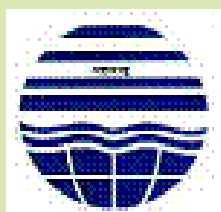




**REPORT ON
AMBIENT NOISE MONITORING
OF
METROPOLITAN CITIES IN
MAHARASHTRA- 2014**



MAHARASHTRA POLLUTION CONTROL BOARD

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December, 2014




FOREWORD

The Noise pollution in metropolitan cities in Maharashtra has increased due to sources such as road traffic, air craft, rail networking, construction noise etc. In order to assess the impact of traffic noise exposure on residents living 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 trend at the identified locations, by repeating the monitoring survey every year. Noise monitoring was carried 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 14th (Non-working day) and 15th (Working day) December, 2014.

This report contains the methodology and observation made during the study. 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 last three years. It is observed that, Noise levels at many locations have decreased when compared to last year. However, noise levels are increased at Mumbadevi, Vashi Naka, Pavan Nagar and Pandit Colony. This clearly indicates activities associated with noise producing activities in urban area are in rise.

Field monitoring of this study was conducted by M/s. Ashwamedh Engineers and Consultants C S Ltd; Nashik and was supported by all Regional Offices of the Board in the field. The entire study work including planning, coordination and report preparation was done at APC Division, MPCB Board. The contributions of *Shri V.M. Motghare, Joint Director-APC* and *Shri S.C. Kollur, Scientific Officer* are appreciated.


(Dr. P. Anbalagan, IAS)
Member Secretary

March' 2015

Contents

Abbreviations	4
Introduction	5
Sound	5
Ambient Noise Monitored at Metropolitan cities - 2014	7
Methodology of the survey	7
Results	8
1. Mumbai.....	8
2. Pune.....	11
3. Nashik	15
4. Aurangabad.....	18
5. Nagpur	20
6. Kolhapur.....	24
Comparative Study of Noise levels.....	27
Conclusion	31
Definitions	32
Annexure I -Detailed list of locations	34
Annexure II - Sound Level Meter.....	35
Annexure II - Noise Pollution (R & C) Rules,2000 amendment dt. 21st April 2009	37

List of Tables

Table 2.1: Standards of Noise Levels under EPA (1986)	6
Table 4.1: Noise Monitoring Locations in Maharashtra	7
Table 5.1: Ambient Noise Levels on 14 th and 15 th December, 2014 in Mumbai	8
Table 5.2: Ambient Noise Levels on 14 th & 15 th December, 2014 in Pune	11
Table 5.3: Ambient Noise Levels on 14 th & 15 th December, 2014 in Nashik	15
Table 5.4: Ambient Noise Levels on 14 th & 15 th December, 2014 in Aurangabad	18
Table 5.5: Ambient Noise Levels on 14 th & 15 th December, 2014 in Nagpur	20
Table 5.6: Ambient Noise Levels on 14 th & 15 th December, 2014 in Kolhapur	24
Table 6.1: Noise Levels as on 16 th December, 2012, 22 nd December, 2013 and 14 th December during Day Time	27
Table 6.2: Noise Levels as on 16 th December, 2012, 22 nd December, 2013 and 14 th December during Night Time	28
Table 6.3: Noise Levels as on 15 th December, 2012, 23 rd December, 2013 and 15 th December during Day Time	29
Table 6.4: Noise Levels as on 15 th December, 2012, 23 rd December, 2013 and 15 th December during Night Time	30

List of Charts

Chart 5.1: Graphical Representation of Mumbai on 14 th December, 2014 (Day time)	10
Chart 5.2: Graphical Representation of Mumbai on 14 th December, 2014 (Night time)	10
Chart 5.3: Graphical Representation of Mumbai on 15 th December, 2014 (Day time)	11
Chart 5.4: Graphical Representation of Mumbai on 15 th December, 2014 (Night time)	11
Chart 5.5: Graphical Representation of Pune on 14 th December, 2014 (Day time)	13
Chart 5.6: Graphical Representation of Pune on 14 th December, 2014 (Night time)	13
Chart 5.7: Graphical Representation of Pune on 15 th December, 2014 (Day time)	14
Chart 5.8: Graphical Representation of Pune on 15 th December, 2014 (Night time)	14
Chart 5.9: Graphical Representation of Nashik on 14 th December, 2014 (Day time)	16
Chart 5.10: Graphical Representation of Nashik on 14 th December, 2014 (Night time)	16
Chart 5.11: Graphical Representation of Nashik on 15 th December, 2014 (Daytime)	17
Chart 5.12: Graphical Representation of Nashik on 15 th December, 2014 (Night time)	17
Chart 5.13: Graphical Representation of Aurangabad on 14 th December, 2014 (Day time)19	
Chart 5.14: Graphical Representation of Aurangabad on 14 th December, 2014 (Night time)19	
Chart 5.15: Graphical Representation of Aurangabad on 15 th December, 2014 (Day time)19	
Chart 5.16: Graphical Representation of Aurangabad on 15 th December, 2014 (Night time)20	
Chart 5.17: Graphical Representation of Nagpur on 14 th December, 2014 (Day time)	22
Chart 5.18: Graphical Representation of Nagpur on 14 th December, 2014 (Night time) ...	22
Chart 5.19: Graphical Representation of Nagpur on 15 th December, 2014 (Day time)	23
Chart 5.20: Graphical Representation of Nagpur on 15 th December, 2014 (Night time) ...	23
Chart 5.21: Graphical Representation of Kolhapur on 14 th December, 2014 (Day time) ...	25
Chart 5.22: Graphical Representation of Kolhapur on 14 th December, 2014 (Night time). 25	
Chart 5.23: Graphical Representation of Kolhapur on 15 th December, 2014 (Day time) ...	26
Chart 5.24: Graphical Representation of Kolhapur on 15 th December, 2014 (Night time). 26	

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

L_{Aeq} Equivalent continuous A-weighted sound pressure level (dB)

L_{max} Maximum sound pressure level (dB)

L_{min} Minimum sound pressure level (dB)

SPL Sound Pressure Level

Introduction

Around the world, there are six major types of pollution such as water pollution, air pollution, solid waste, radioactive and nuclear energy, and lastly noise pollution. Noise pollution, or environmental noise, is displeasing sound created by humans, animals, or machines, that disrupts the activity or balance of domestic and animal life. The most common source of the pollution is brought on worldwide by transportation systems that include motor vehicle noise, aircraft noise and rail noise. Other sources that cause the pollution, both indoor and outdoor, are: car alarms, emergency service sirens, office equipment factory, barking dogs, appliances, fireworks, compressed air horns, construction work, grounds keeping equipment, audio entertainment systems, and even noisy people.

No one on earth can escape the sounds of noise- an unwanted, disturbing sound that causes a nuisance in the eye of the beholder. Noise is a disturbance to the human environment that is escalating at such a high rate that it will become a major threat to the quality of human lives. In the past thirty years, noise in all areas, especially in urban areas, has been increasing rapidly. There are numerous effects on the human environment due to the increase in noise pollution.

Noise pollution is not a necessary price to pay for living in an industrial society. Much can be done to reduce the severity of the problem. For example, vehicles and other machines can be built to produce less noise. Four-cycle engines can replace much noisier two-cycle engines in such products as lawnmowers, motorboats, and jet skis. Labels that indicate the noise levels of appliances and tools can help consumers avoid noisy products and choose quieter alternatives. Even after noise is generated, steps can be taken to reduce human exposure to it.

Sound

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 accommodate 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 (L_{eq}) 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, L_i = 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 (P_r) of 20 μ Pa. Thus the sound pressure level in dB = $20 \log_{10} P/P_r$.

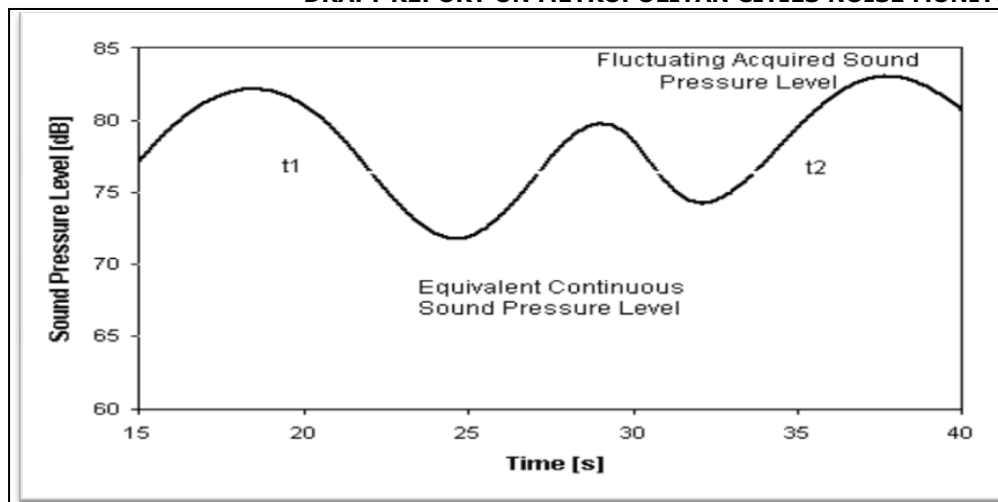


Fig. 2.1:

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.

L₁₀: The level that were exceeded during 10% of the measuring time in dB(A).

L₅₀: The level that were exceeded during 50% of the measuring time in dB(A)

L₉₀: The level that were exceeded during 90% of the measuring time 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 2.1:**

**Table 2.1: 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 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.
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.
6. State GR / Notification: Implementation Authority for Noise Rules in Maharashtra is enclosed at **Annexure-III**.

Ambient Noise Monitored at Metropolitan cities - 2014

In order to assess the ambient noise levels in the environment during a working and a non working day, Maharashtra Pollution Control Board (MPCB) has taken initiative to carry out Noise monitoring at 25 locations in metropolitan cities of Maharashtra for 2 days period i.e. on 14th (Sunday) and 15th (Monday) of December, 2014 for 24Hrs. The main aim of the project is to determine the trends and variations of noise levels at various areas of the city in different land uses and to create awareness about noise pollution through availability of scientific noise level data.

Methodology of the survey

The noise measurements were done using calibrated Sound Level Meters (Type II) made at the fast response mode keeping in view the quickly changing nature of noise levels, using 'A' filter.

The main purpose of noise monitoring was to find out the impact of noise generated during a working and non working day at the same locations during both days and during the same period.

The Noise Level Monitoring in six Metropolitan cities for 24 hours continuously (16 hrs day time & 8 hrs night time) was carried out on 14th (a holiday) and 15th (a working day) of December, 2014. 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.

Table 4.1: 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

Results

1. Mumbai

Table 5.1: Ambient Noise Levels on 14th and 15th December, 2014 in Mumbai

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	14.12.2014	68.2	75.9	58.2	74.1	71.4	64.7
2.	Mumbadevi Temple	14.12.2014	69.6	77.7	55.2	77.7	73.3	61.8
3.	Borivali National Park	14.12.2014	69.5	78.8	63.7	78.0	73.5	67.2
4.	Antop Hill	14.12.2014	67.1	82.1	51.0	78.0	69.5	59.6
5.	Shivaji Park, Dadar	14.12.2014	67.9	80.3	46.3	79.3	73.1	66.8
6.	Santacruz Airport	14.12.2014	67.3	82.9	51.6	79.3	66.8	58.6
7.	Ghatkopar (W)	14.12.2014	71.8	81.3	62.8	80.8	74.7	65.2
8.	Vashi Naka, Chembur	14.12.2014	68.2	81.7	55.4	81.0	73.8	57.5
9.	Goregaon (E)	14.12.2014	68.4	81.7	55.2	80.5	69.2	64.2
10.	Charkop, Kandivali	14.12.2014	67.7	79.0	41.0	77.1	70.8	62.6
Sr.	Monitoring Site	Date	Night 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	14.12.2014	64.4	75.0	51.6	74.6	69.0	51.7
2.	Mumbadevi Temple	14.12.2014	68.0	74.3	56.9	73.4	70.2	61.1
3.	Borivali National Park	14.12.2014	63.1	78.9	52.7	77.9	58.6	54.6
4.	Antop Hill	14.12.2014	63.4	82.2	51.7	73.2	61.9	54.1
5.	Shivaji Park, Dadar	14.12.2014	57.6	82.8	41.0	73.0	58.7	41.9
6.	Santacruz Airport	14.12.2014	65.1	77.2	56.3	74.3	62.2	57.1
7.	Ghatkopar (W)	14.12.2014	68.2	75.8	62.0	74.6	67.6	63.1
8.	Vashi Naka, Chembur	14.12.2014	62.1	73.0	30.8	70.6	65.9	51.5
9.	Goregaon (E)	14.12.2014	64.1	77.8	56.2	73.0	62.0	56.4
10.	Charkop, Kandivali	14.12.2014	65.2	73.5	57.4	72.0	64.6	58.2
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	15.12.2014	64.8	71.3	65.5	47.5	71.2	69.9
2.	Mumbadevi Temple	15.12.2014	56.3	70.8	41.5	41.6	66.8	57.1
3.	Borivali National Park	15.12.2014	64.8	89.0	48.6	37.3	87.9	69.4
4.	Antop Hill	15.12.2014	63.6	72.6	59.0	51.3	70.5	64.7
5.	Shivaji Park, Dadar	15.12.2014	68.3	83.2	59.2	49.7	80.9	74.2
6.	Santacruz Airport	15.12.2014	73.0	86.8	58.8	67.6	74.2	71.5
7.	Ghatkopar (W)	15.12.2014	60.7	82.1	50.4	40.0	79.6	63.2
8.	Vashi Naka, Chembur	15.12.2014	68.5	92.3	65.8	44.0	78.1	74.8
9.	Goregaon (E)	15.12.2014	67.1	89.9	57.2	45.1	82.9	69.5
10.	Charkop, Kandivali	15.12.2014	72.3	87.9	52.8	52.0	86.5	77.6

