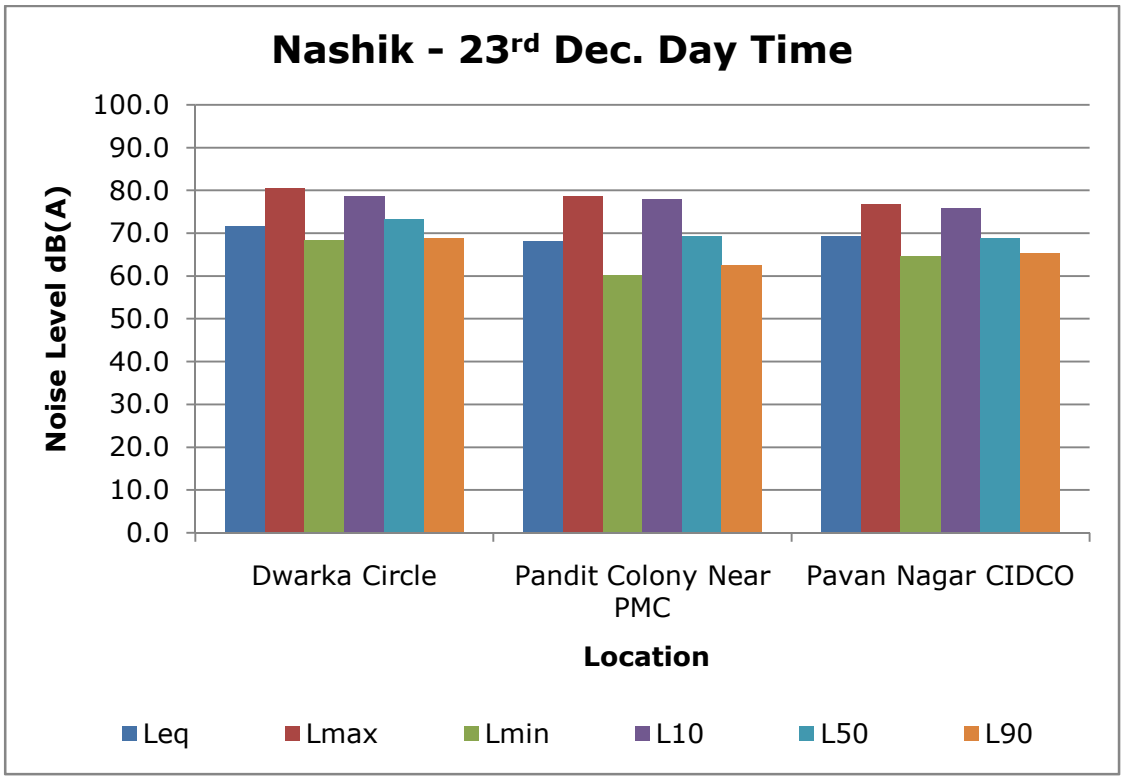

Chart 4.3 (c): Graphical Representation of Nashik on 23rd December, 2013 at Day time

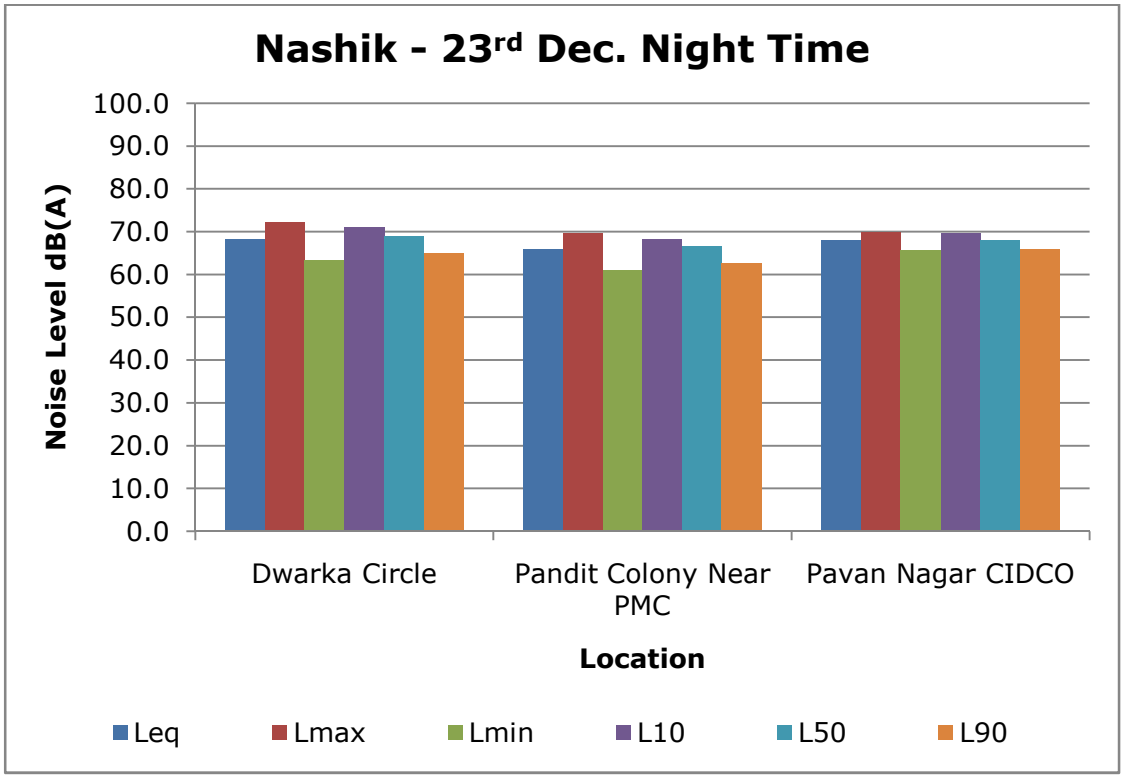

Chart 4.3 (d): Graphical Representation of Nashik on 23rd December, 2013 at Night time

Aurangabad: A total of 3 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours. It was observed that on 22nd December, among all the locations Nirala Bazar had the highest noise level at day time and at night time with 72.4 dB(A) and 64.5 dB(A) respectively. On 23rd December, Nirala Bazar had the highest noise level at day time and night time with 73.2 dB(A) and 64.2 dB(A) respectively. The present study also shows that:

- In the silence zone, the average minimum sound level was 51.6 dB(A) and the average maximum sound level was 63.5 dB(A).
- In the commercial zone, the average minimum sound level was 57.4 dB(A) and average maximum sound level was 68.2 dB(A).
- In the residential zone, the average minimum sound level was 55.0 dB(A) and average maximum sound level was 65.1 dB(A).

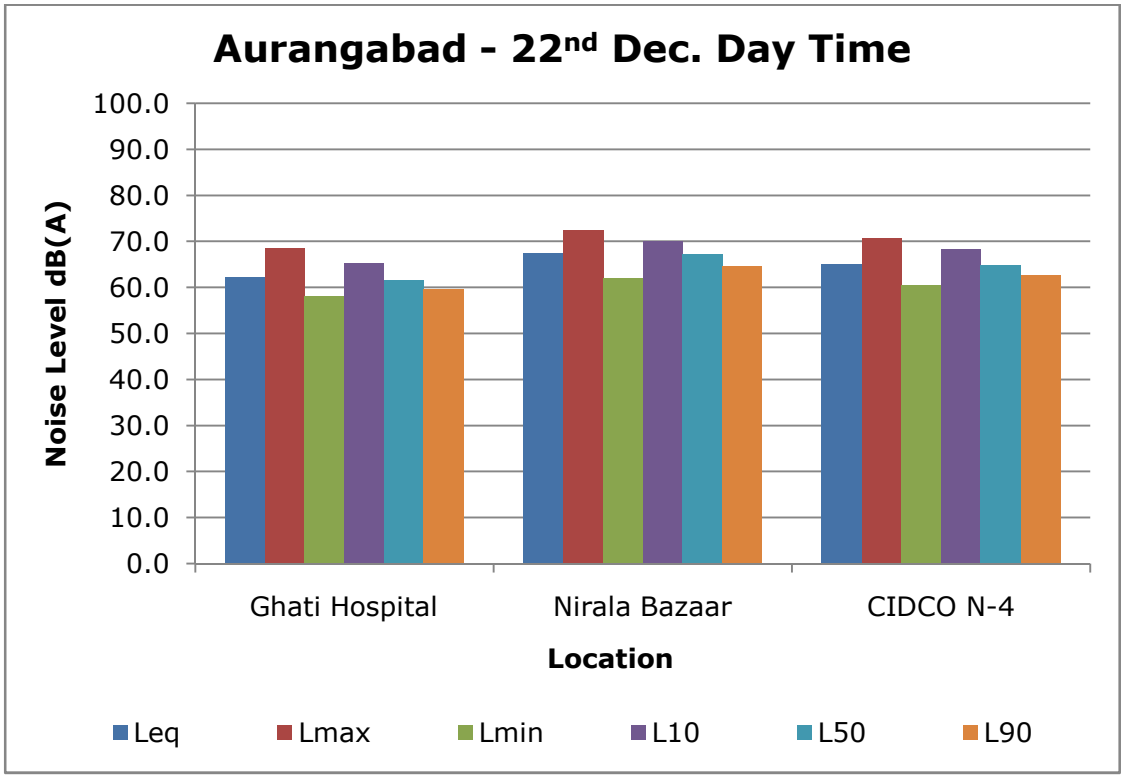

Chart 4.4 (a): Graphical Representation of Aurangabad on 22nd December, 2013 at Day time

