MAHARASHTRA POLLUTION CONTROL BOARD

Annual Report 2015-16

Maharashtra Pollution Control Board
महाराष्ट्र प्रदूषण नियंत्रण मंडळ

Foreword

The Maharashtra Pollution Control Board has truly acquired a significance of its own in the national as well as in the global context. The Board will have to play a far greater role in management in the Areas such as Water pollution control, Air pollution control, Hazardous Waste management, Bio-Medical Waste management, Municipal Solid Waste management etc. For effective implementation of environmental legislations, the Board has taken various steps such as fast clearance of the Consents/ Authorization, Joint Vigilance Sampling, Legal actions under sec. 33A of Water Act and 31A of Air Act, Environment improvement program at religious places, Conducting Mass Awareness programs on large scale, increasing frequency of inspection of polluting sources, monitoring of coastal pollution, strengthening of laboratories for analysis of samples, development of Infrastructure and decentralization of powers at the level of subordinate offices, maximum information dissemination through website etc.

With a view to have ready information on the activities of Maharashtra Pollution Control Board, an attempt is made to present the relevant and latest statistics about key indicators and parameters e.g. Industries covered under the purview of the environmental legislations, Grant of Consent, Authorization issued under Bio-Medical Waste (Mgmt. and Handling) Rules, 1998 & Municipal Solid Waste (M & H) Rules, 2000, Legal Actions initiated against defaulters, Public Complaints, Central Action Plan, Industrial pollution load, CETP Status, Performance of Regional Offices, Central & Regional Laboratories, environmental Water & Air quality, Organization, Staff Strength , Cess assessment and collection etc.

Dr. P. Anbalagan
Member Secretary
Maharashtra Pollution Control Board

INDEX

LIST OF ANNEXURES

1.0 INTRODUCTION

Maharashtra State is the first State in India to introduce environmental legislations. The Maharashtra (Prevention of Water Pollution) Act was promulgated in 1969 & Maharashtra State Board was established in 1970 under the provision of this Act. Subsequently, in 1974, the Parliament passed Water (Prevention and Control of Pollution) Act 1974. This was adopted by the State in 1981 and Maharashtra Pollution Control Board (MPCB) was constituted under this new Act.

Considering the challenges, the Board has strengthened itself in various capacities by developing infrastructure for laboratories and offices, following the practice of e-governance, engaging services of Professionals, Environmental Scientists and Engineers for specific projects and studies.

The Board has established twelve Regional Offices, forty two Sub-Regional offices and eight laboratories across the State to safeguard natural environment and curb the pollution with necessary control measures.

To know the pollution potential the Board regularly analyzes Water samples, Air samples and Hazardous waste samples in the Central laboratory established at Navi Mumbai and seven Regional Laboratories at Nagpur, Aurangabad, Pune, Nashik, Thane, Chiplun and Chandrapur.

To assess ambient air quality, water quality the Board has already strengthened its ‘Monitoring’ network. All the related data is compiled and updated regularly on Board’s website. The ‘Noise’ level monitored during festivals are regularly collected and updated on the website for the information of the people at large. Under the National Ambient Noise Monitoring Network Pro8gramme (NAMP) as per the proposed road map 5 continuous monitoring stations have been installed at Mumbai / Navi Mumbai / Thane area in the State.

As a part of Common Environmental Infrastructure for Environment protection, Common Effluent Treatment Plants (CETP) for treatment and disposal of industrial effluent, common facilities for treatment and disposal of Hazardous Waste and common facilities for treatment and disposal of Bio-Medical Waste have been established across the State.

To motivate the local bodies for treatment and disposal of Municipal Solid Waste, the Board has undertaken demonstration projects at five places in the State.

Through Integrated Management Information System (IMIS) the Board is computerizing its various process and operations to maintain transparency with its constituents and to

increase the overall efficiency. The system is mainly designed for Consent Management, Waste Management, Cess Collection, Laboratory Management and Financial Management. For tracking Hazardous waste, the board has also implemented a computer software program.

For creating general awareness among the people on environmental issues, it is the constant endeavor of the board to conduct various awareness programs throughout the State involving Press, Media, NGOs, Artist and student. Efforts are also being made to create awareness to celebrate almost all festivals in eco-friendly manners.

2.0 CONSTITUTION OF THE BOARD

The Maharashtra Pollution Control Board comprises of Chairman, Members from the categories as shown below and a full time Member- Secretary, as chief executive officer as per the Rules under Water (P.&C.P) Act, 1974 notified by the State Government in 1983. The composition of the Board is as under:

1. **Chairman:** (Part time or full time)
2. **Representatives of the State Govt.** (not exceeding five)
3. **Representatives of local bodies** (not exceeding five)
4. **Representatives of companies or corporations of the State Govt.** (two)
5. **Members representing interests of agriculture, fishery or industry or trade etc.** (not exceeding three)
6. **Member Secretary** (full time)

Government of Maharashtra has the powers under section 4 of the Water (Prevention and Control of Pollution) Act, 1974 to constitute State Pollution Control Board (MPCB). However, members representing the local bodies (not exceeding five) and members representing interests of agriculture, fishery, industry, trade or any other interest are not yet appointed as per the composition given under the Act.

Constitution of M.P.C. Board during 2015-2016

Shri. Ajoy Mehta, IAS, Principal Secretary, Environment Department, Govt. of Maharashtra	**Chairman (Additional Charge)** (April 2015)
Shri Sitaram Kunte, IAS, Principal Secretary, Environment Department, Government of Maharashtra	**Chairman, (Additional Charge)** (from 20/4/2015 to 20/5/2015)
Mrs. Malini Shankar, IAS, Additional Chief Secretary, Environment Dept., Government of Maharashtra,	**Chairman, (Additional Charge)** (From 28/5/2015 to 2/5/2016)
Additional Chief Secretary Public Health Dept. Government of Maharashtra, Mantralaya, Mumbai	**Member**
Principal Secretary-II Urban Development Dept., Government of Maharashtra, Mumbai	**Member**

Principal Secretary Water Supply and Sanitation, Government of Maharashtra, Mantralaya, Mumbai	**Member**
Secretary Home (Transport) Dept., Government of Maharashtra, Mantralaya, Mumbai	**Member**
Chief Executive Officer M.I.D.C., Mahakali Caves Road, Andheri (E),Mumbai	**Member**
Member Secretary (Technical) Maharashtra Jeevan Pradhikaran, Express Towers, Nariman Point, Mumbai	**Member**
Dr. P. Anbalagan Member Secretary, M.P.C.B, Mumbai.	**Member Secretary** (from 07/01/2015)

3.0 MEETINGS OF THE BOARD

During the year 2015-16, 165th Board meeting was held on 14th October 2015. Major decisions taken by the Board during the year 2015-16 are as listed below:

- **Application from MIDC for grant of relaxations of Standards to LSI / MSI; industries at Textile Park, Additional Industrial Area MIDC Nandgaon Peth, Dist. Amravati**

Maharashtra Industrial Development Corporation (MIDC) has proposed a Common Effluent Treatment Plant (CETP) of capacity 5 MLD at textile park additional Amravati industrial area, MIDC Nandgaon Peth, Amravati for which the MPCB has granted Consent on 27/02/2015. There was a request from MIDC to allow LSI and MSI to dispose their effluent in to CETP. However as provided under Environment (Protection) Rules, 1986, it is the Boards that prescribes standards as per local needs and conditions. According to revised guidelines for CETPs published by MOEF&CC, large and medium scale industries other than those belonging to 17 categories of heavily polluting industries may join CETP after primary treatment or as considered necessary by the concerned SPCB for the purpose of hydraulic load & techno-economic viability of the CETP.

CEO, MIDC expressed his views in respect of Textile Park Amravati and said that other textile parks may also be considered for such types of CETPs. He was also of the opinion that irrespective of discharge the primary treatment should be made compulsory for large scale industries.

After due deliberations, the Board resolved that suitable limits to large and medium scale industries be prescribed other than those belonging to the 17 categories of heavily polluting industries at proposed Textile Park, Additional Amravati Industrial Area, MIDC Nandgaon Peth, Dist. Amravati and recommend the same for concurrence of CPCB. The same principal shall be used for all such textile CETPs.

- **Proposal for ground water Pollution assessment at Akolner, Dist. Ahmednagar in compliance of Hon'ble NGT Judgment in (NGT Application NO. 42/2014-wz) dtd. 10th November, 2014**

Member Secretary of the Board briefed about the incidence of ground water pollution at Akolner, Dist. Ahmednagar. The item was placed before the Board for necessary guidance and approval for expenditure to be incurred for assessment of ground water pollution. The Board considered the proposal for remediation of contamination at Akolner.

The proposal to assess the ground water contamination and remediation of the

contamination at Akolner Village has been received from National Institute of Hydrology, Roorkee, Uttarakhand with an expenditure of Rs. 48.0 Lakhs (excluding service tax). The expenditure of the said proposal has to be borne by the M/s. IOCL & M/s. BPCL, Akolner village, Tal Nagar, Dist. Ahmednagar as per the judgment dated 10th November, 2014 (Application No. 42/2014-WZ). In the meantime to ensure expeditious initiation of the study by NIH-Roorkee, MPCB will release payment from Board's funds. Further, MPCB will write to Dist. Collector, Ahmednagar to direct both the Industries to deposit the amount of Rs. 48.00 Lakh plus taxes towards the expenditure, to be incurred for study, to District Collector which in turn can be reimbursed to MPCB.

- **Installation of CAAQMS in CEPI area of Navi Mumbai**

Hon'ble National Green Tribunal (Western Zone) Pune directed MPCB to install the Continuous Ambient Air Quality Monitoring Station (CAAQMS) in the CEPI area of Navi Mumbai which will monitor all the parameters prescribed in the Ambient Air Quality Standards 2009. To comply with the directions of Hon'ble NGT (National Green Tribunal), a proposal was placed before the Board for capital expenditure of Rs. 1.5 Crs and quarterly expenditure of Rs. 6 Lakhs (approx.) for operation and maintenance of this station.

The Board accorded its approval for the same and directed Board office to follow E-tendering process for procurement. The Board authorized Chairmen/Member Secretary for further action. The expenditure in this regard will be made from Cess Funds.

- **Setting up of wind augmentation and air purifying unit on air pollution control system for traffic junction and congested road in Mumbai**

To create favorable Micro Meteorology and to purify air which would reduce the air Pollutant level at traffic junctions in Mumbai, an Air Purifying unit has been developed by NEERI along with environmental experts. A proposal to install such devices at five traffic junctions in Mumbai was received from NEERI. While going through the proposal the Additional Chief Secretary, Home (Transport) pointed out that as there is no traffic junction proposed in the Western side of the city, it is suggested to include one suitable junction from Western suburb also. He also Stated that the Board should be proactive and prepare an action plan to address air pollution. He was of the opinion of proactive action for monitoring through agencies (such as WIAA). He suggested the Board to prepare action plan and budget for the year 2016-2017 and place it before the Board.

Additional Chief Secretary (Environment) pointed out to submit the report on performance of the Research Chair-professor.

- **Scheme of auto-renewal of Consents based on self-certification for Orange & Green Category industries**

With the increase in number of industries in the State and also the requirement of the industries for amendment in products and expansion, the work load of Consent Management has increased significantly. However the limited manpower for the grant of Consent leads delays at various levels. Further the strategy for effective implementation of environmental regulations includes enforcement and compliance aspects which are to be handled simultaneously. Therefore the Board had introduced the concept of "Auto-Renewal of Applications for Consent" without any substantial change in the earlier valid Consent to Operate in order to expedite grant of Consent and reduce unnecessary burden of Consent granting Authority in processing such applications for renewal of Consents. The Board appreciated the work done in this regard and resolved to implement the scheme of Auto Renewal of Consents based on self-certification for Orange and Green category of industries.

- **Simplified Consent Application for Green Category Industry**

The Board has implemented combined application form for Red/Orange/Green categories of industries. However most of the information like hazardous waste, hazardous chemical, and requirement of E.C. etc. are not related to Green category of industry. While processing the application for Green category on the IMIS, it takes longer time as most of the non-relevant information has "Green" category of industry. A draft simplified consent application form for Green category of industry was placed before the Board for perusal & approval as a Government of India initiative under ease of doing business.

After due deliberations, the Board approved the simplified Consent application from for Green Category of industry, to be used for obtaining Consent to Establish /Operate/Renewal subject to approval of GoM. As far as combined Consent under Water Act and Air Act and HW Rules is concerned the Board directed the Board Office to submit necessary proposal to Government of Maharashtra and its onward submission to MoEF&CC, Government of India.

- **Implementation of "Randomized Risk Based Inspection & Sampling" Module**

The Board has taken review of earlier norms being followed for visit, inspection and sampling. In order to bring more authenticity in reporting and sampling, a module has been developed through IMIS application, generating the randomized list of industries for inspection and sampling which appears in the Field Officer's log-in-browsers. The Board approved the 'Randomized Risk Based Inspection & sampling' IMIS module.

- **Amendment to the Enforcement Policy**

Hon'ble National Green Tribunal, Western Zone Bench, Pune vide its judgment dated 16/05/2014 in the matter of M/s. Vinesh & M/s. Kalwal v/s State of Maharashtra & Ors. Bearing Application NO. 30/2013 directed the MPCB to frame the Enforcement Policy to integrate various aspects including inspection, monitoring, standards, compliances, directions, remedial measures and filing of complaints before various Courts as per the provisions of the Environment (Protection) Act, 1986 & other Environmental Laws, based on culpability, environmental damages, severity of pollution, repeated violations etc.

Therefore, it is necessary to formulate an enforcement Policy duly integrated with various aspects including inspection, monitoring standards, compliance of consent conditions & various directions issued by the Board and remedial measures to be undertaken in case of causing serious pollution, giving rise to serious complaints about environmental damages.

The policy frame work for initiating legal action has already been decided, wherein, the time limit to adopt improvement measures duly supported by the bank guarantee for various compliance have been spelt out.

Since enforcement mechanism is subject to improvement on the basis of execution of enforcement policy, in due course of time, the Board will make necessary improvement on the basis of its own experience, amendments in the various Environmental Laws and after perusal of various order passed by the Hon'ble National Green Tribunal, High Court of Judicatures and Hon'ble Supreme Court of India.

The Board has gone through the amendment in the draft Enforcement Policy and directed the Board Office to place the same on the website of the Board for information of public at large. The said policy should also be vetted through reputed institutions like NEERI, IIT, Powai. The Board authorized Member Secretary of the Board to engage the services of reputed institution in this regard.

4.0 COMMITTEES CONSTITUTED BY THE BOARD

With a view to have smooth functioning of the Board, as provided under section 9 of the Water (Prevention and Control of Pollution) Act 1974 and section 11 of the Air (Prevention and Control of Pollution Act 1981; the Board has constituted various committees for efficient and effective implementation of the Acts and Rules. During the year 2015-16, the following Committees were in existence.

4.1 Consent Appraisal Committee (CAC)

During the reporting year, Consent Appraisal Committee is comprised of following members:

1.	Chairman, MPC Board, Mumbai.	Chairman
2.	Secretary, Home (Transport) Dept., Mumbai	Member
3.	Technical Advisor, MIDC, Mumbai	Member
4.	Member Secretary, MPCB, Mumbai	Member Secretary
5	Scientist & Head, NEERI, Mumbai	Special Invitee

- **Terms of Reference**

The CAC considers the applications for consents/ authorizations under Water (P &CP) Act, 1974, Air (P & CP) Act, 1981 and Hazardous Wastes (M & H) Rules, 1989 as under;

'RED' Category : Projects with capital investment above Rs.75Crores

'ORANGE' Category : Projects with capital investment above Rs.750Crores

'GREEN' Category : All Projects beyond Rs.2000Crores/ All Municipal Corporations.

There were 16 Meetings of Consent Appraisal Committee held during the year 2015 -16 wherein 1217 CAC applications were discussed & granted 983 no. of cases.

4.2 Appellate Committee

The Water (Prevention & Control of Pollution) Cess Act 1977 was enacted by the Parliament on December 7, 1977. The main object of the Act is to levy and collection of Cess on water consumed by persons carrying on certain industries and by local authorities and to augment the resources of Central Pollution Control Board and State Pollution Control Boards.

The Act provides for constitution of Appellate Authority comprising of Chairman (Chairman of the Board) and two members to be nominated by the Chairman from amongst the Board Members. The Appellate Authority is empowered to entertain appeal against the order of assessment of order imposing penalty. The Appellants are required to prefer an appeal within 30 days.

Accordingly, Appellate Authority has been reconstituted vide order No.E-319/2006 dated 8/12/2006 to hear an appeals. 59 Appeals were pending before the Appellate Authority since 1992. Out of 59 appeals, the Appellate Authority has disposed off 55 Appeals & remaining 4 appeals are pending for final hearing. During the year no fresh appeal has been filed. The Appellate Committee constituted is comprised of following members:

1.	Chairman Maharashtra Pollution Control Board	Chairman
2.	Chief Executive Officer Maharashtra Industrial Development Corporation, Andheri (E) Mumbai 400093	Member
3.	Member-Secretary (Technical) Maharashtra Jeevan Pradhikaran, Nariman Point Mumbai 400021	Member

4.3 Consent Committee (CC)

The Consent Committee comprises of following members;

1.	Member Secretary, Maharashtra Pollution Control Board	Chairman
2.	Water Pollution Abatement Engineer, Maharashtra Pollution Control Board	Member
3.	Air Pollution Abatement Engineer, Maharashtra Pollution Control Board	Member
4.	Assistant Secretary (Technical), Maharashtra Pollution Control Board	Member
5.	Shri. R. G. Pethe, Retired WPAE Maharashtra Pollution Control Board	Member

- **Terms of Reference**

The Consent Committee considers the applications for consent/ authorization under water (P & CP) Act. 1974, Air (P & CP) Act, 1981 and Hazardous Wastes (M&H) Rules, 1989 as under;

'RED' Category : Projects with capital investment above Rs.25Crores and up to Rs.75 Crores

'ORANGE' Category : Projects with capital investment above Rs.250Crores and upto Rs.750Crores

'Green' Category : Projects with capital investment above Rs.1000Crores and upto Rs.2000Crores

'Infrastructure Project' : Project with capital investment above Rs.25Crores and upto Rs.350Crores

There were 26 meetings of Consent Committee held during the year 2015-16 and total 1261 applications were discussed and 996 were disposed off. Now, consent committee is following the same strategy used in Consent Appraisal Committee for achieving ZERO pendency and compliance of consent condition.

5.0 WATER & AIR QUALITY MONITORING NETWORK AND PRESENT STATUS OF ENVIRONMENT

After independence, there has been rapid urbanization leading to issues related to economic growth and various environmental concerns associated with uncontrolled industrialization. The Government of Maharashtra in exercise of the powers conferred under section 4 of the Water Act, constituted the Board to resolve the environmental issues and implement the environmental Rules & regulations within the State effectively.

According to the above notifications, during the year under report, the Board comprised of a part-time Chairman; four officials representing the interest of the State Government; two officials representing those companies and corporations owned and controlled by the State Government. In addition, four members representing the interests of local bodies, and one member to represent the interests of industries, trade, fisheries, etc., are to be nominated by the State Government. Board's common goal is shaping better Maharashtra through sharing of their expertise and views on various issues such as Environment, Awareness & Training in the State. Board is controlled by full time Member Secretary to execute the decision taken by the Board. The State Pollution Control Board and the State Environment Department have been combining their efforts to maximize the protection of the environment and to control pollution in all sectors. Although details of Board functions are laid down in the Acts, priority areas are: advising the State Government on matters relating to pollution, administering pollution control in the industrial sector and municipal bodies, monitoring of ambient air and water quality in the State, taking necessary steps to improve air and water quality and creating awareness about the ill-effects of pollution.

Maharashtra is a State in the western region of India and is India's second-most populous State and third-largest State by area spread over 307,713 km^2. It is one of the largest, wealthiest & most developed States in India by all major economic indicators and also the most industrialized State in India. The State has a long tradition of highly powerful planning bodies at district and local levels. Local self-governance institutions in rural areas include 34 Zilla Parishads, 355 Taluka Panchayat Samitis and 27,993 Gram Panchayats. Urban areas in the State are governed by 27 Municipal Corporations, 222 Municipal Councils, four Nagar Panchayats and seven Cantonment Boards.

Being the biggest State and having various stipulated environmental norms with various implementing authorities; it is very difficult to analyze the overall compliance of Maharashtra. Looking at the vast spread in number of region and self-governance, collaborative data collection, review of data, analysis and interpretation of whole State data in a single report is

necessary for the decision making authority. It is important and basic need to analyze environmental data of entire State every year in order to understand the actual status of all regions in terms of enforcement and compliance of various stipulated environmental norms laid down.

MPCB being apex environmental regulatory agency; believes in its duty which is mandatory as per chapter VI, Section 39 of Water (P&C), 1974 to submit this report every year. In lieu of the same this report shall give insight about the Board's functions and performance in the fiscal year. Also this annual report will highlight its long-term goals of protecting the environment and human health and action taken in accordance. This report will highlight commitment and groundwork of the Board for a cleaner environment by working with stakeholders and navigating them towards cleaner technology and better compliance using many initiatives and rewarding schemes and engaging citizens through education and awareness thus underlining the motto that environmental responsibility is everyone's, not just the Board's or the Government.

MPCB has its Regional Offices located at 12 different places around the State as shown in **Figure 5.1**. Details of organizational chart & staff strength of MPCB as well as information of Regional & Sub-Regional offices is attached as **Annexure 1A, 1B, 2 & 3** respectively. This report has been compiled based on data received from each field office in terms of present status of environmental aspects.

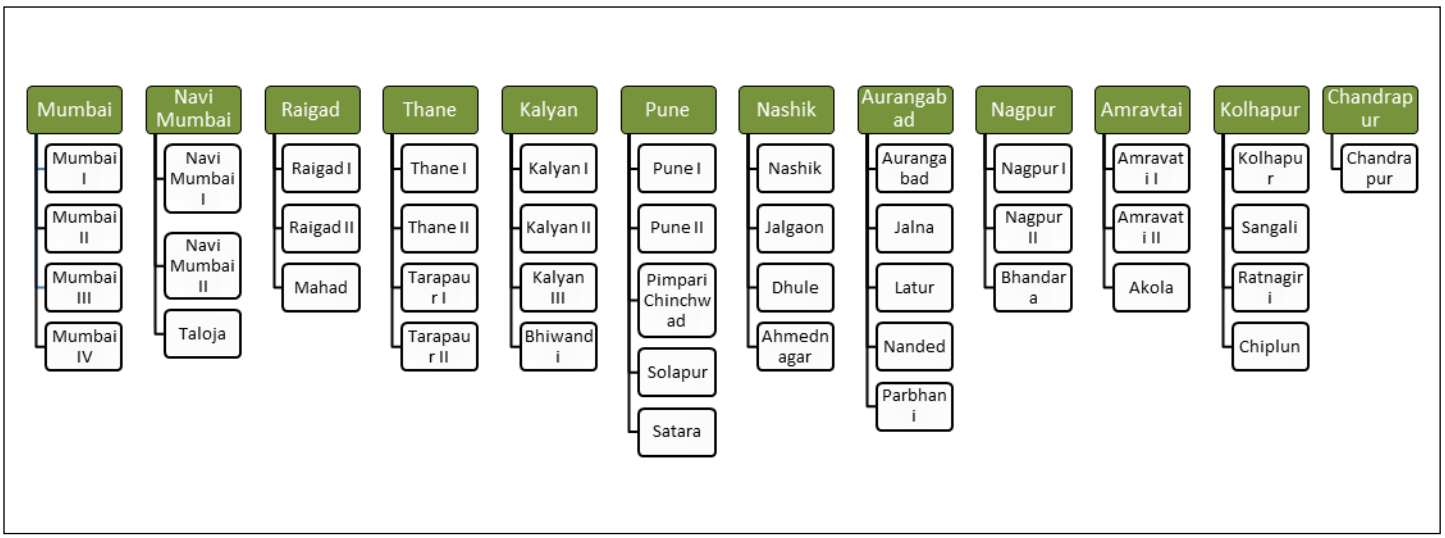


Figure 5.1 MPCB Field Offices

Brief information about each of this region is explained in **Figure 5.2** in terms of its geographical location, administrative working & jurisdictions and other important environmental concerns.

Nashik
- Area- 25871 sq. km
- Population- 52 Lakhs
- Sub regions- Nahsik ,Dhule, Jalgaon, Latur, Ahmednagar
- 5Municipal Corporations
- India's second largest river Godavari rises near Nashik.

Amravati
- Area- 15,187 sq. km
- Population- 6.5 Lakhs
- Regions- Amravati I, Amravati II and Akola
- Amaravati Municipal Corporation
- Situated at right bank of the river Krishna

Nagpur
- Area- 3933.6 sq. km
- Population- 25 Lakhs
- Sub regions- Nagpur I, Nagpur II and Bhandara
- Nagpur Nagpur and 22 municipal councils

Thane
- Area- 147 sq. km
- Population- 41 Lakhs
- Sub regions- Thane I, Thane II, Tarapur I and Tarapur II
- 3 Municipal corporation & 3 municipal councils
- Ecological sensitive areas of Dahanu Taluka and Chemical Zone Tarapur MIDC

Chandrapur
- Area- 10,690 sq. km
- Population- 3.5 Lakhs
- Sub regions- Nagpur I,NagpurII and Bhandara
- Chandrapur Municipal CorporationLargest thermal power plant 'Chandrapur Super Thermal Power

Mumbai
- Area- 603.4 sq. km
- Population- 12.4 Million
- Sub regions- Mumbai I, Mumbai II, Mumbai III and IV
- The capital city of *Maharashtra*
- Divided into Mumbai city & Mumbai Suburban district.
- Bounded by the Arabian Sea to the west.

Aurangabad
- Area- 25,687 sq. km
- Population- 16 Lakhs
- Sub regions- Aurangabad, Latur, Nanded and Parbhani
- 8 districts of Marathwada region
- Major rivers are Godavari,Sukna, Manjra, Asna, Manar and Lendi, Dudhana, Bindusara

Navi Mumbai
- Area- 344 sq. km
- Population- 14 Lakhs
- Sub regions- Navi Mumbai I,II and Taloja
- a planned township of Mumbai off the west coast
- Navi Mumbai Municipal CorporationUran Municipal Council

Pune
- Area- 11,536.2 sq. km
- Population- 62 Lakhs
- Sub regions- Pune I,PuneII,Pimpri Chinchwad, Satara and Solapur
- 4 Municipal Corporation

Kalyan
- Area- 287.2 sq. km
- Population- 19 Lakhs
- Sub regions- Kalyan I,II,III and Bhiwandi
- 1 Municipal Corporation & 2 Municipal Councils
- One of the biggest MIDCs, i.e Kalyan Dombivali.
-

Raigad
- Area- 7152 sq. km
- Population- 26 Lakhs
- Sub regions- . Raigad I, Raigad II and Mahad
- Panvel Municipal Corporation & 10 Municipal Councils
- 4 rivers Patalganga, Kundlika, Amba &Savitri

Kolhapur
- Area- 8,695.93 sq. km
- Population- 27 Lakhs
- Sub regions- Kolhapur, Ratnagiri, Sangli and Chiplun
- 2 Municipal corporations& 24 Municipal councils
- Panchanga & Krishna are the prime rivers

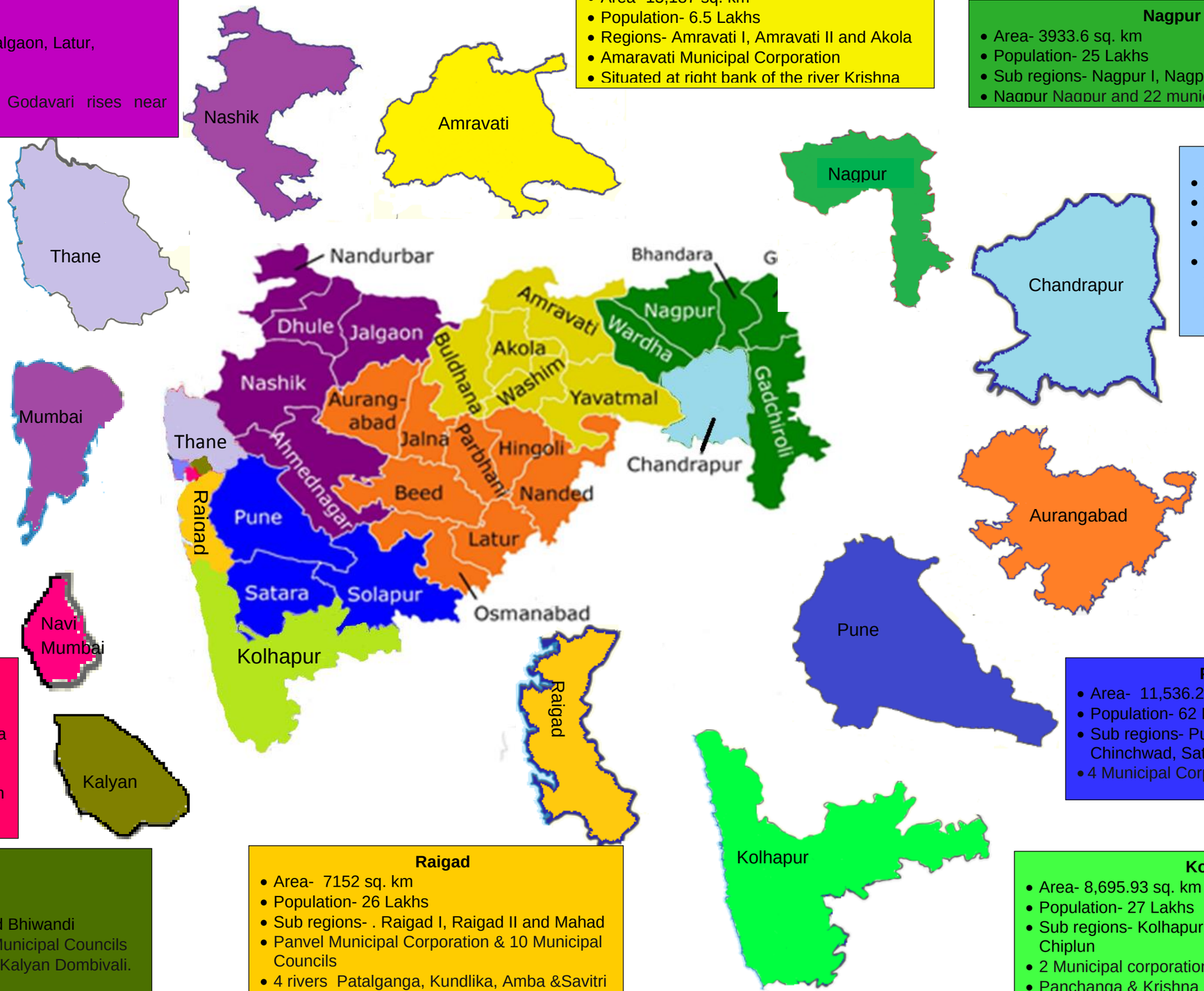


Figure 5.2 Brief Information about each Region in the State

Examples of rapidly depleting assets include depleted groundwater, collapsing fisheries, CO_2 accumulation in the atmosphere, and deforestation. It is a demand of time that we understand our basic requirements, dependency on resources and sustainability on the life support systems that would be the determinant of our very existence. This integrity takes us to the concept of “Sustainable Development” This year, an attempt is made to evaluate the entire State as a whole; based on few indicators that were quantified through standards adopted from various literature surveys. However, taking the concept much further this report also attempts to formulate a framework and micro-scale analysis of each region to evaluate environment quality in terms of certain indicators again parameterized with the local and regional standards available.