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Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
A.	MUMBAI							
1.	Backside of High Court	15.12.2014	55.6	67.3	47.5	65.6	54.0	47.8
2.	Mumbadevi Temple	15.12.2014	54.2	71.4	41.6	64.5	53.4	43.3
3.	Borivali National Park	15.12.2014	54.6	80.6	37.3	79.3	47.6	38.0
4.	Antop Hill	15.12.2014	60.1	75.4	51.3	71.6	57.6	52.1
5.	Shivaji Park, Dadar	15.12.2014	57.0	78.1	49.7	65.4	51.5	50.3
6.	Santacruz Airport	15.12.2014	76.5	85.4	67.6	83.9	75.4	69.4
7.	Ghatkopar (W)	15.12.2014	50.7	78.7	40.0	63.7	46.6	41.6
8.	Vashi Naka, Chembur	15.12.2014	56.0	71.4	44.0	68.8	55.0	44.4
9.	Goregaon (E)	15.12.2014	58.2	87.9	45.1	76.5	51.8	47.6
10.	Charkop, Kandivali	15.12.2014	63.4	74.4	52.0	70.8	61.4	57.6

A total of 10 locations were monitored continuously for two days from 14th to 15th December, 2014 for 24 hours (as shown in Table 5.2). It was observed that, on 14th 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 15th 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 15th December during night time and on 14th 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 15th December during night time and on 15th 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 14th December during night time and average maximum sound level of 76.5 dB(A) was observed at Santacruz airport on 15th December during night time.
- In the industrial zones, the average minimum sound level of 58.2 dB(A) was observed at Goregaon (E) on 15th December during night time and average maximum sound level of 72.3 dB(A) was observed at Charkop, Kandivali on 15th December during day time.

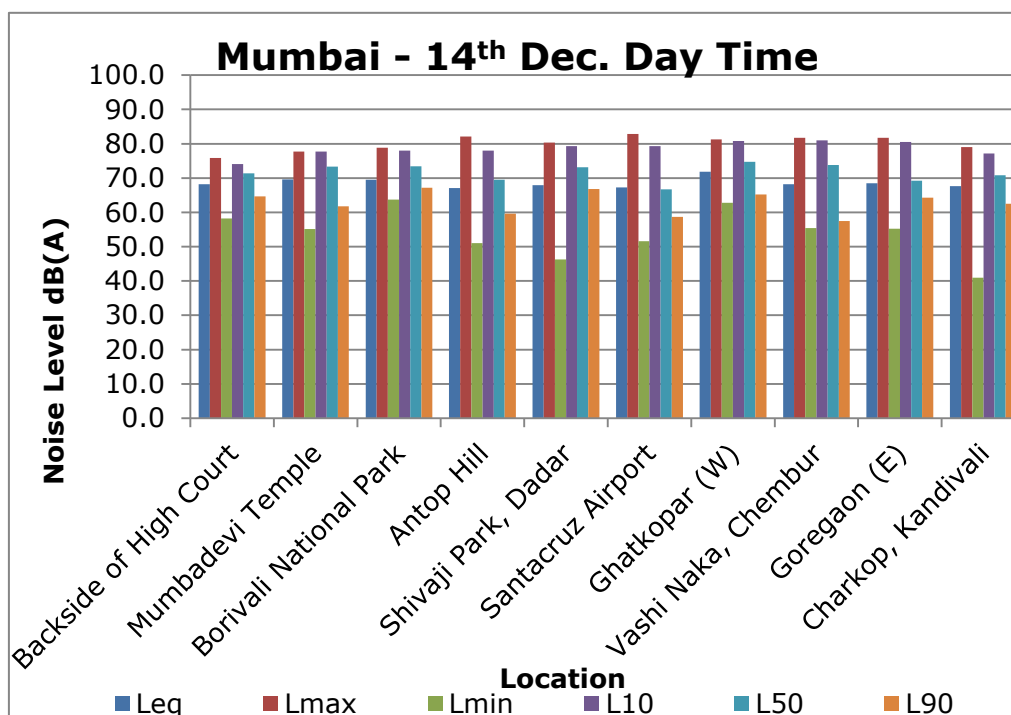
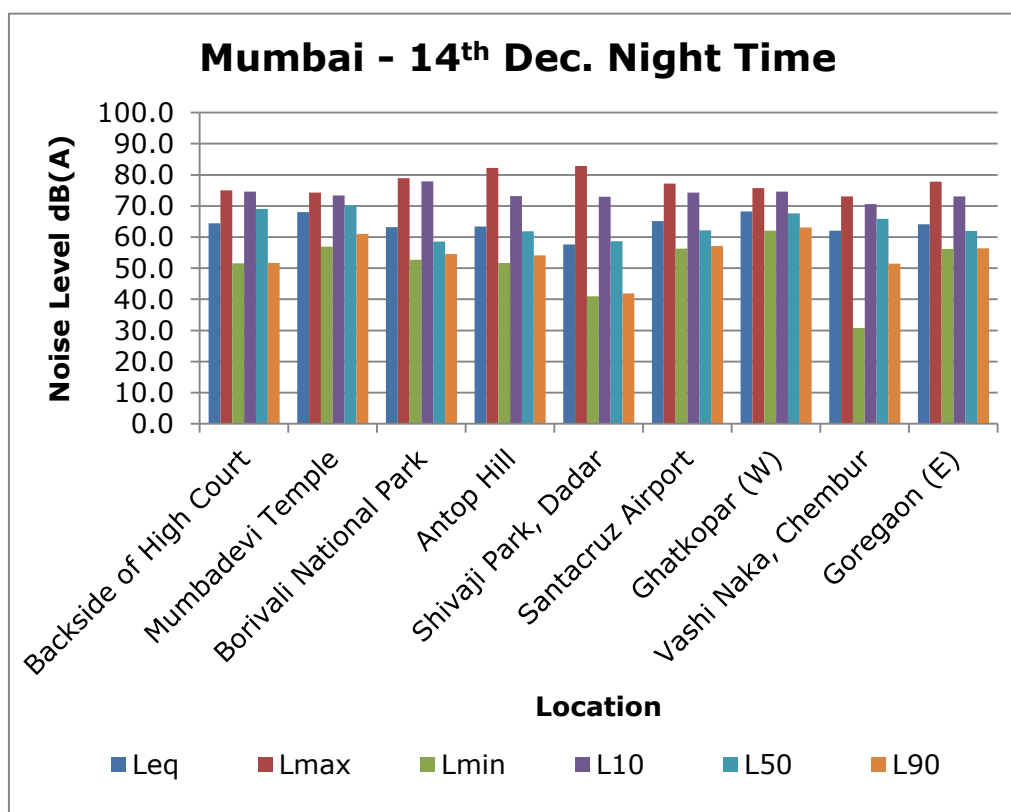
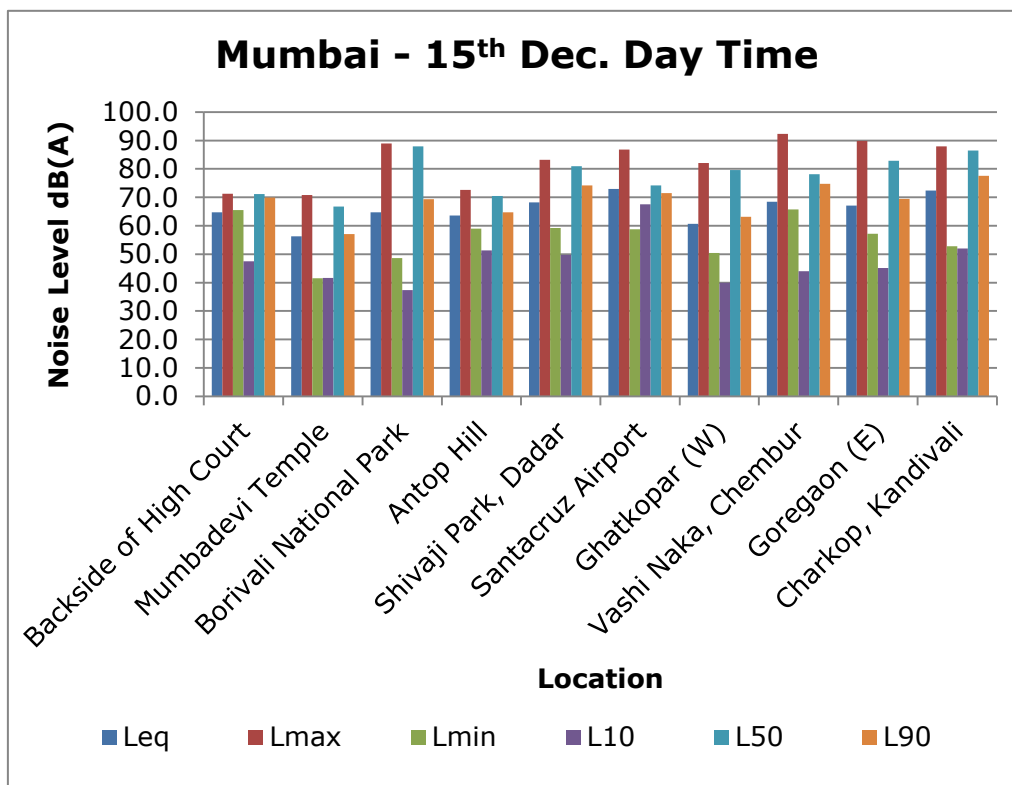
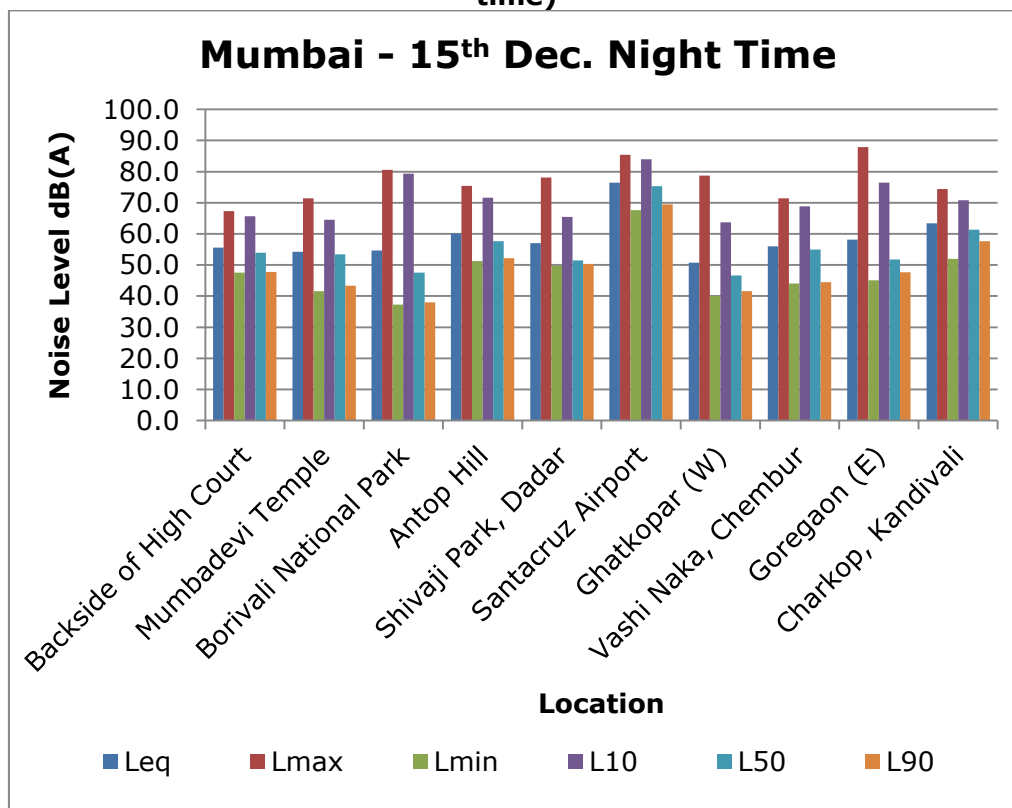
Chart 5.1: Graphical Representation of Mumbai on 14th December, 2014 (Day time)**Chart 5.2: Graphical Representation of Mumbai on 14th December, 2014 (Night time)**