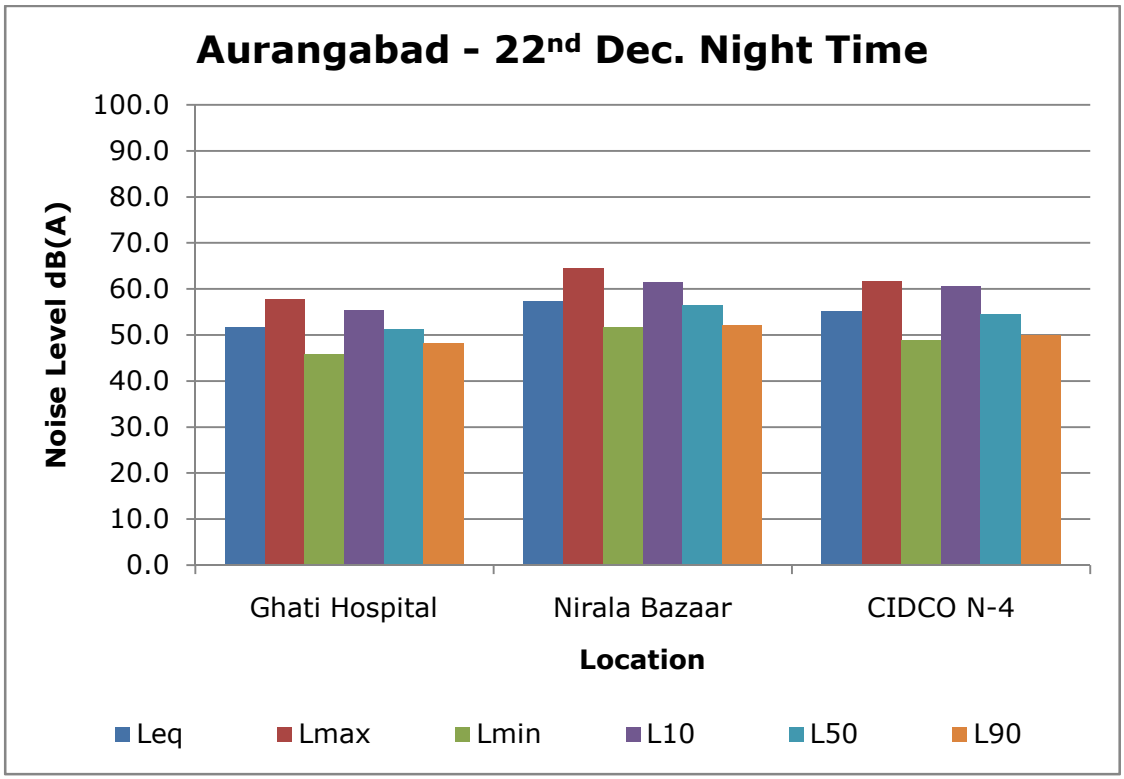

Chart 4.4 (b): Graphical Representation of Aurangabad on 22nd December, 2013 at Night time

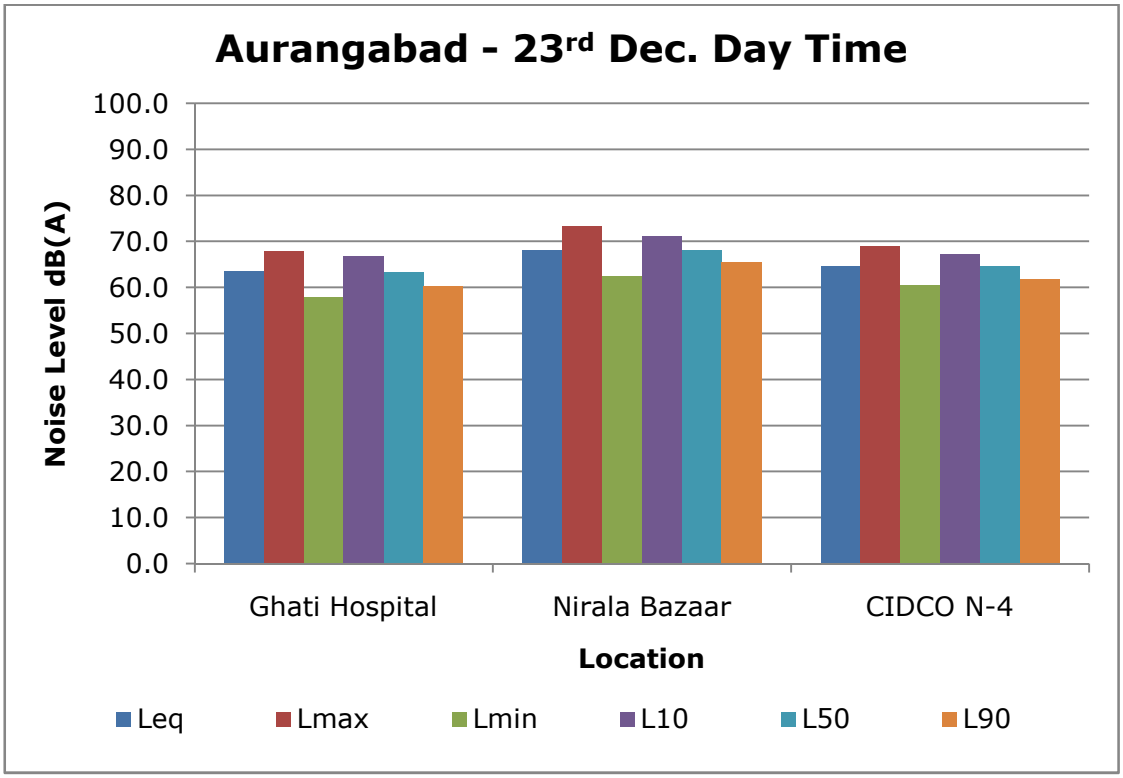

Chart 4.4 (c): Graphical Representation of Aurangabad on 23rd December, 2013 at Day time