In order to assess the environment quality of each of these regions it is necessary to carry out monitoring of each environmental sector. Environment Monitoring is a process to measure pollutants available in Air, Water, Soil etc. and various steps taken to reduce pollution after analysis of data received from monitoring. There are various monitoring programs set by different authorities under which these monitoring processes have been carried out. Details of these programs under which MPCB has carried out monitoring is represented in further sections of the report along with its data analysis & further prediction of environmental status for each region.

5.1. Monitoring Network & Region-wise Air Quality in Maharashtra

Planning for prevention, control or abatement of pollution of streams, wells and air in the State, to secure the execution of such plans and to classify the waters of the State; these are some of the functions of the State Board as Air Pollution & Water Pollution has severe risk for the human life as well all Animal & Plant life. It is necessary to observe the status of both air & water quality under some specific and dedicated system and hence monitoring stations have been set up for observation of pollution extent in river water, seawater and in ambient air.

Ambient air quality monitoring network is designed to get spatial and temporal variation of ambient air concentrations for a wide range of pollutants that are considered relevant for evolving a strategic management plan. Monitoring locations are selected to represent different land use categories like kerbside, residential, industrial, and commercial and so on, to capture air quality levels under different activity profiles. To have a continuous vigilance of air quality in different parts of the State, MPCB has installed various AAQMS (Ambient Air Quality Monitoring Stations) in various regions. The following section provides an overview of the status of AAQM (Ambient Air Quality Monitoring) in year 2015-16.

AAQMS are added periodically to expand the network of monitoring stations. However due to operating challenges like maintenance issues, shortage of manpower and change in location, some monitoring stations are closed temporarily and hence data may be unavailable for a particular station for that period of time. In 2015-16 there were 71 active AAQMS, 62 under NAMP (National Ambient Monitoring Program), 4 under SAMP (State Ambient Monitoring Program) and 5 under CAAQMS (Continuous Ambient Air Quality Monitoring). Parameters like SO_2 (Sulphur dioxide), NO_2 (Oxides of Nitrogen) and RSPM (Respirable Suspended Particulate Matter) are monitored by AAQMS. Along with these parameters CO (Carbon Monoxide), Ozone and Benzene are also monitored by CAAQMS sites at Pune, Bandra and Solapur.

Given that Maharashtra has very prominent industrial zones and is one of the highly populated States in the country, air quality monitoring becomes essential at these locations. However, owing to the population growth and expansion of the cities the residential areas have now grown so large that they are now located in very close vicinity of the industrial belts. Some examples of the same are the residential areas in Navi Mumbai, Dombivali, Ambernath, where the residential zones are very close to the industrial areas. Hence, in a given region there is a mixture of various types of monitoring stations representing various type of areas. MPCB-RO (Regional Office) wise tally of AAQMS operating in the year 2015-16 is presented in **Table 5.1**.

Table 5.1 MPCB RO Wise Tally of Active CAAQMS (2015-16)

MPCB RO	Commercial	Industrial	Residential	Rural and other areas	Total
Amravati	1	2	2	1	6
Aurangabad	1	3	6	1	11
Chandrapur	-	3	3	-	6
Kalyan	2	2	-	5	9
Kolhapur	-	2	4	2	8
Mumbai	-	-	2	-	2
Nagpur	-	1	2	1	4
Nashik	-	2	5	-	7
Navi Mumbai	-	3	2	1	6
Pune	-	1	6	1	8
Raigad	-	-	1	-	1
Thane	-	1	1	1	3
Grand Total	4	20	33	13	71

SO_2 (Sulphur Dioxide), NO_X (Nitrogen Oxides) and RSPM (Respirable Suspended Particulate Matter) are regularly and consistently monitored across all the monitoring sites in Maharashtra under NAMP, SAMP and also at the CAAQMS. SPM (Suspended Particulate Matter) are bigger than coarse particles, they settle down fast and do not reach the respiratory tract and therefore they have less adverse effect on health. As a result the

standard for SPM has not been set as per revised NAAQMS (2009). Although some monitoring stations do record the concentrations of SPM, this has not been considered for the statistical compilation.

MPCB published the data recorded by all the monitoring sites in Maharashtra on its website. It also presents an interactive way to select the time series data for a particular monitoring station. The data sets recorded at the monitoring station for year 2015-16 have been compiled in this report. A pollutant wise overview for the air quality recorded at the areas representing residential, industrial, commercial, rural & other areas and sensitive monitoring is presented in the following section and **Figure 5.3 & 5.4** shows actual location of CAAQM station.

Figure 5.3 Continuous Ambient Air Quality Monitoring Station

Figure 5.4 Continuous Ambient Air Quality Monitoring Station

5.1.1 Ambient Air Quality in Residential Locations of Various Cities In Maharashtra

Air quality in the State is assessed through routine and specific monitoring. In order to assess the Ambient Air Quality in respect of criteria pollutants as per National Ambient Air Quality standards, the data is collected for year 2015-16. The data is analyzed for SO_2, NO_X and Particulate Matter. The locations under different class area like industrial, residential and commercial were monitored region-wise and the observations were made using NAAQM standards as represented in following sections.

5.1.1.1 Mumbai

Samples from 2 Ambient Air Monitoring Stations installed under Continuous Ambient Air Quality Monitoring [CAAQM] were analyzed to assess the quality of ambient air at 2 different locations including residential and commercial area. The annual average concentration for the three parameters i.e. SO_2, NO_x & PM_{10} analyzed at these locations is represented in **Figure 5.5.**

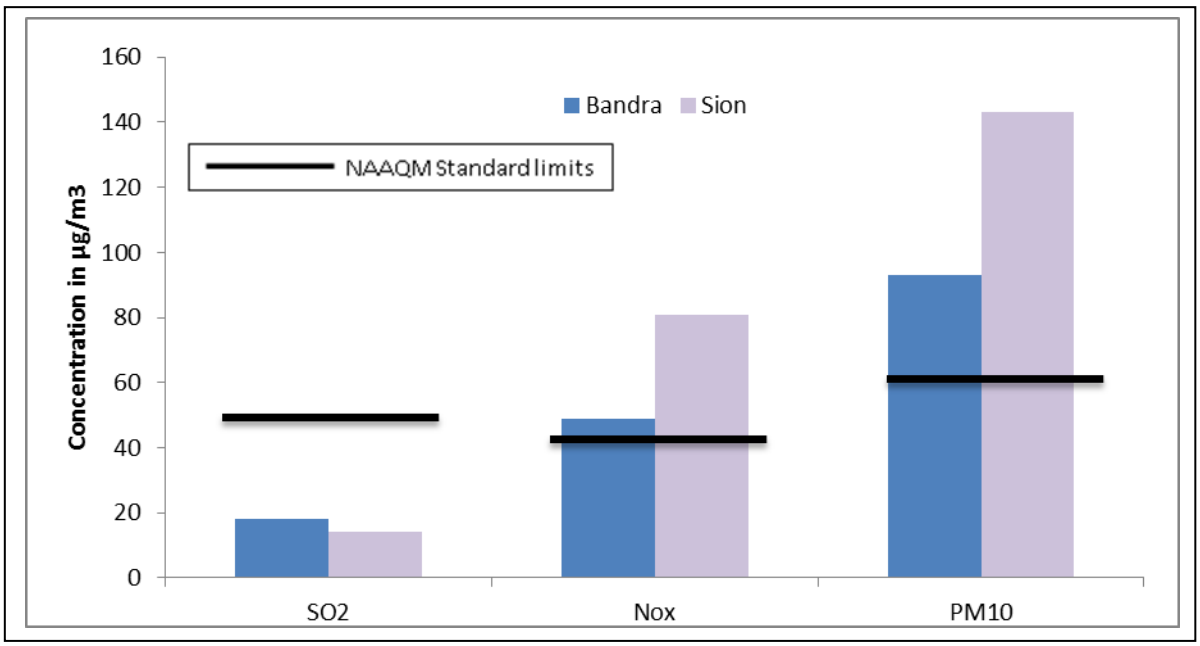


Figure 5.5 Annual Average Air Quality of Mumbai Region

From **Figure 5.5** it is observed that annual average concentration of SO_2 is within the prescribed limit of NAAQM standards. However NO_X & PM_{10} concentration of both the locations viz. Bandra and Sion are not within the prescribed limits. Heavy traffic may be the reason for higher NO_X and PM_{10} concentration. Details of annual average statistical data recorded throughout the year are represented in **Table 5.2.**

Table 5.2 Statistical results of Annual Average Air Quality in Mumbai Region

Parameters [µg/m^3]	Bandra	Sion
SO_2	18	14
NO_X	49	81
PM_{10}	93	143

From **Table 5.2**, it is found that minimum SO_2 of 14µg/m^3 was found at Sion, Mumbai whereas maximum of 18µg/m^3 was found at Bandra. Minimum NO_X & PM_{10} of 49µg/m^3 & 93µg/m^3 respectively was found at Bandra whereas maximum NO_X & PM_{10} respectively that is 81µg/m^3 & 143µg/m^3 respectively was found at Sion, Mumbai.

5.1.1.2 Navi Mumbai

There are 3 Ambient Air Monitoring Stations installed under Continuous Ambient Air Quality Monitoring [CAAQM], 3 are installed under National Air Quality Monitoring Program [NAMP] in this region. Samples were analyzed under CAAQMS 346 under NAMP to assess the quality of ambient air at 6 different locations. The average annual concentrations of all the parameters analyzed at all locations are represented in **Figure 5.6.**

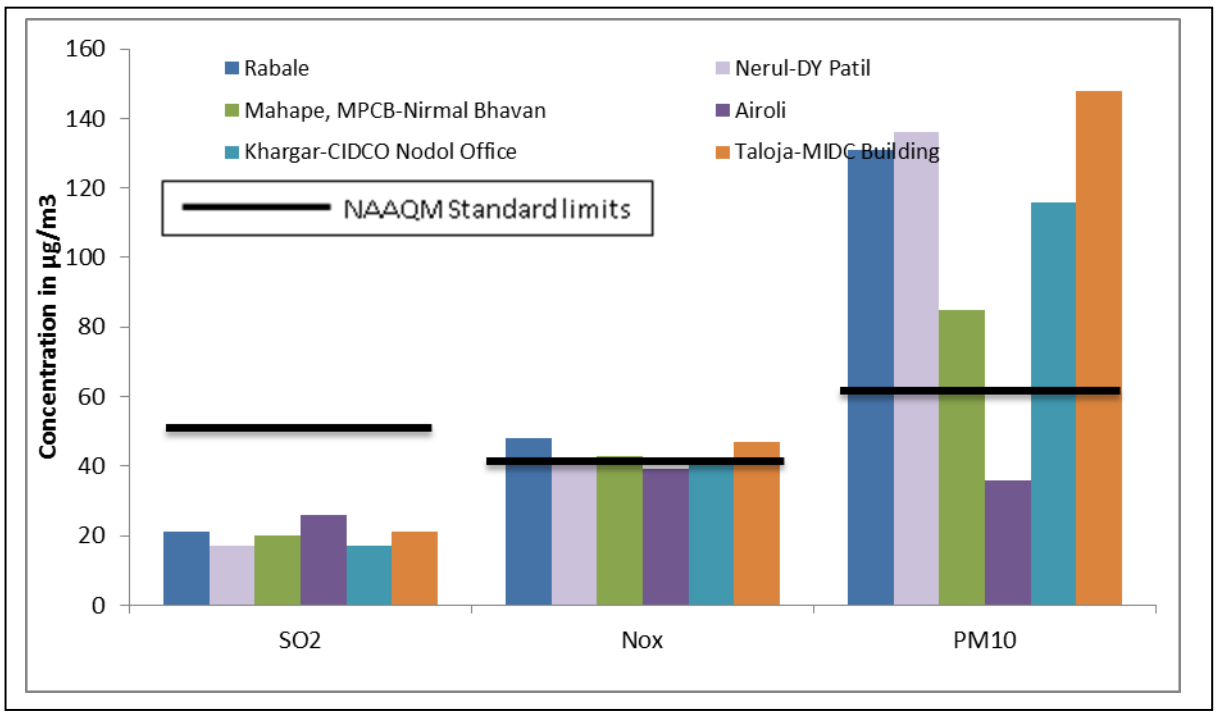


Figure 5.6 Annual Average Air Quality of Navi Mumbai Region

From **Figure 5.6** it is noticed that the average annual concentration of particulate matter is exceeding the limits except at 1 location i.e. Airoli & SO_2 concentration is well within the prescribed standard at all locations whereas NO_X is within the limits only at one location i.e Airoli. Heavy traffic near sampling station might be the reason for higher concentration of

pollutants. A detail of annual average statistical data recorded throughout the year is represented in **Table 5.3.**

Table 5.3 Statistical results of Annual Average Air Quality In Navi Mumbai Region

Parameters [µg/m^3]	Rabale	Nerul-DY Patil	Mahape, MPCB-Nirmal Bhavan	Airoli	Khargar-CIDCO Nodol Office	Taloja-MIDC Building
SO_2	21	17	20	26	17	21
NO_X	48	41	43	39	41	47
PM_{10}	131	136	85	36	116	148

From **Table 5.3**, it is observed that minimum SO_2 of 17µg/m^3 and minimum NO_X of 39µg/m^3 was found at Nerul-DY Patil and Khargar-CIDCO Nodol Office in Navi Mumbai region whereas maximum SO_2 concentration of 26µg/m^3 was found at Airoli and that of NO_X is 48µg/m^3 was found at Rabale. The minimum PM_{10} concentration was found as 36µg/m^3 at Airoli and the maximum concentration of 148µg/m^3 at Taloja - MIDC Building which might be due to the roadside traffic near sampling station.

5.1.1.3 Raigad

In this region ambient air quality is analyzed under National Air Quality Monitoring Program [NAMP] and the sampling station is installed near Panvel water supply plant. The average annual concentration of parameters observed throughout the year at this location is presented in **Table 5.4** & it is observed from the table that NO_X and PM_{10} concentration is exceeding the limit of 40 and 60ug/m^3 respectively.

Table 5.4 Statistical results of Annual Average Air Quality in Raigad Region

Parameters [µg/m^3]	Panvel Water Supply Plant
SO_2	18
NO_X	43
PM_{10}	137

5.1.1.4 Thane

There are 3 Ambient Air Monitoring Stations installed under National Air Quality Monitoring Program [NAMP] & ambient air quality is monitored at 3 different locations in Thane City. The results of assessment are represented in **Figure 5.7.**

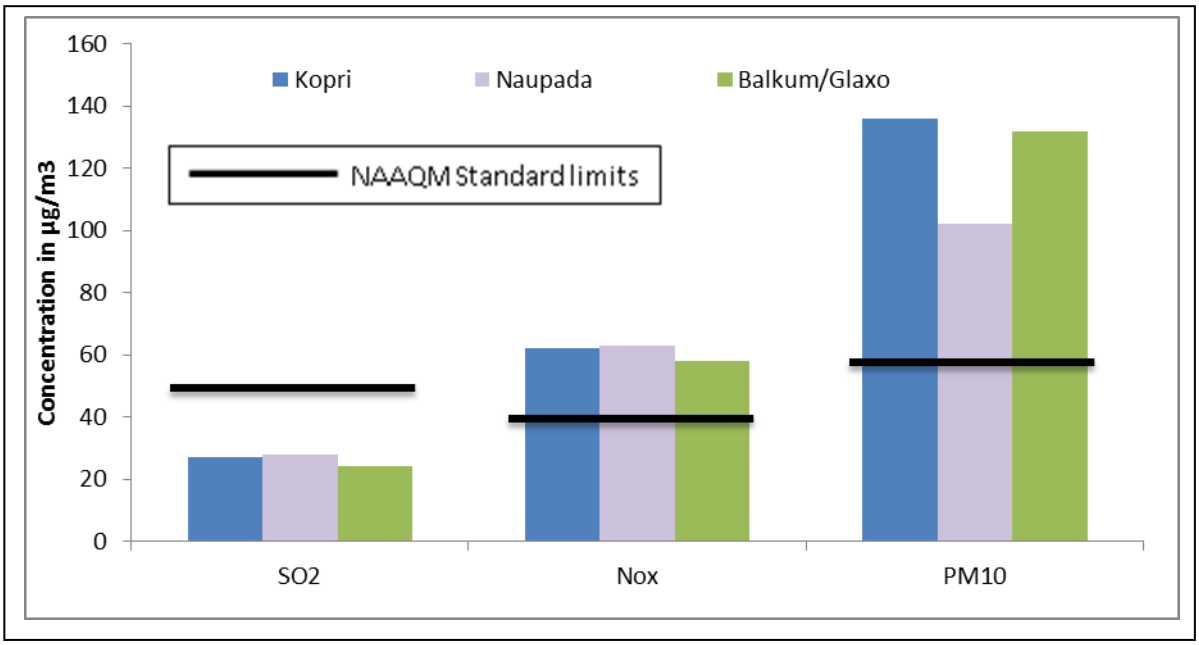


Figure 5.7 Annual Average Air Quality of Thane Region

Figure 5.7 represents that SO_2 concentration at all locations is within the prescribed limits whereas the NO_X and PM_{10} concentration at all the locations viz. Kopri, Naupada and Balkum/ Glaxo are above the standards of 40ug/m^3 & 60ug/m^3 respectively. The higher concentrations of PM_{10} and NO_X are due to the presence of large amount of industries in the vicinity. A detail of annual average statistical data recorded at these stations is represented in **Table 5.5.**

Table 5.5 Statistical results of Annual Average Air Quality in Thane Region

Parameters [µg/m^3]	Kopri	Naupada	Balkum/Glaxo
SO_2	27	28	24
NO_X	62	63	58
PM_{10}	136	102	132

From **Table 5.5**, it is found that minimum SO_2 & NO_X that is 24µg/m^3 & 58µg/m^3 which was found at Balkum/ Glaxo whereas maximum SO_2 & NO_X that is 28µg/m^3 & 63µg/m^3 found at Naupada. Minimum PM_{10} of 102µg/m^3 found at Naupada whereas maximum PM_{10} of 136µg/m^3 found at Kopri.

5.1.1.5 Kalyan

There are 4 Ambient Air Monitoring Stations installed under National Air Quality Monitoring Program [NAMP], 1 is installed under State Air Quality Monitoring Program [SAMP] and 8 stations are installed under National Air Quality Monitoring Program [NAMP]. In this region total sample analyzed were at 9 different locations & average annual concentration observed is as represented in **Figure 5.8.**

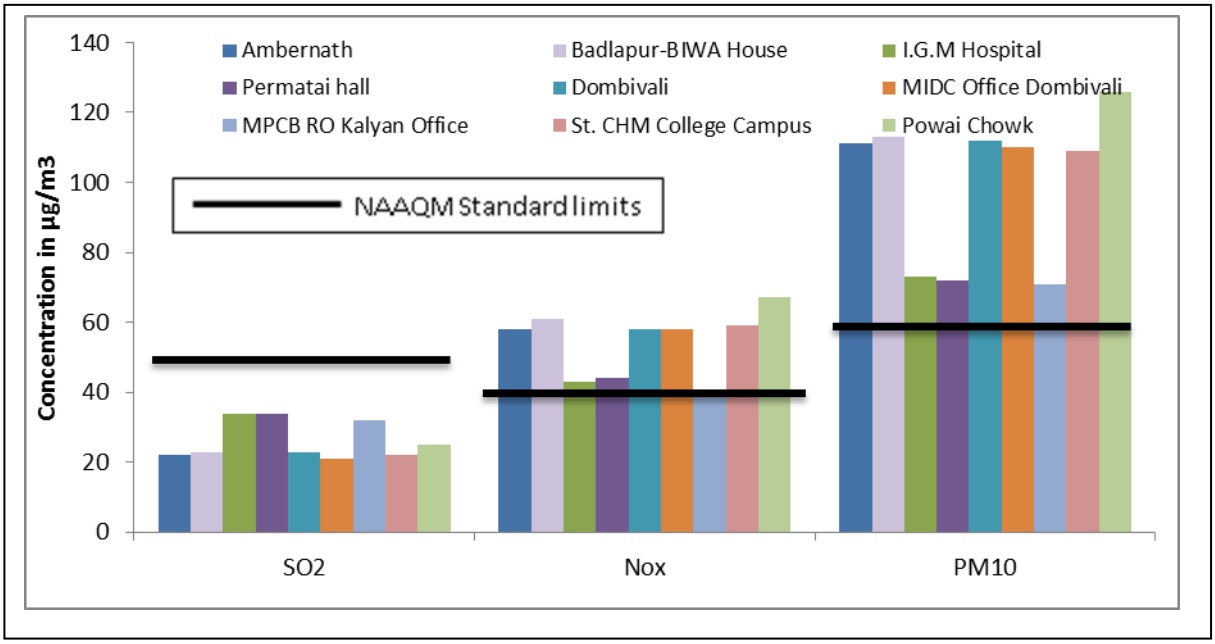


Figure 5.8 Annual Average Air Quality of Kalyan Region

It is represented from the **Figure 5.8** that only SO_2 concentration is within the limit at all locations whereas particulate matter and NO_X is beyond the limit at all location. Heavy traffic near sampling locations might be the reason for increased concentration of PM_{10} & NO_x. Details of average annual concentration of sampling are statistically represented in **Table 5.6.**

Table 5.6 Statistical results of Annual Average Air Quality in Kalyan Region

Parameters [µg/m^3]	Ambernath	Badlapur-BIWA	I.G.M Hospital	Permatai hall	Dombivali	MIDC Dombivali	MPCB Office	St. CHM Col	Powai Chowk
SO_2	22	23	34	34	23	21	32	22	25
NO_X	58	61	43	44	58	58	40	59	67
PM_{10}	111	113	73	72	112	110	71	109	126

From **Table 5.6** it is observed that, minimum 21µg/m^3 of SO_2 was found at MIDC Office Dombivali in Kalyan region whereas maximum SO_2 of 34µg/m^3 was found at I.G.M Hospital and Dombivali. Minimum NO_X & PM_{10} that is 40µg/m^3 & 71µg/m^3 respectively was found at MPCB RO Kalyan Office in Kalyan whereas maximum NO_X & PM_{10} that is 67µg/m^3 & 126µg/m^3 respectively was found at Powai Chowk which might be because of heavy traffic conditions near sampling location.

5.1.1.6 Pune

Pune City has always been appreciated as a “Pensioner's Paradise”. Its salubrious climate and clean air leads to decrease in illness rate which is good but this rate is seemingly deteriorating with time. Air pollution has reached to such an extent that, this metropolis is choking on its own vehicular exhaust. Looking at the continuous increase in air pollution,

there are 3, 4 & 1 Ambient Air Quality Monitoring Stations installed under CAAQM, NAMP & SAMP respectively. Samples have been analyzed to assess the air quality in entire region for all the areas i.e. residential, commercial & industrial. The annual average concentration of all parameters is represented in **Figure 5.9.**

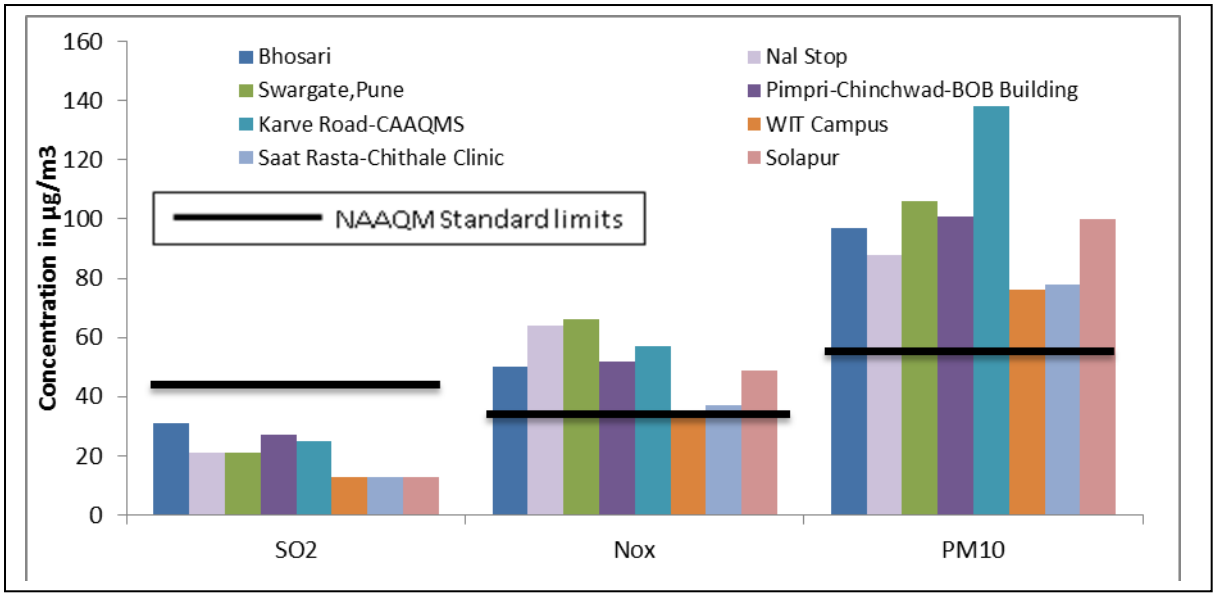


Figure 5.9 Annual Average Air Quality of Pune Region

It is observed from **Figure 5.9** that in this region annual average concentration of PM_{10} is higher than the prescribed limit at all the locations & concentration of NO_X is beyond the limit at 6 locations viz. Bhosari, Pimpri - Chinchwad-BOB building, Saat Rasta-Chithale Clinic, Nal Stop, Karve road-CAAQMS, Solapur and Swargate. Levels of SO_2 are well within the limit at every location. Details of annual average statistical data recorded at these sampling locations are represented in **Table 5.7.**

Table 5.7 Statistical results of Annual Average Air Quality in Pune Region

Parameters [µg/m^3]	Bhosari	Nal Stop	Swargat, Pune	Pimpri-Chinchwad-BOB Building	Karve Road-CAAQMS	WIT Campus	Saat Rasta-Chithale Clinic	Solapur
SO_2	31	21	21	27	25	13	13	13
NO_X	50	64	66	52	57	35	37	49
PM_{10}	97	88	138	101	106	76	78	100

From **Table 5.7** it is found that, minimum SO_2 of 13µg/m^3 was found at WIT Campus, Saat Rasta- Chithale Clinic and Solapur whereas maximum SO_2 that is 31µg/m^3 was found at Bhosari in Pune. Minimum NO_X of 35µg/m^3 was found at WIT Campus in Pune whereas maximum NO_X of 66µg/m^3 was found at Swargate having the biggest bus stand and depot in Pune the drain of all the major bus services going in and out of Pune results in the increased concentration. Minimum PM_{10} of 76µg/m^3 was found at WIT Campus whereas maximum PM_{10} that is 138µg/m^3 was found at Swargate Pune.