Chart 5.3: Graphical Representation of Mumbai on 15th December, 2014 (Day time)**Chart 5.4: Graphical Representation of Mumbai on 15th December, 2014 (Night time)****2. Pune****Table 5.2: Ambient Noise Levels on 14th & 15th December, 2014 in Pune**

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀

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1.	Nucleus Mall	14.12.2014	63.0	80.0	50.2	76.2	71.0	59.8
2.	Pune University	14.12.2014	69.8	84.0	55.2	83.1	81.7	66.4
3.	Kakade Angan	14.12.2014	57.4	67.8	51.6	66.6	61.1	58.4
Sr.	Monitoring Site	Date	Night Time (6PM-10AM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Nucleus Mall	14.12.2014	50.9	58.7	45.8	55.8	50.4	46.2
2.	Pune University	14.12.2014	53.2	69.8	42.0	64.9	51.3	43.3
3.	Kakade Angan	14.12.2014	49.0	55.8	42.9	54.3	48.4	43.3
Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Nucleus Mall	15.12.2014	62.7	79.4	50.2	76.2	69.6	59.7
2.	Pune University	15.12.2014	67.1	84.0	55.2	83.0	73.4	62.1
3.	Kakade Angan	15.12.2014	58.6	69.4	51.6	68.3	62.8	58.8
Sr.	Monitoring Site	Date	Night Time (6PM-10AM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Nucleus Mall	15.12.2014	51.2	58.7	46.5	55.7	50.3	46.8
2.	Pune University	15.12.2014	55.4	69.8	44.8	67.3	53.4	46.0
3.	Kakade Angan	15.12.2014	50.1	55.8	43.1	56.0	50.3	43.9

A total of 3 locations were monitored continuously for two days from 14th to 15th December, 2014 for 24 hours. In all three locations, on 14th 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 15th 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 14th December at night time and the average maximum noise level of 84 dB(A) on 14th 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 15th December at day time.
- In the commercial zone, the average minimum noise level of 45.8 dB(A) was found on 14th December at night time and the average maximum noise level of 80 dB(A) on 14th December at day time.

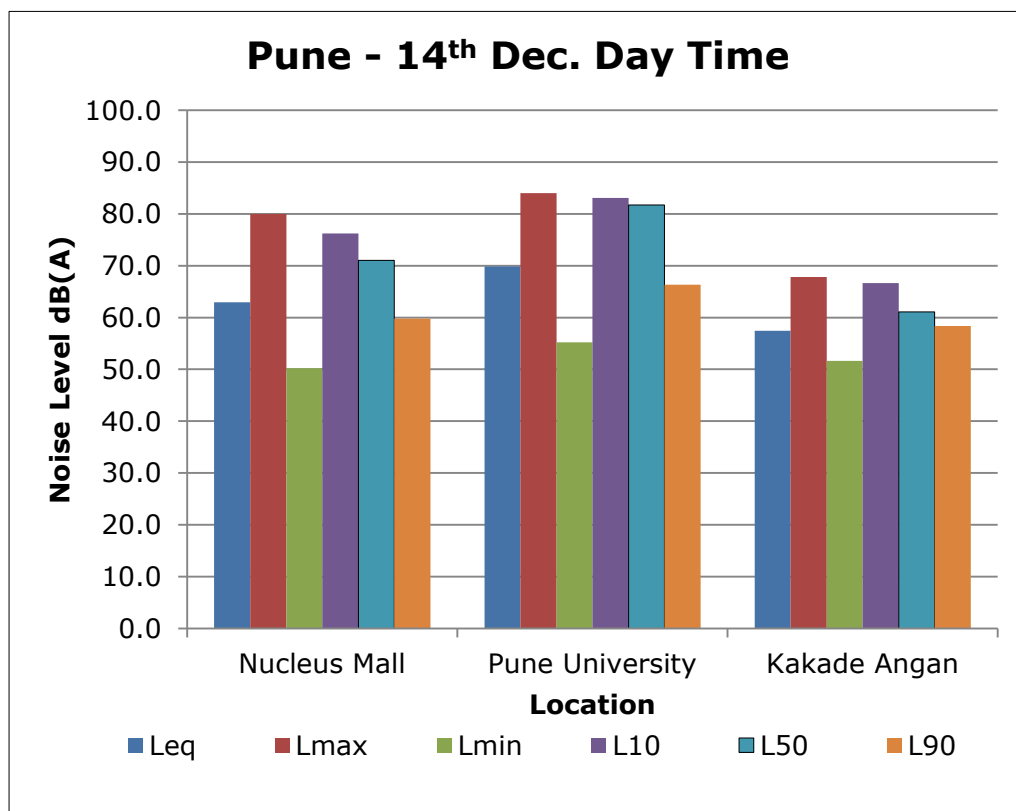
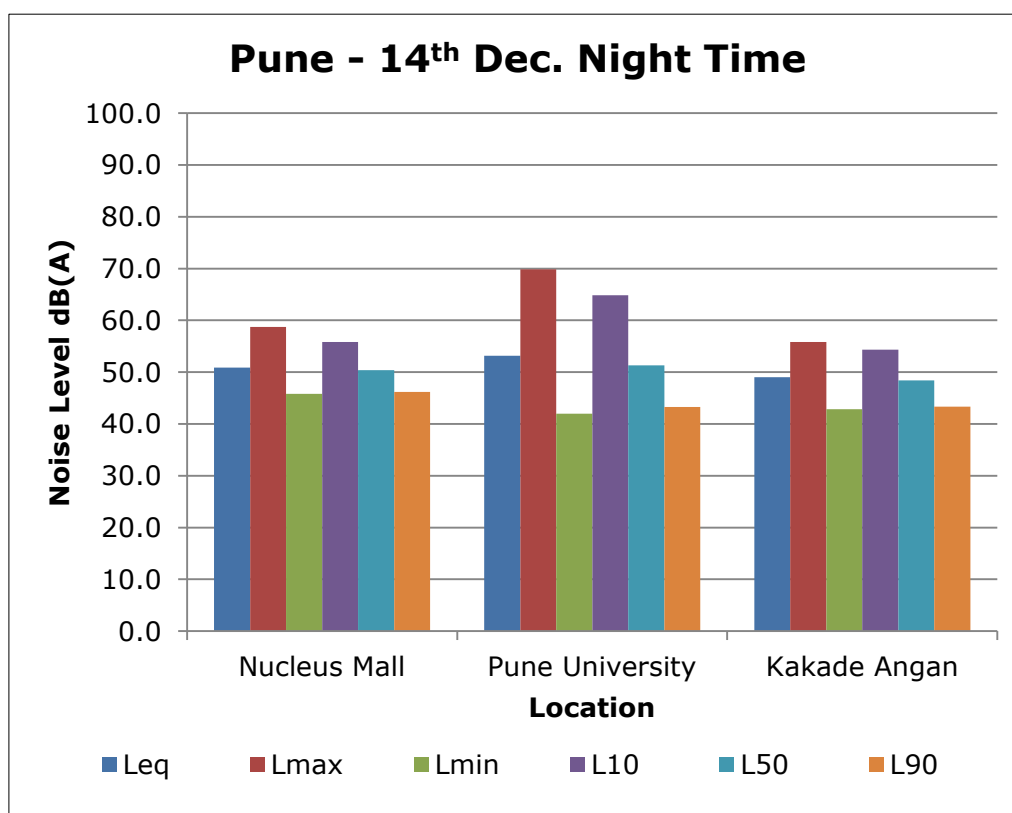
Chart 5.5: Graphical Representation of Pune on 14th December, 2014 (Day time)Chart 5.6: Graphical Representation of Pune on 14th December, 2014 (Night time)

Chart 5.7: Graphical Representation of Pune on 15th December, 2014 (Day time)

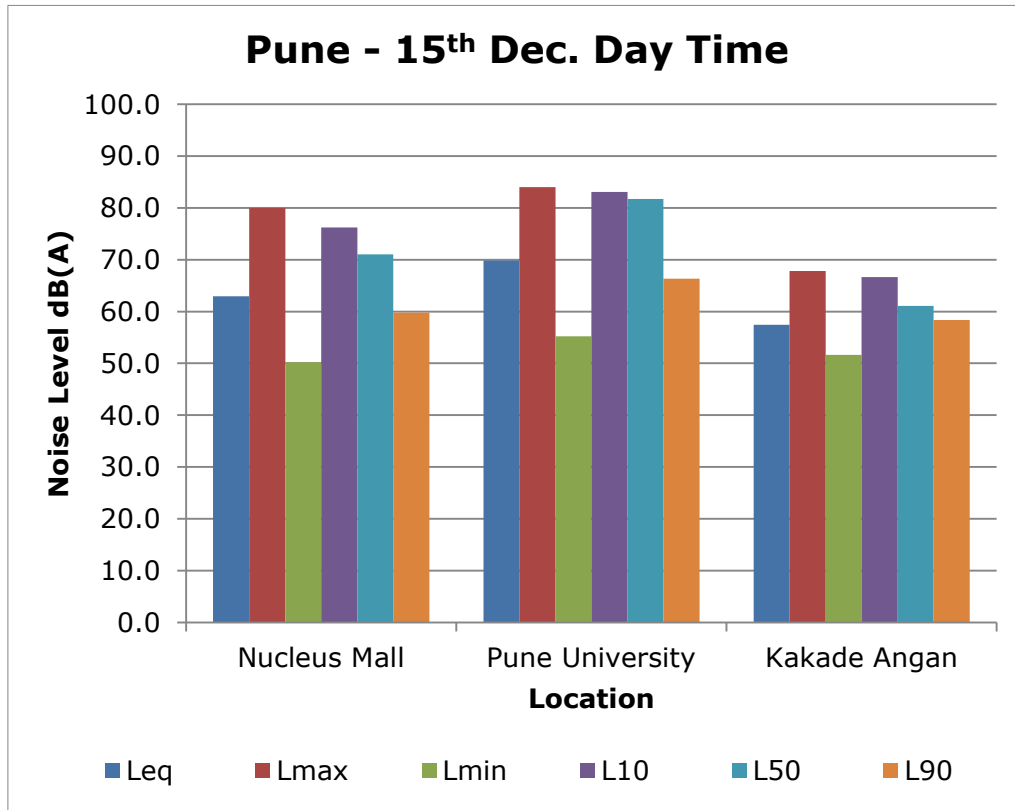
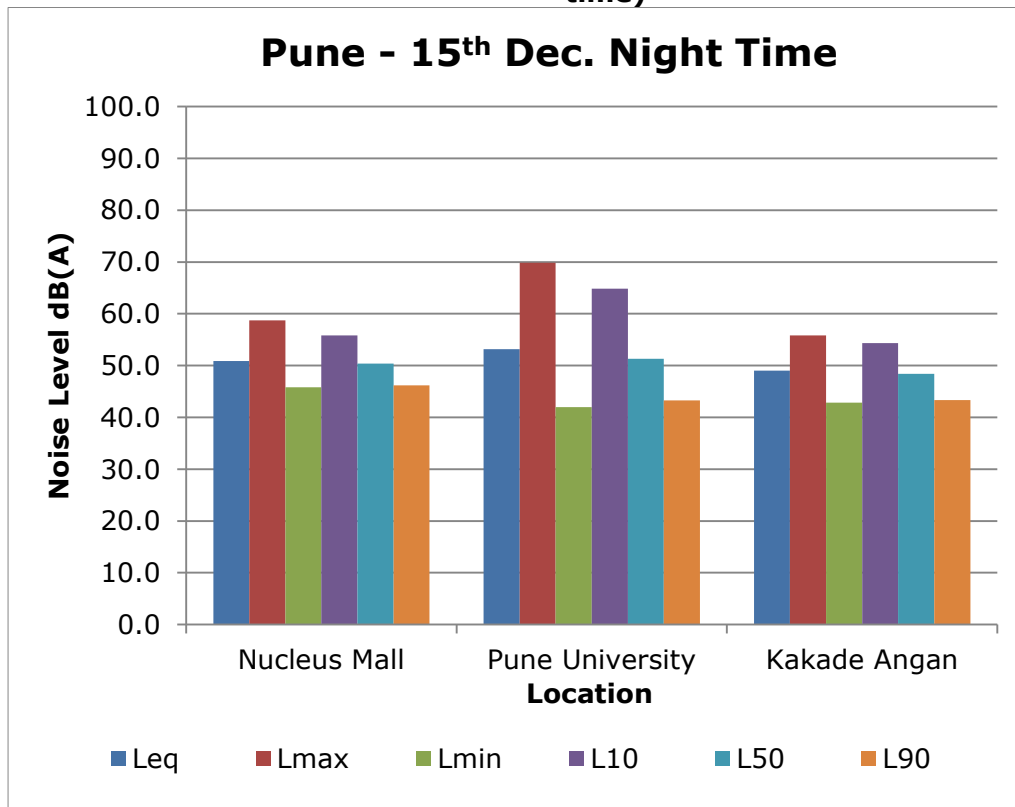