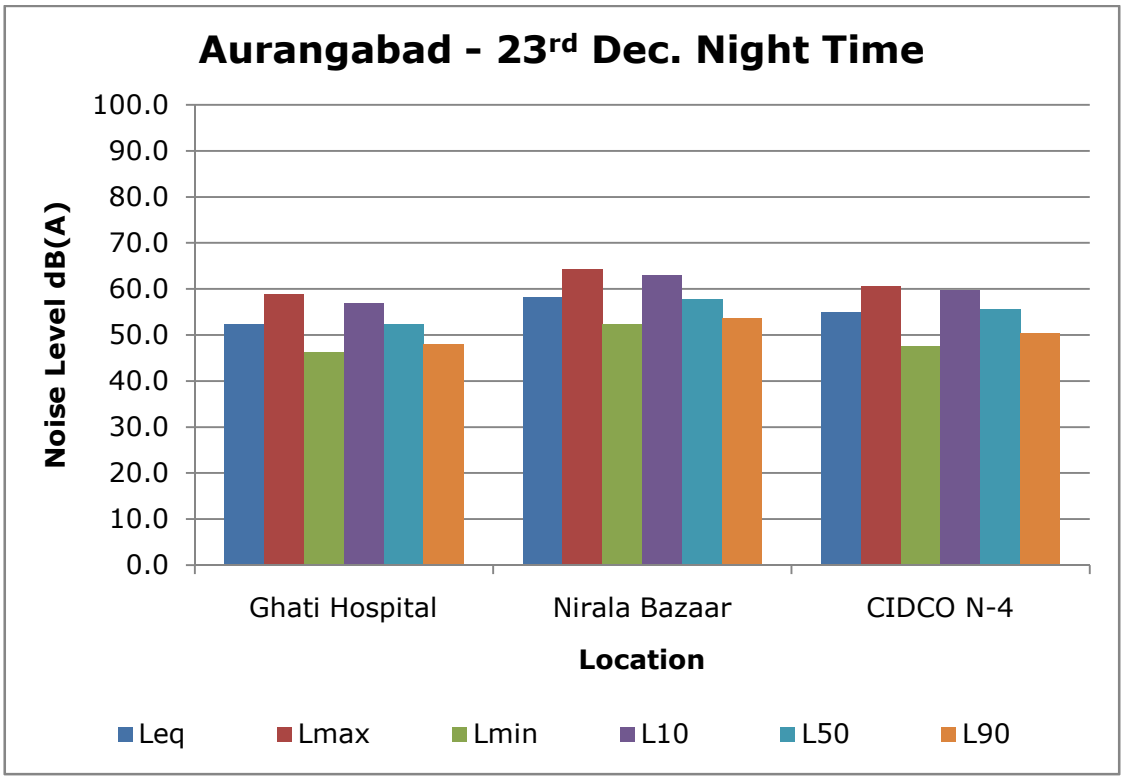

Chart 4.4 (d): Graphical Representation of Aurangabad on 23rd December, 2013 at Night time

Nagpur: A total of 3 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours. It was observed that on both days, Sitabardi Police station was having maximum noise level at day as well as at night time. It was also observed that:

- At the silence zone the average minimum sound level was 46.8 dB(A) and the average maximum sound level was 56.0 dB(A).
- At the commercial zone the average minimum sound level was 62.3 dB(A) and average maximum sound level was 71.6 dB(A).
- At the residential zone the average minimum sound level was 54.4 dB(A) and average maximum sound level was 64.1 dB(A).

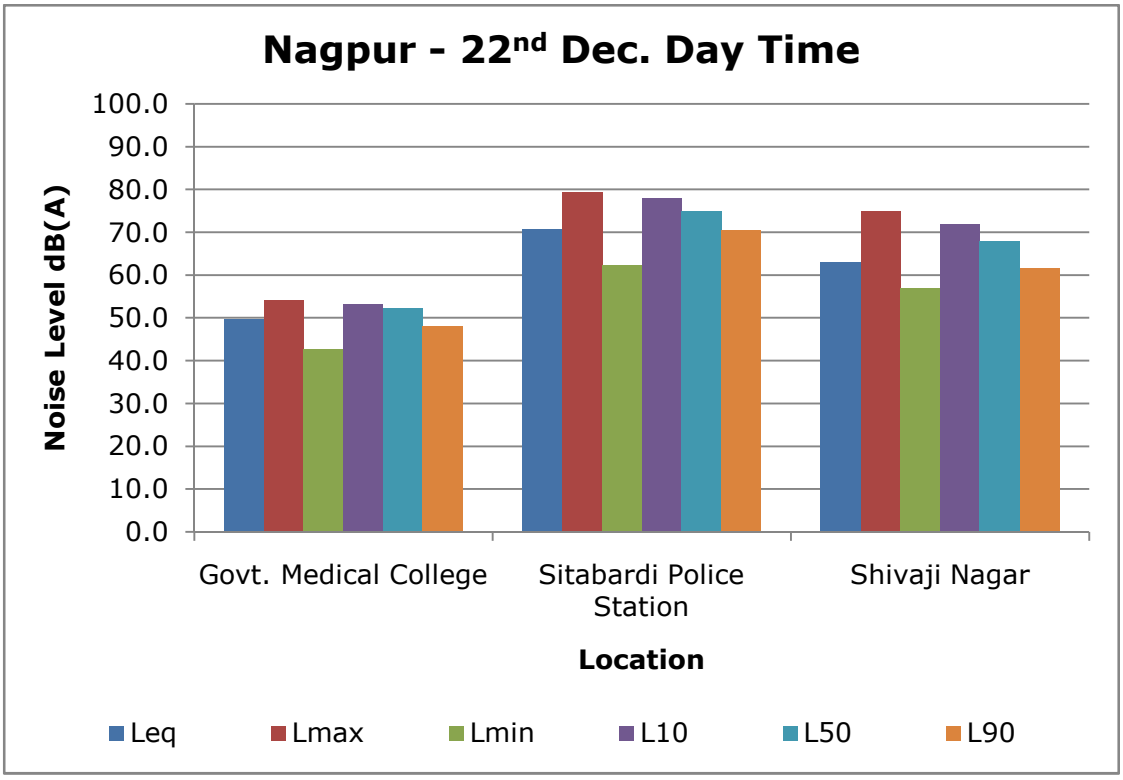

Chart 4.5 (a): Graphical Representation of Nagpur on 22nd December, 2013 at Day time

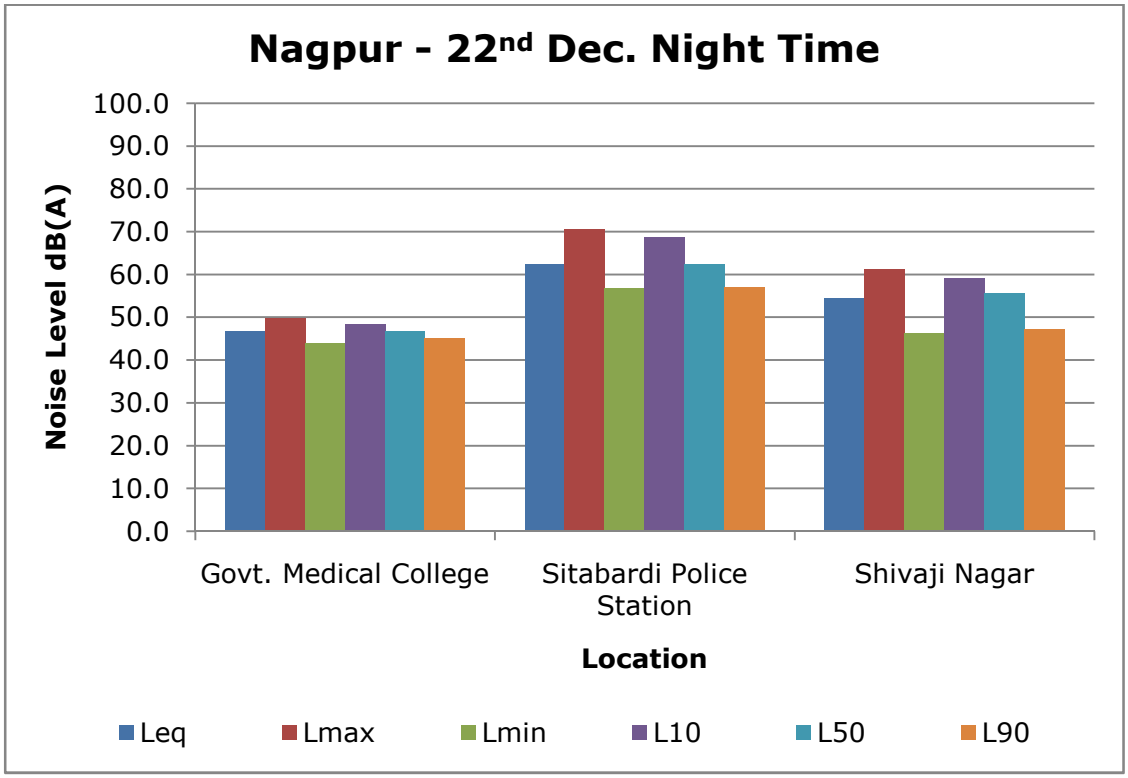

Chart 4.5 (b): Graphical Representation of Nagpur on 22nd December, 2013 at Night time