5.1.1.7 Nashik

There are 4 Ambient Air Monitoring Stations installed under NAMP & 3 stations are installed under SAMP. Samples were analyzed in Nashik at 7 locations to understand the air quality in this area. The results of the sampling are represented in **Figure 5.10**

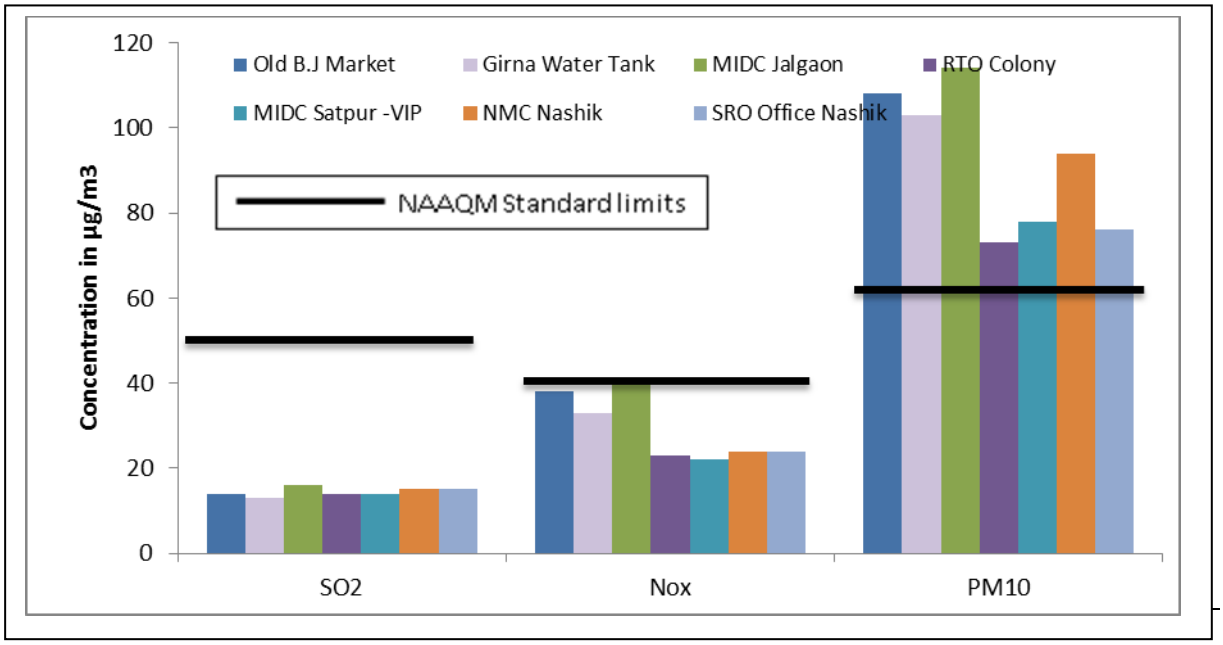


Figure 5.10 Annual Average Air Quality of Nashik Region

It is observed from the above **Figure 5.10** that concentration of SO_2 is within the prescribed limit whereas that of NO_X is above the standards only at 1 location i.e. MIDC Jalgaon. Presence of industries might be the reason for increased concentration in NO_x. PM_{10} is beyond the limit at all locations. Details of annual average statistical data are represented in **Table 5.8.**

Table 5.8 Statistical results of Annual Average Air Quality in Nashik Region

Parameters [µg/m^3]	Old B.J Market	Girna Water Tank	MIDC Jalgaon	RTO Colony	MIDC Satpur - VIP	NMC Nashik	SRO Office Nashik
SO_2	14	13	16	14	14	15	15
NO_X	38	33	41	23	22	24	24
PM_{10}	108	103	114	73	78	94	76

From **Table 5.8** it is found that, minimum SO_2 of 13µg/m^3 was found at Girna Water Tank Jalgaon in Nashik whereas maximum SO_2 of 16µg/m^3 was found at MIDC Jalgaon. Minimum NO_X of 22µg/m^3 was found at MIDC Satpur –VIP in Nashik region whereas maximum NO_X of 41µg/m^3 was found at MIDC Jalgaon. Minimum PM_{10} of 73µg/m^3 was found at RTO Colony in Nashik whereas maximum PM_{10} of 114µg/m^3 was found at MIDC Jalgaon at Nashik.

5.1.1.8 Aurangabad

In the jurisdiction of Regional Office, MPCB, Aurangabad, major air polluting industries are Steel Industries, Re-rolling mills, Stone Crushers, Thermal Power Plant, etc. The main contributors of environmental pollution are the parameters like SPM/TPM, SO_2 and NO_X. Most of the industries have provided air pollution control systems with adequate height of chimney. The other sources of Air pollution are vehicular traffic, burning of agro waste pre and post harvesting, burning of M.S.W. in open space, construction activities, etc. Looking at the source and extent of pollution level, 6 Continuous Air Quality Monitoring Stations are installed in Aurangabad, Nanded, Jalna & Latur under the State Air Quality Monitoring Program [SAMP] & 4 Air Quality Monitoring Stations are installed under Monitoring of Indian National Aquatic Resources System [MINARS]. The samples were taken at 10 locations from industrial, commercial & residential areas & analyzed to assess the air quality in the region. The results are represented in **Figure 5.11.**

A committee has been formed which constitutes the officials from IIT, NEERI and MPCB for studying the pollution control facilities in steel industries of Jalna Area.

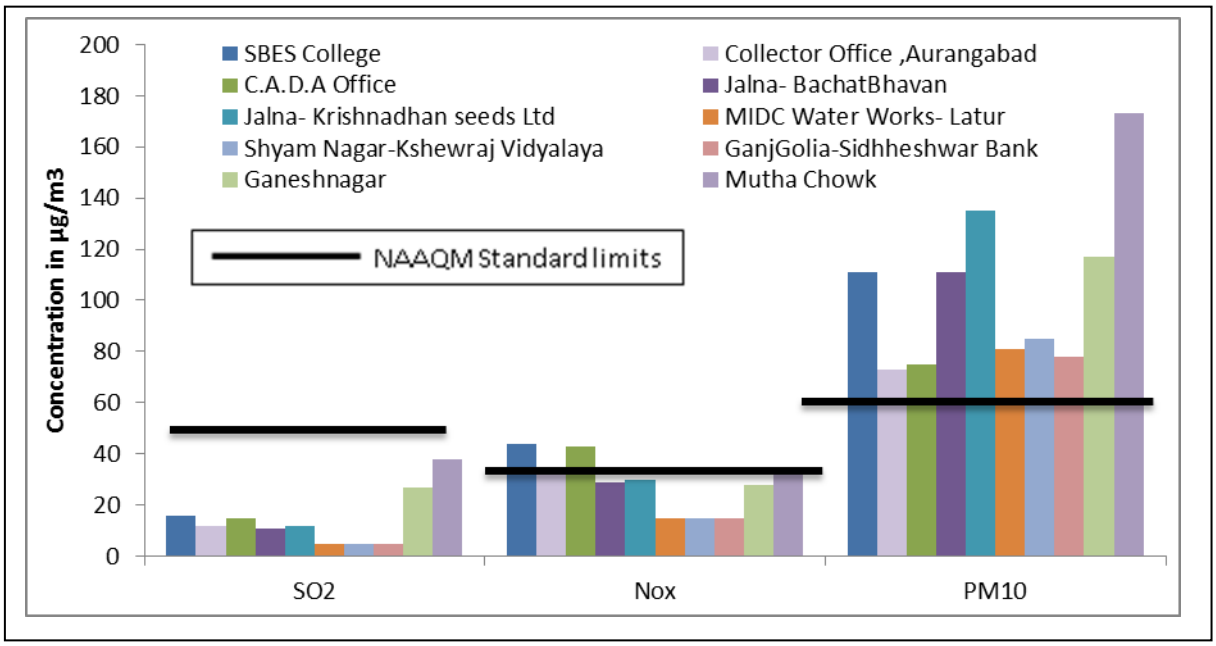


Figure 5.11 Annual Average Air Quality of Aurangabad Region

From **Figure 5.11** it is represented that SO_2 concentration in entire region is within the limit. However PM_{10} is exceeding the limit at all locations in the region and NO_X is exceeding only at two locations i. e. SBES College and Industrial Area CIDCO. Details of annual average statistical data are represented in **Table 5.9.**

Table 5.9 Statistical results of Annual Average Air Quality in Aurangabad Region

Parameters [µg/m^3]	SBES College	Collector Office ,Aurangabad	C.A.D.A Office	Jalna-Bachat Bhavan	Jalna-Krishnadhan seeds Ltd	MIDC Water Works-Latur	Shyam Nagar-Keshewraj Vidyalaya	GanjGolia-Sidhheshwar Bank	Ganeshnagar	Mutha Chowk
SO_2	16	12	15	11	12	5	5	5	27	38
NO_X	44	35	43	29	30	15	15	15	28	32
PM_{10}	111	73	75	111	135	81	85	78	117	173

From the **Table 5.9** it is found that, minimum SO_2 of 5µg/m^3 was found at MIDC Water Works- Latur ,Shyam Nagar – Keshewraj Vidyalaya and Gunj Golai at Latur in Aurangabad region whereas maximum SO_2 that is 38µg/m_3 was found at Mutha Chowk. The maximum concentration of SO_2 is due to the industries in vicinity. Minimum NO_X that is 15µg/m^3 was found at MIDC Water Works- Latur, Keshavraj Vidyalaya, Latur and Ganj Golia-Sidhheshwar Bank in Aurangabad whereas maximum NO_X that is 44µg/m^3 was found at SBES College. Minimum PM_{10} of 73µg/m^3 was found at Collector Office, Aurangabad in Aurangabad region whereas maximum PM_{10} of 173µg/m^3 was found at Mutha Chowk.

5.1.1.9 Nagpur

There are 4 Ambient Air Monitoring Stations installed under National Air Quality Monitoring Program [NAMP] in this city. Samples were analyzed to assess the air quality of the region at 4 locations. Result of the analyses is represented in **Figure 5.12.**

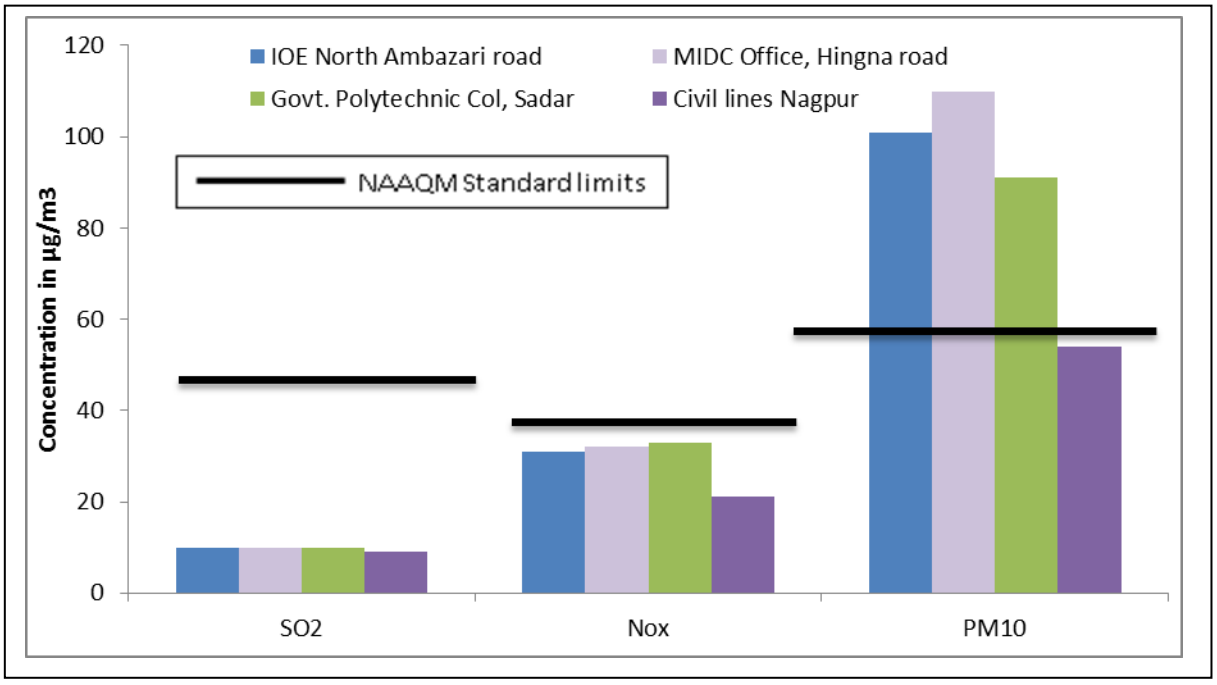


Figure 5.12 Annual Average Air Quality of Nagpur Region

It is depicted from **Figure 5.12** that concentrations of gases are well within the limit in entire region; however the concentration of particulate matter is within the prescribed limit at only one location i.e. Civil lines Nagpur. It is observed that the particulate matter concentration is exceeding at certain locations for few samples; making the average quality beyond the limits. Details of annual average statistical data is represented in **Table 5.10.**

Table 5.10 Statistical results of Annual Average Air Quality in Nagpur Region

Parameters [µg/m^3]	IOE North Ambazari road	MIDC Office, Hingna road	Govt. Polytechnic Col, Sadar	Civil lines Nagpur
SO_2	10	10	10	9
NO_X	31	32	33	21
PM_{10}	101	110	91	54

From the **Table 5.10** it is found that, minimum SO_2, NO_X & PM_{10} that is 9µg/m^3, 21µg/m^3 & 54µg/m^3 respectively which was found at Civil lines Nagpur whereas maximum $SO_{2,}$ that is 10µg/m^3 , was found at IOE North Ambazari road, MIDC Office, Hingna road and Govt. Polytechnic Col, Sadar. Maximum NO_X that is 33µg/m^3 which was found at Govt. Polytechnic Col, Sadar & maximum PM_{10} of 110µg/m^3 was found at MIDC Office, Hingna road.

5.1.1.10 Amravati

In this region, total 6 ambient air quality monitoring stations have been installed under National Air Quality Monitoring Program [NAMP].The samples were taken at 6 locations from industrial, commercial & residential areas & analyzed to assess the air quality in the region. The air quality analyses are represented in **Figure 5.13.**

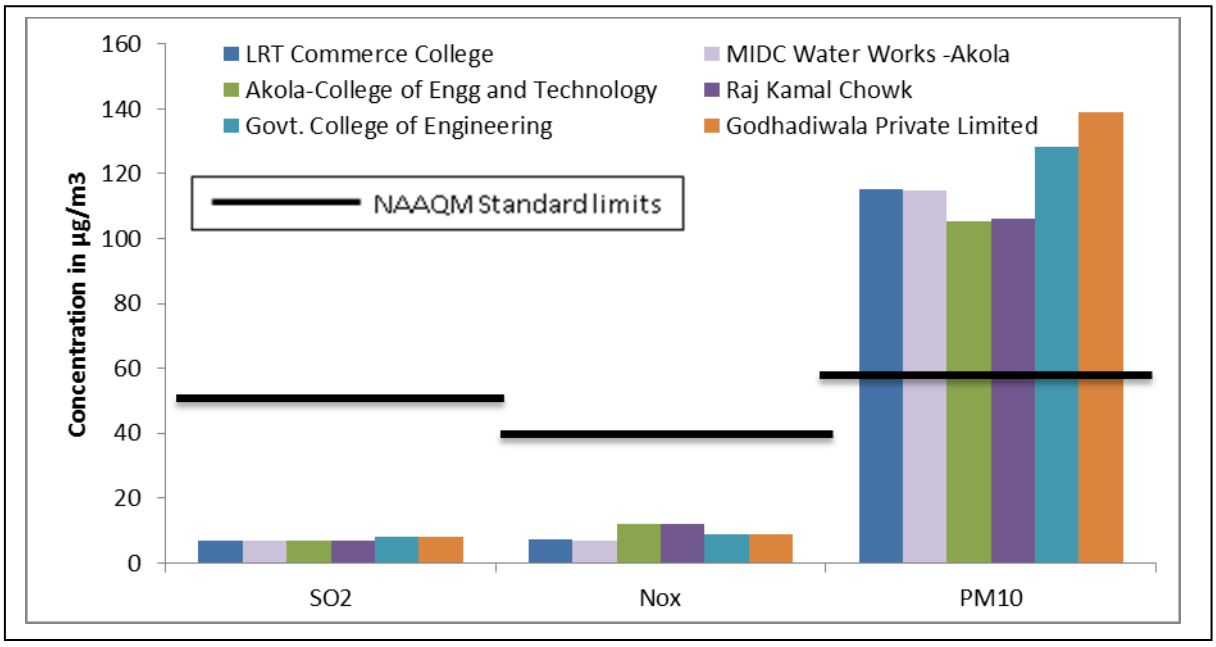


Figure 5.13 Annual Average Air Quality of Amaravti Region

It is depicted from the **Figure5.13** that concentrations of SO_2 and NO_X were within the prescribed limit of NAAQM whereas that of PM_{10} was not within the prescribed limits. Heavy traffic might be the reason for increased concentration in PM_{10}. Details of annual average statistical data are represented in **Table 5.11.**

Table 5.11 Statistical results of Annual Average Air Quality in Amravati Region

Parameters [µg/m^3]	LRT Commerce College	MIDC Water Works - Akola	Akola-College of Engg & Technology	Raj Kamal Chowk	Govt. College of Eng.	God hadiwala Private Limited
SO_2	6.9	7	6.75	7	8.09	8
NO_X	7.41	7	12.08	12	9	9
PM_{10}	115.08	115	105.5	106	128.08	139

From **Table 5.11**, minimum SO_2 that is 6.75µg/m^3 which was found at Akola College whereas maximum SO_2 of 8.09µg/m^3 was found at Govt. College of Engineering. Minimum NO_X that is 7µg/m^3 was found at MIDC Water Works -Akola whereas maximum NO_X of 12.08µg/m_3 was found at Akola-College of Engineering and Technology. Minimum PM_{10} that is 105.5µg/m^3 was found at Akola-College of Engineering and Technology whereas maximum PM_{10} that is 139µg/m^3 was found at Godhadiwala Private Limited.

5.1.1.11 Kolhapur

In this region, samples were taken at 8 different locations from industrial, commercial & residential areas & analyzed to assess the air quality in the region.

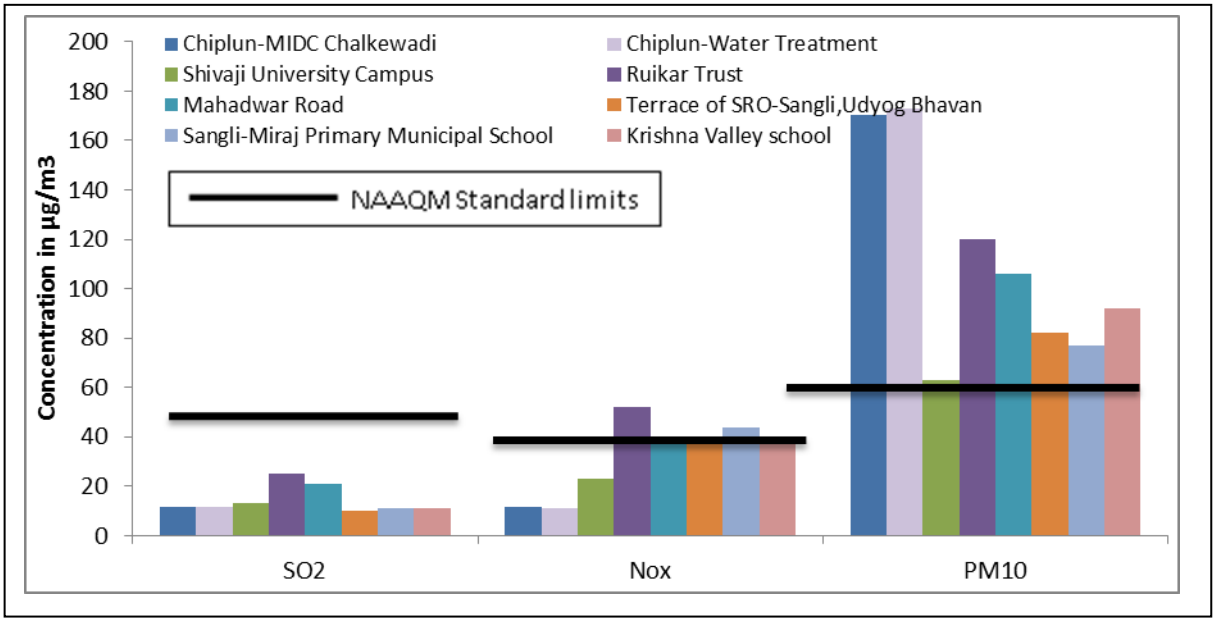


Figure 5.14 Annual Average Air Quality of Kolhapur Region

From **Figure 5.14** it is predicted that concentration of SO_2 is well within the limits at all the locations but NO_X is not within the standards prescribed standard except at 4 locations viz.

Chiplun-MIDC Chalkewadi, Chiplun- Water Treatment, Shivaji University campus and Terrace of SRO-Sangli, Udyog Bhavan. PM_{10} concentrations are exceeding just beyond the limit at all locations. Details of annual average statistical data are represented in **Table 5.12.**

Table 5.12 Statistical results of Annual Average Air Quality in Kolhapur Region

Parameters [µg/m^3]	Chiplun-MIDC Chalkewadi	Chiplun-Water Treatment	Shivaji University Campus	Ruikar Trust	Mahadwar Road	Terrace of SRO-Sangli,Udyog Bhavan	Sangli-Miraj Primary Municipal School	Krishna Valley school
SO_2	11.5	11.5	13	25	21	10	11	11
NO_X	11.5	11	23	52	40	38	44	37
PM_{10}	170.5	173	63	120	106	82	77	92

From the **Table 5.12**, minimum SO_2 of 10µg/m^3 was found at Terrace of SRO-Sangli, Udyog Bhavan in Kolhapur whereas maximum SO_2 & NO_X, that is 25µg/m^3 & 52µg/m^3 respectively, was found at Ruikar Trust. The main reason of high concentration can be heavy traffic and smaller roads resulting into congestion. Minimum NO_X of 11µg/m^3 was found at Chiplun-Water Treatment in Kolhapur. Minimum PM_{10} of 63µg/m^3 was found at Shivaji University Campus in Kolhapur Region whereas maximum PM_{10} that is 173µg/m^3 was found Chiplun-Water Treatment due to heavy traffic coming from the main highway.

5.1.1.12 Chandrapur

The pilot project of ETS (Emission Trading Scheme) for industries is introduced in Chandrapur Region in collaboration with CPCB, MPCB & J-Pal. At present 68 nos. of stacks of 21 industries have been connected with ETS Server.

Area under this office is rich with major minerals like coal, dolomite, limestone etc. and thus industries based on these minerals are established in this area and are coalmines, cement, sponge iron, coal watery & Thermal power plant. These industries are mainly air polluting industry and having sources from their process units. Apart from this there are other sources of air pollution i.e. coal transportation, coal depots, domestic coal burning, vehicular transportation etc. There are 3 Ambient Air Monitoring Stations installed under National Air Quality Monitoring Program [NAMP] and another 3 are installed under State Air Quality Monitoring Program [SAMP].The samples were taken at 6 locations from industrial, commercial & residential areas & analyzed to assess the air quality in the region. The results are represented in **Figure 5.15.**

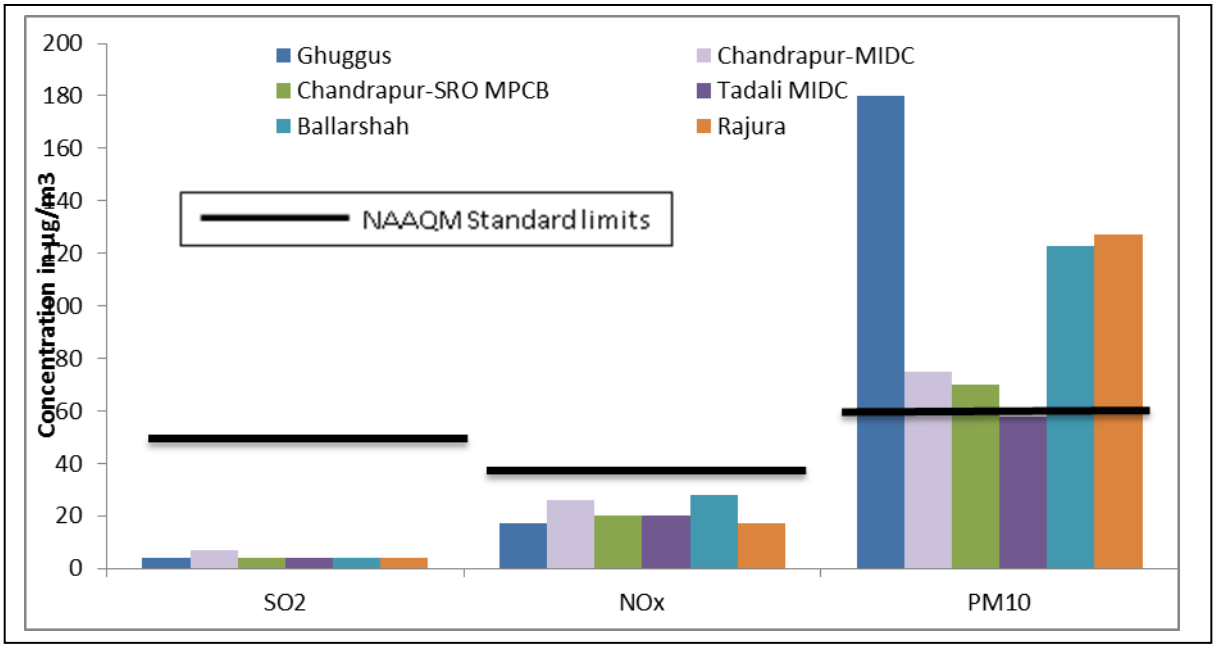


Figure 5.15 Annual Average Air Quality of Chandrapur Region

From **Figure 5.15,** it is predicted that concentration of gases is within the prescribed limits, however the concentration of PM_{10} is exceeding the limits at all the locations except 1 i.e. Tadali- MIDC. Heavy traffic and presence of industries might be the reason for higher PM_{10} concentration. A detail of annual average statistical data is represented in **Table 5.13.**

Table 5.13 Statistical results Of Annual Average Air Quality In Chandrapur Region

Parameters [µg/m^3]	Ghuggus	Chandrapur-MIDC	Chandrapur-SRO MPCB	Tadali MIDC	Ballarshah	Rajura
SO_2	4	7	4	4	4	4
NO_X	17	26	20	20	28	17
PM_{10}	180	75	70	58	123	127

From **Table 5.13,** it is observed that minimum SO_2 of 4µg/m^3 was found at all the sampling stations in Chandrapur region except at Chandrapur – MIDC whereas maximum SO_2 that is 7µg/m^3 was found at Chandrapur - MIDC. The major reasons behind such higher SO_2 concentration are the mining Industries in MIDC area. Minimum NO_X of 17µg/m^3 was found at Ghuggus and Rajura in Chandrapur region whereas maximum NO_X of 28µg/m^3 was found at Ballarshah. Minimum PM_{10} of 58µg/m^3 was found at Tadali MIDC in Chandrapur region whereas maximum PM_{10} of 180µg/m^3 was found at Ghuggus.

From above observations it is analyzed that at almost every region the quality of air is exceeding the limits in terms of particulate matter while the gases' concentration are within the limit.

5.1.2 Conclusion

All the AAQMS representing residential areas were well below the annual (50µg/m^3) as well as daily (80µg/m^3) standards. All the 13 AAQMS representing rural and other areas in Maharashtra recorded the annual SO_2 well under the annual standards (50µg/m^3).Air quality in the commercial areas of Maharashtra is clean for SO_2 pollution and all the AAQMS recorded annual average well below the annual as well as daily standards.

The Industrial area of CIDCO in Aurangabad region recorded the highest annual NO_X concentration of 81µg/m^3 which is twice the standard. The Amravati, Kolhapur, Chandrapur were observed to be less polluted as compared to other region. The AAQMS at Sion, Mumbai region recorded the highest annual NO_X concentrations at 81µg/m^3 which is more than twice the standard value. The residential areas of Amravati, Aurangabad, Chandrapur, Kolhapur were observed to be less polluted than other regions in terms of NO_X pollution. All AAQMS of Kalyan region recorded annual NO_X in range of 43-67µg/m^3 exceeding the annual concentration of NO_X. The rural regions of Amravati, Aurangabad and Nagpur were observed to be less polluted in terms of NO_X as compared to other regions.