Chart 5.8: Graphical Representation of Pune on 15th December, 2014 (Night time)



3. Nashik

Table 5.3: Ambient Noise Levels on 14th & 15th December, 2014 in Nashik

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Dwarka Circle	14.12.2014	70.6	74.3	68.4	73.6	71.5	69.7
2.	Pandit Colony Near PMC	14.12.2014	67.3	77.4	56.1	73.8	68.6	61.1
3.	Pavan Nagar CIDCO	14.12.2014	76.5	84.5	74.0	83.0	80.1	76.7
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Dwarka Circle	14.12.2014	69.2	76.8	60.5	75.5	68.7	63.0
2.	Pandit Colony Near PMC	14.12.2014	66.1	67.5	63.5	67.5	66.9	64.3
3.	Pavan Nagar CIDCO	14.12.2014	69.6	79.1	55.5	78.9	68.5	62.2
Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Dwarka Circle	15.12.2014	71.7	80.4	68.4	78.5	73.2	68.8
2.	Pandit Colony Near PMC	15.12.2014	68.1	78.7	60.2	77.9	69.2	62.6
3.	Pavan Nagar CIDCO	15.12.2014	69.3	76.8	64.6	75.9	68.8	65.4
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
C.	NASHIK							
1.	Dwarka Circle	15.12.2014	68.3	72.1	63.4	71.1	68.9	64.9
2.	Pandit Colony Near PMC	15.12.2014	65.8	69.7	61.0	68.3	66.5	62.6
3.	Pavan Nagar CIDCO	15.12.2014	67.9	69.9	65.7	69.7	68.0	66.0

A total of 3 locations were monitored continuously for two days on 14th and 15th December, 2014 for 24 hours. It was observed that, on 14th 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 15th 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 15th December and average maximum sound level of 76.5 dB(A) was observed at Pavan Nagar and CIDCO during day time on 14th 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 15th December..

Chart 5.9: Graphical Representation of Nashik on 14th December, 2014 (Day time)

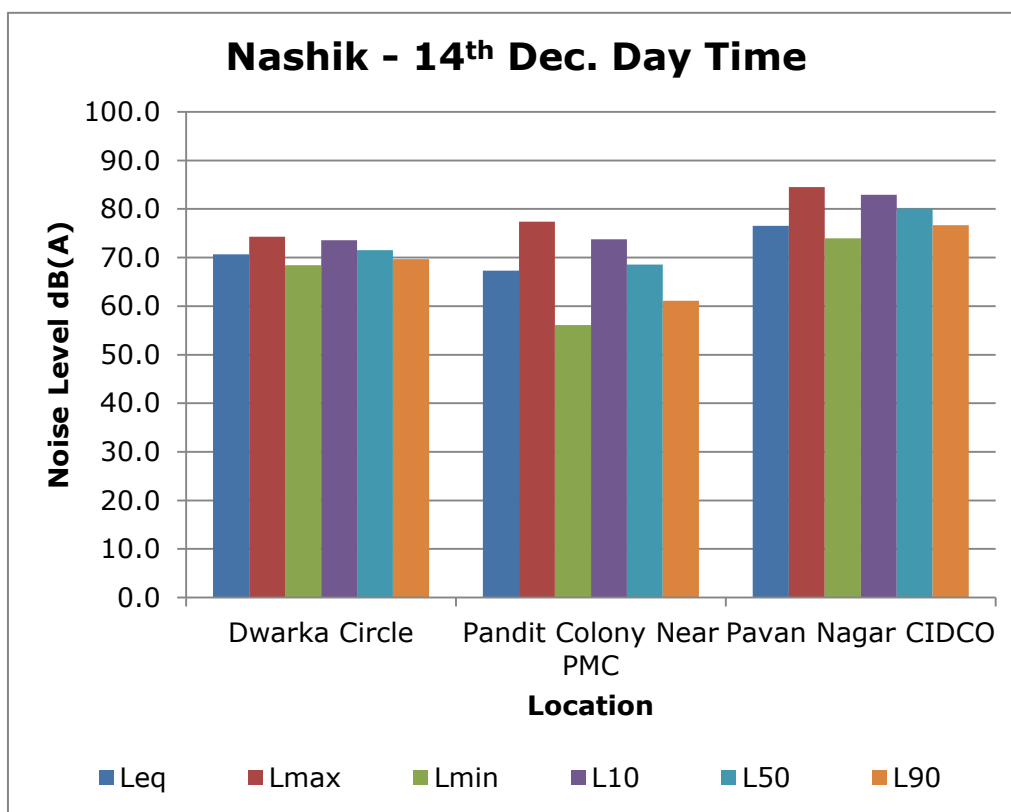


Chart 5.10: Graphical Representation of Nashik on 14th December, 2014 (Night time)

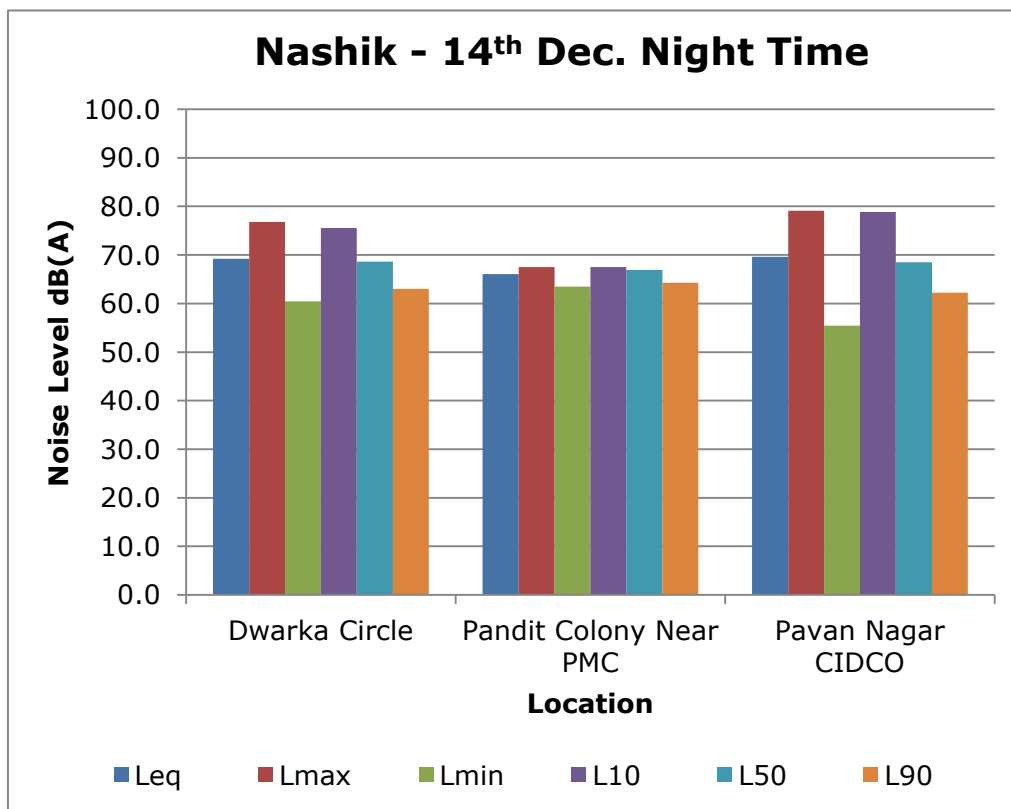


Chart 5.11: Graphical Representation of Nashik on 15th December, 2014 (Daytime)

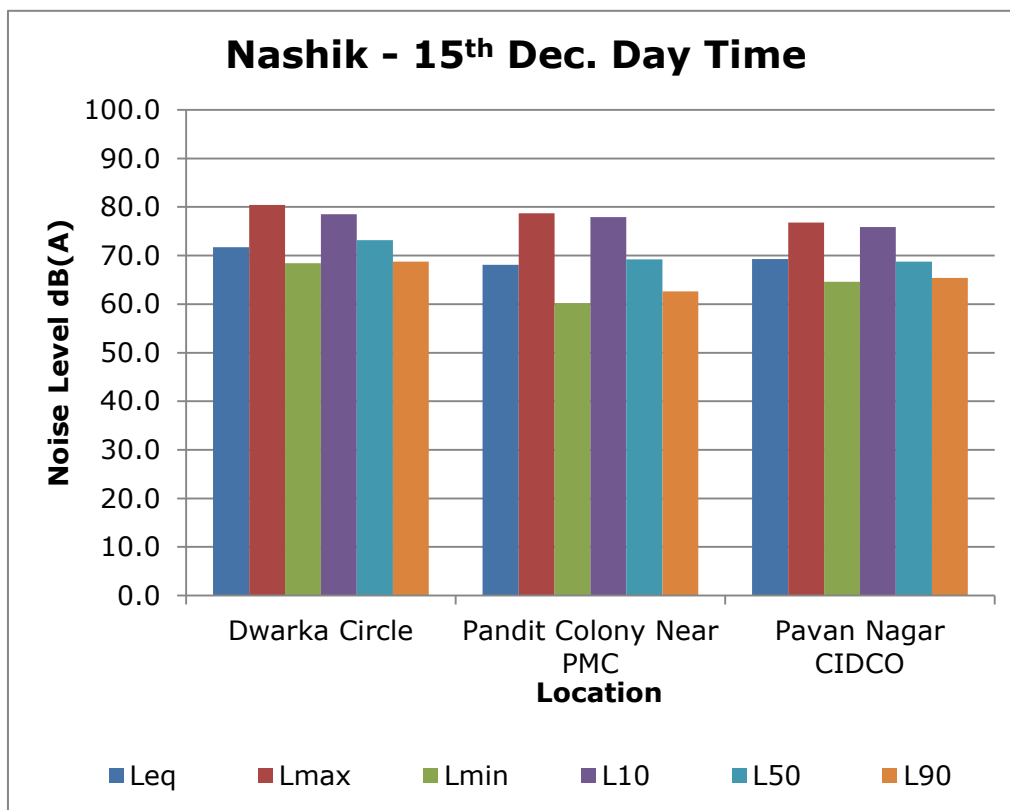
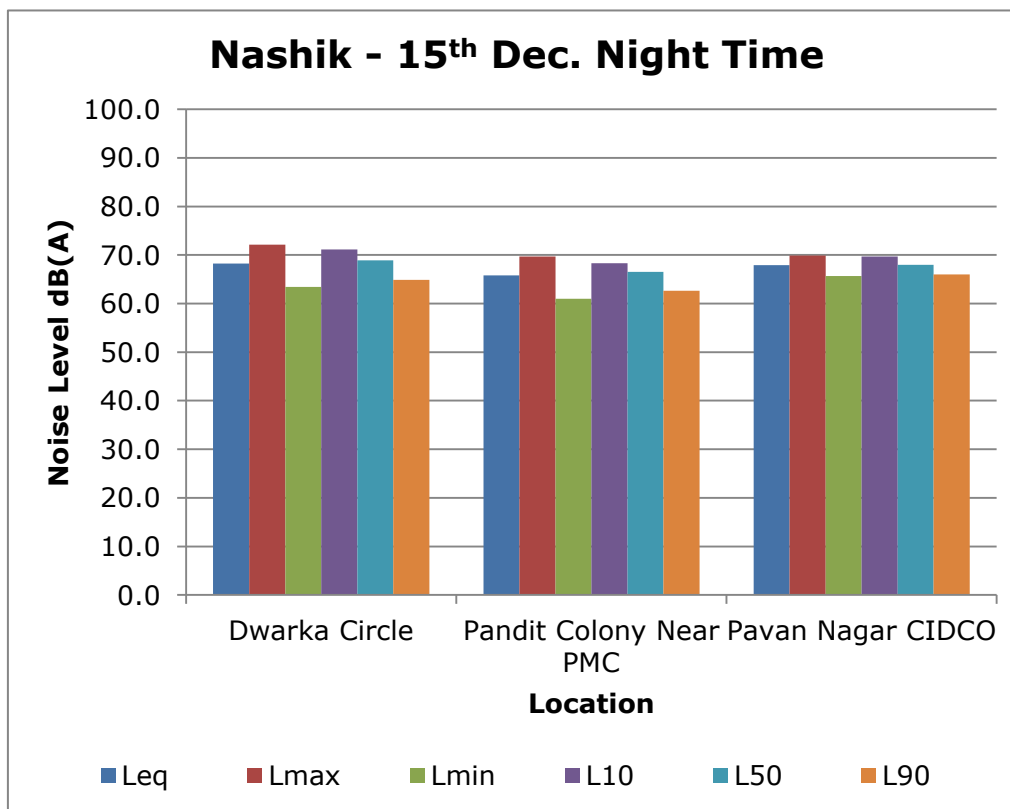