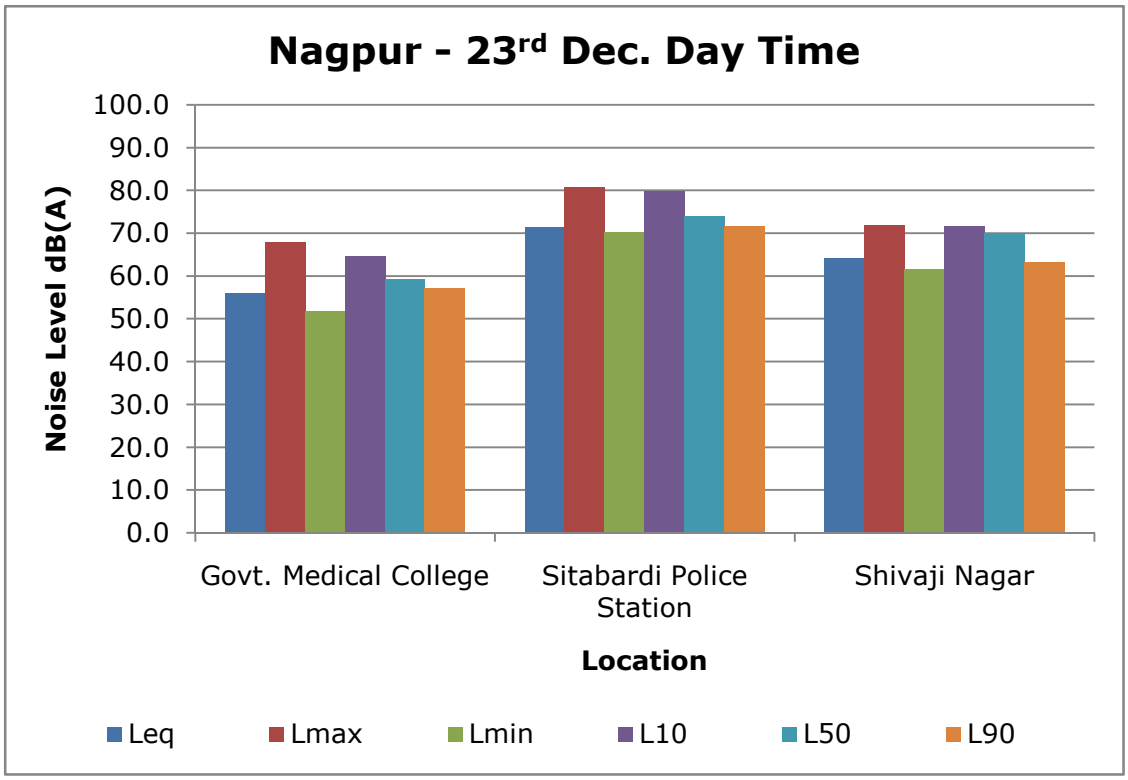

Chart 4.5 (c): Graphical Representation of Nagpur on 23rd December, 2013 at Day time

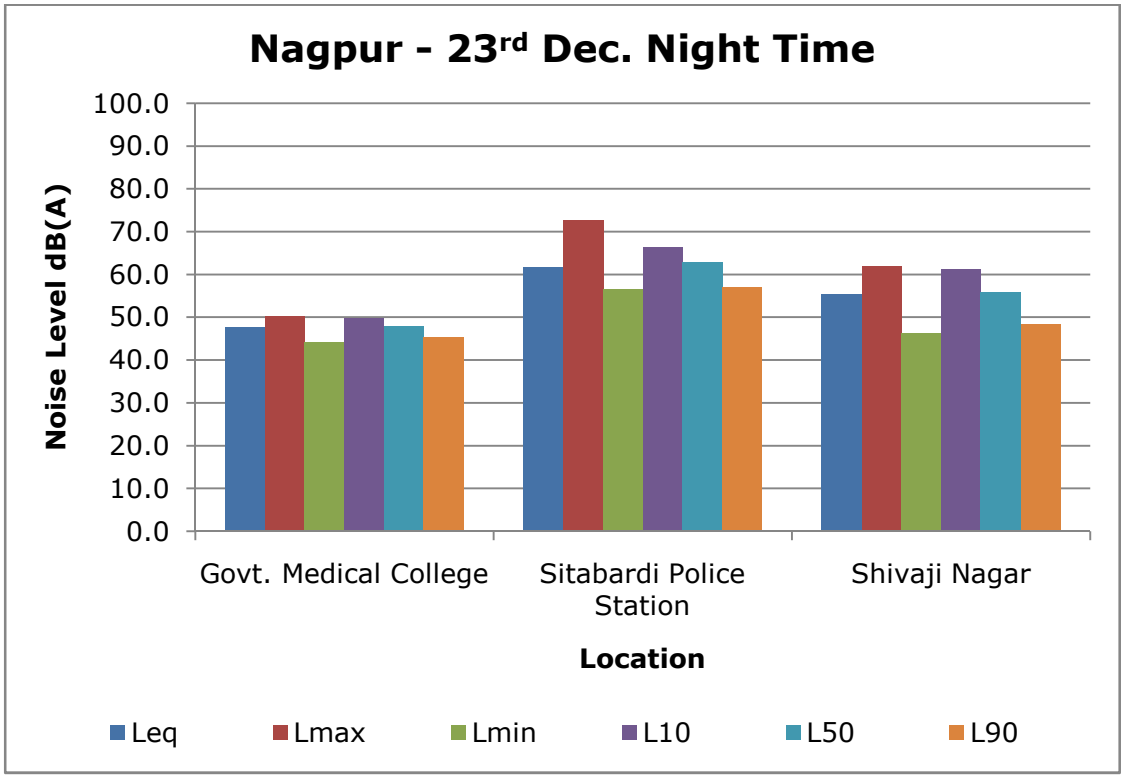

Chart 4.5 (d): Graphical Representation of Nagpur on 23rd December, 2013 at Night time

Kolhapur: A total of 3 locations were monitored continuously for two days from 22nd to 23rd December, 2013 for 24 hours. It was observed that, among all the locations Shahupuri was found to be having highest noise level on the 22nd December both day & night time with 89.0 db(A) and 74.0 dB(A) respectively. On 23rd December, Dasara Circle Chowk had the highest noise level at day time and night time with 89.0 dB(A) and 82.0 dB(A) respectively. It was also observed that:

- At the silence zone, the average minimum sound level was 46.8 dB(A) and the average maximum sound level was 56.0 dB(A).
- At the commercial zone, the average minimum sound level was 62.3 dB(A) and average maximum sound level was 71.6 dB(A).
- At the residential zone, the average minimum sound level was 54.4 dB(A) and average maximum sound level was 64.1 dB(A).

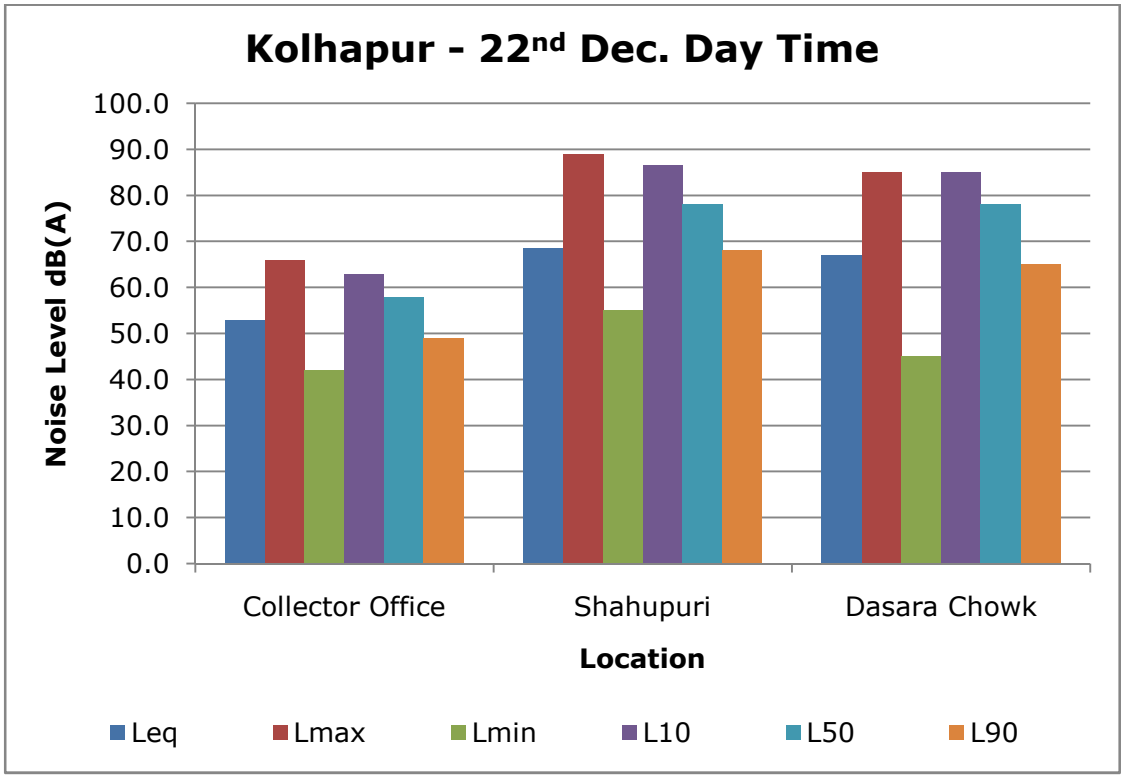

Chart 4.6 (a): Graphical Representation of Kolhapur on 22nd December, 2013 at Day time