All the AAQMS sites representing industrial areas violated the annual and daily standards prescribed by CPCB (60µg/m^3). The highest annual average concentration of RSPM is recorded at Industrial Area CIDCO, Aurangabad. None of the industrial sites were observed to meet the RSPM standard limits or meet the prescribed standards by CPCB. It could be observed in Figure 5.12 that except for Civil Lines (54µg/m^3), Nagpur; all the stations have exceeded the annual average concentration for RSPM which is 60µg/m^3. The highest concentrations (180µg/m^3) are recorded at Ghuggus, Chandrapur which are almost 3 times the annual standard. The reason for the same could be due to the presence of the industries. Almost all AAQMS, under rural and other areas exceeded the annual average standard (60µg/m^3), except for Airoli station from Navi Mumbai which has recorded the lowest concentration of annual RSPM as 36µg/m^3 lying within the limit set by CPCB (60µg/m^3). The AAQMS site at Raj Kamal Chowk, Amravati recorded the highest concentration of RSPM which is almost double (135µg/m^3) the standard followed by Powai chowk, Kalyan (126µg/m^3) and Ruikar trust, Kolhapur (120µg/m^3).

5.1.3 Ambient Noise Quality at Various Locations In State

Noise pollution is defined as unwanted sound, a potential hazard to health and communication dumped into the environment with regard to the adverse effect it may have on unwilling ears. Sound, which pleases the listeners, is music to the ears and that which causes pain and annoyance is noise. It is caused mainly due to vehicles, industrial activities

and other human activities. Traffic jams, bad roads, festivals and other types of celebration increases the ambient noise levels on that particular day. Noise pollution causes decrease in the work efficiency of man, lack of concentration, fatigue, increased blood pressure & temporary deafness which may finally lead to permanent deafness. Various Rules have been put forth to control noise pollution such as Noise Pollution (Regulation and Control) Rule 2000 under Environment Protection Act 1996, The Noise Pollution (Regulation and Control) Rules, 2000 has been authorized in order to curb the growing menace of Noise Pollution.

The unit of Noise measurement is decibel, one-tenth of a bell and denotes as dB, however the monitoring unit is considered as dB(A) Leq. which denotes the time weighted average 'A' of the level of sound in decibels on **scale A** and it has been found related to **human hearing.** Thus, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear. The unit of frequency is hertz (Hz) and is defined as the number of compressions and rarefactions per unit time (sec.). Human hearing is sensitive to frequencies in the range of about 20-20,000 Hz (the audio frequency range). Site of an area is selected such that it meets the land use pattern as prescribed in the standard e.g. Industrial, Commercial, and Residential & Silence Zone. According to the Noise standards of CPCB, the levels should be 65dB and 55dB in commercial areas during the day and night time respectively, while in residential area it should be 55dB and 45dB for the same as presented in **Table 5.14.**

Table 5.14 Noise Standards by CPCB

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

Noise pollution is an objectionable parameter and thereby would involve individual perception. Usually Noise regulations have been much in discussions in the recent past and most of the areas across India, do not qualify under the Noise Standards though being dependent upon individual perception; MPCB has been monitoring noise periodically & also during the festivals expecting higher variations and impacts on the environment & people. The monitoring is carried out in prescribed Day time (06:00 am to 10:00 pm) and Night time (10:00 pm to 06:00 am).The exercise has to be carried out for 6 to 8 hrs. in the said time frame of day & night. Region-wise details of noise pollution monitoring and analysis are discussed in following sections.

5.1.3.1 Mumbai

Total 40 observations were taken during this year out of which 20 were during the day time and 20 during the night time. The **Figure 5.16** summarizes the average day time and night time noise levels at 10 locations of 2 days.

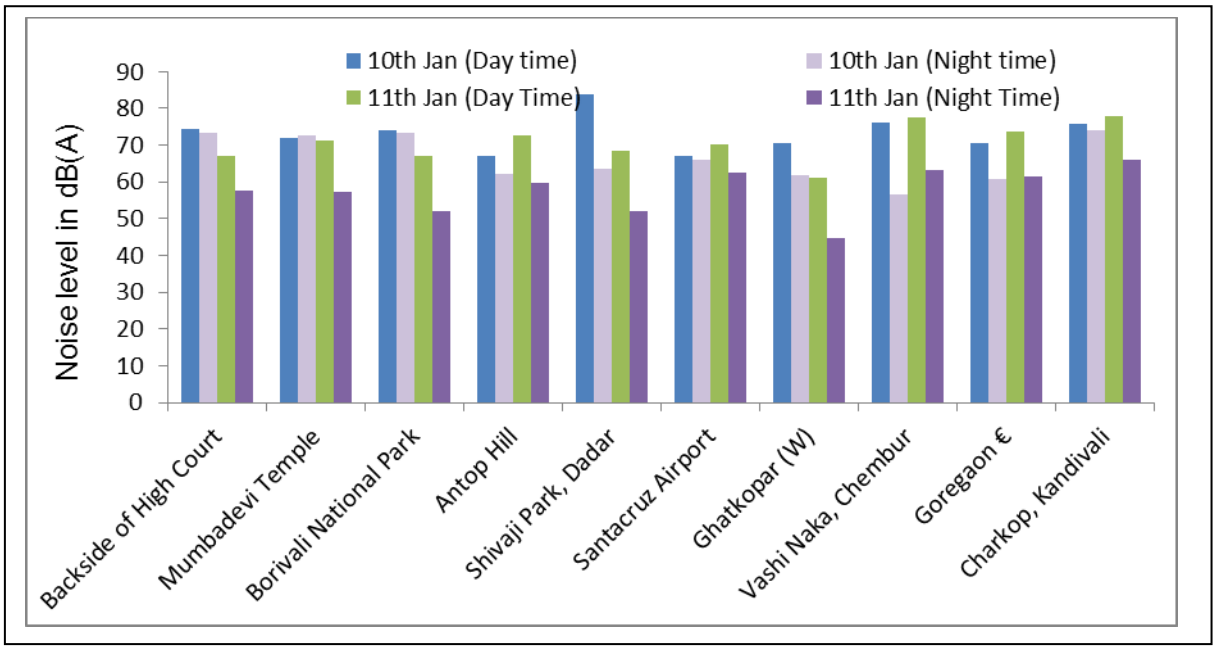


Figure 5.16 Summary of Noise Levels observed in Mumbai

On 1st day of monitoring highest noise level was observed at Shivaji Park, Dadar with 83.8 dB(A) and Charkop, Kandivali was found with high noise level on the second day of noise monitoring

5.1.3.2 Thane

Industries, vehicles, commercial places i.e. Markets, Cinema Halls, Bus Stand, Railway Station, Festivals are the major sources of Noise Pollution in the city. Total 20 observations were taken during this year out of which 10 were during the day time and 10 during the night time. The **Figure 5.17** summarizes the average day time and night time noise levels at 5 locations of 2 days.

From **Figure 5.17,** the highest noise level during day time on the first day was observed at Tembi Naka with 75.2 dB(A) and Main road Gaodevi Mandir was found to have high noise levels during night time with 72.6 dB(A) & on 2nd day highest noise level was found at Gaodevi Mandir with 72.6 dB(A) during the day time & 60.9 dB(A) during the night time respectively.

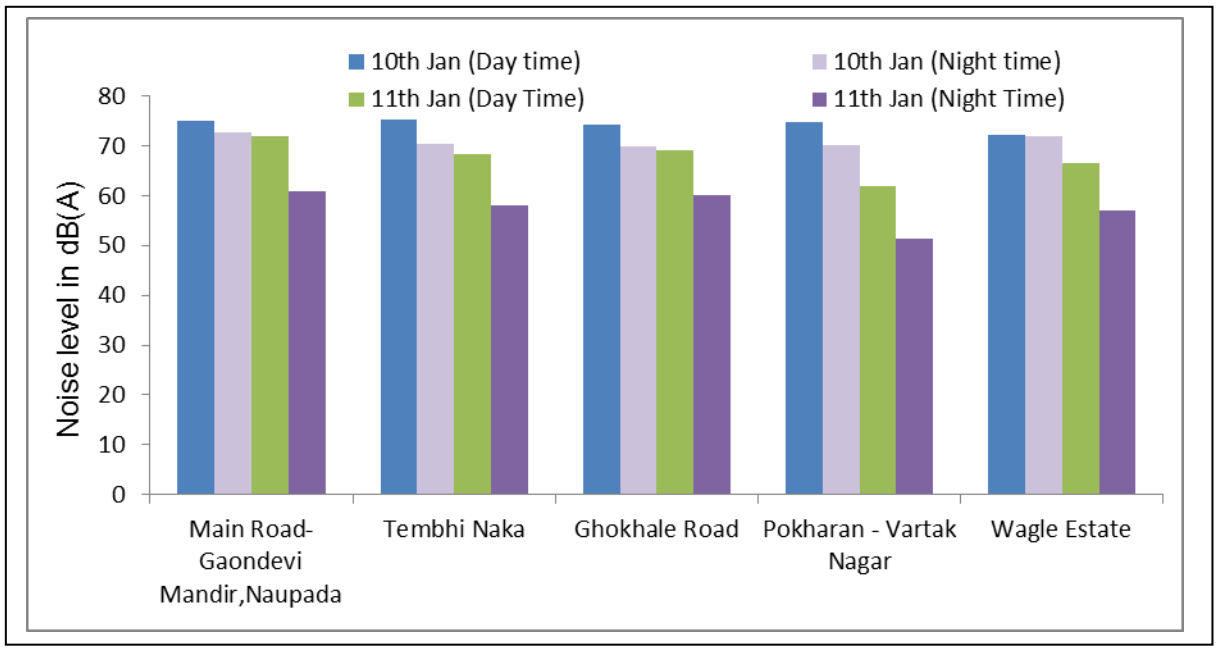


Figure 5.17 Summary of Noise levels observed in Thane

5.1.3.3 Kalyan

Total 12 observations i.e. 6 during the day time and 6 during the night time were taken during this year. **Figure 5.18** summarizes the average day time and night time noise levels at 3 locations of 2 days

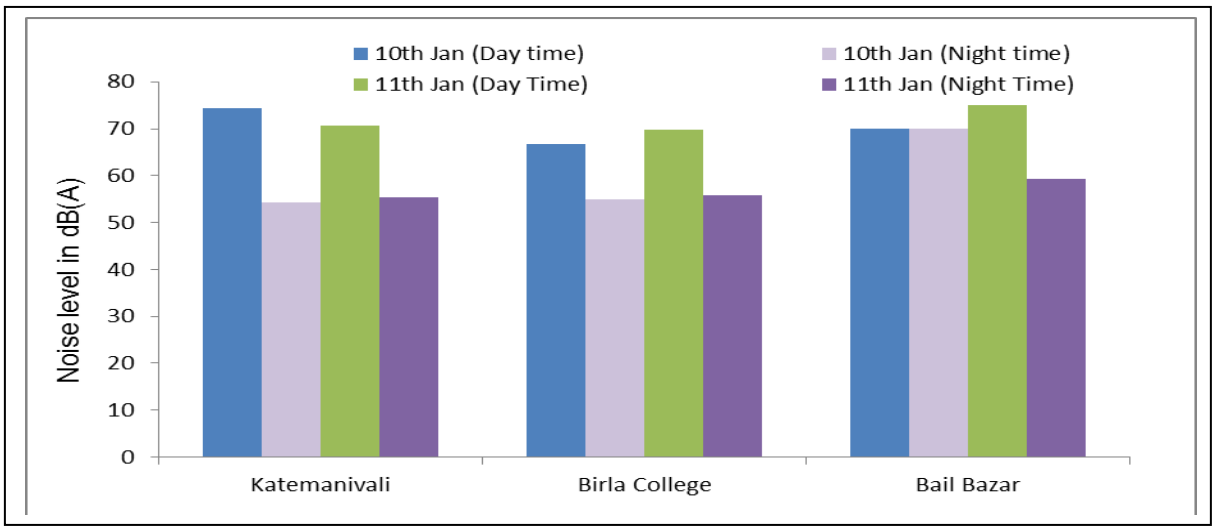


Figure 5.18 Summary of Noise levels observed in Kalyan

Katemanivali was found to have the highest noise level during the 3 days monitoring of Diwali festival. The highest noise level during day time was observed on the first day of monitoring with 82.2 dB(A) and during night time with 77.5 dB(A) was observed on the second day of noise monitoring.

5.1.3.4 Pune

Total 20 observations i.e. 10 during the day time and 10 during the night time were taken during this year. The **Figure 5.19** summarizes the average day time and night time noise levels at 5 locations of 2 days

From **Figure 5.19**, the highest noise level during day time both on first and second day of monitoring was observed at Nucleus mall with 73.8 dB(A) and 67.3 dB(A) respectively. The highest noise level during night time both on first and second day of monitoring was observed at Nucleus mall with 54.1 dB(A) and 53.3 dB(A) respectively

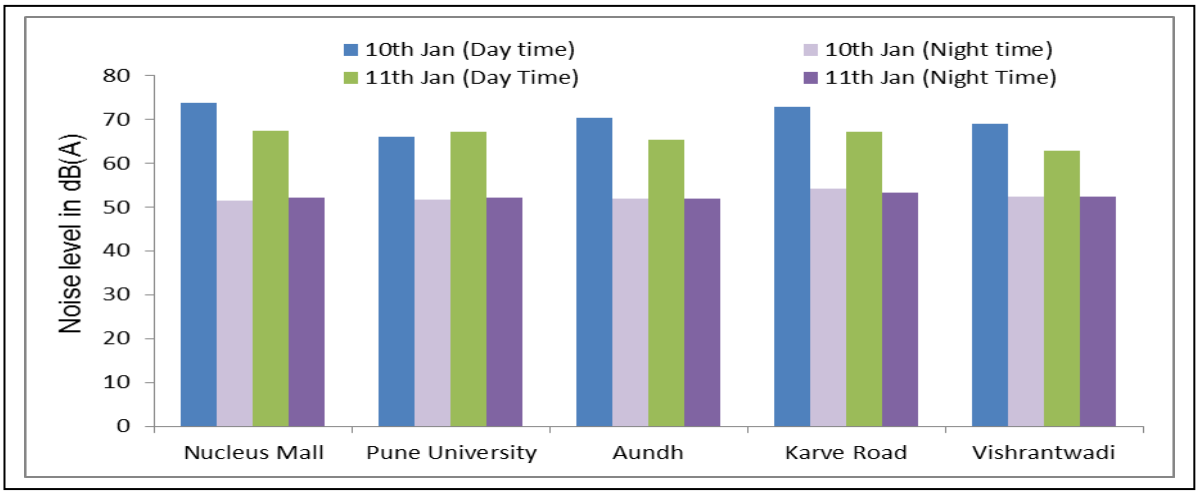


Figure 5.19 Summary of Noise levels observed in Pune

5.1.3.5 Nashik

Total 20 observations i.e. 10 during the day time and 10 during the night time were taken during this year. The **Figure 5.20** summarizes the average day time and night time noise

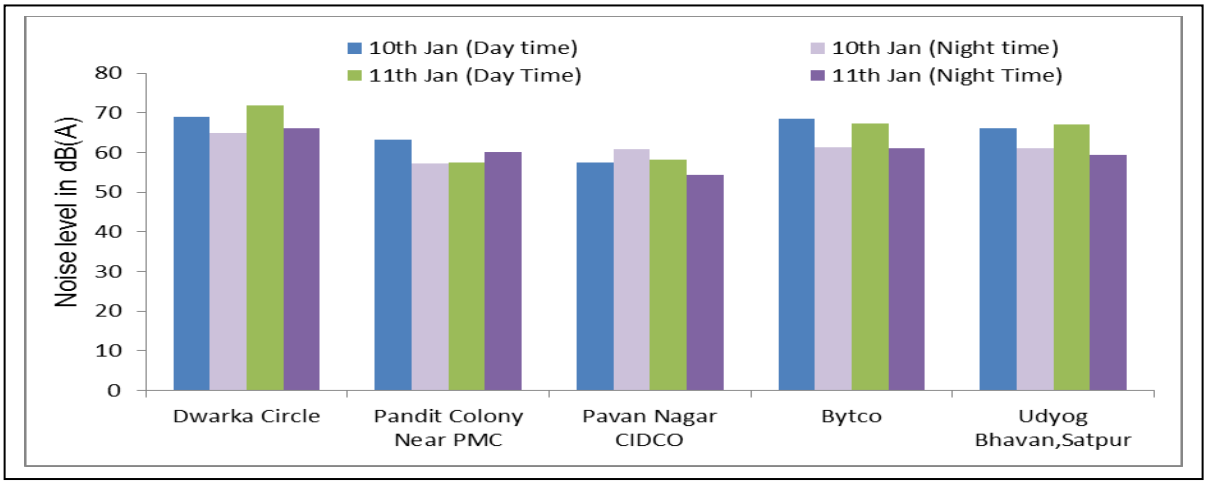


Figure 5.20 Summary of Noise levels observed in Nashik

In Nashik the highest noise level was observed on the first day during the noise monitoring at CBS both during day time and night time with 81.9 dB(A) and 81.7 dB(A) respectively.

5.1.3.6 Aurangabad

Total 12 observations i.e. 6 during the day time and 6 during the night time were taken during this year. The **Figure 5.21** summarizes the average day time and night time noise levels at 3 locations of 2 days.

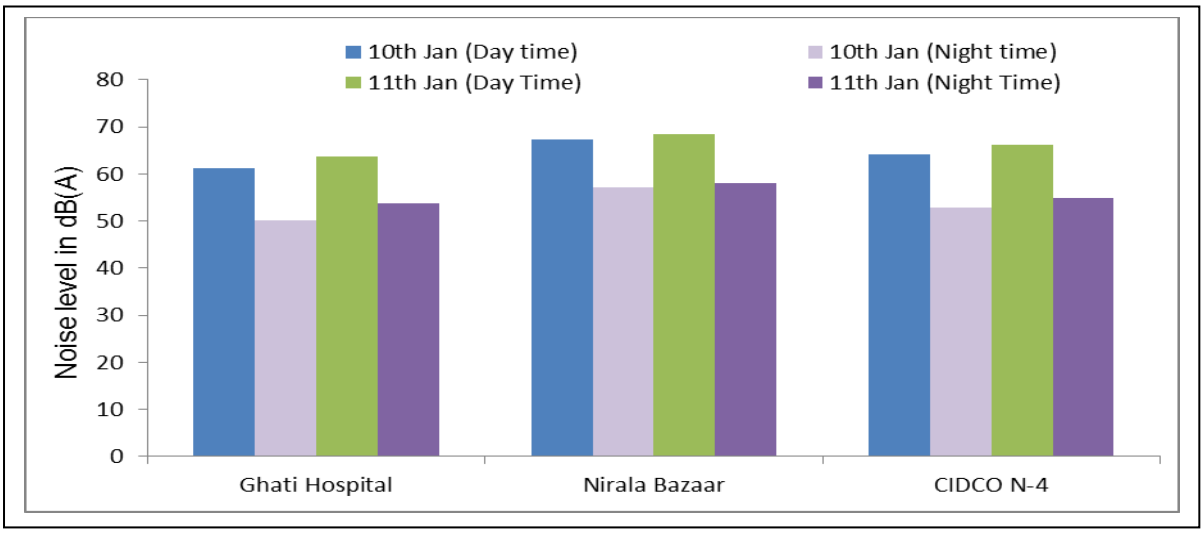


Figure 5.21 Summary of Noise levels observed in Aurangabad

Gulmandi was found to have the highest noise level both during day time and night time with 76.4 dB(A) and 65.5 dB(A) respectively which was observed on the first day of noise monitoring.

5.1.3.7 Nagpur

Total 20 observations i.e. 10 during the day time and 10 during the night time were taken during this year. The **Figure 5.22** summarizes the average day time and night time noise levels at 5 locations of 2 days.

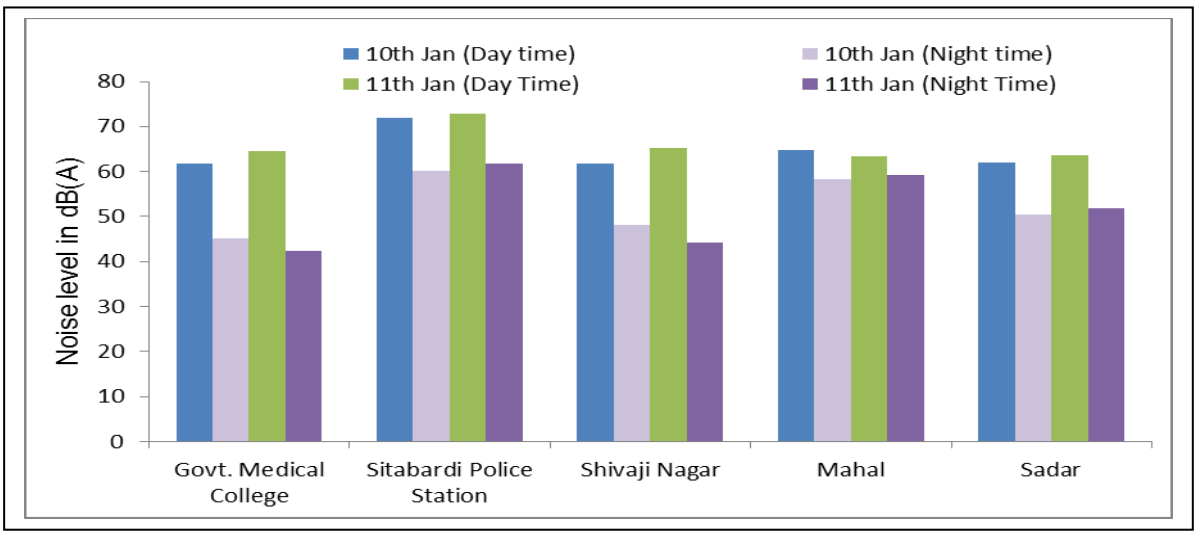


Figure 5.22 Summary of Noise levels observed in Nagpur

In Nagpur, out of 5 locations monitored in 3 days, Sadar was found to have the highest noise level on the first day of monitoring both during day time and night time with 77 dB(A) and 82.6 dB(A) respectively.

5.1.3.8 Amravati

Total 12 observations i.e. 6 during the day time and 6 during the night time were taken during this year. The **Figure 5.23** summarizes the average day time and night time noise levels at 3 locations of 2 days.

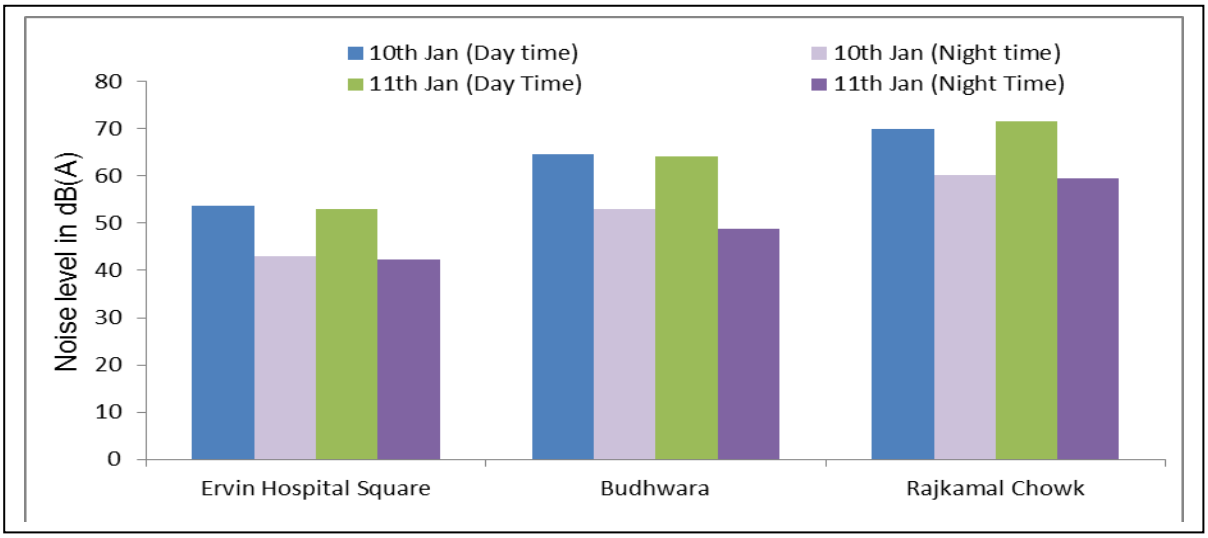


Figure 5.23 Summary of Noise levels observed in Amaravati

The highest noise level both during day time and night time was observed on the first day of noise monitoring at Rajkamal Chowk with 75.4 dB(A) and 60.8 dB(A) respectively.

5.1.3.9 Kolhapur

Total 20 observations i.e. 10 during the day time and 10 during the night time were taken during this year. The **Figure 5.24** summarizes the average day time and night time noise levels at 5 locations of 2 days.

The highest noise level during day time of 86.5 dB(A) was observed at Papachi Tikti and during night time was observed at Bindu Chowk with 85.0 dB(A).

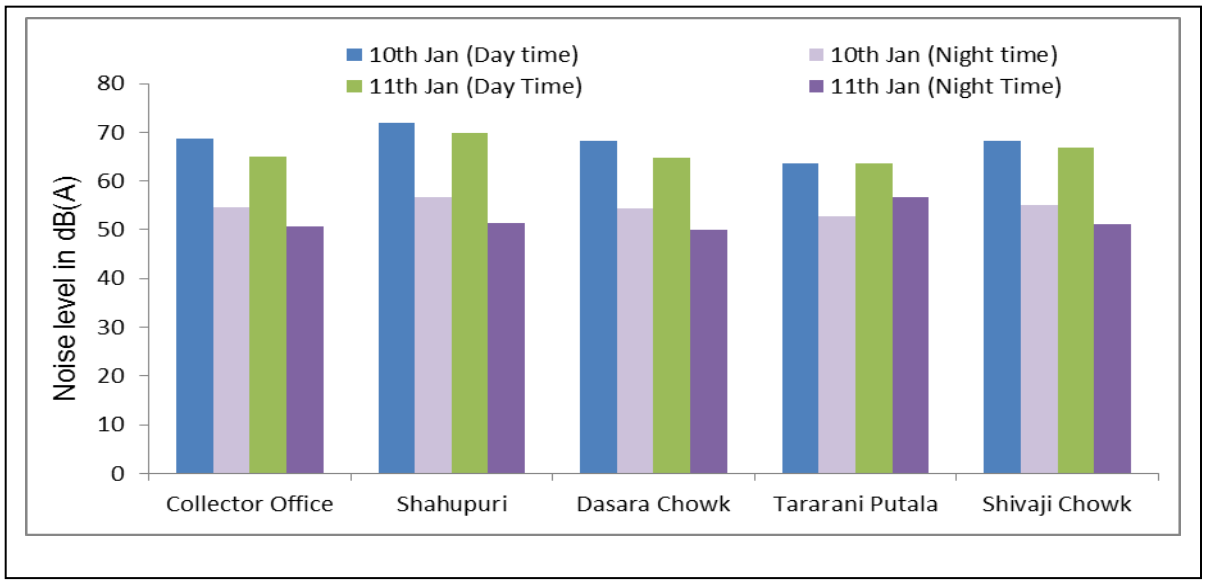


Figure 5.24 Summary of Noise levels observed in Kolhapur

5.1.3.10 Chandrapur

Total 12 observations i.e. 6 during the day time and 6 during the night time were taken during this year. The **Figure 5.25** summarizes the average day time and night time noise levels at 3 locations of 2 days.

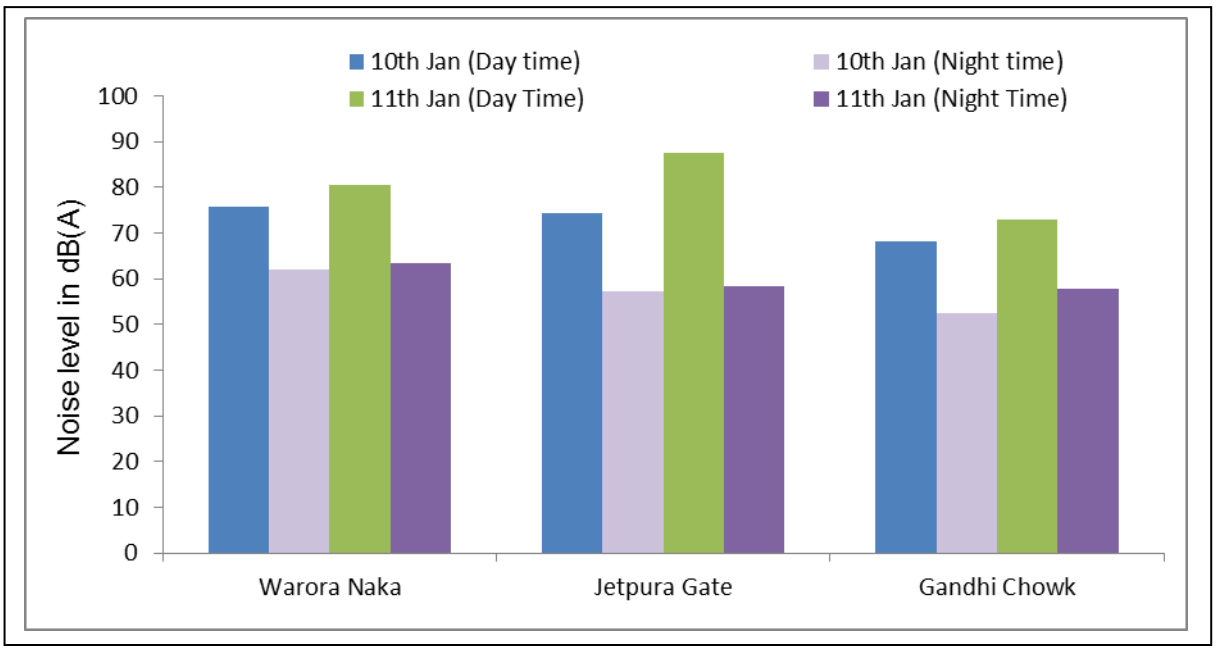


Figure 5.25 Summary of Noise levels observed in Chandrapur

The highest noise level both during day time and night time was observed on the first day of monitoring at Jatpura Gate with 85 dB(A) and at Warora Naka 77.9 dB(A) respectively.