Chart 5.12: Graphical Representation of Nashik on 15th December, 2014 (Night time)



4. Aurangabad

Table 5.4: Ambient Noise Levels on 14th & 15th December, 2014 in Aurangabad

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Ghati Hospital	14.12.2014	62.2	68.6	58.2	65.4	61.7	59.5
2.	Nirala Bazaar	14.12.2014	67.4	72.4	62.1	70.2	67.2	64.7
3.	CIDCO N-4	14.12.2014	65.1	70.8	60.5	68.4	64.8	62.6
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
D.	AURANGABAD							
1.	Ghati Hospital	14.12.2014	51.6	57.7	45.7	55.5	51.3	48.2
2.	Nirala Bazaar	14.12.2014	57.4	64.5	51.6	61.3	56.5	52.1
3.	CIDCO N-4	14.12.2014	55.1	61.6	48.8	60.6	54.6	49.9
Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
D.	AURANGABAD							
1.	Ghati Hospital	15.12.2014	63.5	67.8	57.9	66.8	63.5	60.3
2.	Nirala Bazaar	15.12.2014	68.2	73.2	62.5	71.1	68.1	65.6
3.	CIDCO N-4	15.12.2014	64.5	68.9	60.6	67.2	64.6	61.9
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
D.	AURANGABAD							
1.	Ghati Hospital	15.12.2014	52.2	58.8	46.2	56.9	52.2	48.0
2.	Nirala Bazaar	15.12.2014	58.1	64.2	52.2	63.0	57.8	53.7
3.	CIDCO N-4	15.12.2014	55.0	60.6	47.6	59.8	55.5	50.4

In Aurangabad also 3 locations were monitored continuously for two days from 14th to 15th December, 2014 for 24 hours. It was observed that on 14th 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 15th 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 5.13: Graphical Representation of Aurangabad on 14th December, 2014 (Day time)

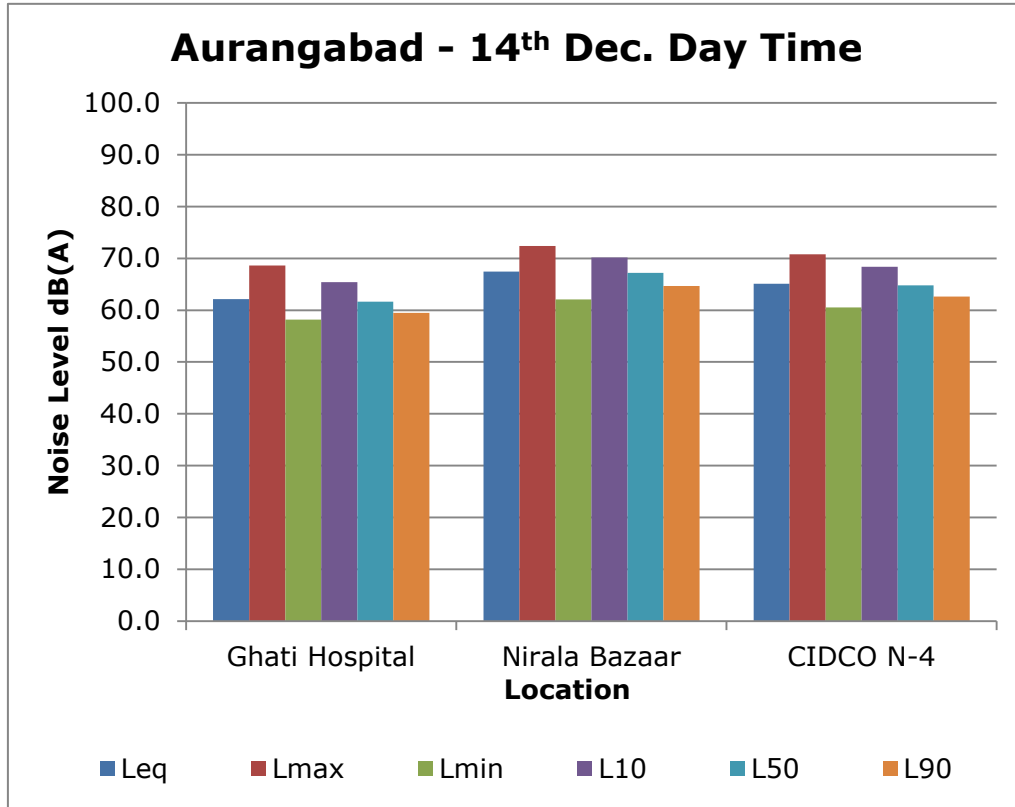


Chart 5.14: Graphical Representation of Aurangabad on 14th December, 2014 (Night time)

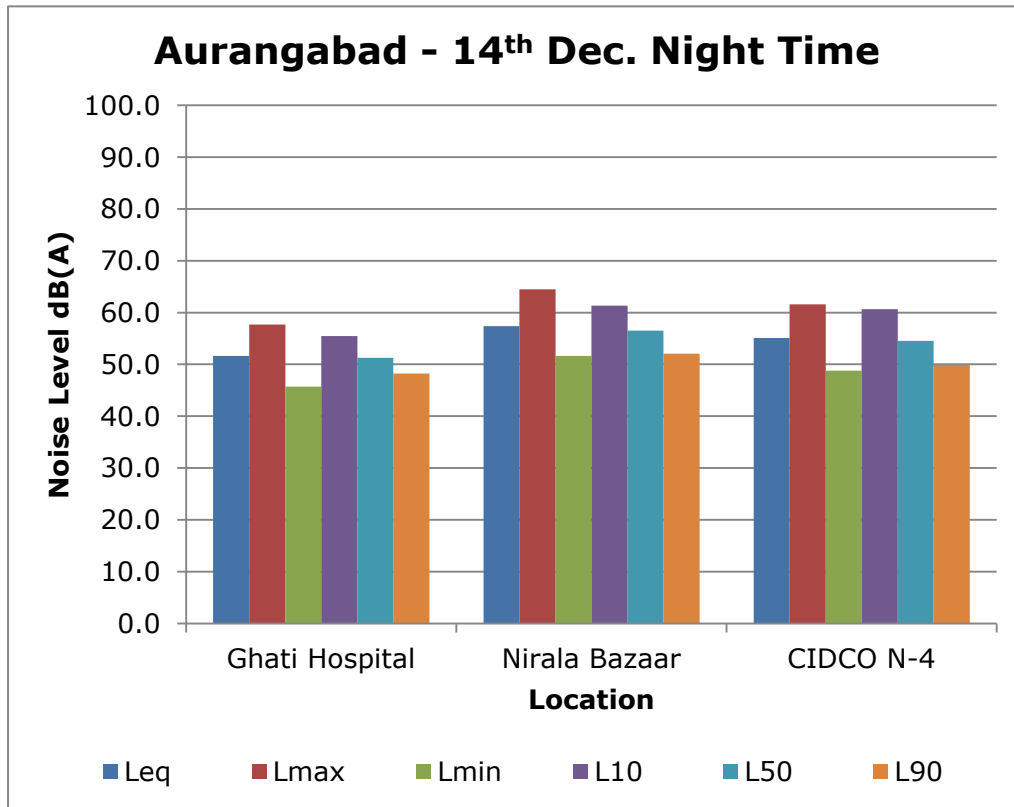


Chart 5.15: Graphical Representation of Aurangabad on 15th December, 2014 (Day time)

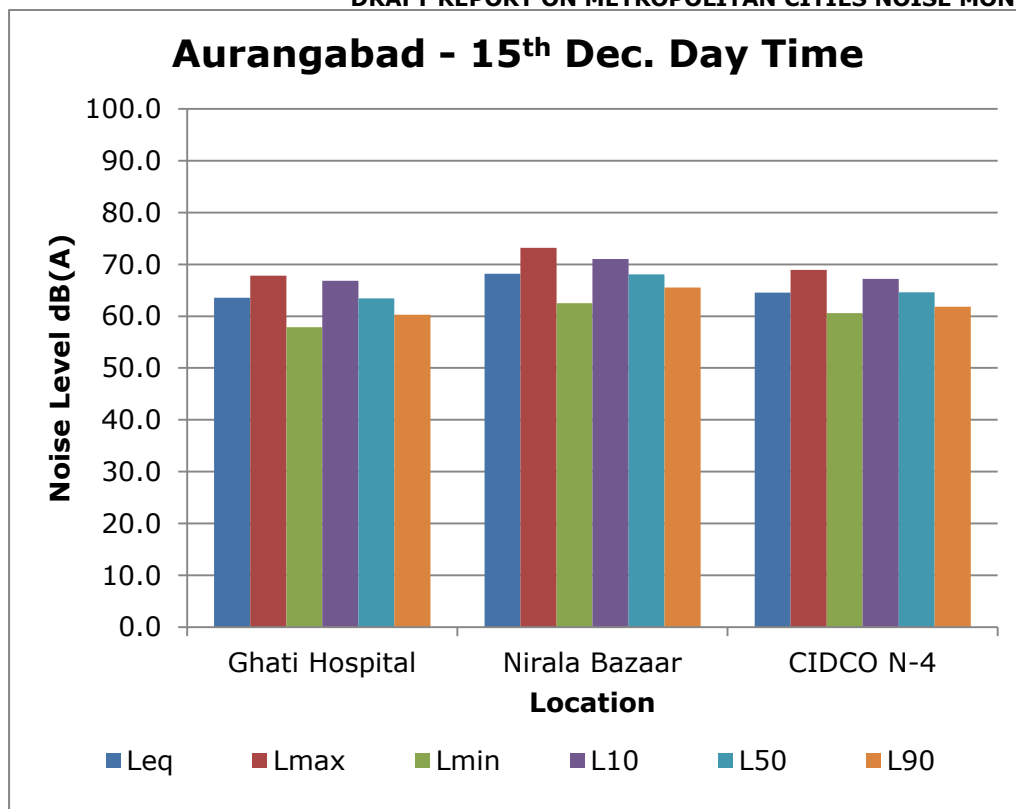
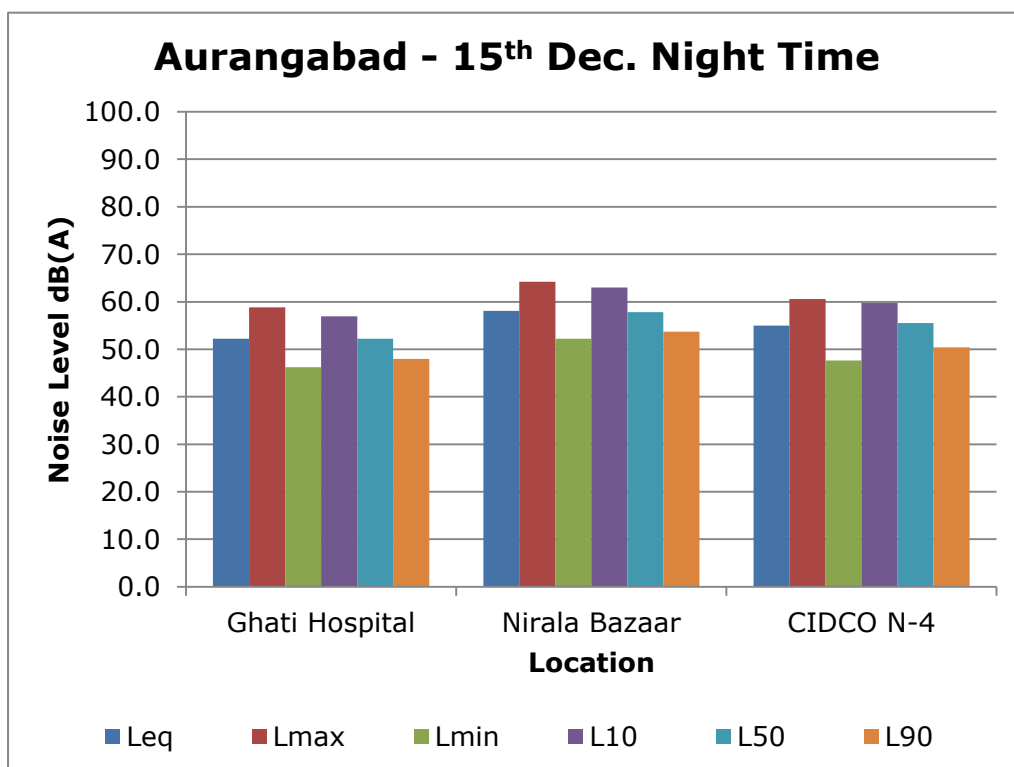


Chart 5.16: Graphical Representation of Aurangabad on 15th December, 2014 (Night time)



5. Nagpur

Table 5.5: Ambient Noise Levels on 14th & 15th December, 2014 in Nagpur

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀

DRAFT REPORT ON METROPOLITAN CITIES NOISE MONITORING - 2014

1.	Govt. Medical College	14.12.2014	49.5	54.1	42.7	53.3	52.2	48.0
2.	Sitabardi Police Station	14.12.2014	70.6	79.4	62.4	78.0	74.9	70.4
3.	Shivaji Nagar	14.12.2014	62.9	74.8	56.9	71.8	67.8	61.6
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Govt. Medical College	14.12.2014	46.8	49.7	43.9	48.4	46.9	45.0
2.	Sitabardi Police Station	14.12.2014	62.3	70.7	56.7	68.8	62.3	57.1
3.	Shivaji Nagar	14.12.2014	54.4	61.2	46.2	59.2	55.8	47.2
Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Govt. Medical College	15.12.2014	56.0	67.8	51.8	64.6	59.2	57.1
2.	Sitabardi Police Station	15.12.2014	71.3	80.8	70.3	79.7	73.9	71.6
3.	Shivaji Nagar	15.12.2014	64.1	71.9	61.5	71.7	70.1	63.3
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L_{eq}	L_{max}	L_{min}	L₁₀	L₅₀	L₉₀
1.	Govt. Medical College	15.12.2014	47.7	50.3	44.2	49.7	47.9	45.4
2.	Sitabardi Police Station	15.12.2014	61.8	72.6	56.6	66.4	62.8	57.0
3.	Shivaji Nagar	15.12.2014	55.2	62.0	46.2	61.3	55.9	48.3

A total of 3 locations were monitored continuously for two days at Nagpur on 14th and 15th December, 2014 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).