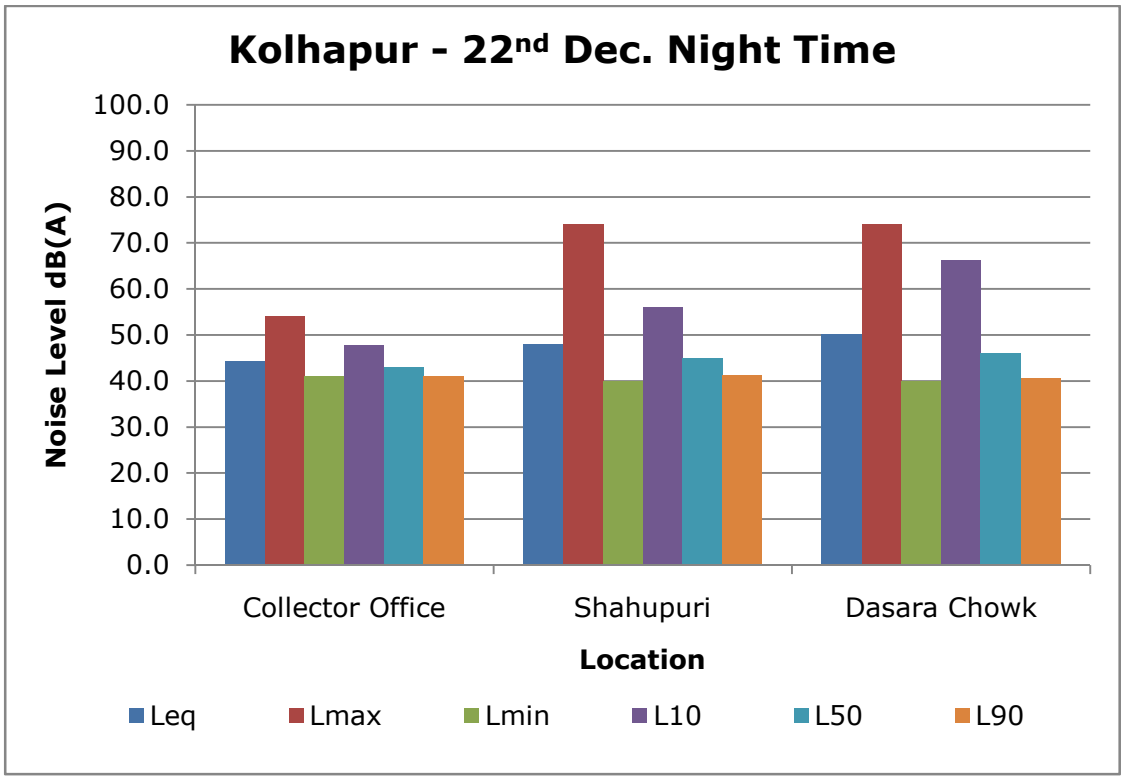

Chart 4.6 (b): Graphical Representation of Kolhapur on 22nd December, 2013 at Night time

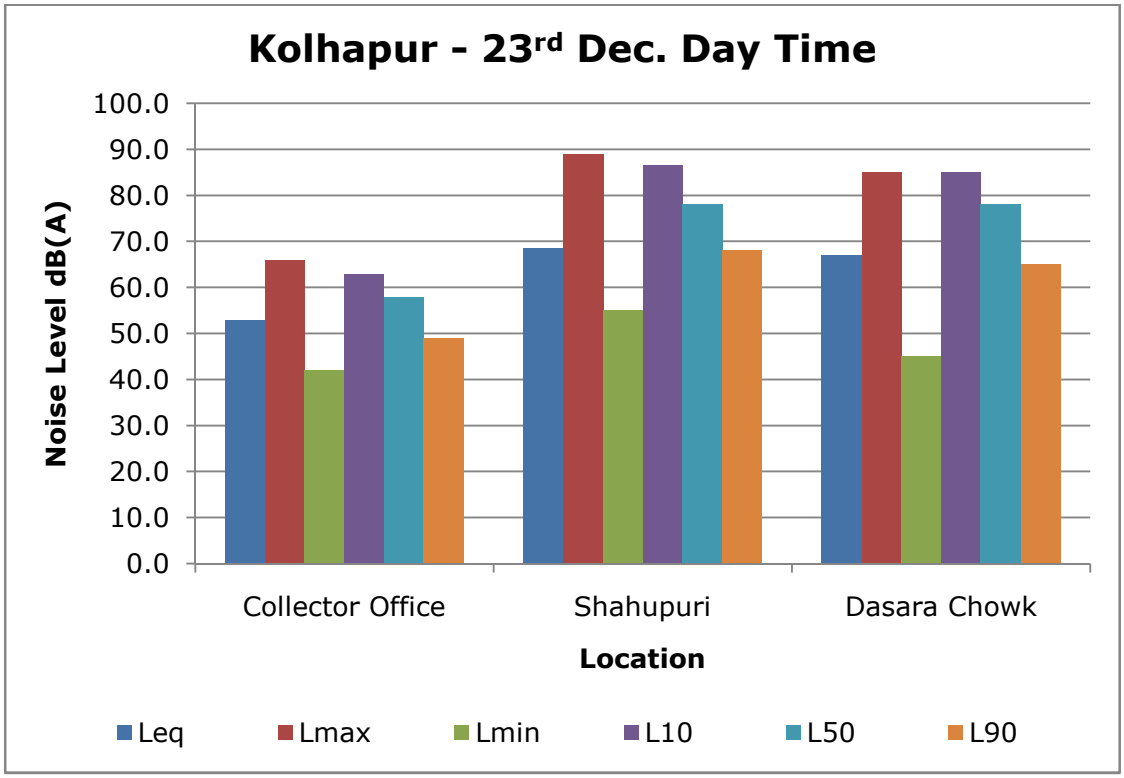

Chart 4.6 (c): Graphical Representation of Kolhapur on 23rd December, 2013 at Day time