5.1.4 Conclusion

Noise pollution is not only causing environmental damage but it also has a negative impact on human health as it can cause conditions such as aggression, hypertension, high stress levels, hearing loss and sleep disturbances. The noise measured during the Maharashtra Control Board noise monitoring project, the noise levels where exceeding the limits of provided in Noise Pollution (R & C) Rules, 2000 amendment dated 21st April 2009. Road vehicles including trucks, buses, tractors, SUVs and even motorcycles and most cars are major reason for the increase in noise range. Noise pollution can take a severe toll on human health in the long run. These effects will not become apparent immediately, but there could be repercussions later on. The effects include deterioration of mental health, ability to hear things clearly, dilation in the pupils of the eyes, improper working of the heart etc. The government should make efforts to control noise pollution by replacing rickety buses with comfortable coasters, planting trees all over the city, etc. The world without excessive noise pollution coming from human sources would be a much quieter and much more beautiful place to live in.

5.2 Water Quality in Maharashtra

Water, an important factor essential for the health of human beings, if contaminated leads to serious health problems. The major sources of water include oceans, lakes, rivers and ground water. The most important rivers of Maharashtra State are Godavari, Krishna, Bhima Tapi and Wardha-Wainganga River respectively. If pollutants are discharged directly or indirectly to these water bodies without effective treatment or without removal of the harmful compounds, it could create a serious threat to human health & environment.

Some of the basic causes of water pollution include pathogens, chemicals, elevated temperature, discoloration, plant matter, manmade chemicals, detergents, food processing waste, insecticides, herbicides, volatile organic compounds, chlorinated solvents, acid rain drainage, fertilizers, heavy metal from motor vehicles, soil erosion and sedimentation in water bodies etc. The idol immersion during Ganpati festival is also one of the sources of river pollution.

5.2.1 Water Quality Monitoring Network in Maharashtra

Located on the west coast of India, Maharashtra is the second State in India in terms of population (11.24crores) and the third largest in terms of area (30.7Mha). The total geographical area of the State is divided into 5 basins, namely Godavari, Tapi, Narmada, Krishna and West flowing rivers of the Konkan region.

In Maharashtra, 55% of the dependable yield is received from four basins (Krishna, Godavari, Tapi and Narmada) whereas remaining 45% of State's water resources are from west flowing rivers. As per Ministry of Drinking Water and Sanitation, the State had 557 stationary drinking water quality testing laboratories as on January 31, 2014; about one-fourth of the total such stationary testing laboratories available in the entire country.

In Maharashtra, water quality is monitored by various agencies namely Hydrology Project (SW), Groundwater Surveys & Development Agency (GSDA), CPCB, Maharashtra Pollution Control Board (MPCB), Central Water Commission (CWC), Central Ground Water Board (CGWB) as per provisions made by Water Quality Assessment Authority constituted under sub sections (1) and (3) of section 3 of the Environment (Protection) Act, 1986 (Act No.29 of 1986).

The water quality testing under the GEMS and MINARS program under NWMP in Maharashtra is monitored by MPCB (State nodal agency). Monitoring is carried out at 250 station as presented in **Table 5.15**, (156 are on rivers, 34 on sea/creek, 10 on nallahs and 50 groundwater), the highest across all States. MPCB has infrastructure to monitor 44 parameters including field observations, general parameters, core parameters and trace metals. The water samples are monitored with a monthly and six monthly frequencies for surface and groundwater stations respectively.

Table 5.15 Basin And Water Body wise Tally of WQMS in Maharashtra

Water body	Basin				
	Tapi	Godavari	Krishna	West Flowing Rivers	Grand Total
Rivers	20	48	53	35	156
Creek/Sea	0	0	0	34	34
Nalla	0	1	1	8	10
Bore well	1	8	10	5	24
Dug well	1	12	5	6	24
Hand pump	0	1	0	0	1
Tube well	1	0	0	0	1
Grand Total	23	70	69	88	250

The comprehensive data sets recorded by WQMS across the State were organized basin wise for evaluation of both surface and groundwater quality. The water monitoring stations were further arranged from upstream to downstream in order to study basin wise trend of water quality. The classification of the various rivers, their basins and sub basins considered in this report is presented in **Table 5.16**. The Water quality index is determined by calculating the basic parameters like pH, BOD (mg/l), DO (mg/l to %) and FC (MPN/100ml). The WQI has been calculated separately for surface water and groundwater water samples

using the formula provided by National Sanitation Foundation (NSF) and the relative weights modified by CPCB. To present the data in a spatial format GIS (Geographical Information System) maps were generated.

The following section presents the illustrations of the parameters pH, DO, BOD and FC recorded across the 229 surface water quality monitoring stations of MPCB in a lucid format. Further, basin wise water quality index is presented in this section for the basins of Krishna, Godvari, Tapi and West flowing rivers.

The classification of the rivers considered under basins and sub basins in the report is given in **Table 5.16.**

Table 5.16 Classifications of Rivers Considered Under Basins & Sub Basins

Basin	Sub Basins	Name of rivers	No. of WQM stations
Tapi	Tapi Upper	Tapi, Purna, Pedhi	8
	Tapi Middle	Tapi, Girna, Rangavali, Amravati, Bori, Burai, Gomai, Hiwara, Kan, Mor, Panzara, Titur, Waghur, Waghur	15
Godavari 1	Godavari Upper	Godavari, Chikhalinalla, Darna	23
	Godavari Middle	Godavari, Bindusara	11
	Manjra	Godavari, Manjra	2
Godavari 2	Wardha	Wardha, Penganga	17
	Weinganga	Kolar, Kanhan, Wainganga	16
	Pranhita and others	Wainganga	1
Krishna	Bhima Upper	Bhima, Nira, Chandrabhaga, Mutha, Ghod, Indrayani, Pawana, Sina, Vel, Nalla, MulaMutha	43
	Krishna Upper	Krishna, Panchganga, Koyna, Urmodi, Venna	26
West Flowing		Kalu, Ulhas, Patalganga, Bhatsa, Vashishti, Mithi, Kundalika, Savitri, Amba, Kundalik, Muchkundi, Surya, Tansa, Vaitarna, Rabodinalla, ColourChemnalla, Sandoz nalla, BPT Navapur, Tarapur MIDC nalla, Pimpal-Panerinalla	54
Saline			34
		Total	**250**

5.2.2 Water Quality Index

A water quality index provides a single number (like a grade) that expresses overall water quality of a certain water sample (location and time specific) for several water quality parameters. The objective of developing an index is to simplify the complex water quality parametric data into comprehensive information for easy understanding. A water index

based on important parameters provides a simple indicator of water quality and a general idea on the possible problems with the water in the region.

In 1970, the National Sanitation Foundation, USA developed the Water Quality Index (NSFWQI), a standardized method for comparing the water quality of various water bodies. NSFWQI is one of the most respected and utilized water quality indexes in the United States. Nine water quality parameters selected for calculating the index include Dissolved Oxygen, Fecal Coliform, pH, Biochemical Oxygen Demand (BOD) (5-day), Temperature change (from 1 mile upstream), Total phosphate, Nitrate, Turbidity & Total Solids.

5.2.2.1 WQI for surface water

Given the parameters monitored in India under the NWMP and to maintain the uniformity while comparing the WQI across the nation, the NSF WQI has been modified and relative weights been assigned by CPCB. The modified weights as per CPCB are given in **Table 5.17** and the equations used to determine the sub index values are given **Table 5.18**. Upon determining the Water Quality Index, the water quality is described for easy understanding and interpretation. The description used in the report for classifying and the describing the water quality is presented in **Table 5.19**.

Table 5.17 Modified Weights for Computation of WQI Based on DO, FC, pH And BOD

Parameters	Original Weights from NSF WQI	Modified Weights by CPCB
Dissolved Oxygen (DO)	0.17	0.31
Fecal Coliform (FC)	0.15	0.28
pH	0.12	0.22
BOD	0.1	0.19
Total	**0.54**	**1**

Table 5.18 Sub Index Equation Used to Calculate NSF WQI for DO, FC, pH And BOD

Water Quality Parameters (units)	Range Applicable	Equation
Dissolved Oxygen (DO)(% Saturation)	0-40	0.18 + 0.66 X % Saturation DO
	40-100	(-13.55) + 1.17 X % Saturation DO
	100-140	163.34 - 0.62 X % Saturation DO
Fecal Coliform (FC) (counts/100 ml)	1 - 103	97.2 - 26.6 X log FC
	103 - 105	42.33 - 7.75 X log FC
	>105	2
pH	02 - 05	16.1 + 7.35 X (pH)
	05 - 7.3	(-142.67) + 33.5 X (pH)
	7.3 - 10	316.96 - 29.85 X (pH)
	10 – 12	96.17 - 8.0 X (pH)
	<2, >12	0

BOD (mg/l)	0 – 10	96.67 - 7 X (BOD)
	10 – 30	38.9 - 1.23 X (BOD
	>30	2

Table 5.19 Water Quality Classification and Best Designated Use

WQI Value	Water Quality	Class by CPCB	Class by MPCB	Remarks	Color code used in this report
63 – 100	Good Excellent	A	A -I	Non Polluted	
50 – 63	Good water	B	Not Prescribed	Non Polluted	
38 - 50	Poor Water	C	A –II	Polluted	
38 & less	Very Poor water	D, E	A – III, A- IV	Heavily Polluted	

5.2.2.2 WQI for Groundwater

MPCB monitors ground water quality for parameters like pH, total hardness, Calcium, Magnesium, Chloride, total dissolved solids, Fluoride, Manganese, Nitrate, Sulphates and so on once in six months. Based on the stringency of the parameters and its relative importance in the overall quality of water for drinking purposes each parameter has been assigned specific weightage. The relative weights of the same have been determined and presented in **Table 5.20** for the parameters monitored and recorded by MPCB for the water samples monitored in the year 2015-16.These weights indicate the relative harmfulness when present in water. The maximum weight assigned is 5 and minimum is 1.

Table 5.20 Relative Weights of Each Parameter

Chemical Parameters	Indian Standards for Drinking Water Quality[22]		Weight (Wi)			
	Acceptable Limit	Permissible Limits	Weight	Relative Weight	Weight w/o Iron, Manganese & Bicarbonate	Relative Weight w/o Iron, Manganese & Bicarbonate
pH	6.5-8.5	No relaxation	4	0.09756	4	0.13333
Total Hardness	300	600	2	0.04878	2	0.06667
Calcium	75	200	2	0.04878	2	0.06667
Magnesium	30	No relaxation	2	0.04878	2	0.06667
Bicarbonate	244	732	3	0.07317	-	-
Chloride	250	1000	3	0.07317	3	0.10000
Total Dissolved Solids	500	2000	4	0.09756	4	0.13333
Fluoride	1	1.5	4	0.09756	4	0.13333
Manganese	0.1	0.3	4	0.09756	-	-
Nitrate	45	No relaxation	5	0.12195	5	0.16667

Sulphate	200	400	4	0.09756	4	0.13333
Total			**41**	**1**	**30**	**1**

5.2.3 Analysis of surface Water Quality with Statistical details

Based on the absolute value of the index determined, water quality is classified as presented below in **Table 5.21.**

Table 5.21 Groundwater Classification Based On the Water Quality Index

WQI Value	Water Quality	Color code used in this report
<50	Excellent	
50-100	Good water	
100-200	Poor Water	
200-300	Very Poor water	
>300	Water Unsuitable for drinking	

Surface water is available in the form of rivers, lakes, ponds, canals and so on. However, rivers are the most important source of surface water. The surface water resources potential of India, is about 1869 Billion Cubic Meters (BCM). Due to various topographical constraints and uneven distribution over space and time, only about 690 BCM of surface water and 431 BCM of ground water can be used. It has been estimated that due to increase in population between 2001 and 2011 in India, the per capita availability of water resources has reduced from 1,816 cubic meter to 1,544 cubic meter. The stress on water resources is increasing rapidly due to the pressure from urbanization and industrialization. The pollution of water resources caused by discharge of sewage and industrial effluents in water bodies further deteriorate quality of water.

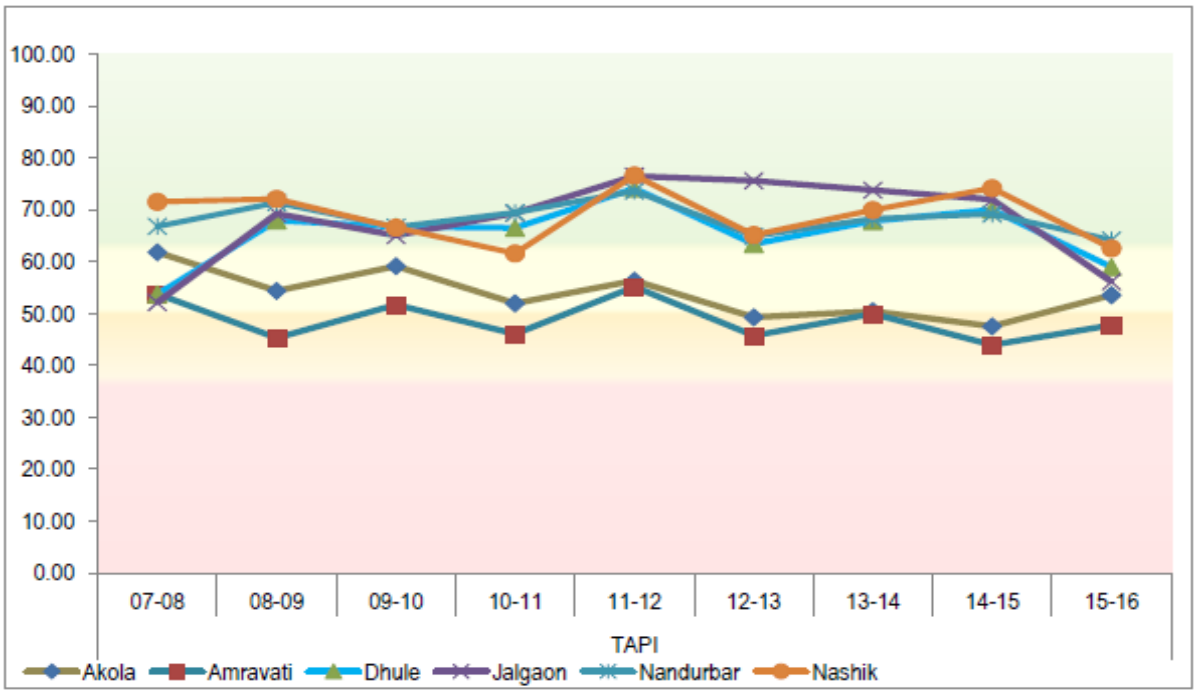
In order to have continuous vigilance check on water quality across the State, MPCB has installed WQMS (Water Quality Monitoring Stations) across the State. The total WQMS for year 2015-16 are represented in the **Table 5.22** water quality is monitored per month across all the stations. The spatial presence of the stations is presented basin wise in the respective sections.

Table 5.22 Monitoring Stations List across Different Type of Water Bodies (MPCB)

Water Quality monitoring stations	
Water Bodies	**2015-16**
Rivers	156
Sea and Creek	34
Nalla	10
Borewell	24
Dug well	24
Hand pump	1
Tube well	1
Total	**250**

5.2.3.1 Tapi Basin

In Maharashtra, the Tapi Basin could be divided into two sub-basins Tapi Upper and Tapi Middle. There are a total of 22 surface water monitoring stations (5 on upper and 17 on middle) in Tapi basin in Maharashtra. **Figure 5.26** shows the trends in WQI along the Tapi Basin flowing through 6 districts from the year 2007 -2016.



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure 5.26 Trend of Annual Average WQI Across Districts of Tapi Basin

Note:

This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data may be analyzed to pin point the most affected and polluted patches in that district.

The Intra basin performance of Tapi Basin across six districts of the State is depicted in **Figure 5.26.** It is observed that among six districts, namely Akola, Amravati, Dhule, Jalgaon, Nandurbar and Nashik, the annual average WQI of Amravati and Akola were consistently in Bad to Medium category (i.e. WQI in range of 38-63) from year 2007-08 till 2014-15. This

year in 2015–16 both the districts have registered improvement in the overall water quality. Dhule, Jalgaon, Nandurbar and Nashik belong in the Medium to Good category (i.e. WQI in range of 50-63). But a decrease could be recorded in all these 4 stations this year which indicates deterioration in the water quality at these stations.

The Tapi basin has 8 WQMS in Tapi Upper and 15 WQMS in Tapi Middle. From **Figure 5.26**, it can be noted that more 50% of the observations in Tapi Middle were recorded to be in the dry and no data category while only 20% of the observations in Tapi Upper were recorded as Dry, Not collected and No Data categories. This could be attributed to lack of rainfall this year which has led to the drying of rivers. The occurrence of “Medium to Good” and “Bad” categories of WQI is more than double in the Tapi Upper compared to Tapi Middle. This indicates that the water quality in Tapi Upper is better compared to Tapi Middle.

5.2.3.2 Godavari Basin 1

The Godavari basin passes through six States (third largest basin in India) and drains about 10% of the total geographical area of the country. Approximately 50 percent of the catchment area comes under the State of Maharashtra. In Maharashtra, the Godavari Basin could be divided into six sub-basins Godavari Upper, Godavari Middle, Manjra, Wardha, Weinganga, Indravati and Pranhita. In this report for the ease of analysis the sub-basins have been categorized into two, Godavari 1 Basin covering Upper, middle and Manjra sub-basin and Godavari 2 basin covering Wardha, Weinganga, Indravati and Pranhita. In basin 1 there are a total of 34 surface water monitoring stations (21 on upper, 11 on middle and 2 on Manjra). A list of the station and the codes has been provided below. In basin 2 there are a total of 29 surface water monitoring stations (12 on Wardha, 16 on Weinganga and 1 on Pranhita). **Figure 5.27** shows the trends in WQI along the Godavari Basin 1 flowing through 4 districts from the year 2007 -2016.

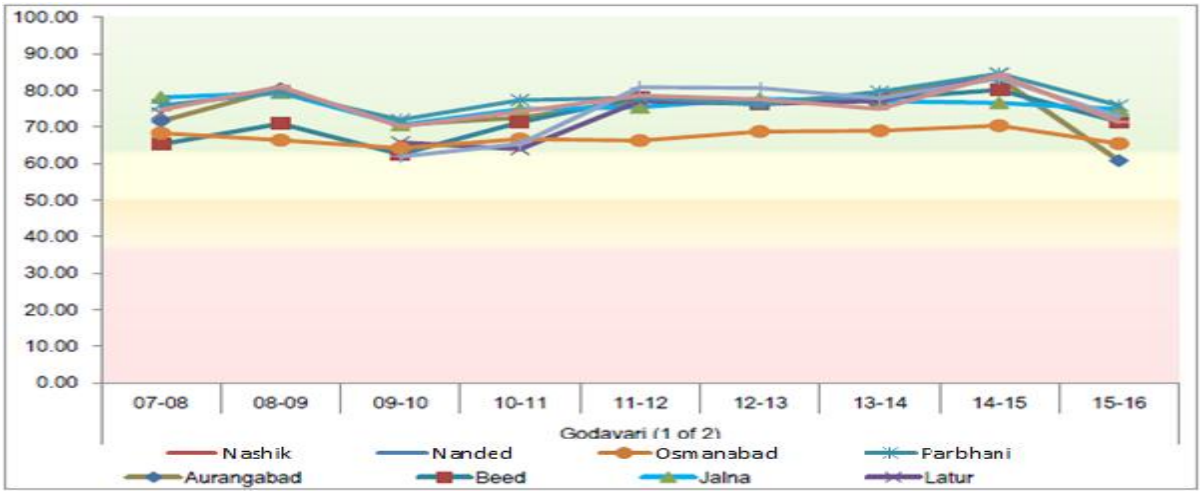


Figure 5.27 Trend of Annual Average WQI across Districts of Godavari Basin (1 Of 2)

It is observed that the annual average WQI across major districts of Godavari basin (1 of 2) namely - Beed, Jalna, Latur, Nanded, Nashik, Osmanabad and Parbhani are in Good to excellent category (63-100) except for Aurangabad. The WQI of Aurangabad was found to decrease this year from Good to Excellent to Good to Medium category (50-63). Irrespective of the fact that majority of the indices for districts belong in the Good to Excellent category, a slight decrease could be observed this year which indicates a slight deterioration in the water quality.

5.2.3.3 Godavari Basin 2

Figure 5.28 shows the trends in WQI along the Godavari Basin 2 flowing through 7 districts from the year 2007 -2016.

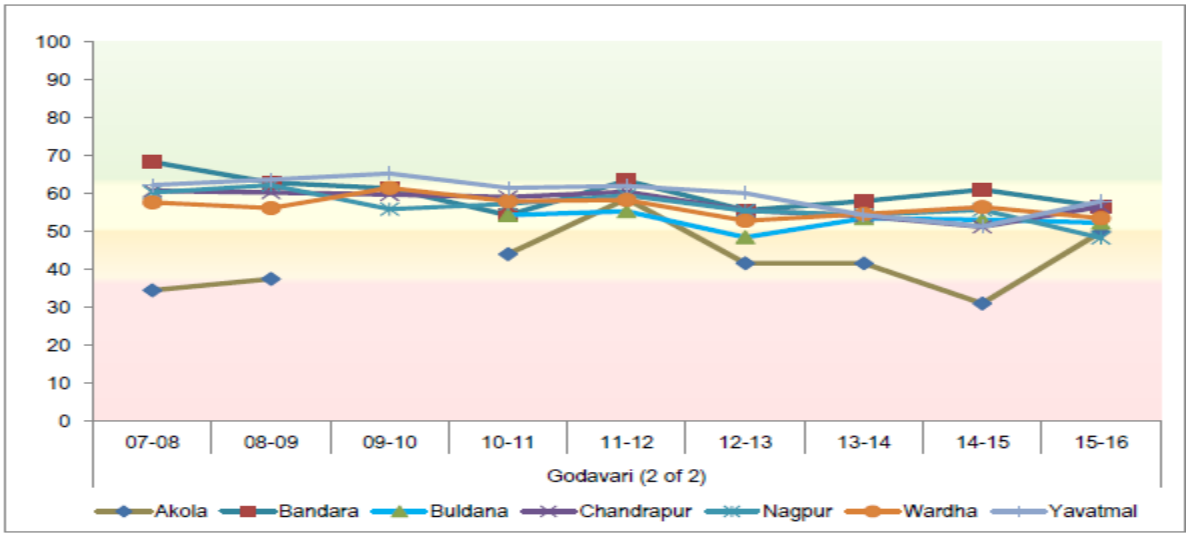


Figure 5.28 Trend of Annual Average WQI Across Districts of Godavari basin (2 of 2)

Among the seven districts namely Akola, Bandara, Buldhana, Chandrapur, Nagpur, Wardha and Yavatmal, the annual average WQI of all the districts except Akola were Medium to Good (50-63). But this year in 2015- 16, an improvement in the water quality at Akola has been recorded as the WQI has improved from Very Bad to Bad category.

5.2.3.4 Krishna Basin

The Krishna originates as the Upper Krishna basin in the Western Ghats of Maharashtra and Karnataka, drains the Deccan Plateau, and discharges into the Bay of Bengal. The Krishna basin spreads across the States of Maharashtra (69,425sq.km), Karnataka (113,271sq.km) and Andhra Pradesh (76,252sq.km) covering total area of 2,58,948sq.km which is about 8% of total geographical area of country. The principal tributaries joining Krishna are the Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra and the Musi. **Figure 5.29**

shows the trends in WQI along the Krishna Basin flowing through 6 districts from the year 2007 -2016.

It is observed that among the 5 districts- Kolhapur, Pune, Sangli, Satara and Solapur, the annual average WQI of Sangli and Kolhapur were Good to Excellent category (63-100). Satara and Solapur display an increasing trend in the WQI as Satara has improved from 'Mediun to Good' to Good to Excellent category and Solapur has shown an increasing trend towards the Good to Excellent category. Since the last 2 years, the WQI of Pune has also improved from "Bad" category to "Medium to Good" category. The new station added at Ahmednagar has shown the WQI to be in the Bad category in 2015- 16.

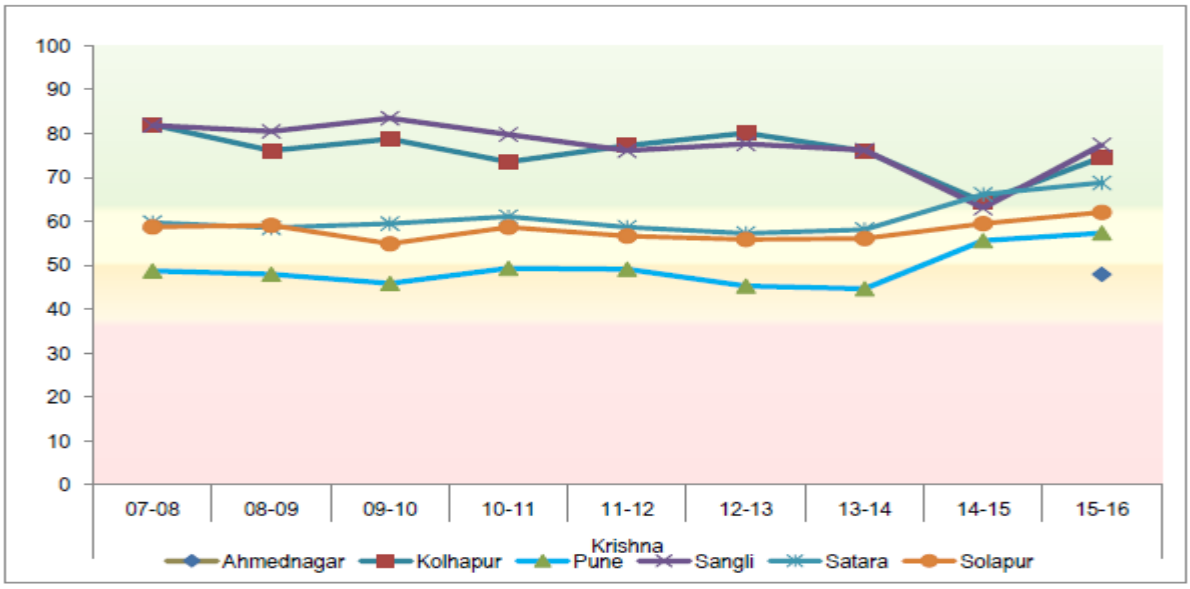


Figure 5.29 Trend of Annual Average WQI across Districts Of Krishna Basin

5.2.3.5 West Flowing Rivers

Maharashtra has many westwards flowing rivers originating from the Western Ghats like Damanganga, Surya, Vaitarna, Ulhas, Savitri, Kundalika, Patalganga, Vashisti, Shastri, Karli, Terekhol and so on. These are an important source of drinking water, agricultural applications and industrial purposes and are known to contribute about 44.54% of the yield at 75% dependability of Maharashtra. Rivers like Vaitarna, Patalganga, Ulhas, and Balganga and so on with tributaries such as Tansa, Bhasta and Barvi are used as sources of drinking water. While Rivers like Ulhas, Patalganga, Panvel, Bhogeshwari and Amba & few other tributaries like Vashishthi and Kundalika lie very close to industrial areas and are thus prone to water pollution due to release of industrial effluents.

Figure 5.30 shows the trends in WQI along the West flowing rivers through 4 districts from the year 2007 -2016.

The results showed that among four districts, namely Thane, Mumbai, Raigad and Ratnagiri, the annual average WQI of Mumbai were consistently in Bad to Medium category (38-63) across all the years. This year in 2015-16 WQI has also shown a decline which indicates the deteriorating water quality in Mumbai. Raigad, Ratnagiri and Thane were in Good to Excellent (63-100) category. Thane and Ratnagiri have shown improvement in its category this year compared to last year (2014-15). Even though the WQI for Raigad is in Good to Excellent category, a decreasing trend could be observed over the years.