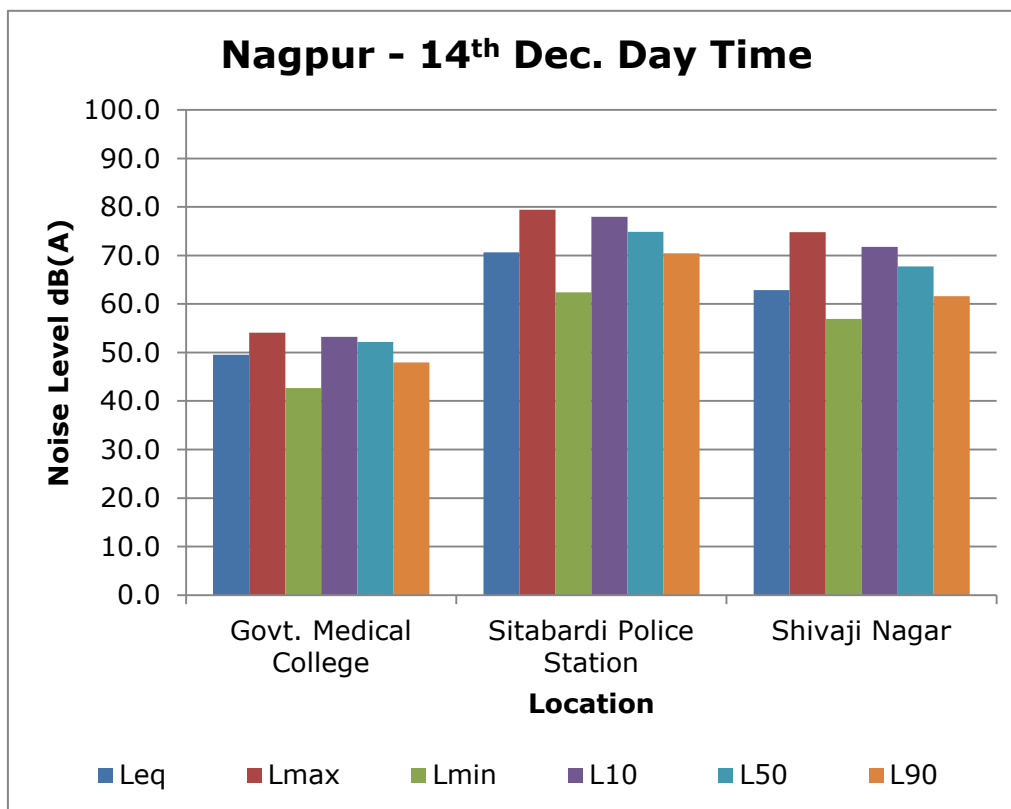
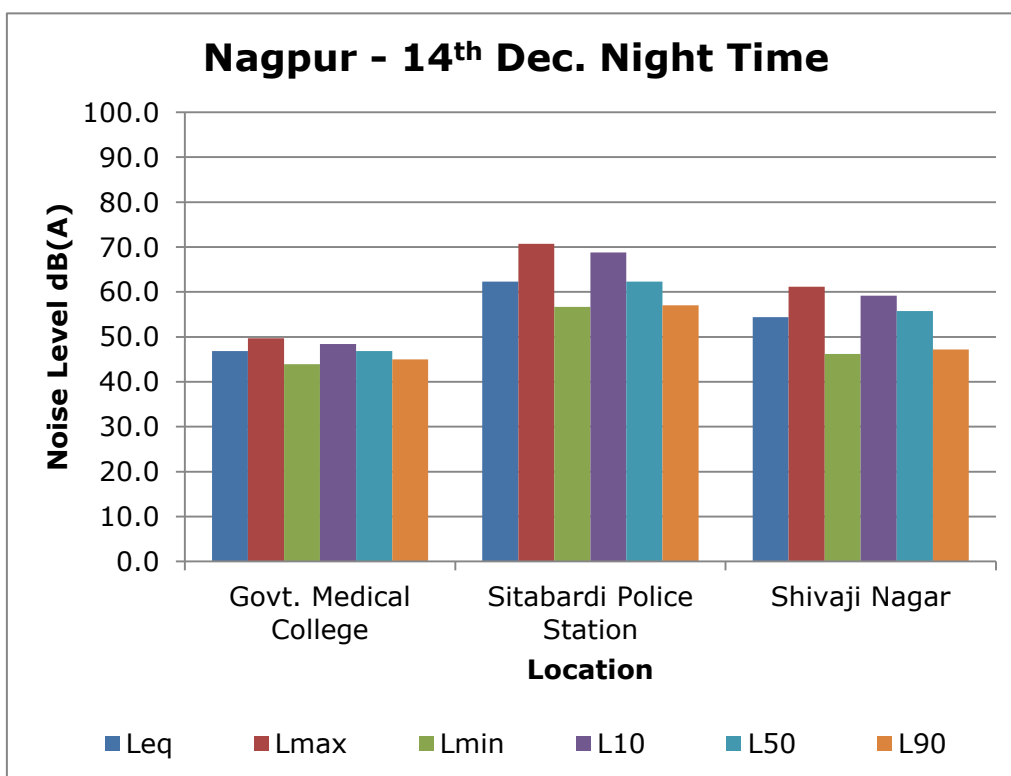
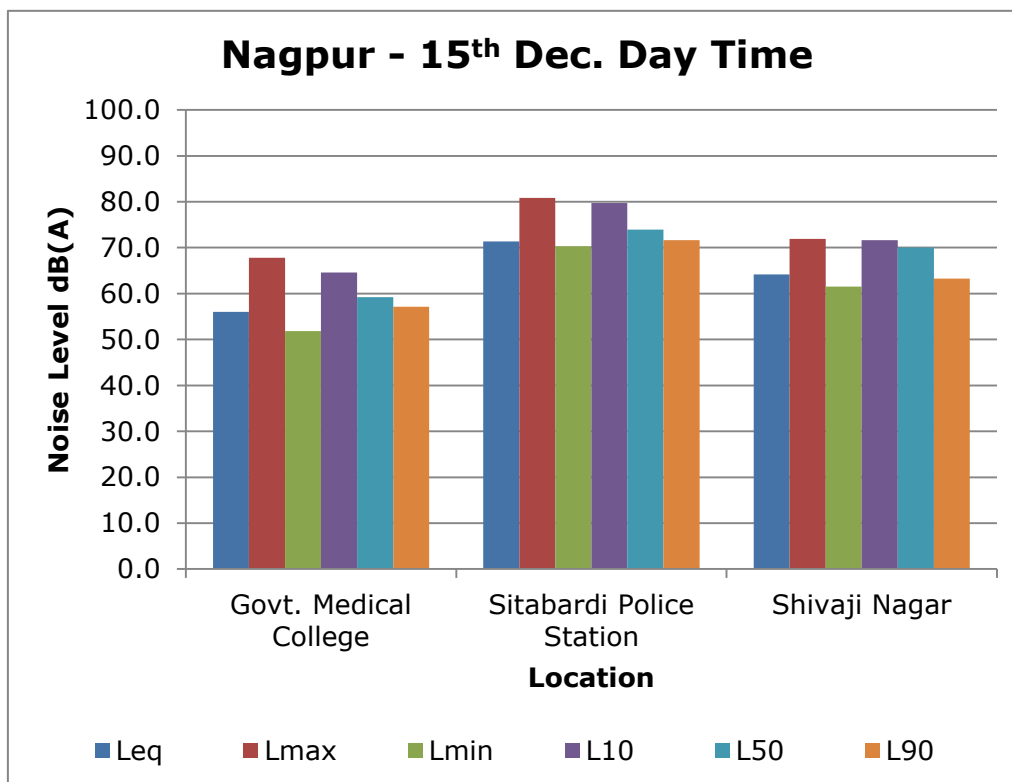
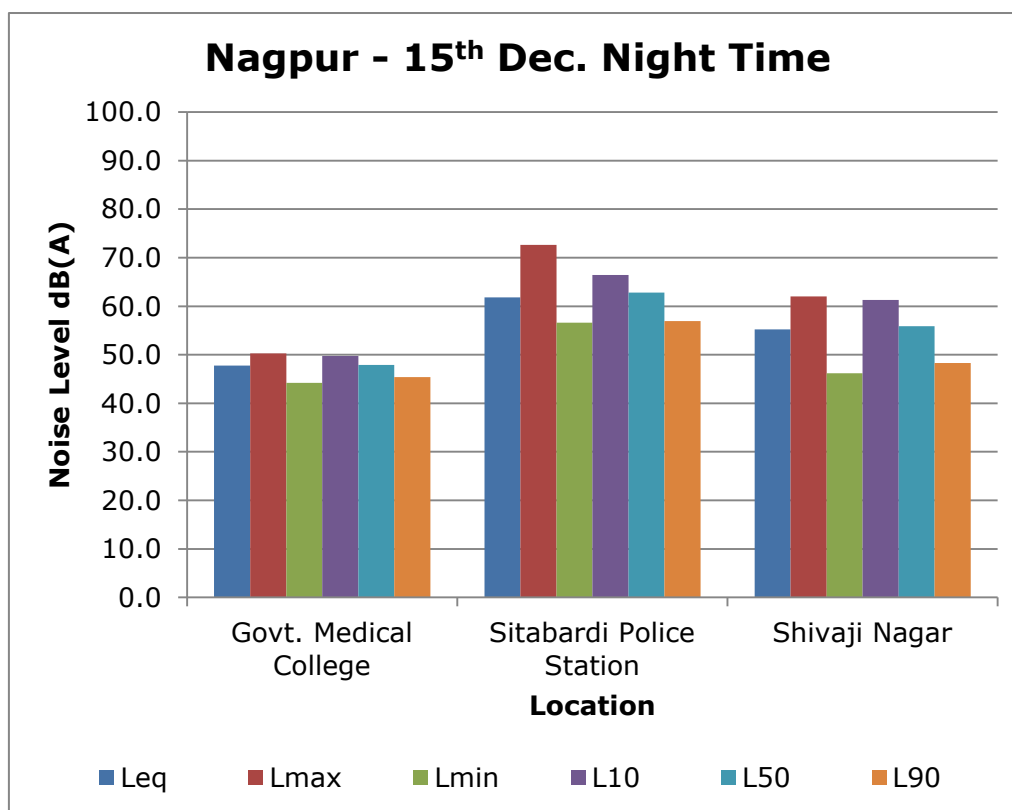
Chart 5.17: Graphical Representation of Nagpur on 14th December, 2014 (Day time)**Chart 5.18: Graphical Representation of Nagpur on 14th December, 2014 (Night time)**

Chart 5.19: Graphical Representation of Nagpur on 15th December, 2014 (Day time)**Chart 5.20: Graphical Representation of Nagpur on 15th December, 2014 (Night time)**