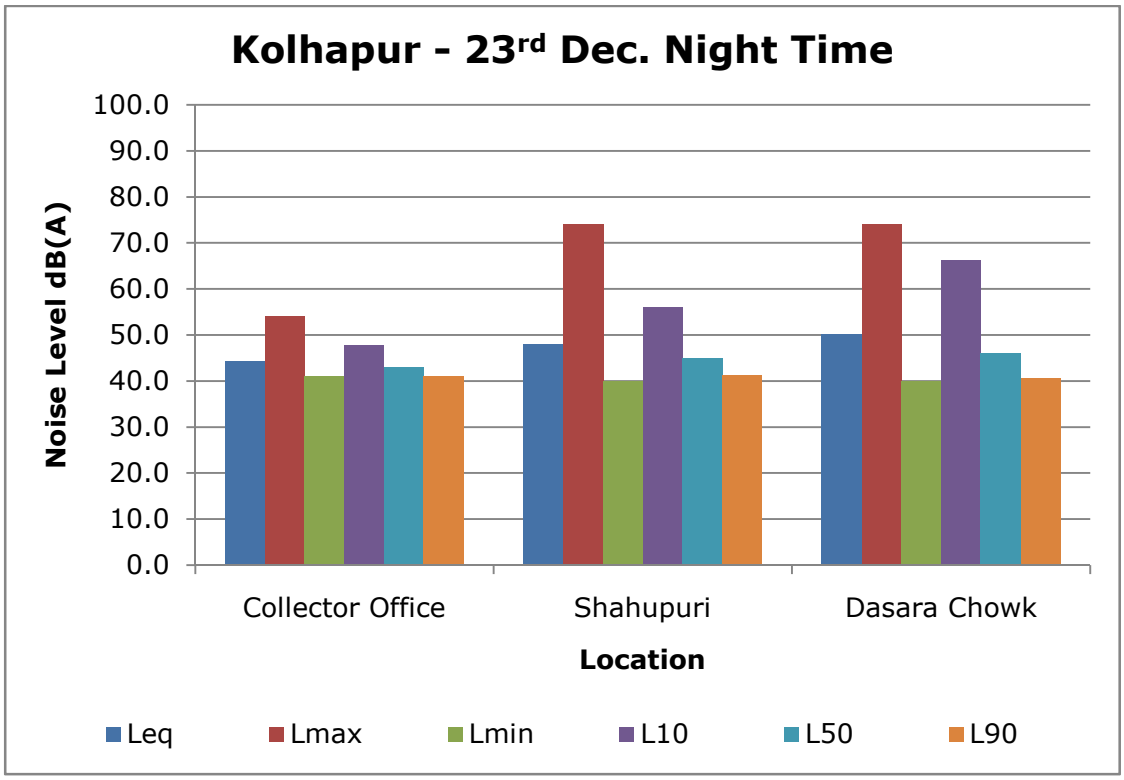

Chart 4.6 (d): Graphical Representation of Kolhapur on 23rd December, 2013 at Night time

4.2 Comparative Study:

It is observed from the results that, the noise levels mostly exceeded the permissible limit on both days the 22nd (holiday) & 23rd (working day) December, 2013 in all the six Metropolitan Cities of Maharashtra as shown in the table 4.4.1 given below:
The detailed comparison of Noise level results during last year result are as follows

Table 4.3: Noise Levels as on 18th December 2011, 16th December, 2012 and 22nd December, 2013 during Day Time

Area	Location	Sunday, 18th December 2011 (Holiday) L_{eq} dB(A)	Sunday, 16th December 2012 (Holiday) L_{eq} dB(A)	Sunday, 22nd December 2013 (Holiday) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
MUMBAI					
Silence	High Court	53.4	72.7	68.2	50
	Mumbadevi	71.7	67.6	69.6	50
	National Park	68.6	72.4	69.5	50
Residential	An top Hill	67.4	72.5	67.1	55
	Shivaji Park	63.9	73.7	67.9	55
Commercial	Airport	67.0	74.2	67.3	65
	Vashi Naka	70.6	71.0	71.8	65
	Ghatkopar	75.0	80.5	68.2	65
Industrial	Goregaon	59.5	75.2	68.4	75
	Charkop	68.8	68.0	67.7	75
PUNE					
Silence	University	54.2	74.8	69.8	50
Residential	Kakade Angan	63.3	71.7	57.4	55
Commercial	Nucleus Mall	53.8	74.4	63.0	65
NASHIK					
Residential	Pandit Colony	72.2	69.0	67.3	55
Residential	Pavan Nagar	67.6	69.3	76.5	55
Commercial	Dwarka Circle	71.8	73.6	70.6	65
AURANGABAD					
Silence	Ghati Hospital.	59.0	67.4	62.2	50
Residential	CIDCO N-4	62.5	67.3	65.1	55
Commercial	Nirala Bazaar	61.0	71.1	67.4	65
NAGPUR					
Silence	Medical College	61.4	65.1	49.5	50

Area	Location	Sunday, 18th December 2011 (Holiday) L_{eq} dB(A)	Sunday, 16th December 2012 (Holiday) L_{eq} dB(A)	Sunday, 22nd December 2013 (Holiday) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
Residential	Shivaji Nagar	73.8	64.9	62.9	55
Commercial	Sitabardi	65.7	72.8	70.6	65
KOLHAPUR					
Silence	Dasara Chowk	60.3	55.5	67.1	50
Residential	Collec tor Office	64.8	71.0	52.8	55
Commercial	Shahupuri	64.6	62.9	68.6	65

Table 4.4: Noise Levels as on 18th December 2011, 16th December, 2012 and 22nd December, 2013 during Night Time

Area	Location	Sunday, 18th December 2011 (Holiday) L_{eq} dB(A)	Sunday, 16th December 2012 (Holiday) Leq dB(A)	Sunday, 22nd December 2013 (Holiday) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
MUMBAI					
Silence	High Court	47.2	54.0	64.4	40
	Mumbadevi	71.6	60.3	68.0	40
	National Park	68.1	57.2	63.1	40
Residential	An top Hill	67.3	61.1	63.4	45
	Shivaji Park	55.4	57.1	57.6	45
Commercial	Airport	64.2	70.6	65.1	55
	Vashi Naka	67.6	65.2	68.2	55
	Ghatkopar	69.9	71.4	62.1	55
Industrial	Goregaon	40.1	55.9	64.1	70
	Charkop	63.9	62.1	65.2	70
PUNE					
Silence	University	46.3	72.8	53.2	40
Residential	Kakade Angan	57.8	65.2	49.0	45
Commercial	Nucleus Mall	47.1	72.5	50.9	55
NASHIK					
Residential	Pandit Colony	70.3	65.7	66.1	45
Residential	Pavan Nagar	66.2	67.6	69.6	45
Commercial	Dwarka Circle	69.0	69.8	69.2	55

Area	Location	Sunday, 18th December 2011 (Holiday) L_{eq} dB(A)	Sunday, 16th December 2012 (Holiday) Leq dB(A)	Sunday, 22nd December 2013 (Holiday) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
AURANGABAD					
Silence	Ghati Hospital.	50.5	52.1	51.6	40
Residential	CIDCO N-4	60.9	56.4	55.1	45
Commercial	Nirala Bazaar	57.3	61.7	57.4	55
NAGPUR					
Silence	Medical College	54.0	48.1	46.8	40
Residential	Shivaji Nagar	63.6	56.7	54.4	45
Commercial	Sitabardi	52.1	65.8	62.3	55
KOLHAPUR					
Silence	Dasara Chowk	55.6	57.2	50.1	40
Residential	Collec tor Office	55.6	53.0	44.3	45
Commercial	Shahupuri	57.1	61.4	48.0	55

Table 4.5: Noise Levels as on 19th December 2011, 15th December, 2012 and 23rd December, 2013 during Day Time

Area	Location	Monday, 19th December 2011 (Working Day) L_{eq} dB(A)	Monday, 15th December 2012 (Working Day) L_{eq} dB(A)	Monday, 23rd December 2013 (Working Day) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
MUMBAI					
Silence	High Court	69.0	74.8	64.8	50
	Mumbadevi	70.6	70.5	56.3	50
	National Park	65.2	72.5	64.8	50
Residential	An top Hill	65.7	73.3	63.6	55
	Shivaji Park	63.9	68.4	68.3	55
Commercial	Airport	71.1	74.8	73.0	65
	Vashi Naka	73.1	70.1	60.7	65
	Ghatkopar	74.1	81.0	68.5	65
Industrial	Goregaon	69.5	73.8	67.1	75
	Charkop	69.1	69.0	72.3	75
PUNE					
Silence	University	57.5	74.6	63.0	50
Residential	Kakade Angan	61.4	71.9	69.8	55

Area	Location	Monday, 19th December 2011 (Working Day) L_{eq} dB(A)	Monday, 15th December 2012 (Working Day) L_{eq} dB(A)	Monday, 23rd December 2013 (Working Day) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
Commercial	Nucleus Mall	56.3	74.4	57.4	65
NASHIK					
Residential	Pandit Colony	72.3	67.3	68.1	55
Residential	Pavan Nagar	69.2	71.1	69.3	55
Commercial	Dwarka Circle	67.4	78.0	71.7	65
AURANGABAD					
Silence	Ghati Hospital.	63.0	67.3	63.5	50
Residential	CIDCO N-4	67.1	64.1	64.5	55
Commercial	Nirala Bazaar	63.3	68.4	68.2	65
NAGPUR56.0					
Silence	Medical College	61.9	65.7	56.0	50
Residential	Shivaji Nagar	71.8	66.1	64.1	55
Commercial	Sitabardi	63.6	70.9	71.3	65
KOLHAPUR					
Silence	Dasara Chowk	63.1	63.9	52.8	50
Residential	Collec tor Office	69.0	55.6	68.6	55
Commercial	Shahupuri	69.7	71.9	67.1	65