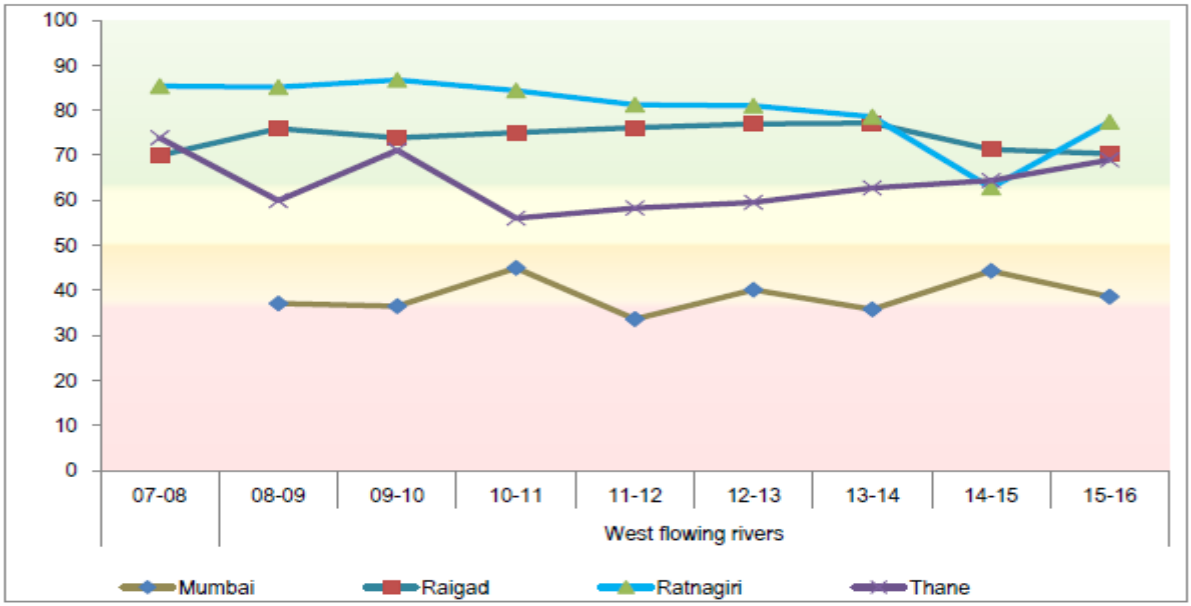


Figure 5.30 Trend of Annual Average WQI Across Districts Of West Flowing Basin

5.2.4 Analysis of Sea and Creek Water Quality with Statistical details

Ranking seventh largest in the world in terms of coastline, India has 7,517km long coastline out of which 5,423km belongs to peninsular India and remaining 2,094km to the Andaman, Nicobar and Lakshadweep Islands. India has 43% sandy beaches; 11%, rocky coast including cliffs; and 46%, mudflats or marshy coast. It is estimated that nearly 250 million people live within area of 50km from the coastline of India. This coastline supports a huge human population, which is dependent on the rich coastal and marine resources for economic growth.

Rapid industrialization has taken place along the coastline of India. Among the coastlines, industrial pollution is recorded high on coast of West Bengal, Tamil Nadu, Gujarat, Maharashtra and Andhra Pradesh. It is estimated that about 8000 industries release 390 million tonnes of effluents annually into the Indian coastal waters either directly or indirectly.

Disposal of Municipal solid waste also acts as source of marine pollution. Municipal waste consists of degradable and non- degradable waste which comprises of plastic, rubber, glass, heavy metals and so on. The discarded plastic waste leads to entanglement, suffocation and ingestion of aquatic life. Consumption of plastic by marine animals causes disruption of the endocrine system and reduction in reproduction rate. Heavy metals such as mercury, lead, nickel, arsenic, and cadmium, could also accumulate in the tissues of many species in a bio accumulation process. Recreational activities like tourism and oil spills from shipping industries also contribute to coastal pollution.

Being a coastal State, Maharashtra is bestowed with a coast line of about 720 kms. Thane, Mumbai, Raigad, Ratnagiri and Sindhudurg districts are all located along the coastal front in Maharashtra. These districts are blessed with beaches, mangroves, migratory birds, corals and a lot of unique marine biodiversity. These areas are not only stress busters for general public but also cater of tourism sector. These patches are also significant for various livelihood opportunities since they support occupations like fishing and salt production in the State.

Given the fact that water pollution on the coastal front shall directly impact the marine ecosystem and also the humans, it is of significant importance to monitor sea water quality. MPCB has 36 monitoring stations along the sensitive and pollution prone areas of coastline of the State. Regular monitoring is conducted at these monitoring stations. **Figure 5.31** shows the trends in WQI along the Sea and Creek from the year 2007 -2016

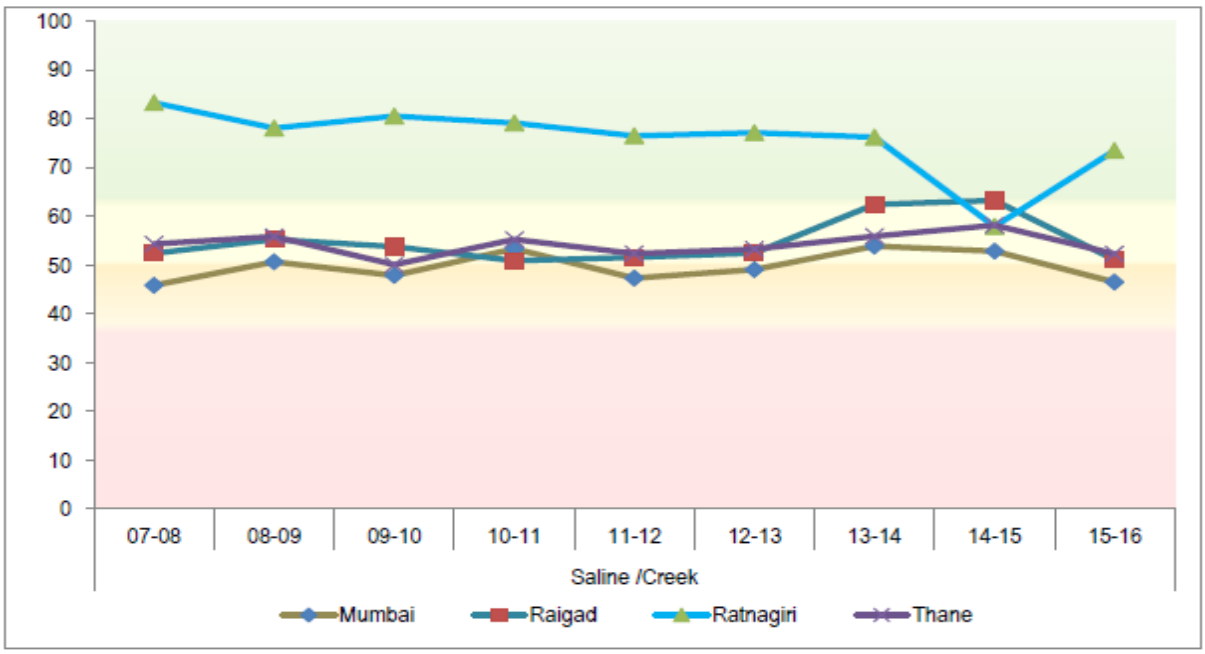


Figure 5.31 Trend of Annual Average WQI across Districts Of Coastal Basin

The water quality results from test conducted in the year 2015-16 showed that among the four coastal districts, the sea/creek water quality at Thane, Raigad and Mumbai were in 'Bad to Medium' category (38-63). A decreasing trend was also being observed in the water quality at these 3 districts. Irrespective of the sudden decrease in the average water quality of Ratnagiri district last year, this year the water quality was in the Good to Excellent category (63-100).

The trend in average occurrence for WQI across the WQMS was noted and it is observed that occurrence of Medium to good category has increased across the past 9 years. The Bad to Very Bad category has also shown a decline over the years which indicate the improving water quality. But the category of 'Good to Excellent' has shown decrease this year while a growth in 'Medium to Good' and 'Bad' has increased

5.2.5 Analysis of Ground water quality

Water located beneath the earth's surface in soil pore spaces and aquifers formed due to formation of cracks in the rocks is termed as Groundwater. It is recharged from rain and surface water and at times the only source for water supply in regions. Groundwater constitutes about two thirds of the freshwater resources of the world and accounts for nearly 80 per cent of the rural and 50 per cent of the urban water needs in India. Groundwater is intensively drawn for agricultural, irrigation and industrial purposes. The accumulation and inadequate disposal of waste generated by the industries ultimately leads to groundwater pollution. MPCB has 50 ground water monitoring stations which monitor water quality twice a year for parameters like pH, Nitrate, TDS, Hardness, Fluoride, microbial content, Sulphates and so on.

The basins of Tapi, Godavari, West Flowing rivers and Coastal have recorded a decreasing trend in their annual average Water Quality Index (WQI) while Krishna basin showed an increasing trend for its WQI. Station No. 186 and 187 on Nag River (Nagpur region) had the annual average WQI in Bad to Very Bad category throughout the year. This was highly polluted compared all the other rivers in the basin, which is a serious cause of concern and should immediately be investigated further for the cause of pollution.

Stations on nallahs at BPT Navpur, Sandoz and Rabodi from Thane region also recorded the WQI in Bad to Very Bad category throughout the year. This indicated pollution mostly due to the release of waste water from the industrial area of Thane. Considering the intra basin scenario of Krishna basin, Bhima Upper sub basin was found to be more polluted than Krishna Upper.

Out of 65 water monitoring stations of groundwater, Station no. 2819 dug well in Pune recorded the water quality in Bad to Very Bad category throughout the year. Raigad region recorded the water quality of ground water in excellent category. The levels of Total Hardness, pH, Fluoride and Nitrate were recorded to be high in 2015-16.The **Table 5.23** gives the WQI for Ground water in Kalyan, Navi Mumbai, Raigad, Thane, Amravati, Aurangabad, Nashik, Chandrapur, Nagpur, Kolhapur and Pune respectively whereas **Table 5.24** shows the legend.

Table 5.23 WQI for Ground Water in Various Regions

Apr					67		29		23		175	Dry	62		
Oct					93		22		23		55	Not collected	167		
Station Code	205	206	207	208	214	215	217	218	1989	1984	1985	1986	1987	1988	
RO	Kalyan				Navi Mumbai		Raigad			Thane					

Apr	74	Dry	38	85	99	101	Station closed	Dry	138			429			
Oct	112	Not collected	104	139	48	166	Station closed	139	189			110			
Station Code	2001	2002	2003	1993	2200	2201	2824*	2825	221	1990	1991	2204	2816	2817	2818
RO	Amravati			Aurangabad					Nashik						

Apr				60	128	36	107	110	69	Dry	72	182			
Oct	174					71									
Station Code	2828	209	210	212	213	1994	1995	1996	1997	1998	1999	2000	2203	2826	2827
RO	Chandrapur	Nagpur													

Apr	42	33	208	329	228	582	222	28	26	206	157	52	644	660	33	37	560	67			
Oct	27	29	65	249	55	64	139	29	72	218	72	41	29	30	30		472	115	107	338	316
Station Code	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
RO	Kolhapur																Pune				

Table 5.24 Legend for WQI color variations

Legend

Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	Not Collected	No data

5.3 Industrial Pollution

The Ministry of Environment, Forest and Climate Change (MoEF&CC) had brought out notifications in 1989, with the purpose of prohibition/ restriction of operations of certain industries to protect ecologically sensitive areas. The notification introduced the concept of categorization of industries as "Red", "Orange" and "Green" with the purpose of facilitating decisions related to location of these industries. Subsequently, the application of this concept was extended in other parts of the country not only for the purpose of location of industries, but also for the purpose of Consent management and formulation of norms related to surveillance / inspection of industries. The process of categorization thus far was primarily based on the size of the industries and consumption of resources. The pollution

due to discharge of emissions & effluents and its likely impact on health was not considered as primary criteria.

Based on the series of brain storming sessions among CPCB, SPCBs and MoEF&CC, the following criteria on "Range of Pollution Index" for the purpose of categorization of industrial sectors is finalized.

- Industrial Sectors having Pollution Index score of 60 and above - Red category
- Industrial Sectors having Pollution Index score of 41 to 59 - Orange category
- Industrial Sectors having Pollution Index score of 21 to 40 - Green category

Maharashtra is one of the most highly industrialized States in India. With the rise in industrial eStates in the State, areas like Mumbai, Thane, Navi-Mumbai, Kalyan, Nashik, Pune & Pimpri-Chinchwad have a large number of pollution prone industries are facing chronic industrial pollution. In order to maintain safe distance between industrial units and river to avoid discharge of effluent in to water bodies, the State has its policy which also States that no industry will be allowed to establish along a river bank. Industries are being encouraged to recycle and reuse the waste.

Maharashtra Pollution Control Board (MPCB) has divided the State Maharashtra into 12 regions viz Mumbai, Navi Mumbai, Raigad, Thane, Kalyan, Pune, Nashik, Aurangabad, Nagpur, Amravati, Kolhapur and Chandrapur. The total numbers of industries in Maharashtra are 84,075. These industries are categorized as red, green and orange and further in each it is again divided into small, large & medium based on its pollution index. The total number of red industries in Maharashtra is 18,737 orange are 24,052, green are 41,286.The total number of large scale industries are 5913, medium scale 2,514 and small scale 75,648. The flow chart of the categorization as well as size of industries within Maharashtra is given in **Table 5.25** and details of regional industry statistics is attached as **Annexure 4.**

Table 5.25 Categorization of Industries in Maharashtra

Maharashtra - 84075(Total No. of Industries)			
	Large	**Medium**	**Small**
Red	3415	723	14599
Orange	2327	1305	20420
Green	171	486	40629

To monitor compliance of Consent conditions, performance of ETP, ECS and other measures, the Board officials inspect the industries regularly. There are 713 industries identified under “17 categories of highly polluting industries” of which 93 industries are closed, 556 industries have complied with the pollution control norms and necessary action

has been initiated against 69 non-complied industries. **Table 5.26** shows region wise details of these industries.

Table 5.26 17 Categories of Highly Polluting Industries as on 31.3.2016

Sr. No	Region	No. of Units	No. of Units Closed	No. of Units Complying with Standards	No. of Units not Complying with Standards
1	Mumbai				
2	Navi - Mumbai	31	0	26	5
3	Thane	112	10	100	0
4	Raigad	52	3	49	0
5	Kalyan	55	4	49	2
6	Pune	159	6	144	9
7	Nashik	113	26	68	23
8	Nagpur	35	10	14	14
9	Amravati				
10	Aurangabad	105	32	63	9
11	Kolhapur	27	0	27	0
12	Chandrapur	24	2	16	7
	Total	**713**	**93**	**556**	**69**

The total amount of effluent generated by all the industries in Maharashtra is 37,219.59 MLD whereas the total amount of effluent that gets treated is 37,110.83MLD. Common Effluent Treatment Plants not only helps the industries in easier control of the pollution but also act as a step towards cleaner environment and service to the society at large. The concept of CETP has many advantages. Waste water from few industries often contains significant concentration of pollutants and to reduce them to the desired concentration becomes techno-economically difficult.

The region wise information regarding the number of industries under each category as well as the amount of effluent generated and amount treated, Performance of CETPs operating in some of the Regions is illustrated below.

5.3.1 Analysis of performance of CETP with Statistical details

Region-wise details of CETP performance analyzed are discussed in detail in following sections. The CPCB standards are considered for evaluation of performance i.e. 100 & 250mg/l for BOD & COD respectively.

5.3.1.1 Mumbai

Industrial Statistics in Mumbai region is represented in the **Table 5.27** & there is no CETP provided in this region currently.

Table 5.27 Categorization of Industries in Mumbai

Mumbai - 3957(Total No. of Industries)			
	Large	**Medium**	**Small**
Red	170	54	480
Orange	421	300	660
Green	0	27	1845

5.3.1.2 Navi Mumbai

MIDC industrial eStates in Navi Mumbai are TTC and Taloja and few industries scattered in Uran Taluka. Chemical, bulk drugs & intermediates, dye and dye intermediates, pharmaceutical, pesticide, Food Industries, Petrochemical, engineering goods and textile manufacturing industries, etc. are the types of industries present in these areas. 2 numbers of CETPs are provided to treat the effluent generated from these industries and total amount of effluent being treated is to the tune of 67.62 MLD. Industrial Statistics in Navi Mumbai region is demonstrated in **Table 5.28.**

Table 5.28 Categorization of Industries in Navi Mumbai

Navi Mumbai – 4157 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	168	31	1809
Orange	134	178	952
Green	6	59	1540

The average annual statistical data analyzed to understand performance of CETP for various parameters is represented in **Table 5.29.**

Table 5.29 Statistical Data Analysis for CETP Performance in Navi Mumbai Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
Taloja CETP Co Operative Society	1056	2637	483	278	686	131
Thane-Belapur Association	387	1037	176	70	230	33

It is clear from the **Table 5.29** that Thane Belapur Association performed well, where more than 82% reduction in B.O.D and 78% reduction in C.O.D. at the outlet were noticed. Also all the parameters of treated water are within the discharge standard prescribed under EPA, Schedule VI. Also it is observed that BOD & COD concentrations of treated water at Taloja MIDC do not qualify the discharge standard 100 & 250mg/l.

5.3.1.3 Raigad

Industrial Statistics in this region is demonstrated in **Table 5.30.** There are total 3 numbers of CETPs provided in this region & total amount of effluent being treated in these CETPs is 32.5MLD.

Table 5.30 Categorization of Industries in Raigad

Raigad – 1447 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	148	31	383
Orange	86	31	324
Green	0	19	425

Annual average performance of these CETPs during the year is presented in **Table 5.31.**

Table 5.31 Statistical Data Analysis for CETP Performance in Raigad Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
PRIA CETP (I) Ltd	371	971	196	238	571	52
MMA-CETP Co Operative Society Ltd	339	1056	159	75	206	76
RIA CETP Co-op. Society Ltd.	912	2105	296	220	617	84

It is clear from the **Table 5.31** above that MMA CETP performance is good, where more than 78% reduction in B.O.D and 80% reduction in C.O.D. at the outlet were noticed. Also all the parameters of treated water are within the discharge standard prescribed under EPA, Schedule VI.

5.3.1.4 Thane

Mainly engineering, fabrication, plastic and various service industries like Hotels, Service Stations, etc. are the types of industries present in this region. 1 CETP is provided to treat the effluent generated from these industries and total amount of effluent being treated is 39.24MLD.

Most of the industries located in Corporation area have been shifted to nearby industrial areas of MIDC. Industrial Statistics in Thane is demonstrated in **Table 5.32.**

Table 5.32 Categorization of Industries in Thane

Thane – 3186 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	190	33	950
Orange	251	24	451
Green	1	13	1273

The treatment capacity of CETP, Tarapur is exhausted due to excessive quantum of waste water and pollution load. Now, it has been proposed to install additional CETP of 50 MLD as expansion of existing CETP. Environment Department, Government of Maharashtra has issued Environment Clearance for the proposed expansions vide letter dtd. 24/03/2015. The work of additional CETP of 50 MLD is in progress and it will be made operational within period of 18 months.

Table 5.33 Statistical Data Analysis for CETP Performance in Thane Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
Tarapur Environment Protection Society CETP	999	2813	479	266	802	150

Table 5.33 result shows 73% reduction in B.O.D. & 71% reduction in COD. However concentration of BOD & COD parameter in treated water is not within the prescribed limit of 100 & 250mg/lit respectively.

5.3.1.5 Kalyan

Industrial Statistics in Kalyan region are demonstrated in **Table 5.34.** 6 CETPs are provided to treat the effluent generated from these industries and total amount of effluent being treated is around 32.5MLD.

Table 5.34 Categorization of Industries in Kalyan

Kalyan – 4570 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	135	107	1769
Orange	79	57	929
Green	0	22	1472

The treated effluent is finally discharged into the Diva creek. The Addl. Ambernath CETP was in operation since June-2012. The capacity of CETP in Addl. Ambernath MIDC is about 7.5 MLD. Performance of these CETPs during the year is presented in **Table 5.35**.

Table 5.35 Statistical Data Analysis for CETP Performance in Kalyan Region

Parameters in mg/l	Inlet			Outlet		
	BOD(Avg)	COD(Avg)	S.S(Avg)	BOD(Avg)	COD(Avg)	S.S(Avg)
ACMA - CETP-Co-operative Society Ltd	288	763	218	39	144	27
Chikhloli-Morivali Effluent Treatment	619	1701	252	44	150	27
Badlapur CETP Association	526	1394	222	92	251	80
Dombivli Better Environment System Association	685	1661	362	155	425	89
Dombivli CETP (Chemical) (Phase-II)	868	2226	300	262	737	150
Additional Ambernath CETP	1745	6406	179	380	949	138

As per **Table 5.35**, it is found that all CETPs except Dombivli Better Environment System Association, Dombivli CETP (Chemical) (Phase-II) and Additional Ambernath CETP, the BOD is within the prescribed limit of 100 & 250mg/lit respectively. The efficiency of BOD and Cod removal is more than 80% in ACMA - CETP-Co-operative Society Ltd, Chikhloli-Morivali Effluent Treatment and Badlapur CETP Association.

5.3.1.6 Pune

This region mostly harbors multi facet forms of industries ranging from IT & Biotech parks to complicated process & manufacturing industries. Total numbers of CETPs provided in this region are 5 & total amount of effluent treated in these CETPs is 361.2 MLD. Industrial Statistics in Pune region is demonstrated in **Table 5.36.**

Table 5.36 Categorization of Industries in Pune

Pune – 18598 (Total No. of Industries)			
	Large	Medium	Small
Red	1168	235	3558
Orange	1098	511	4587
Green	105	266	7070

CETPs performance at all these locations have been regularly monitored by comparing the inlet and outlet parameters as presented in **Table 5.37.** As per the observation it is clear that

CETP located at Kurkumbh MIDC is performing very well with almost 96% efficiency however the COD in not within the prescribed limit. The BOD and COD values of the rest i.e Kurkumbh Environment Protection Co-opp. Society, Ranjangaon CETP, Hydro Air Tectonics (PCD) and Greenfield CET Plant Pvt. Ltd are within the prescribed limits of 100mg/l and 250mg/l respectively.

Table 5.37 Statistical Data Analysis for CETP Performance in Pune Region

Parameters in mg/l	Inlet			Outlet		
	BOD(Avg)	COD(Avg)	S.S(Avg)	BOD(Avg)	COD(Avg)	S.S(Avg)
Kurkumbh Environment Protection Co-op Society	2225	6538	187	97	290	40
Ranjangaon CETP	210	638	274	60	183	68
Hydro Air Tectonics (PCD)	68	187	60	33	97	21
Greenfield CET Plant P. Ltd	164	491	109	46	130	28

5.3.1.7 Nashik

There are no CETP presently in this region however it is proposed CETP for MIDC Ahmedabad & MIDC Satpur, Nashik. Industrial Statistics in Nashik region is demonstrated in **Table 5.38.**

Table 5.38 Categorization of Industries in Nashik

Nashik – 11165 (Total No. of Industries)			
	Large	Medium	Small
Red	399	58	2036
Orange	109	55	2312
Green	44	35	6117

5.3.1.8 Aurangabad

There is only 1 CETP provided of 10MLD capacity Viz. M/s. Waluj CETP Pvt. Ltd. located at MIDC Area, Waluj. The said CETP is in operation. Earlier, CETP was receiving very less effluent i.e. 1MLD from industries, however, due to continuous follow-up by the Board Officers, now the CETP is receiving effluent to the tune of about 4.5MLD. M/s. Waluj CETP Pvt. Ltd., Aurangabad has received Vasundhara Award during this year based on its performance.

Industrial Statistics in Aurangabad region is presented in **Table 5.39** and performance of CETP is presented in **Table 5.40.**

Table 5.39 Categorization of Industries in Aurangabad

Pune – 8633 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	202	71	851
Orange	34	70	2004
Green	11	14	5376

Table 5.40 Statistical Data Analysis for CETP Performance in Aurangabad Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
SMS Waluj CETP Pvt Ltd	212	865	168	28	169	41

As per **Table 5.40**, it is observed that the CETP is performing at its maximum efficiency and obtaining desired results as well. The efficiency of this CETP for removal is almost 87% for BOD and 81% for COD.

5.3.1.9 Nagpur

Industrial Statistics in Nagpur region is presented in **Table 5.41**. 1 CETP is provided in this region to treat the effluent generated from industries & average annual performance of CETP is presented in **Table 5.42.**

Table 5.41 Categorization of industries in Nagpur

Nagpur-5632 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	395	15	1253
Orange	62	21	2215
Green	3	3	1665

Table 5.42 Statistical Data Analysis for CETP Performance in Nagpur Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
Butibori CETP Pvt. Ltd.	264	742	142	33	99	51

It is observed from **Table 5.42** that the CETP is performing at almost 87% efficiency and achieving the desired disposal standard of 100mg/l and 250mg/l for BOD and COD respectively.

5.3.1.10 Amravati

Total amount of effluent generated in this region is 20.12MLD & there is no CETP provided by the municipal corporation in this region. However, all the effluent generated from

industries is getting treated as industries have provided their own ETP units. Industrial Statistics in Amravati region is demonstrated in **Table 5.43.**

Table 5.43 Categorization of Industries in Amaravati

Amravati – 6641 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	51	13	320
Orange	8	10	1920
Green	0	4	4315

5.3.1.11 Kolhapur

In this region Sugar, Distillery, Agro base industry, Foundries & Engineering types of industries are situated. MIDC Shiroli, MIDC Gokulshirgaon, Five Star MIDC Kagal-Hatkanangale, MIDC Shinoli, MIDC Ajara and MIDC Gadhinglaj are the major industrial areas and total amount of effluent generated is 232.49 MLD.

In the jurisdiction of Sub Region Kolhapur there are 4 Common Effluent Treatment Facility of 31.5MLD. The CETP in Miraj region is not in operation. The non-CETP individual industries have also provided ETP and made arrangements for its disposal on their own land for gardening/irrigation. Industries located at Gane Khadpoli & Kherdi are having Primary & Secondary Treatment. Treated effluent is reused in the process & remaining is discharged on land for gardening/ irrigation purpose. Industries situated at MIDC Lote are having Primary & Secondary Treatment & some of them are having tertiary treatment. Also some industries have achieved zero discharge. The treated effluent is disposed to CETP for further treatment & disposal which is further disposed in to Karambavne Creek which is notified by NIO.

Industrial Statistics in Kolhapur region is demonstrated in **Table 5.44** and performance of CETP is presented in **Table 5.45.**

Table 5.44 Categorization of Industries in Kolhapur

Kolhapur – 14836 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	240	75	1663
Orange	30	48	3656
Green	1	22	1901

Table 5.45 Statistical Data Analysis for CETP Performance in Kolhapur Region

Parameters in mg/l	**Inlet**			**Outlet**		
	BOD(Avg)	**COD(Avg)**	**S.S(Avg)**	**BOD(Avg)**	**COD(Avg)**	**S.S(Avg)**
L.K. Akiwate Ind. Co Op, EState Ltd	676	2060	191	73	201	45
Lote Parshuram	898	2939	208	151	397	117

Env. Co-op Societ						
ITDCL (1 MLD)	407	1389	193	35	144	36
ITDCL (12 MLD)	545	1783	192	33	129	51
Kagal-C.E.T.P.	248	753	157	56	197	59

It is observed from the **Table 5.45** all CETPS except Lote Parshuram, treated water quality meets the desired discharge standards.

5.3.1.12 Chandrapur

Total amount of effluent generated from industries in this region is 254.24MLD and there is no CETP provided in this region. However industries are treating their effluent individually within the premises thereby all the effluent generated is being treated. Many of the industries are not located on the banks of the river except M/s. Bilt Graphic Paper Products Limited that is located near Wardha River, Super Thermal Power Station which is located near Erai River and WCL mines located near Wardha & Erai Rivers. Industrial Statistics in Chandrapur region is demonstrated in **Table 5.46**.

Table 5.46 Categorization of Industries in Chandrapur

Chandrapur-1253 (Total No. of Industries)			
	Large	**Medium**	**Small**
Red	149	0	247
Orange	15	0	410
Green	0	2	430

5.4 Domestic Waste Water Treatment

Sewage is water-carried waste, in either solution or suspension that is intended to flow away from a community. Domestic wastewater contains both solid and dissolved pollutants including fecal matter, paper, urine, sanitary items, food residues and a variety of other contaminants. This wastewater may carry pathogenic organism that can transmit disease to humans and other animals, contain organic matter that can cause odor and nuisance problems of receiving water bodies and can lead to eco toxicity. Excessive deposition of chemical nutrients in water bodies is called eutrophication. It is one of the numerous problems created by sewage water pollution. Degradation of the quality of water, reduction in the number of fish and increase in BOD, are the effects of eutrophication. The toxics released into the rivers through sewage water are consumed by fishes and other organisms, thus increasing the possibility of these toxics entering the food chain. Collecting and treating wastewater has been even more beneficial to human health than the health service because

it will stop water-borne diseases such as cholera and typhoid. Proper collection and safe, nuisance-free disposal of the liquid wastes of a community are legally recognized as a necessity and it is important for a safe and clean environment.

Discharge of untreated sewage into the water bodies is single most important cause for pollution of surface and ground water because there is a remarkable gap between generation and treatment of domestic wastewater. Domestic sewage is responsible for about 80% of water pollution. Following are certain causes for improper handling of STP operation;

- In STPs operation Sludge removal & its treatment is generally neglected
- Irregular power supply and non-availability of alternate facility in most of the local bodies
- Fund shortage is an important factor in poor operation and maintenance of STPs
- Deputation of unqualified or less qualified staff at site lead to poor operation of STPs

Maharashtra Pollution Control Board (MPCB) has divided the State of Maharashtra into 12 regions viz Mumbai, Navi Mumbai, Raigad, Thane, Kalyan, Pune, Nashik, Aurangabad, Nagpur, Amravati, Kolhapur and Chandrapur. Details related to domestic waste water treatment for each these regions is discussed in following section of the report.