6. Kolhapur

Table 5.6: Ambient Noise Levels on 14th & 15th December, 2014 in Kolhapur

Sr.	Monitoring Site	Date	Day Time (6AM-10PM) Values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Collector Office	14.12.2014	52.8	66.0	42.0	62.9	58.0	49.0
2.	Shahupuri	14.12.2014	68.6	89.0	55.0	86.6	78.0	68.0
3.	Dasara Chowk	14.12.2014	67.1	85.0	45.0	85.0	78.0	65.0
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Collector Office	14.12.2014	44.3	54.0	41.0	47.7	43.0	41.0
2.	Shahupuri	14.12.2014	48.0	74.0	40.0	56.0	45.0	41.2
3.	Dasara Chowk	14.12.2014	50.1	74.0	40.0	66.3	46.0	40.7
Sr.	Monitoring Site	Date	Day Time (6AM-10PM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Collector Office	15.12.2014	58.4	81.0	42.0	77.0	67.0	47.5
2.	Shahupuri	15.12.2014	67.3	88.0	55.0	87.4	79.0	62.0
3.	Dasara Chowk	15.12.2014	69.5	89.0	45.0	88.0	82.5	65.0
Sr.	Monitoring Site	Date	Night Time (10PM - 6AM) values in dB(A)					
			L _{eq}	L _{max}	L _{min}	L ₁₀	L ₅₀	L ₉₀
1.	Collector Office	15.12.2014	44.2	54.0	42.6	51.9	42.5	40.0
2.	Shahupuri	15.12.2014	44.0	74.0	40.0	49.4	42.0	40.0
3.	Dasara Chowk	15.12.2014	51.9	74.0	40.0	76.4	44.0	40.0

A total of 3 locations were monitored continuously for two days from 14th to 15th December, 2014 for 24 hours. It was observed that, among all the locations Shahupuri was found to be having highest noise level on the 14th December both day & night time with 89.0 dB(A) and 74.0 dB(A) respectively. On 15th 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 5.21: Graphical Representation of Kolhapur on 14th December, 2014 (Day time)

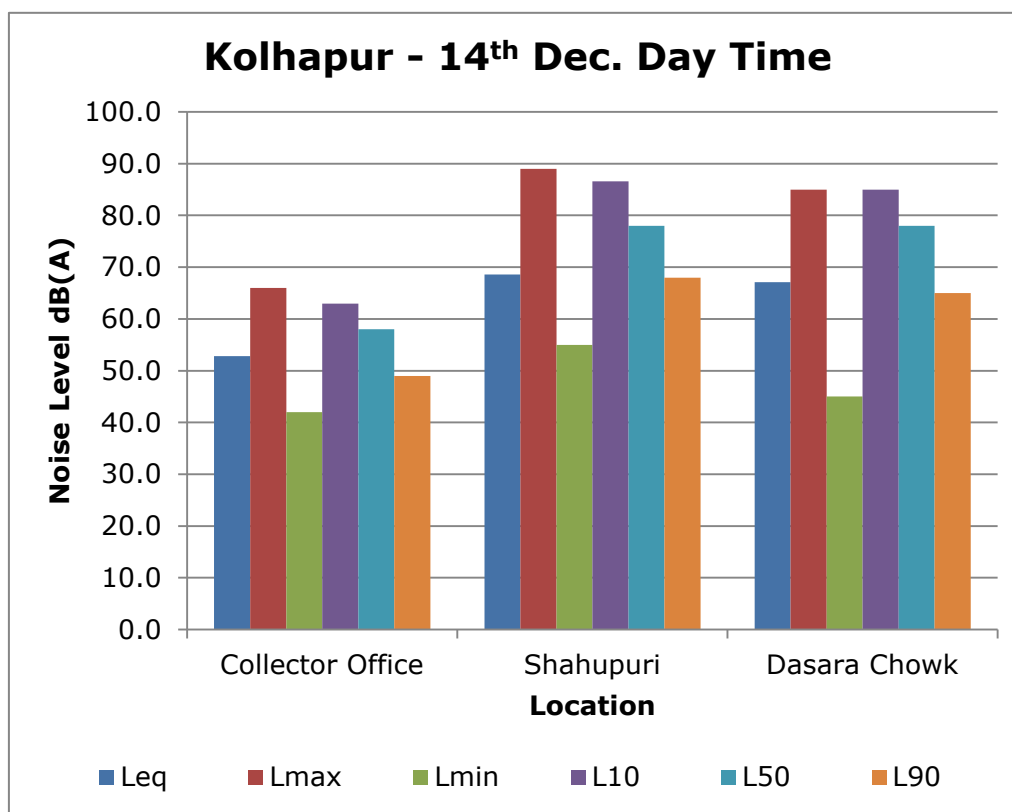


Chart 5.22: Graphical Representation of Kolhapur on 14th December, 2014 (Night time)

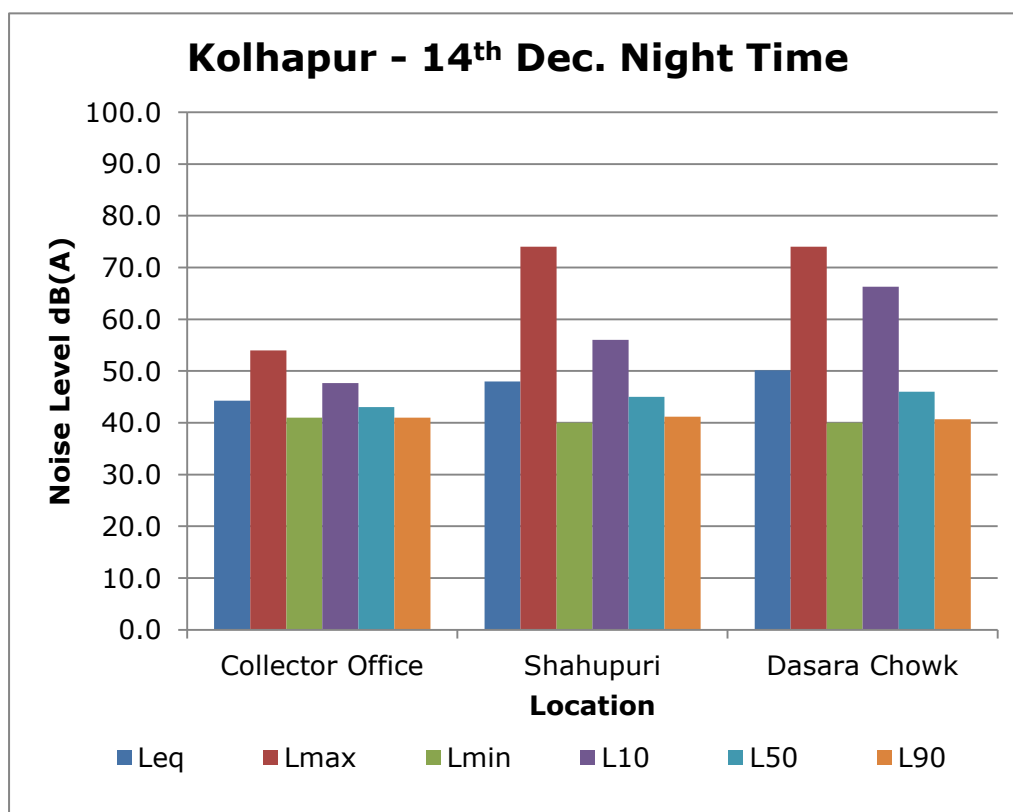
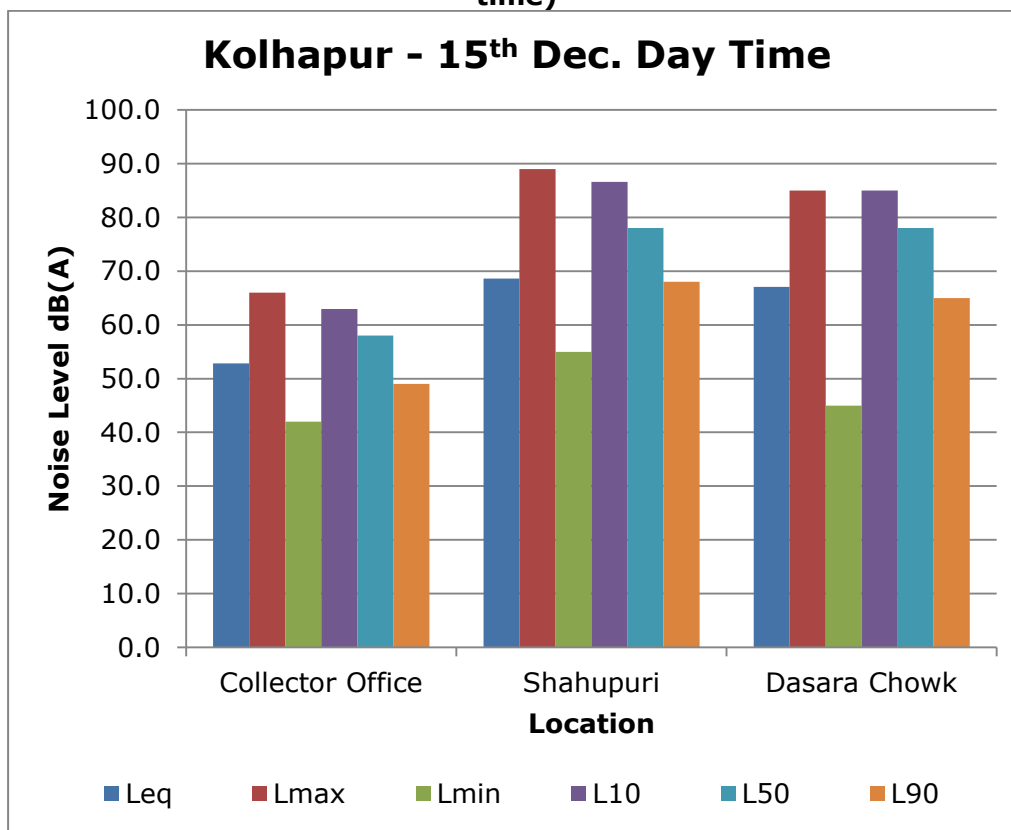
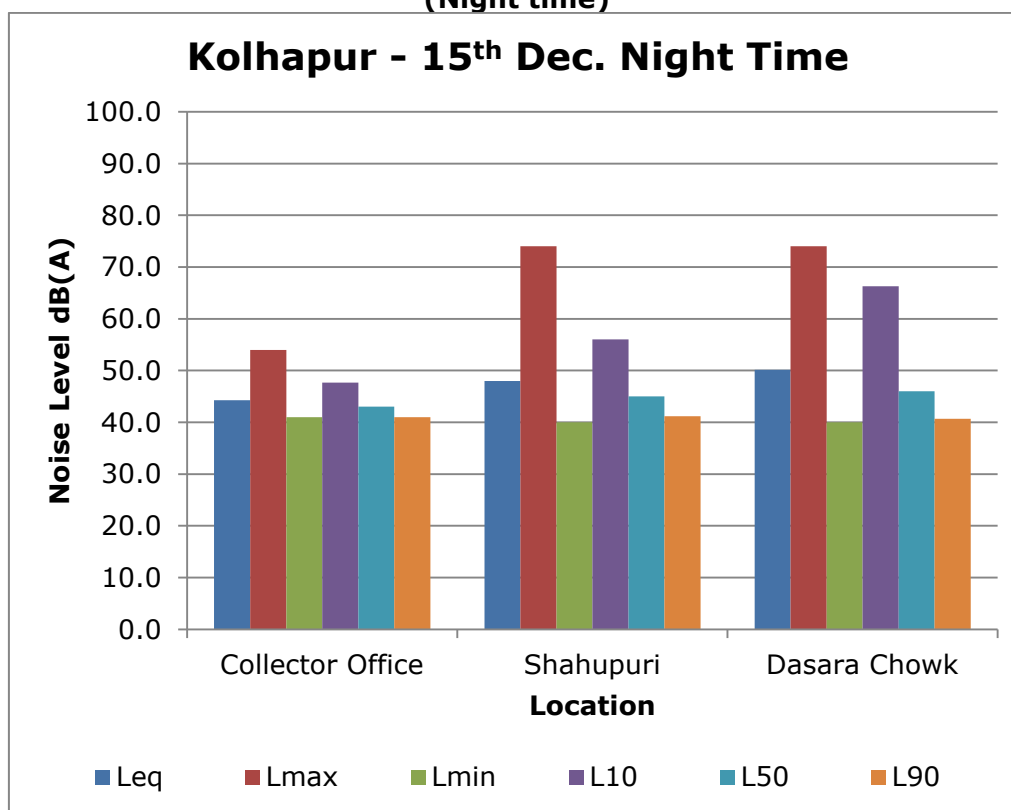


Chart 5.23: Graphical Representation of Kolhapur on 15th December, 2014 (Day time)**Chart 5.24: Graphical Representation of Kolhapur on 15th December, 2014 (Night time)**

Comparative Study of Noise levels

It is observed from the results that, the noise levels mostly exceeded the permissible limit on both days the 14th (holiday) & 15th (working day) December, 2014 in all the six Metropolitan Cities of Maharashtra as shown in the table 6.1 given below:

The detailed comparison of Noise level results during last year result are as follows

Table 6.1: Noise Levels as on 16th December, 2012, 22nd December, 2013 and 14th December during Day Time

Area	Location	Sunday, 16 th December 2012 (Holiday) L _{eq} dB(A)	Sunday, 22 nd December 2013 (Holiday) L _{eq} dB(A)	Sunday, 14 th December 2014 (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
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