Table 4.6: Noise Levels as on 19th December 2011, 15th December, 2012 and 23rd December, 2013 during Night Time

Area	Location	Monday, 19th December, 2011 (Working Day) L_{eq} dB(A)	Monday, 15th December, 2012 (Working Day) L_{eq} dB(A)	Monday, 23rd December 2013 (Working Day) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
MUMBAI					
Silence	High Court	59.9	53.3	55.6	40
	Mumbadevi	51.8	56.2	54.2	40
	National Park	71.9	71.5	54.6	40
Residential	An top Hill	52.4	59.0	60.1	45
	Shivaji Park	48.5	53.2	57.0	45

Area	Location	Monday, 19th December, 2011 (Working Day) L_{eq} dB(A)	Monday, 15th December, 2012 (Working Day) L_{eq} dB(A)	Monday, 23rd December 2013 (Working Day) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
Commercial	Airport	73.2	71.6	76.5	55
	Vashi Naka	69.8	65.5	50.7	55
	Ghatkopar	67.1	71.3	56.0	55
Industrial	Goregaon	53.0	52.1	58.2	70
	Charkop	52.0	58.7	63.4	70
PUNE					
Silence	University	55.9	72.4	50.9	40
Residential	Kakade Angan	46.6	65.0	53.2	45
Commercial	Nucleus Mall	47.2	71.7	49.0	55
NASHIK					
Residential	Pandit Colony	74.9	66.7	67.3	45
Residential	Pavan Nagar	62.4	68.0	71.1	45
Commercial	Dwarka Circle	69.4	72.1	78.0	55
AURANGABAD					
Silence	Ghati Hospital.	51.1	51.8	67.3	40
Residential	CIDCO N-4	59.7	54.1	64.1	45s
Commercial	Nirala Bazaar	55.0	61.7	68.4	55
NAGPUR					
Silence	Medical College	57.4	49.7	65.7	40
Residential	Shivaji Nagar	59.0	56.7	66.1	45
Commercial	Sitabardi	52.5	63.5	70.9	55
KOLHAPUR					
Silence	Dasara Chowk	62.6	51.0	63.9	40
Residential	Collec tor Office	60.5	48.4	55.6	45
Commercial	Shahupuri	43.1	53.3	71.9	55

Comparison study of last year's noise levels and this year's noise levels shows that there is decrease in noise levels at very less number of locations this year.

5. CONCLUSION

The study reveals that Noise levels at many locations this year have tremendously decreased at many locations as compared to last year. All location of Pune, Aurangabad & Nagpur showed lower levels of noise frequency both day time and night time on both working and holiday. It was observed that there was

increase in noise levels in some locations such as Mumbadevi, Vashi Naka, Pavan Nagar and Pandit colony. It can be concluded that as year moves public is aware of the impact of noise generation and have taken steps to control the same.

6. DEFINITIONS

A-Weighting
"A-weighting" is the frequency weighting characteristic as specified in IEC 123 or IEC 179 and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound.

A-weighted Sound Pressure Level
The "A-weighted sound pressure level" is the sound pressure level modified by application of the A-weighting. It is measured in dBA, A-weighted, and denoted as dBA.

Decibel
The "decibel" is a dimensionless measure of the sound level or sound pressure level; see sound pressure level.

Equivalent Sound Level
The "equivalent sound level" sometimes denoted L_{eq} is the value of the constant sound level which would result in exposure to the same total A–weighted energy as would the specified time–varying sound, if the constant sound level persisted over an equal time interval. It is measured in dBA.

Fast Response
"Fast response" is a dynamic characteristic setting of sound level meter meeting the applicable specifications.

L_{max}
The maximum Sound Pressure Level (SPL) value measured during the duration of monitoring

L_{min}
The minimum Sound Pressure Level (SPL) value measured during the duration of monitoring.

L_{10}
The level that were exceeded during 10% of the measuring time in dB (A)

L_{50}
The level that were exceeded during 50% of the measuring time in dB (A)

L_{90}
The level that were exceeded during 90% of the measuring time in dB (A).

Percentile Sound Level
The "X percentile sound level", designted Lx, is the sound level exceeded x percent of a specified time period, It is measured in dBA.

Sound
"Sound" is an oscillation in pressure, stress, particle displacement or particle velocity, in a medium with internal force (e.g. elastic viscous), or the superposition of such propagated oscillations, which may cause an auditory sensation.

Sound Level Meter
A "sound level meter" is n instrument which is sensitive to and calibrated for the measurement of sound.

Sound Pressure Level
The "Sound Pressure level" is twenty times the logarithm to the base 10 of the ratio of the effective pressure (P) of a sound to the reference pressure (Pr) of 20 μPa. Thus the sound pressure level in dB = 20 log10 P/Pr.

ANNEXURE - I

ध्वनी प्रदूषण (नियंत्रण व नियमन) नियम, २००० ची प्रभावीपणे अंमलबजावणी करण्यासाठी प्राधिकरणाची नियुक्ती करण्याबाबत

महाराष्ट्र शासन
पर्यावरण विभाग, मंत्रालय,
शासन निर्णय क्रमांक : ध्वनीप्र-२००९/प्र.क्र.९५/तांक-१
नविन प्रशासन भवन, १५ वा मजला, मादाम कामा रोड, मुंबई - ४०० ०३२
दिनांक: २१ एप्रिल, २००९

वाचा - १) शासन निर्णय क्रमांक : ध्वनीप्र-२०००/प्र.क्र.२४/तांक ३, दिनांक १६ ऑगस्ट, २००० आणि दिनांक १५ जून, २००१
२) मे. उच्च न्यायालयाच्या मुंबई खंडपीठामध्ये दाखल करण्यात आलेल्या सार्वजनिक हिताच्या याचिका क्र. (१) २०५३/२००३, (२) ७४/२००७, (३) ८५/२००७ आणि (४) १/२००९ मधील दिनांक २६/२/२००९ चे आदेश

प्रस्तावना :-

पर्यावरण विभाग, शासन निर्णय क्र. एन.पी./२०००/२४/क्र.३, दिनांक १६/८/२००० व दिनांक १५/०६/२००१ रोजी ध्वनी प्रदूषण (नियंत्रण व नियमन) नियम, २००० च्या २ (क) नुसार, राज्यातील पोलीस आयुक्त असलेल्या शहरामध्ये पोलीस उप आयुक्त व इतर ठिकाणी जिल्हा पोलीस अधिक्षक यांना एक सदस्य प्राधिकरण म्हणून ध्वनी प्रदूषण नियमाची अंमलबजावणी करण्यासाठी नियुक्ती करण्यात आली आहे.

मा. उच्च न्यायालय, मुंबई खंडपीठाने वरील याचिकांमध्ये महाराष्ट्र शासन व इतर विभागांनी ध्वनी प्रदूषण (नियंत्रण व नियमन) नियम, २००० ची प्रभावी अंमलबजावणी करण्याकरीता दिनांक २६/२/२००९ रोजी ठराविक निर्देश दिलेले आहेत. त्यानुसार स्थानिक स्वराज्य संस्थांनी शहरी भागात शांतता झोन जाहीर करणे आवश्यक आहे.

शासन निर्णय :-

१) मा. उच्च न्यायालयाच्या आदेशानुसार तसेच ध्वनी प्रदूषण (नियंत्रण व नियमन) नियम, २००० च्या कलम ३ (५) नुसार स्थानिक स्वराज्य संस्थांनी शहरी भागात शांतता झोन त्वरीत जाहिर करुन योग्य ते आदेश काढावेत. तसेच शहरात शांतता झोनचे फलक लावून आदेशाची प्रभावी अंमलबजावणी करण्यासाठी योग्य ती प्रसिध्दी करावी.