5.4.1 Analysis of performance of STP with Statistical details

Region wise details of STPs are presented in following section & STP performance is analyzed based on MoEF&CC standards of 30mg/l & 30mg/l for Biological Oxygen Demand & Suspended Solids respectively.

5.4.1.1 Mumbai

Mumbai region has provided total 8 Nos. of STPs and total sewage getting treated in these STP is 2118MLD. The annual average performance analysis of all STPs provided in Mumbai region is represented in **Table 5.47**

Table 5.47 Average Annual Performances of STPs in Mumbai Region

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G(Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Worli STP	114	87	276	225	2	5	144	136
Colaba STP	42	59	182	161	1	5	46	38
Versova	52	36	122	76	BDL	BDL	53	26
Bandra	--	35	--	73	BDL	BDL	--	24
MCGM's STP, Ghatkopar I	--	50	--	115	--	BDL	--	45
MCGM's STP, Ghatkopar II	--	36	--	83	--	BDL	--	30
Malad STP	88	73	184	132	4.9	2	120	75
Charkop STP	135	85	225	185	4	3	135	78

From **Table 5.47** it is observed that all STPs are functioning at more than 50% efficiency. However, it is observed that no STP is achieving BOD standards i.e. 30mg/l. It should be noted that only Three STPs namely Versova, Bandra & Ghatkopar are achieving TSS standards of 30mg/l. Other parameters i.e. COD & O&G are being achieved by all STPs.

5.4.1.2 Navi Mumbai

This jurisdiction is having only one Municipal Corporation (Navi Mumbai Municipal Corporation) and one Municipal council (Uran Municipal Council). Details of sewage generation and its disposal of each local body is presented in following section;

a) Navi Mumbai Municipal Corporation

Navi Mumbai Municipal Corporation has provided 8 numbers of Sewage Treatment Plants out of which total capacity of 443MLD is being operated by NMMC and remaining 1 STP of 30MLD is being operated by CIDCO. All STPs are constructed based on Cyclic Activated Sludge process (C-Technology). STP of NMMC at Sector -2 Nerul consists of treatment in Aerated Lagoons

b) Uran Municipal Council

No treatment facility is provided by the local body and thereby untreated sewage is being discharged into creek through nallah. The proposal of underground drainage system & STP is under consideration of Maharashtra Jeevan Pradhikaran.

Performance of all 8 STPs of Navi Mumbai Municipal Corporation is presented in **Table 5.48.**

Table 5.48 Average Annual Performance of STP of Navi Mumbai Municipal Corporation

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G(Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
STP- Sector 12, CBD	…..	8	…..	26	…..	BDL	…..	10
STP- Sector 50, Nerul	…..	14	…..	42	…..	BDL	…..	11
STP- Sector 2, Nerul	The effluent is diverted to STP at Sec-50, Nerul							
STP- Sector 18, Vashi	…..	10	…..	23	…..	7.1	…..	11
STP- Sec. 20 Sanpada	…..	19	…..	38	…..	BDL	…..	11
STP KoperKhairane	…..	7	…..	21	…..	BDL	…..	10
STP Airoli	…..	11	…..	43	…..	BDL	…..	13
STP Ghansoli	…..	15	…..	41	…..	BDL	…..	11

**Note: (…..)- sample was not collected; and same applies for all the tables*

From above **Table 5.48** it is observed that average concentration of all parameters is well within the prescribed discharge standards laid down by MoEF&CC. O&G concentration in treated water from all STPs is Below Detection Limit.

5.4.1.3 Thane

There are total 6 Urban Local Bodies in the Jurisdiction of Thane Region, details of sewage generation and its disposal of each local body is presented in following section;

a) Thane Municipal Corporation

Total 3 numbers of STPs are provided by Thane Municipal Corporation. TMC has proposed to install 4 new STP's with total capacity of 100.49MLD at Kharegaon (46.76MLD), Kolshet (23.06MLD), Lodha (22.22MLD) and Vitava (8.45MLD).

b) Mira Bhayander Municipal Corporation

The Mira Bhayander Municipal Corporation has provided STP at 12 locations with total capacity of 117MLD but at present only 5 number of STPs are in operations i.e. 13MLD STP at Shanti Park,11MLD at Shanti Nagar, 17MLD at Kankia, 2MLD at Jessal Park, 1.5MLD at Shrusti Complex. 48.5MLD of domestic Sewage is being discharged in the Creek without any treatment.

Overall Sewage generation from all local bodies under the jurisdiction of Thane Municipal Corporation is 548MLD [TMC - 350 + MBMC - 93 + VVCMC - 105] and out of which only 296.5MLDis being treated in 9 operational STPs having 296.5MLD capacity whereas 251.5MLD is being directly discharge in to the Creek without any treatment. Performance of all STPs of Thane Municipal Corporation is presented in **Table 5.49**

Table 5.49 Average Annual Performance of STP of Thane Municipal Corporation

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G(Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Thane Municipal Corporation,	…..	13	…..	37	…..	BDL	…..	20
STP at Shrushti Complex	…..	122	…..	290	…..	1	…..	78

As per **Table 5.49**, it is observed that Thane Municipal Corporation is performing well & achieving all desired treated water quality standards as per discharge standard. However STP provided at Shrushti complex; BOD & SS concentration is found to be exceeded in treated water quality and crossing the prescribed standard of 30mg/lit.

5.4.1.4 Kalyan

Domestic sewage is generating by local body namely Kalyan-Dombivali Municipal Corporation, Grampanchyat at & industries in this jurisdiction. Details of sewage generation and its disposal of each Municipal Corporation and Council are given in following section;

a) Kalyan & Dombivali Municipal Corporation

KDMC has provided 6 no. of Sewage Treatment Plants and construction of one STP is in process. Capacity of existing STPs are 203MLD and located at different locations namely 40MLD at Barawe, 40MLD at Aadharwadi, 40MLD at Chinchpada, 40MLD at Barave, 2MLD at Titwala (E), 1MLD at Titwala (W) &40MLD at Motagaon. KDMC has also installed 6 New STPs.

b) Ulhasnagar Municipal Corporation

The U.M.C. has provided STP of capacity 28MLD, but due to heavy flood condition in July 2005 the STP is hampered and since then it is not in operation. Due to non-compliances of consent conditions, MPCB has issued Conditional Directions to UMC. There is existing STP of capacity 28MLD and has proposed to install additional STP of additional 135MLD.

c) Ambernath Municipal Councils

AMC has provided STP of 28MLD and is in operation

d) Bhiwandi Nizampur City Municipal Corporation

BNCMC has provided 2 STPs of total capacities 30MLD with individually capacity of 13MLD & 17MLD. Recently BNCMC has undertaken construction of proposed additional STPs of capacity 99MLD at 4 places in BNCMC area i.e. 29MLD at Idgah, 30MLD at Bakara Bazaar, 9MLD at Temghar and 31MLD at Stepping Garden.

e) Kalyan Municipal Corporation

Overall 311MLD of wastewater is being treated in 6 operational STPs having 311MLD capacity. Performance of all STPs of Kalyan Municipal Corporation is presented in **Table 5.50.**

Table 5.50 Average Annual Performance of STP of Kalyan Municipal Corporation

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G(Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Adharwadi STP	…..	16	…..	50	BDL	BDL	…..	130
Barve STP	30	12	90	50	BDL	BDL	30	13
Ulhasnagar Municipal Corp	…..	17	…..	51	…..	BDL	…..	10
Ambernath Municipal Corp	…..	20	…..	56	…..	BDL	…..	18
Badlapur Municipal Corp	STP installed							
Bhiwandi Nizampur City Municipal Corporation,	…..	98	…..	284	…..	BDL	…..	343

It is observed from **Table 5.35,** that Barve STP is performing at almost 50% efficiency and achieving the desired treated water quality standard. However, Adharwadi & Bhiwandi -

Nizampur STP is crossing the TSS limit i.e. 30mg/l. Bhiwandi STP is performing well but not meeting the BOD standard of 30mg/l.

5.4.1.5 Pune

- Sewage generation from all local areas-1,281.8MLD
- Pune Municipal Corporation alone generates 744MLD sewage, out of which 567MLD is treated at present with the help of 10 numbers of STP's provided at different locations
- The Pimpri-Chinchwad Municipal Corporation (PCMC) has provided 13 STPs at various locations
- The treated and untreated wastewater is disposed off into the river

To improve the river water quality, local bodies from Pune region have been given directives time to time to Pune Municipal Corporation and Pimpri Chinchwad Municipal Corporation for treatment of total sewage generated. PMC proposes to install 9 no. of STPs of Capacities 364MLD & PCMC proposes to install 90MLD of capacity. Solapur Municipal Corporation is in process of installation of 3 STPs of collective capacity of 102MLD. Performance status of all STPs of Pune Region is presented in **Table 5.51.**

Table 5.51 Average Annual Performance of STP of Pune Regional Office

Location & Parameters in mg/l	BOD (Avg.)	COD (Avg.)	O & G (Avg.)	S. S. (Avg.)
	Outlet	Outlet	Outlet	Outlet
PMC STP at Bopodi	15	41	BDL	13
PMC STP at Tanajiwadi	13	37	BDL	12
PMC STP at New Naidu	11	32	BDL	7
PMC STP at old Naidu	21	56	0.1	17
PMC STP at Mundhwa	11	29	BDL	10
PMC STP at Bhiroba	17	47	BDL	22
PMC STP at Vittalwadi	13	35	BDL	12
PMC STP at Erandwana	12	34	BDL	9
PMC STP at Baner	13	35	BDL	9
PMC Kharadi STP	12	34	BDL	10
Aquatech Solution Pvt. Ltd. CSTP, MIDC Hinjewadi,	24	67	0	32
Kirkee Cantonment Board (8 MLD)	7	20	BDL	8
Kirkee Cantonment Board (1.2 MLD)	182	632	4.6	171
Lonawala Municipal Council, Lonavala	8	32	BDL	8
Shirur Municipal Council, Shirur	12	…..	…..	6
Sangavigaon	50	…..	Nil	54
Kasarwadi Phase-I	Not in Operation			
Kasarwadi Phase-II	12	35	Nil	19.33

Kasarwadi Phase-III	15	42	Nil	16
Chinchwad Phase-I	11	30	Nil	20
Chinchwad Phase-II	14	35	Nil	21
Chikali Phase-I	19	53	Nil	26
Chikali Phase-II	9	30	Nil	19
Pimple Nilakh	15	44	Nil	33
Akurdi	13	34	Nil	16
Ravet	12	36	Nil	8
STP No.1(City Survey no.257/1) Mahabaleshwar,	16	…..	BDL	6
STP No.2- Survey No.626, Mahabaleshwar,	19	…..	BDL	8
STP No.1- Siddharthnagar, Panchgani,	11	…..	1	51
STP No.2- at Shivajinagar, Panchgani,	9	…..	1	19
Baradabari, Near Oxidation Pond, Karad	13	…..	BDL	9
Solapur Municipal Corporation, Solapur	STP is not in operation			
Pandharpur Municipal Council, Pandharpur	90	275	BDL	21

In this region, Municipal Corporations have provided many STPs to treat the generated sewage. In comparison, it can be observed that all the STPs are performing well and achieving desired treated water quality standards in terms of parameter concentration. However 3 STPs are not giving the desired efficiency viz. Kirkee Cantonment Board, Sangavi Gaon & Pandharpur Municipal Council, it is observed that BOD concentration is slightly exceeding the prescribed limit of 30mg/lit. Also SS concentration in treated water is exceeding the limit of 30mg/lit.

5.4.1.6 Nashik

Nashik Municipal Corporation has provided 270.5MLD capacity of STP to treat the sewage generation from the city & 142MLD STP is proposed. Annual average performance status of STPs of Nashik region is presented in **Table 5.52**

Table 5.52 Average Annual Performance of STP of Nashik Regional Office

Name of the STP	BOD (Avg.)		COD (Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Shirdi, Nagar Panchyat	110	5	200	36	78	10

It is observed from the **Table 5.52** that provided STP is performing at almost 90-95% efficiency and achieving the desired treated water quality standards.

5.4.1.7 Aurangabad

The main source of domestic pollution is generation of sewage effluent from house hold activities. In this region, there are 57 Local Bodies including Municipal Corporation, B and C Class Municipal Councils and one Cantonment Board. The major local bodies are C class

Municipal Councils. Only Aurangabad Municipal Corporation and Nanded Waghala City Municipal Corporation has provided STP whereas other Municipal Corporations have not provided any treatment facilities

a) Aurangabad Municipal Corporation

Aurangabad Municipal Corporation has installed two STPs, one at CIDCO having capacity of 6.5MLD, which is in operation and another is at Dr. Salim Ali Lake, having 5MLD capacity which is also in operation. Aurangabad Municipal Corporation has proposed 4 STPs of total capacity 216MLD under UIDSSMT, 161MLD STP at Nakshatrawadi, 10MLD at Banewadi, 35MLD at Zalta and 10MLD at Padegaon. Further, the MIDC Aurangabad has also proposed to provide 4MLD capacity of STP at MIDC Waluj Area.

b) Nanded Waghala Municipal Corporation

NWMC has provided STP at Village Bondar for the capacity of 87MLD under NRAP program and one STP of 30MLD at Elichpur under JNNURM Program. Both STPs has commissioned and are in operation. However present sewage load received at Bondar STP is about 33.75MLD & at Elichpur STP is about 4MLD.Treated sewage from Elichpur STP is given to the farmers for agriculture use whereas NWMC has proposed to supply Bondar STP treated sewage to the Parli Power Station. The NWMC has also started the construction work of 15MLD STP at Sangvi under JNNURM Program.

c) Latur Municipal Corporation

Latur Municipal Corporation has undertaken the construction work of drainage system. The MPCB is perusing this matter through letters to the Corporation authorities to provide STP for treatment of domestic effluent.

Presently untreated domestic effluent from all the Municipal Councils in Marathwada region as well as Nagar Panchayat in Nanded district is being discharged into local nallas. Average annual performance of STPs analyzed under Aurangabad Regional Office is presented in **Table 5.53.**

Table 5.53 Average Annual Performance of STP of Aurangabad Regional Office

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G (Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Nanded Waghala City Mun. Corp. STP (87 MLD)	12	57	40	144	BDL	BDL	38	63
Nanded Waghala City Mun. Corp. Bondar STP (30 MLD)	62	73	180	161	BDL	BDL	63	72
CIDCO STP Aurangabad	…..	95	…..	280	…..	7.2	…..	86
STP at Saleem Ali Sarovar, HUDCO, Aurangabad	…..	16	…..	62	…..	BDL	…..	34

It is observed from **Table 5.53** that the only STP provided at Saleem Ali Sarovar, HUDCO is performing well and achieving the desired standards of treated water for all parameters except TSS standard of 30mg/l while the other 3 STPs are meeting the standards of COD & O&G but not achieving desired standard of BOD [30mg/l] and TSS [30mg/l].

5.4.1.8 Nagpur

In Nagpur Region, there is one Municipal Corporation i.e. Nagpur Municipal Corporation [NMC] and 22 numbers of Municipal Councils. Nagpur Municipal Corporation has provided 2 STP; both are located at Bhandewadi, 100MLD STP based on aerobic process and another STP of 130MLD. In addition to these 4 numbers of sewage treatment plants of 5MLD capacity are also proposed at different locations of which work of 2 sewage treatment plant are in progress Average annual performance of STPs analyzed under Nagpur region is presented in **Table 5.54.**

Table 5.54 Average Annual Performance of STP of Nagpur Region

Location & Parameters in mg/l	BOD (Avg.)		COD(Avg.)		O & G (Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Bhandewadi STP, NMC Nagpur	78	21	80	65	6.7	1.8	95	15

It is depicted from **Table 5.54** that STP provided in this region is performing at almost 90% efficiency and concentration of BOD & SS in outlet is within the prescribed limit.

5.4.1.9 Kolhapur

There are 2 Municipal Corporation namely Kolhapur Municipal Corporation and Sangli-Miraj-Kupwad Municipal Corporation and 24 Municipal Council under Kolhapur region. Only 2 STPS have been provided in this region. Details of sewage generation and its disposal from each municipal corporations and local bodies are presented in following section;

a) Kolhapur Municipal Corporation

There is 1 Municipal Corporation and 09 Municipal Councils in this region. Out of which Kolhapur Municipal Corporation [KMC] & Ichalkaranji Municipal Council [IMC] is located on the banks of Panchganga River. Total sewage of 55MLD is being treated in new 76MLD STP and remaining sewage is directly mixed into the Panchganga River through various Nallas. From IMC, total sewage generated is about 38MLD for which IMC has provided 20MLD STP but only 14MLD is being treated & remaining is discharged directly into Panchganga River through various Odhas/Nallas.

b) Sangli-Miraj-Kupwad Municipal Corporation

There is one Municipal Corporation and 5 Municipal Councils in this region. The Corporation has provided 10 numbers of oxidation ponds which are out of order presently. Corporation has started work of 23.5MLD STP on this land based on SBR technology. Commissioning of another 27MLD STP is in process which is based on Oxidation Pond located at Dhulgaon. Other than above mentioned STPs, no sewage treatment plant is provided by other Municipal Councils and generated sewage is directly being discharged in to the water bodies. Average annual performance details of Sewage Treatment Plant of Kolhapur region is presented in **Table 5.55.**

Table 5.55 Average Annual Performance of STP of Kolhapur Region

Location & Parameters in mg/l	BOD (Avg.)		COD (Avg.)		O & G (Avg.)		S. S. (Avg.)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Kolhapur Municipal Corporation	46	28	94	81	BDL	BDL	171	23
Ichalkaranji Municipal Council	95	28	232	78	BDL	BDL	24	30
SMK Corporation Oxidation Pond At Bedag Road	Not in operation							
SRO Ratnagiri	There is no any STP provided by the Municipal Council							
SRO Chiplun	There is no STP provided by any Municipal Council/Nagar Panchyat in the jurisdiction of this office							

It is depicted that both the STPs are performing at almost 50-60% efficiency and achieving the desired treated water quality standards for all the parameters. O&G concentration in treated water is also observed to be Below Detection Limit [BDL] in all STPs.

5.4.1.10 Chandrapur

At present, there is no STP provided by Chandrapur Municipal Corporation. However, 2 numbers of STP having capacity 45MLD & 25MLD under UIDSSMT scheme are in under construction phase and shall be commissioned soon.

5.5 Solid Waste Management in Maharashtra

Solid Waste is classified into four different types depending on their source. First category of solid waste is Municipal Solid Waste (MSW). It consists of household waste, construction and demolition debris (C&D), Sanitation residue, and waste from streets, generated mainly from residential and commercial complexes. As per the MoEF&CC it includes commercial and residential waste generated in municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes. Second category of solid waste is Hazardous Solid Waste (HSW) which is also termed as industrial waste. They may contain toxic substances, corrosive, highly inflammable, or react when exposed to certain things such as gases. Third category of solid waste is biomedical

waste or hospital waste. It is usually infectious waste that may include waste like sharps, soiled waste, disposables, anatomical waste, cultures, discarded medicines, chemical wastes, etc., usually in the form of disposable syringes, swabs, bandages, body fluids, human excreta, etc. These can be a serious threat to human health if not managed in a scientific and discriminate manner. Fourth category of waste is electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling or disposal are also considered e-waste.

Following are major waste treatment and disposal methods for MSW

a) Thermal Treatment-Thermal waste treatment refers to the processes that use heat to treat waste materials. Following are some of the most commonly used thermal waste treatment techniques:
   - Incineration - This approach involves the combustion of waste material in the presence of oxygen. The combustion process converts wastes into ash, flue, gas, water vapor, and carbon dioxide.
   - Gasification and Pyrolysis are two similar methods, both of which decompose organic waste materials by exposing waste to low amounts of oxygen and very high temperature.
   - Open Burning is a legacy of thermal waste treatment that is environmentally harmful.

b) Dumps and Landfills
   - Sanitary landfills provide the most commonly used waste disposal solution.
   - Controlled dumps are more or less the same as sanitary landfills.
   - Bioreactor landfills are the result of recent technological research. These landfills use superior microbiological processes to speed up waste decomposition.

c) Biological Waste Treatment
   - Composting is another most frequently used waste disposal or treatment method which is the controlled aerobic decomposition of organic waste materials by the action of small invertebrates and microorganisms.
   - Anaerobic Digestion also uses biological processes to decompose organic materials.

There are various processes used to treat BMW viz. Chemical processes, Thermal processes, Mechanical processes, Irradiation processes and Biological processes etc. Chemical processes use chemicals that act as disinfectants whereas thermal processes utilize heat to disinfect. This includes autoclaving and microwaving. Mechanical processes are used to change the physical form or characteristics of the waste either to facilitate waste handling or to process the waste in conjunction with other treatment steps. The two primary mechanical processes are shredding and compaction. In irradiation processes, wastes are

exposed to ultraviolet or ionizing radiation in an enclosed chamber. These systems require post shredding to render the waste unrecognizable. Biological processes use biological enzymes for treating medical waste.

The treatment technologies for HSW have been categorized as physical, chemical, biological, thermal, or stabilization/fixation.

- Physical treatment processes include gravity separation, phase change systems, such as air and steam stripping of volatiles from liquid wastes, and various filtering operations, including carbon adsorption.
- Chemical treatment transforms waste into less hazardous substances using such techniques as pH neutralization, oxidation or reduction, and precipitation. Biological treatment uses microorganisms to degrade organic compounds in the waste stream.
- Thermal destruction processes include incineration, which is increasingly becoming a preferred option for the treatment of hazardous wastes and pyrolysis, which is the chemical decomposition of waste, is brought about by heating the material in the absence of oxygen.

The two methods for proper treatment of e-waste are recycling and refurbishing. For recycling, there may be products that cannot be recycled completely. PVC layers, for example, stay as such for ages and cannot be recycled. If electronics are refurbished, they can be sold again at a lower price. Thus, both the society and environment will benefit. Instead of simply dumping your old TV into the garbage bin, you might want to think about calling the vendor and ask him where to present the item for refurbishing

Municipal Solid Waste generated in Maharashtra State is being treated in 56 Common Facilities provided by either Corporation or Municipal Councils. 4 Common Hazardous Waste Treatment Facilities are provided to treat the hazardous waste generated in State. 3 Common Waste Treatment Facilities are provided to treat the biomedical waste generated. Details of waste generation, facilities & treatment provided are elaborated in following section of the report.

5.5.1 Analysis of Waste Management with Statistical details

The detailed report about the quantity of different categories of solid waste generated and treated in all the regions of the Maharashtra is given below.

5.5.1.1 Mumbai

- Quantity of Municipal Solid Waste generated – 8,600MT/Month

- Quantity of Hazardous Solid Waste generated- 190MT/Month of which 180MT/Month is treated
- Biomedical Solid Waste generated -1,5947kg/D & all is getting treated in the facilities provided
- Almost 100% waste treatment is carried out for Municipal, Hazardous and Biomedical Waste

5.5.1.2 Navi Mumbai

- Quantity of Municipal Solid Waste generated-15,011MT/Month of which 15,005MT/Month is being treated
- Quantity of Hazardous Solid Waste generated- is 5,813.64MT/Month of which 5,813.64MT/Month is being treated
- Biomedical Solid Waste generated -1,239.38kg/D of which 1,239.38kg/D is getting treated
- The whole quantity of Municipal, Hazardous and Biomedical Solid Waste generated is getting treated

5.5.1.3 Raigad

- Quantity of Municipal Solid Waste generated - 375MT/Month of which 375MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated- 2,217MT/Month of which 2,217MT/Month is treated
- Biomedical Solid Waste generated -105kg/D of which 105kg/D is getting treated
- 100% waste treatment is carried out for Municipal, Hazardous and Biomedical Waste

5.5.1.4 Thane

- Quantity of Municipal Solid Waste generated – 52,833.45MT/Month
- Quantity of Hazardous Solid Waste generated- 1,003.59MT/Month of which 1,003.59MT/Month is getting treated
- Biomedical Solid Waste generated -3,511.16kg/D of which 3,511.16kg/D is getting treated
- 100% treatment carried out for Hazardous and Biomedical waste

5.5.1.5 Kalyan

- Quantity of Municipal Solid Waste generated – 23,780MT/Month of which 10,800MT/Month is being treated

- Quantity of Hazardous Solid Waste generated- 15,231.5MT/Month and15,231.5MT MT/Month is getting treated
- Biomedical Solid Waste generated -213.59kg/D of which 77.09kg/D is getting treated
- Only 46% of Municipal Waste and 62.9% of Biomedical Waste is getting treated

5.5.1.6 Pune

- Quantity of Municipal Solid Waste generated – 13,211MT/Month of which 13,211MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated- 350MT/Month of which 350MT/Month is getting treated
- Biomedical Solid Waste generated -1,450kg/D of which 1,450kg/D is getting treated
- 100% waste treatment is carried out for Municipal, Hazardous and Biomedical Waste

5.5.1.7 Nashik

- Quantity of Municipal Solid Waste generated – 23,776.24MT/Month of which 18,722MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated- 672MT/Month of which 672MT/Month is getting treated
- Biomedical Solid Waste generated -3,253.3kg/D of which 2,656kg/D is getting treated
- 78.7% of municipal waste and 81.6% of biomedical waste generated is being treated.

5.5.1.8 Aurangabad

- Quantity of Municipal Solid Waste generated – 39,740MT/Month of which 26,285MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated- 1,423.88MT/Month of which 1,423.88MT/Month is getting treated
- Biomedical Solid Waste generated -6,786.04kg/D of which 6,786.04kg/D is getting treated
- 66% of municipal waste, 100% of hazardous waste and biomedical waste is getting treated

5.5.1.9 Nagpur

- Quantity of Municipal Solid Waste generated – 31,485MT/Month of which 6,485MT/Month is getting treated

- Quantity of Hazardous Solid Waste generated-2,861.655MT/Month of which 2,861.655MT/Month is getting treated
- Biomedical Solid Waste generated -1,851.535kg/D of which 1,851.535kg/D is getting treated
- Only 20.1% of municipal waste, 100% of Hazardous waste and Biomedical waste is getting treated

5.5.1.10 Amravati

- Quantity of Municipal Solid Waste generated – 10,433.05MT/Month of which 8,878MT/Month is being treated
- Quantity of Hazardous Solid Waste generated- 720.13MT/Month and 664.8 MT/Month is getting treated
- Biomedical Solid Waste generated -2,679.9kg/D and all the waste is getting treated
- 85.1% of Municipal Waste and 92.22% of hazardous Waste is getting treated whereas 100% treatment is provided for biomedical waste

5.5.1.11 Kolhapur

- Quantity of Municipal Solid Waste generated – 16,388.5MT/Month of which 1,231MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated-1,737.503MT/Month of which 1,492.11MT/Month is getting treated
- Biomedical Solid Waste generated 427.757kg/D of which 427.757kg/D is getting treated
- Only 7.5% of Municipal waste, 86% of Hazardous Waste and 100% of Biomedical Waste is getting treated

5.5.1.12 Chandrapur

- Quantity of Municipal Solid Waste generated - 9,306MT/Month of which 840MT/Month is getting treated
- Quantity of Hazardous Solid Waste generated - 2,132.47MT/Month of which 2,132.47MT/Month is getting treated
- Only 9% of Municipal Waste and 100% of Hazardous Waste is getting treated

5.5.2 Status of Common Hazardous Waste Treatment, Storage & Disposal Facility

There are total 4 number of Common Hazardous Waste Treatment, Storage & Disposal Facilities installed and operating successfully in the State of Maharashtra, 2 facilities namely

Mumbai Waste Management [MWM], Taloja, Trans Thane Waste Management Association [TTCWMA], Mahape, are located under Navi Mumbai Region, 1 facility namely Maharashtra Enviro Power Ltd [MEPL], Ranjangaon is located under Pune region & Vidharbha Enviro Protection Ltd. [VEPL], Buttibori Industrial Area is located under Nagpur region. Presently 6128 industries are member of these 4 facilities and disposing their Hazardous Waste. HW generation of the State is presented in **Figure 5.32** & details of individual capacity of CHWTSDF are presented in **Table 5.56.**

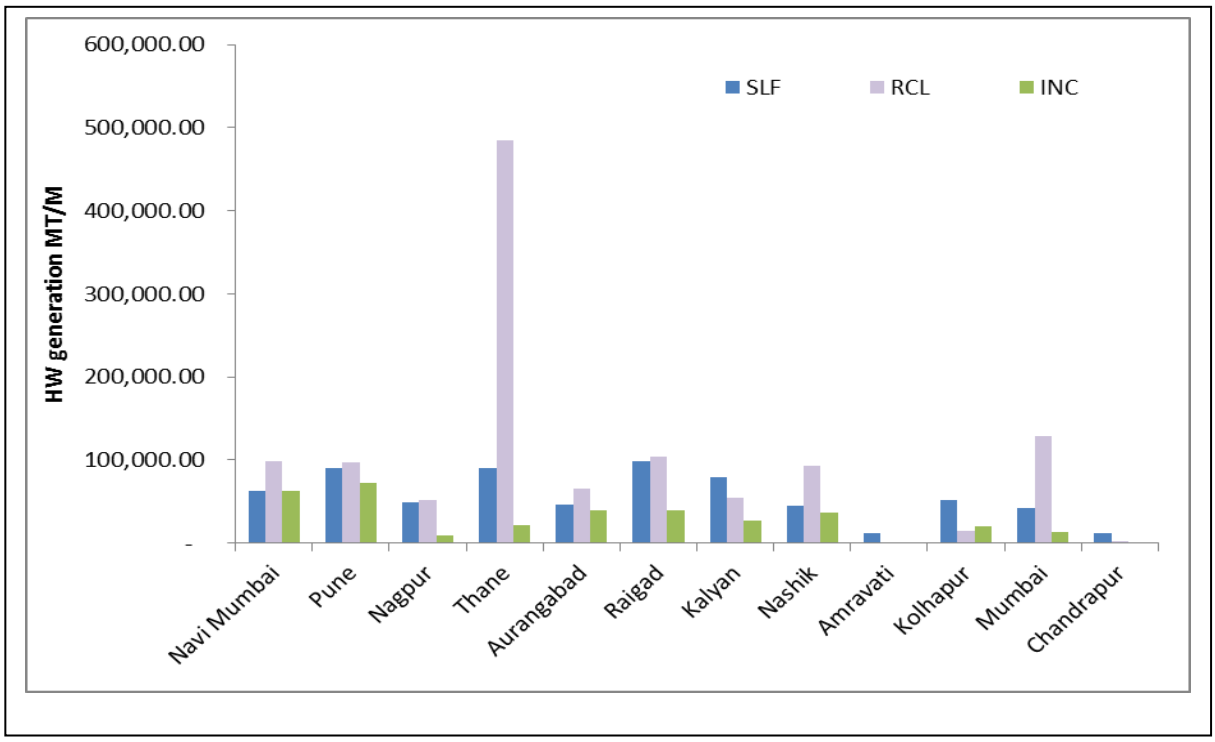


Figure 5.32 Region wise Hazardous Waste generation (SLF-Secured Landfill facility, RCL-Recyclable, INC-Incinerable)

Table 5.56 Summary of Hazardous Waste Received at disposal sites in 2015-16

Sr. No.	SITE	DLF (MT/M)	LAT (MT/M)	INC (MT/M)	TOTAL (MT/M)
Total industries Joined		6,128Nos.			
1	MWML - TALOJA	26,603.00	1,14,863.00	25,885.00	1,67,351.00
2	TTCWMA - MAHAPE	2,106.47	8,557.71	0	10,664.18
3	MEPL - RANJANGAON	42,496.97	25,825.99	28,357.19	96,680.15
4	VEPL - BUTIBORI	8,296.70	11,117.75	4,026.17	23,440.62
	TOTAL	**79,503.14**	**1,60,364.45**	**58,268.36**	**2,98,135.95**

**LAT-Landfill along trading scheme*

There are 6,128 industries that generate Hazardous Waste. Various methods viz. DLF, LAT, INC and onsite hydroclave are used for the treatment of this Hazardous Waste.79,503.14

MT/Month of HW is treated by DLF method, 1,60,364.45 MT/Month by LAT method and 58,268.36 MT/Month by INC method.