DRAFT REPORT ON METROPOLITAN CITIES NOISE MONITORING - 2014

Area	Location	Sunday, 16 th December 2012 (Holiday) L _{eq} dB(A)	Sunday, 22 nd December 2013 (Holiday) L _{eq} dB(A)	Sunday, 14 th December 2014 (Holiday) L _{eq} dB(A)	Maximum Permissible Limit in dB(A)
Residential	Collector Office	64.8	71.0	52.8	55
Commercial	Shahupuri	64.6	62.9	68.6	65

Table 6.2: Noise Levels as on 16th December, 2012, 22nd December, 2013 and 14th December during Night Time

Area	Location	Sunday, 16 th December 2012 (Holiday) L _{eq} dB(A)	Sunday, 22 nd December 2013 (Holiday) L _{eq} dB(A)	Sunday, 14 th December 2014 (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
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	63.6	56.7	54.4	45

DRAFT REPORT ON METROPOLITAN CITIES NOISE MONITORING - 2014

Area	Location	Sunday, 16 th December 2012 (Holiday) Leq dB(A)	Sunday, 22 nd December 2013 (Holiday) Leq dB(A)	Sunday, 14 th December 2014 (Holiday) Leq dB(A)	Maximum Permissible Limit in dB(A)
	Nagar				
Commercial	Sitabardi	52.1	65.8	62.3	55
KOLHAPUR					
Silence	Dasara Chowk	55.6	57.2	50.1	40
Residential	Collector Office	55.6	53.0	44.3	45
Commercial	Shahupuri	57.1	61.4	48.0	55

Table 6.3: Noise Levels as on 15th December, 2012, 23rd December, 2013 and 15th December during Day Time

Area	Location	Monday, 15 th December 2012 (Working Day) Leq dB(A)	Monday, 23 rd December 2013 (Working Day) Leq dB(A)	Monday, 15 th December 2014 (Working Day) Leq 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	Antop 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
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

DRAFT REPORT ON METROPOLITAN CITIES NOISE MONITORING - 2014

Area	Location	Monday, 15 th December 2012 (Working Day) L _{eq} dB(A)	Monday, 23 rd December 2013 (Working Day) L _{eq} dB(A)	Monday, 15 th December 2014 (Working Day) L _{eq} dB(A)	Maximum Permissible Limit in dB(A)
NAGPUR					
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	Collector Office	69.0	55.6	68.6	55
Commercial	Shahupuri	69.7	71.9	67.1	65

Table 6.4: Noise Levels as on 15th December, 2012, 23rd December, 2013 and 15th December during Night Time

Area	Location	Monday, 15 th December 2012 (Working Day) L _{eq} dB(A)	Monday, 23 rd December 2013 (Working Day) L _{eq} dB(A)	Monday, 15 th December 2014 (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
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

DRAFT REPORT ON METROPOLITAN CITIES NOISE MONITORING - 2014

Area	Location	Monday, 15th December 2012 (Working Day) L_{eq} dB(A)	Monday, 23rd December 2013 (Working Day) L_{eq} dB(A)	Monday, 15th December 2014 (Working Day) L_{eq} dB(A)	Maximum Permissible Limit in dB(A)
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	Collector 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.

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.

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 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 a sound level meter meeting the applicable specifications.

Percentile Sound Level

The "x percentile sound level", designated L_x , 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 forces (e.g. elastic, viscous), or the superposition of such propagated oscillations, which may cause an auditory sensation.

Sound Level

"Sound level" is the A-weighted sound pressure level.

Sound Level Meter

A "sound level meter" is an 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 (P_r) of 20 μ Pa. Thus the sound pressure level in dB = $20 \log_{10} P/P_r$.

ANNEXURE I

Annexure I -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 II

Annexure II - Sound Level Meter

MS 6701, Type II



ANNEXURE III

Annexure II - Noise Pollution (R & C) Rules, 2000 amendment dt. 21st April 2009

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 जाहीर करून 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 सभोवताली १०० मीटर क्षेत्र
- ३) रुग्णालयाच्या सभोवताली १०० मीटर क्षेत्र

२) ध्वनी प्रदूषणाची वाढती पातळी व निरनिराळे प्रदूषण स्रोत विचारात घेता, शासनाच्या निरनिराळ्या विभागांनी सद्यःस्थितीत 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

रौटा/इच-०१००[४००-४-२००९]-१

विभागांनी स्वतंत्र आदेश निर्गमित करावेत. सदर प्राधिकरण, ते राबवित असलेल्या नियमाच्या तरतुदीनुसार तसेर ध्वनी प्रदूषण (नियंत्रण व नियमन) नियम, २००० च्या तरतुदीनुसार ध्वनी प्रदूषण नियंत्रण व नियमनाची कार्यवाही करण्यास सक्षम असेल.

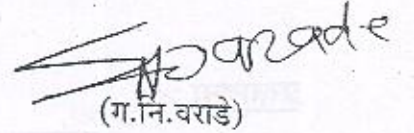
A.

३) ध्वनी प्रदूषण करणारे उपकरणे / स्रोत जसे D.G. Sets (15-500 KVA); Coal Washeries ; Fire Crackers Generator Sets with Diesel (upto 1000 KVA) manufactured on or after 1st July, 2003 ; Vehicles at manufacturing stage from the year, 2003 and 1st April, 2005 respectively as well as Noise Limits for Automobiles and Domestic appliances and construction equipments at the manufacturing stage laid down under the provisions of the Environment (Protection) Act, 1986 and Rules made there under इत्यादींची, सभोवतालच्या हवेतील ध्वनी प्रदूषण गुणवत्तेच्या विहित मर्यादा परिशिष्ट २ मध्ये नमूद केल्याप्रमाणे असेल.

४) या शासन निर्णयान्वये, पर्यावरण विभागाने यापूर्वी दिनांक १६ ऑगस्ट, २००० आणि दिनांक १५ जून, २००१ रोजी या विषयाबाबत निर्गमित केलेला शासन निर्णय खारीज करण्यात येत आहे. हा शासन निर्णय निर्गमित झाल्याच्या दिनांकापासून लागू राहील.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

B.


(ग.नि.वराडे)

संचालक (पर्यावरण)

प्रत माहितीसाठी :-

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मा.उपमुख्यमंत्र्यांचे प्रधान सचिव

मा. मुख्यसचिव

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सर्व मा. मंत्री / राज्यमंत्री यांचे खाजगी सचिव

सर्व जिल्हाधिकारी

सर्व पोलीस आयुक्त / उप आयुक्त

सर्व जिल्हा पोलीस अधिक्षक / उप अधिक्षक

पर्यावरण विभाग सर्व अधिकारी / कार्यासन / निवडनस्ती - तांक १

परिशिष्ट - १

एच-०१०० -१३

ध्वनी प्रदूषण व नियमन व नियंत्रणाची अंमलबजावणी करण्यासाठी शासनाच्या अधिपत्याखाली असलेल्या संस्थांमधील संबंधित 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 Development	<p>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.</p> <p>The urban local bodies shall be responsible for demarcation of the silent zones as per the Noise Rules, 2000 and displaying the same adequately.</p> <p>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.</p> <p>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.</p>
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

6.	Head of M.M.R.D.A., M.S.R.D.C., C.I.D.C.O., having local jurisdiction constituted under various Laws and Public Works Department.	Urban Development	<p>jurisdiction.</p> <p>Corresponding Rules for the enforcement and maintenance 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</p> <p>These Developmental Authorities should include adequate noise abatement measures in their project activities such as noise barriers to the bridges and flyovers, tree plantation for roads etc.</p>
7.	Member Secretary and any officer Maharashtra Pollution Control Board not below the rank of the Deputy Superintendent of Police	Environment Department	<p>(i) Monitoring of Ambient Noise Levels in case of specific requests from other authorities referred in the table and communicating the results to the respective Authorities for further necessary action at their end.</p> <p>(ii) For the enforcement of Noise Pollution Control Measures and Standards in industrial areas.</p>
8.	<p>(i) Any officer from the State Transport Department / Deputy Regional Transport Officer in their respective jurisdiction not below the rank of the Deputy Superintendent of Police</p> <p>(ii) Head of Maharashtra State Road Transport Corporation or any officer/ Depot Manager not below the rank of the Deputy Superintendent of Police.</p> <p>(iii) Traffic Police Authorities not below the rank of the Deputy Superintendent of Police</p>	Home Department (Transport)	<p>Enforcement and maintenance of the Noise Standards laid down under Environment (Protection) Rules, 1986 and Motor Vehicles Act, 1939 for the new and operating vehicles within their respective jurisdiction.</p> <p>The noise levels generated by the in-use vehicles should be monitored while grant of Pollution Under Control Certificate.</p>

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, L_w 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.

The DG set should also be provided with proper exhaust muffler with insertion loss of minimum 25dB (A).

- A. (C) **Guidelines for the manufacturers/users of DG sets (5 KVA and above).**
01. The manufacturer should offer to the user a standard acoustic enclosure of 25 dB(A) Insertion Loss and also a suitable exhaust muffler, with Insertion Loss of 25 dB(A).
 02. The user should make efforts to bring down the noise levels due to the D.G. set, outside his premises, within the ambient noise requirements by proper siting and control measures.
 03. The manufacturer should furnish noise power levels of the unsilenced DG sets as per standards prescribed under (A).
 04. The total sound power level of a D.G. set, at the user's end, shall be within 2 dB(A) of the total sound power level of the DG set, at the manufacturing stage as prescribed under (A).
 05. Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.
 06. A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer, which would help to prevent noise levels of the DG set from deteriorating with use.

3. Noise Level Standards for Coal Washeries

Operational / Working Zone -- not to exceed 85 dB(A) Leq for 8 hours exposure.

The Ambient Air Quality Standards in respect of noise as notified under Environment (Protection) Rules, 1986 shall be followed at the boundary line of the coal washery.

Code of Practice of Coal Washery

Water or Water mixed chemical shall be sprayed at all strategic coal transfer points such as conveyors, loading/unloading points etc. As far as practically possible conveyors, transfer points etc. shall be provided with enclosures.

- * The crushers/pulverizers of the coal washeries shall be provided with enclosures, fitted with suitable air pollution control measures and finally emitted through a stack of minimum height of 30m, conforming particulate matter emission standards of 150 mg/Nm³ or provided with adequate water sprinkling arrangement.
- * Water sprinkling by using fine atomizer nozzles arrangement shall be provided on the coal heaps and on land around the crushers/pulverisers.
- * Area, in and around the coal washery shall be pucca either asphalted or concreted.
- * Water consumption in the coal washery shall not exceed 1.5 cubic meter per tonne of coal.
- * The efficiency of the settling ponds of the waste water treatment system of the coal washery shall not be less than 90%.
- * Green belt shall be developed along the road side, coal handling plants, residential complex, office building and all around the boundary line of the coal washery.
- * Storage bunkers, hoppers, rubber decks in chutes and centrifugal chutes shall be provided with proper rubber linings.

- * Vehicles movement in the coal washery area shall be regulated effectively to avoid traffic congestion. High pressure horn shall be prohibited. Smoke emission from heavy duty vehicle operating in the coal washeries should conform the standards prescribed under Motor Vehicle Rules, 1989.

4. Noise Standards for fire-crackers

- A.(i) The manufacturer, sale or use of fire-crackers generating noise level exceeding 125 dB(A) or 145 dB(C)_{pk} at 4 meters distance from the point of bursting shall be prohibited.
- (ii) For individual fire-cracker constituting the series (joined fire crackers), the above mentioned limit be reduced by $5 \log_{10} (N)$ dB, where N=Number of crackers joined together.
- B. The broad requirements for measurement of noise from fire-crackers shall be-
- (i) The measurements shall be made on a hard concrete surface of minimum 5 meter diameter or equivalent.
- (ii) The measurement shall be made in free field conditions i.e., there shall not be any reflecting surface upto 15 meter distance from the point of bursting.
- (iii) The measurement shall be made with an approved sound level meter.
- C. The Department of Explosives shall ensure implementation of these standards.

5. Noise Limits for Generator Sets run with diesel

Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after 1st July, 2003

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity upto 1000 KVA, manufactured on or after the 1st July, 2003 shall be 75 dB(A) at 1 meter from the enclosure surface.

The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

The implementation of noise limit for these diesel generator sets shall be regulated as given in below mentioned paragraph.

Requirement of certification

Every manufacturer of engine or every importer of engine or product must have valid certificates of Type Approval and certificates of Conformity of Production for each year, for all engine models being manufactured or for all engines or product models being imported, after the effective date with the emission limit as specified in earlier paragraph.

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

Sr.No.	Type of Vehicle	Noise Limits dB(A)	Date Implementation of
(1)	(2)	(3)	(4)
1.	Two Wheeler		1 st 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		1 st January, 2003
	Displacement upto 175 cm ³	77	
	Displacement more than 175 cm ³	80	
3.	Passenger Car	75	1 st January, 2003
4.	Passenger or Commercial Vehicles		1 st 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	

(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

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