१) शैक्षणिक संस्थांच्या सभोवताली १०० मीटर क्षेत्र
२) सर्व न्यायालयाच्या सभोवतीली १०० मीटर क्षेत्र
३) रुग्णालयाच्या सभोवताली १०० मीटर क्षेत्र

२) ध्वनी प्रदूषणाची वाढती पातळी व निरनिराळे प्रदूषण स्त्रोत विचारात घेता, शासनाच्या निरनिराळ्या विभागांनी सद्य:स्थितीत ते राबवीत असलेल्या नियमाद्वारे ध्वनी प्रदूषण नियंत्रण व नियमनाची अंमलबजावणी करावी. त्याकरिता परिशिष्ट १ मध्ये नमूद केल्याप्रमाणे, शासनाच्या संबंधित विभागांच्या अधिपत्याखालील संस्थांच्या अधिकाऱ्यांना पदनाम प्राधिकरण म्हणून जाहीर करण्यात येत आहे. याबाबत संबंधीत

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ध्वनी प्रदूषण व नियमन व नियंत्रणाची अंमलबजावणी करण्यासाठी शासनाच्या अधिपत्याखाली असलेल्या संस्थांमधील संबंधीत अधिका-याची पदनाम प्राधिकरण म्हणून नियुक्ती

Sr. No	Officer /Agency	Concerned Department	Duties
1.	District Magistrate, Sub-Divisional Magistrate,	Revenue	Corresponding Rules for the enforcement of the Noise Pollution Control measures within their respective jurisdiction.
2.	Police Commissioner or any other officer not below the rank of the Deputy Superintendent of Police designated for the maintenance of Ambient Air Quality Standards, as mentioned in the Rule 2(c) of Noise Pollution(Regulation and Control) Rules, 2000.	Home	The Police Authorities will be responsible for initiating further legal actions in respect of the violations..
3.	Municipal Commissioner, Additional/Deputy Municipal Commissioner/ Chief Officer of Municipal Council/Committee Govt. of Maharashtra not below the rank of the Deputy Superintendent of Police.	Urban Developement	Corresponding Rules for the enforcement of noise standards laid down under the Environment (Protection) Rules, 1986 at source for construction projects, utilities for buildings (ACs, DG sets etc.), domestic appliances, development and other activities in their jurisdiction. The urban local bodies shall be responsible for demarcation of the silent zones as per the Noise Rules, 2000 and displaying the same adequately. The urban local bodies shall include an Action Plan for noise control in the Environmental Status Report submitted by them annually, including noise monitoring and noise mapping studies. The Local Body and Urban Development Deptt., Govt. of Maharashtra will not grant any permissions for development activities in consistent with or in conflict with the categorization of zone. In case of overlapping zones, stringent standards will prevail over in that particular area.
4.	Registrar /Head Master of the Educational Institutions duly approved by the concerned Government not below the rank of the Deputy Superintendent of Police	Higher & Technical Education/ School Education	Corresponding Rules for the enforcement and maintenance of the Ambient Noise Standards laid down for domestic appliances, automobiles etc. in respect of any activity in its jurisdiction.
5.	Dean/Superintendent of the Government Hospitals not below the rank of the Deputy Superintendent of Police	Public Health	Corresponding Rules for the enforcement and maintenance of the Ambient Noise Standards laid down for domestic appliances, automobiles etc. in respect of any activity in its

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परिशिष्ट- २

Schedule
(Under rule 3(1) and 4(1)) of Noise Pollution (Control and Regulation) Rules, 1999

Ambient Air Quality Standards in respect of Noise

Area Code	Category of Area/Zone	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

i. Day time shall mean from 6.00 a.m. to 10.00 p.m.

ii. Night time shall mean from 10.00 p.m. to 6.00 a.m.

iii. 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.

iv. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

*dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A" , in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq : it is an energy mean of the noise level, over a specified period.

2. Standards / Guidelines for control of Noise Pollution from Stationary Diesel Generator (DG) Sets.

(A) Noise Standards for DG sets (15-500 KVA)

The total sound power level, Lw of a DG set should be less than, $94+10 \log_{10}$ (KVA), dB(A), at the manufacturing stage, where, KVA is the nominal power rating of a DG set. This level should fall by 5 dB(A) every five years, till 2007, i.e. in 2002 and then in 2007

(B) Mandatory acoustic enclosure/acoustic treatment of room for stationary DG sets (5KVA and above).

Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.

The acoustic enclosure / acoustic treatment of the room should be designed for minimum 25 dB (A) Insertion Loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances, the performance may be checked for noise reduction upto actual ambient noise level, preferably in the night time). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/room, and then averaged.

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6. (1) Noise limits for vehicles applicable at manufacturing stage from the year, 2003.

Sr.No.	Type of Vehicle	Noise Limits dB(A)	Date of Implementation
(1)	(2)	(3)	(4)
1.	Two Wheeler		1st January, 2003
	Displacement upto 80 cm^3	75	
	Displacement more than 80 cm^3 but upto 175 cm^3	77	
	Displacement more than 175 cm^3	89	
2.	Three Wheeler		1st January, 2003
	Displacement upto 175 cm^3	77	
	Displacement more than 175 cm^3	80	
3.	Passenger Car	75	1st January, 2003
4.	Passenger or Commercial Vehicles		1st July, 2003
	Gross vehicle weight upto 4 tonnes	80	
	Gross vehicle weight more than 4 tonnes but upto 12 tonnes	83	
	Gross vehicle weight more than 12 tonnes	85	

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(2) Noise Limits for vehicles at manufacturing stage applicable on and from 1st April, 2005

Sr.No.	Type of vehicles	Noise Limits
1.0	**Two Wheelers**	
1.1	Displacement upto 80 cc	75
1.2	Displacement more than 80 cc but upto 175 cc	77
1.3	Displacement more than 175 cc	80
2.1	**Three Wheelers**	
2.1	Displacement upto 175 cc	77
2.2	Displacement more than 175 cc	80
3.0	**Vehicles used for the carriage of passengers and capable of having not more than nine seats, including the driver's seat**	74
4.0	**Vehicles used for the carriage of passengers having more than nine seats including the driver's seat and a maximum Gross Vehicle Weight (GVW) of more than tonnes**	
4.1	With an engine power less than 150KW	78
4.2	With an engine power of 150 KW or above	80
5.0	**Vehicles used for the carriage of passengers having more than nine seats including the driver's seat: Vehicle used for the carriage of goods.**	
5.1	With a maximum GVW not exceeding 2 tonnes	76
5.2	With a maximum GVW greater than 3 tonnes but not exceeding 3.5 tonnes	77
6.0	**Vehicles used for the transport of goods with a maximum GVW exceeding 3.5 tonnes**	
6.1	With an engine power less than 75 KW	77
6.2	With an engine power of 75 KW or above but less than 150KW	78
6.3	With an engine power of 150 KW or above	80

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7. **Noise Standards Part E:-**

A. **Noise limits for Automobiles (Free Field Distance at 7.5 meter in dB(A) at the manufacturing stage.**

(a)	Motorcycle, Scooters and Three Wheelers	80
(b)	Passenger Cars	82
(c)	Passenger or Commercial vehicles upto 4 MT	85
(d)	Passenger or Commercial vehicles above 4 MT and Upto 12 MT	89
(e)	Passenger or Commercial vehicles exceeding 12 MT	91

B. **Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31st December, 1993.**

(a)	Window Air Conditioners of 1 ton to 1.5 ton	68
(b)	Air Coolers	60
(c)	Refrigerators	46
(d)	Diesel generator of domestic purposes	85-90
(e)	Compactors (rollers), Front Loaders, Concrete Mixers, Cranes (moveable), Vibrators and Saws	75

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ANNEXURE - II

Detailed list of locations

Total 25 locations were covered during Metropolitan Noise monitoring in all over Maharashtra state. The detailed list of locations is given below:-

Sr.	City	Location	Area
1.	Mumbai	High Court	Silence
		Mumbadevi temple	
		Borivali National Park	
		Antop Hill	Residential
		Shivaji Park, Dadar	
		Santacruz Airport	Commercial
		Vashi Naka, Chembur	
		Ghatkopar (W)	
		Charkop, Kandivali (W)	Industrial
		Goregaon (E)	
2.	Pune	Pune University	Silence
		Nucleus Mall	Commercial
		Kakade Angan	Industrial
3.	Nashik	Dwarka Circle	Commercial
		Pandit Colony Near NMC	Residential
		Pavan Nagar CIDCO	
4.	Aurangabad	Ghati Hospital	Silence
		Nirala bazaar	Commercial
		CIDCO N-4	Residential
5.	Nagpur	Government Medical College	Silence
		Sitabardi Police Station	Commercial
		Shivaji Nagar	Residential
6.	Kolhapur	Collector Office	Residential
		Dasara Chowk	Silence
		Shahupuri	Commercial

ANNEXURE - III

SOUND LEVEL METER