Table 5.57 represents about the number of units in each region that is given an authorization to generate HSW.

Table 5.57 No. of units in each region that is given authorization to generate HSW

Authorizations – Region wise		
Sr. No.	**Region**	**Total No. of Units**
1	Amravati	75
2	Aurangabad	340
3	Chandrapur	127
4	Kalyan	893
5	Kolhapur	362
6	Mumbai	396
7	Nagpur	355
8	Nashik	503
9	Navi Mumbai	710
10	Pune	1,222
11	Raigad	596
12	Thane	549
	Total	**6,128**

5.5.3 Status of Common Bio-medical Waste Treatment, Storage & Disposal Facility

Total Numbers of Health Care Facilities (HCFs) in the State is presented in **Table 5.58** . Total numbers of beds provided in the facilities are 2,75,845.

Table 5.58 Total Numbers of Health Care Facilities (HCFs) in the State

Sr. No.	HCF Category	No. of HCFs require authorization under BMW Rules	No. of HCFs does not require authorization under BMW Rules
1	Bedded Hospitals	21,191	0
2	Non Bedded Hospitals	12,928	16,657
3	Others (Veterinary Hospitals, Research Organizations etc.	11,580	310

Total 126 no of HCFs have applied for Consents under Water & Air Acts Status of Consents under Water Act & Air Acts, 49 have obtained Consent under Water & Air Acts, 64 applications are under consideration & 4 applications are rejected.

Further 15,559 Nos. of HCFs have applied for authorization, 13,815 No. of HCFs have obtained authorization, 2,696 applications are under consideration & 1 application is rejected.

Table 5.59 Details of On-Site treatment equipment's installed by HCFs

Sr. No.	No. of HCFs	On site Deep Burial		On-site Incinerator		On-site Autoclave		On-site Microwave		On-site Shredder	
		Nos.	Capacity	Nos.	Capacity	Nos.	Capacity	Nos.	Capacity	Nos.	Capacity
1	8,300	6,979	3,903	9	1,585	335	2,665	1	40	1,641	29,96

Total BMW Generated & Treated by HCFs (On site/captive facilities) is 20024 Kg/day. Total Recyclable & Treated BMW Sold off by HCFs is 682 Kg/day and total Treated BMW Disposed off by HCFs through a CBMWTSDF is 20050Kg/day. Further to the same No. of On-site incinerator (s) in operation installed by HCFs with APCD is 9.

- Details of Common Bio-medical Waste Treatment Facility (CBWTF):
  - a) Total No. of CBWTFs in operation : 37
  - b) Total No. of CBWTFs under consideration : 3
  - c) Total No. of incinerators installed by CBWTFs :
    - I) With APCD : 42
    - II) Without APCD : 0

- Details of CBWTFs
  - a) Total BMW collected & treated by CBWTFs in kg/day : 47,247
  - b) Total recyclable BMW sold off by CBWTFs in kg/day : 7,752

- Total BMW disposed off by CBWTFs in kg/day : 46,616

- Action taken against HCFs / CBWTFs for violation of provisions:
  - a) No. of show cause notices issued to HCFs : 426
  - b) No. of show cause noticed issued to CBWTFs : 3
  - c) No. of HCFs closed during the year 2015 : 0
  - d) No. of CBWTFs closed during the year 2015 : 3

- Details of Bio-medical Waste Management Scenario :
  - a) Total Biomedical Waste Generation in kg/day :
    - I. Incinerable : 46,593
    - II. Recyclable (after autoclaving followed by shredding : 17,041
    - III. Disposable in secured landfill /deep burial / sanitary landfill : 12,082
  - b) Total bio-medical waste collected in kg/day : 59,537
  - c) Total bio-medical waste Treated & Disposed in kg/day : 61,104

5.5.4 E-Waste

Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution. Electronic scrap components, such as CPUs, contain potentially harmful components such as lead, cadmium, beryllium, or brominated flame retardants. Recycling and disposal of e-waste may involve significant risk to health of workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operations and leaking of materials such as heavy metals from landfills and incinerator ashes

➢ **Implementation of the E-waste (management and Handling) Rules, 2011**

- For effective implementation of the E-Waste (Management and Handling) Rules, 2011 a circular was issued on 20/07/2012 which is made available on MPCB website.
- Ministry of Environment, Forest and Climate Change, Government of India, has notified new E-Waste (Management) Rules, 2016 on 23rd March, 2016; which will come into force from the 1st day of October, 2016
- A registration committee has been constituted for grant or renewal of registration under the E-Waste (Management and Handling) Rules, 2011 for Dismantling/Recycling of the E-waste using Environmentally Sound technology
- During the Year 2016-17, the Boards has granted authorization and registration under the E-waste (Management and Handling)Rules, 2011, to 13 E-waste dismantlers and 2 E-waste Recyclers having Environmental sound Management of E-Waste and granted authorization to 8 Collection Centers for E-Waste in Maharashtra State

Details of authorization issued under the E-waste (M and H) Rules, 20111 to Dismantlers / Recyclers/ Collection/ Producers is as shown in **Table 5.60**.

Table 5.60 Status of E-Waste Generation and Recycling in Maharashtra State

Sr. No.	Types of Authorization/ Registration Granted by Board	Authorization/ Registration Granted bynthe Board (Nos)	Capacity of E-waste generation/ collection/ Dismantling/ Recycling (MT/A)
1	E-Waste Producers-Manufacturer	27	Not Applicable
2	E-Waste Producers Importer	25	Not Applicable
	Total	**52**	Not Applicable
E-Waste Collection/dismantling and recycling capacity/ Centers			
3	E-Waste Collection Center's	42	Not Applicable

4	E-Waste Dismantlers	27	32720
5	E-Waste Recyclers	05	15340
	Total	**74**	**48060**

5.6 Performance of Board Laboratories

Maharashtra Pollution Control Board has established / recognized a Central Laboratory and 7 Regional Laboratories at Pune, Nashik, Aurangabad, Nagpur, Chiplun, Thane and Chandrapur, respectively under sub-section 2 of Section 17 of the Water (P&CP) Act, 1974 and the Air (P&CP) Act, 1981. These laboratories are well equipped and approved by Ministry of Environment & Forest and Climate Change (MoEF&CC), Government of India (GoI), Delhi under E(P) Act, 1986 and also ISO 9001:2008 and OHSAS 18001:2007 accredited.

MPCB laboratories functions as Board's laboratories as defined under Water and Air Act; and Environment (Protection) Act, 1986 and Rules made there under to analyze the samples collected by field officers from respective region for analysis of Water, Air & Hazardous waste, Municipal Solid Waste, Biomedical waste samples and submit the reports to respective Sub Regional Office for further regulatory action. Regional Lab Chandrapur analyzes only Air samples.

MPCB' laboratories are well equipped with modern sophisticated instruments and equipment like UV Spectrophotometer, Gas Chromatograph (GC), Mass Spectroscopy, Atomic Absorption Spectrophotometer (AAS), Ion Chromatography (IC) Inductive Couple Plasma (ICP), Adsorable Organic Halide Analyzers (AOx), CHNS Analyzers and others.

Water sample analysis includes physical, chemical, microbiological and toxicological parameters. Air sample analysis includes ambient air quality parameter such as RSPM, suspended Particulate Matter, Sulphur-di-Oxide, Oxides of Nitrogen, Acid Mist, Benzene, Chlorine, Lead, Ammonia, VOC, etc. The Stack monitoring includes analysis of parameters, such as Total Particulate Matter, Sulphur-Di-Oxide, Acid Mist, Chlorine, H_2S, HCl, Ammonia etc. Hazardous Waste samples are analyzed for metals, Hydrocarbons, etc. Bio-Medical Waste samples are analyzed for spore test. Analysis Performance of Board Laboratories for the year 2015-2016 is presented in **Table 5.61** & represented graphically in **Figure 5.33 to 5.35.**

Table 5.61 Yearly performances of Board's laboratories (April-2015 to March-2016)

Sr. No	Laboratory	Total No. of Samples Received			Total No. of Samples Analyzed			Total No. of Parameters Analyzed		
		Water	Air	H.W	Water	Air	H.W	Water	Air	H.W
1	CL, Navi Mumbai	10343	1425	280	10487	1430	242	121473	9898	1673

2	RL, Nagpur	2961	1411	28	3601	2095	28	45864	5517	357
3	RL, A'bad	2348	310	18	2348	310	18	27258	881	56
4	RL, Pune	6729	876	35	5698	908	23	65664	3964	91
5	RL, Nashik	3636	709	28	3602	1080	18	42351	4761	193
6	RL, Chiplun	4912	1046	87	4803	1151	91	57031	2804	905
7	RL, Thane	2218	1000	_	2275	1019	_	15857	2251	_
8	RL, Chandrapur	_	706	_	_	706	_	_	2072	_
TOTAL		**33147**	**7483**	**476**	**32814**	**8699**	**420**	**375498**	**32148**	**3275**

** CL - Central Laboratory, RL - Regional Laboratory*

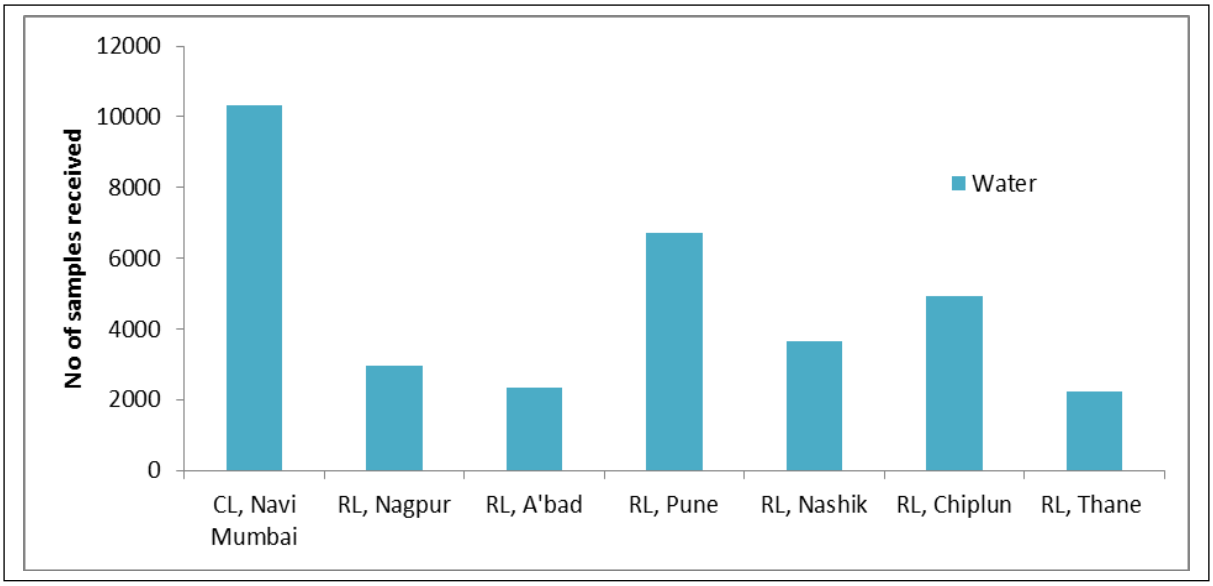


Figure 5.33 Total No. of Water Samples Received (2015-16)

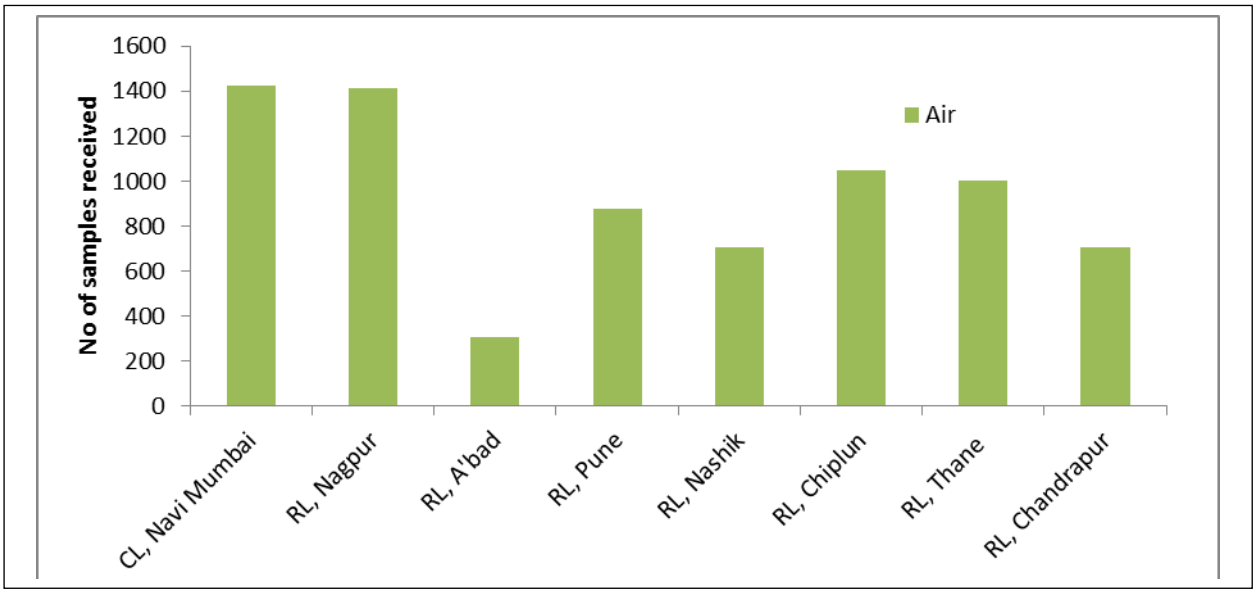


Figure 5.34 Total No. of Air Samples Received (2015-16)

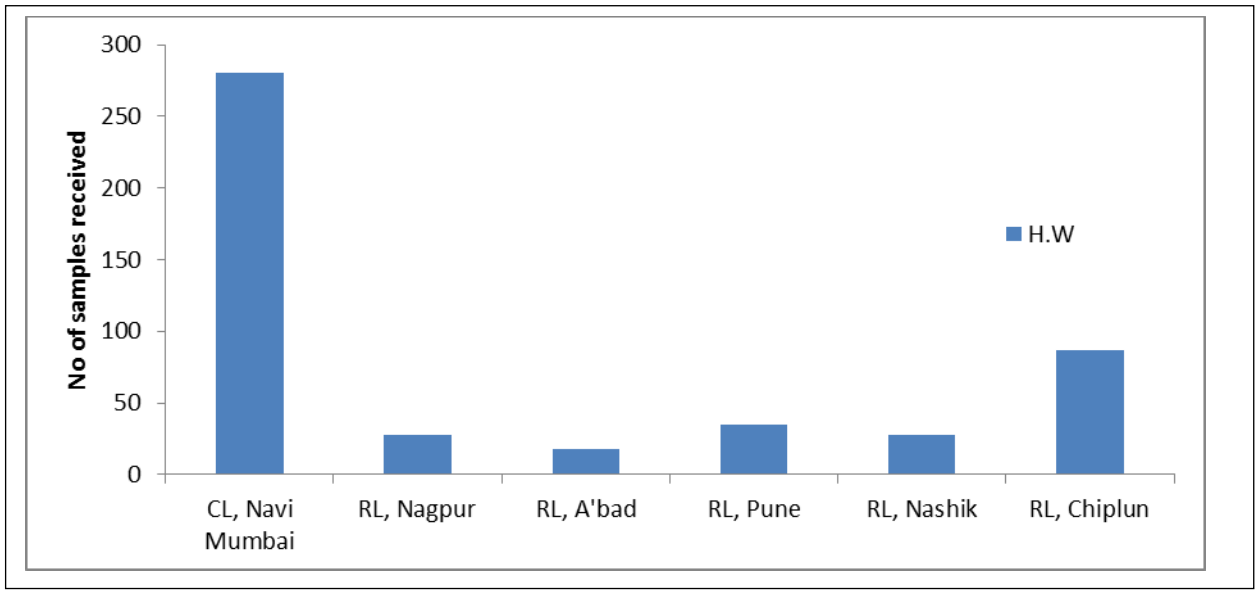


Figure 5.35 Total No. of HW Samples Received (2015-16)

➢ **Achievements of MPC Board Laboratories**

A. ISO 9001:2008 and OHSAS 18001:2007 Accreditation

Maharashtra Pollution control Board's Central Laboratory and Seven Regional laboratories located at Pune. Nashik, Aurangabad, Nagpur, Chandrapur, Thane and Chiplun are awarded **ISO 9001:2008** and OHSAS 18001:2007 in March 2014 by BSCIC an accredited certification body by National Accreditation Board for Certification (NABCB) for its QMS and OHSAS certification services and accredited by foreign Direct Accreditation from by Joint Accreditation System for Australia and New Zealand (JASANZ) and continued in March 2015 after 1st surveillance audit and in March 2016 after 2nd surveillance audit

B. 100% Performance in Inter Laboratory Proficiency Testing in analysis

Central Pollution Control Board, Delhi conducts exercise through "Inter Laboratory Proficiency Testing" program across the country for EPA approved laboratories including State Pollution Control Board's laboratories for Chemical, Biological and Microbiological analysis. During the year 2015-16 the Board's Central Laboratory and Regional Laboratory, Nashik, Pune, Aurangabad and Nagpur participated in these programs and achieved 100% performance

C. Strong support in Judicial matters

As per direction of High Court Bombay (No. PIL 17/2011 dated 01/03/2011) and order vide No. MPCB/PSO/B-27 dated 02.03.2011, MPCB laboratories are completing

weekly analysis of CETP Joint Vigilance Sample analysis across the State and submitting analysis report well within time for hoisting the performance of CETPs on MPCB web site

D. Time bound completion of analysis of samples collected under special projects

i. During Ganesh Festival MPCB laboratories analyze the samples (pre and post immersion) collected from lakes, Rivers, Sea and Creeks

ii. Sinhastha Kumbhmela - Maharashtra Pollution Control Board carried out Water, Air and Noise Monitoring and its Analysis during Sinhastha Kumbhmela 2015. Mass awareness programme is being carried out during Kumbhmela period to keep the Godavari River free from pollution & to keep clean environment at Nashik Region

E. Training to Scientific Staff

Maharashtra Pollution Control Board imparted “Internal Auditor” training as per ISO9001: 2008 and OHSA 18001:2007 to Scientific Officers and Regional Officers of the Board in the year 2016 and declared twenty three officers as qualified as ‘Internal Auditor’ for MPCB Laboratories.

6.0 REGIONAL ENVIRONMENTAL PROBLEMS & CONTROL MEASURES TAKEN IN RESPECTIVE REGIONS

Major environmental problems across the State and control measures adopted for the same are mentioned in this Chapter.

6.1 Chandrapur

Heavy transportation of coal, iron ore, cements etc. overloading of trucks, railway siding at Ghuggus, Wani, Tadali, Majri area. Coal depot issues in Yavatmal & Chandrapur districts. Board has issued guidelines for coal stack &railway siding. For implementation of said guidelines Board has issued proposed direction & taken personal hearing of coal depot located at Wani area.

Board has conducted meeting regarding review of CEPI under the Chairmanship of Additional Chief Secretary of Environment at Collector Office, Chandrapur to reduce score of CEPI and implementation action plan of CEPI.

6.2 Aurangabad

The trend of Air quality in this Region is quite changed in the parameter like SPM and RSPM mostly due to construction activities and vehicular pollution throughout the year.

The air polluting industries in the Region have provided Cyclone type dust collectors, Bag filters, Wet Scrubber, Fly ash arrester and ESP with adequate height of stack for control of air emission and same are operated regularly. Recently a meeting was held on 18/02/2016 under the Chairmanship of the Hon'ble Environment Minister, Govt. of Maharashtra at Mantralaya, Mumbai and as per the minutes of said meeting, 10 Nos. of steel industries in Jalna district are directed to operate the existing air pollution control system efficiently, to improve the O & M of Air Pollution Control System and to submit the Bank Guarantee of Rs. 5.0 Lacs (each) towards compliance of these directions.

Major industrial units have installed pollution reduction mechanism like R.O system, MEEP system for reduction in quantity of effluent and the industries are also sending their treated effluent to CETP for further treatment and disposal. Industries have also installed Air Pollution Control System like ESP, Ventury Wet Scrubbers etc. for minimization of emissions in the environment. Further industries have joined to CHWTSDF for safe disposal of Hazardous Waste and provided separate storage facility within premises.

6.3 Kalyan

1. Only part of Kalyan & Dombivali city is covered by under-drainage system. Most of sewage is flowing through open nalla & meeting to Ulhas creek

2. Smell nuisance is being caused by improper treatment of effluent in industrial area The MIDC effluent carrying pipeline and chambers are broken and the overflowing effluent in local nalla which is flowing through residential area due to which smell nuisance compliant has been received
3. There is no treatment facility available and presently illegal dumping of MSW carried out by Corporation & Local Grampanchyat on unauthorized areas & industrial areas
4. There is no demarcation as industrial, residential & commercial zone
5. STP of Ulhasnagar Municipal Corporation is not continuously in operation & STP of Ambernath Municipal Council is partially found in operation. This is leading to Waldhuni river pollution
6. Diversion of Khemani nalla is felt necessary
7. ETPs are not provided for jean washing units operating in Ulhasnagar & Ambernath area
8. Noise pollution is being caused by jean sewing machine in Ulhasnagar area
9. Illegal industrial units operating in Ulhasnagar residential area
10. There is no treatment facility available & presently illegal dumping of MSW carried by Ulhasnagar Municipal Corporation, Ambernath Municipal Council on unauthorized area. Badlapur Municipal Council dumping MSW unscientifically on unauthorized site
11. The industries developed in this area are mostly Air Pollution prone Industries. Almost all the industries in Wada, Shahapur & Murbad Tehsil has provided necessary APC systems like swinging hood, duct line, air blower, cyclone followed by Bag house or Wet type scrubber to control the air pollution. The chimney of minimum height of 30 Mts. is provided to assure natural dispersion of pollutants at specific height. Regional Office, Kalyan regularly carries out vigilance of the industries to check compliance of consent conditions. Most of the industries are operating their APC Systems. However, in some cases it is observed that though the APC systems provided by the industries are adequate but there are problems of operation & maintains of APC system or that they are not operating continuously & efficiently

6.4 Bhiwandi

1. Insufficient collection, transportation and treatment and disposal facility for sewage and solid waste within and outside the Corporation area causing environmental problems within and outside the city area by way of open gutters, common nallas, accumulation of waste water and other related issues

2. Unorganized establishment/ growth of power loom, in the area and establishment of this in the residential area and no mechanism in place for abating noise pollution
3. Unorganized growth of godowns and power looms and small scale industry in the nearby villages which are mainly non polluting
4. Rapid increase in construction of godowns without any basic infrastructure, thereby causing vehicular pollution and emission of road dust
5. Incidents of fire in the godown belt due to lack of proper attention towards safely
6. Vehicular pollution due to movement of heavy vehicles, lack of roads, bad condition of road and lack of traffic sense among the vehicular transporters
7. Unscientific dumping of Municipal Solid Waste at Chavindra site
8. Disposal of untreated domestic effluent into Kamavari River
9. Illegal construction of godowns and storage of chemical at village, Dapoda, Purna, Kasheli, Gundavali, Val, Kalher etc.

6.5 Kolhapur

The major source of Panchaganga river pollution is due to the discharge of untreated sewage in Panchaganga River by local bodies located on the bank of river. The contribution of effluent discharged in Panchaganga River is as below:

Kolhapur Municipal Corporation	-	96 MLD
Ichalkaranji Municipal Council	-	32 MLD
174 Villages	-	23 MLD
Industrial	-	4.5 MLD

1. About 20 MLD agriculture run off directly enters Panchaganga River
2. On the bank of Panchaganga River about 8 Sugar industries, 5 Distillery units were located. All the sugar industries have provided Effluent Treatment Plant for the effluent generated and the treated effluent is used for irrigation purpose. Most of the times, these sugar industries have carried out excess crushing of sugar cane and due to insufficient treatment facility the excess effluent discharge into nearby nalla which further meets the River. Sometimes due to accidental discharge there may be pollution problem & fish kill incidence
3. The major problem in the MIDC Shiroli & Gokul Shirgaon is disposal of Foundry waste sand/ Slag and sewage treatment since MIDC has not provided Sewage Treatment Facility and other required infrastructure. Regional Office, Kolhapur has issued letter regarding the same to MIDC office, Kolhapur. The Foundry industries

has formed a cluster for recycling of burnt sand and the said project will be implemented very soon & about 60 % waste sand will be recycled

4. The Municipal Solid Waste generated from the Kolhapur City area is not handled or treated scientifically by the Corporation. There are frequent complaints about the same. Necessary direction has been issued by the Board to the corporation
5. Due to the construction of about 8 K. T. Weir on River Panchaganga the natural flow of the river water is not maintained which causes the further deterioration of water quality
6. Along with above problems the MSW and Sewage treatment of local bodies is a problematic issue and Regional Office, Kolhapur took necessary follow up for the same during the year

Regional Office, Kolhapur has brought above points to the notice of concerned authorities by the way of regular correspondence, analysis of water samples & asked to adopt precautionary measures from time to time

6.6 Nashik

In this region, Air Pollution problems created due to stone crushers located in Vilholi Sarul village area; the Board has issued directions U/s 31 A of Air Act and 33 A of Water Act.

Quantity of Water consumption of Nashik Municipal Corporation is 390.0 MLD & quantity of generation of sewage is 280.0.MLD. Nashik Municipal Corporation is having STP of capacity 270.50 MLD & sewage is treated to the tune of 225.0 MLD. Nashik Municipal Corporation has also proposed to provide STP of capacity 142 MLD.

The Board has directed to Nashik Municipal Corporation to avoid the untreated Sewage discharging into river. Further the Board issued consent to Nashik Municipal Corporation with condition to operate & maintain the STP's to achieve BOD level 30 mg/l to 10 mg/L. The Board monitored river water quality & STP regularly during the year.

6.7 Pune

- **Major reasons for River Water Pollution in the area;**
  1. Domestic Sewage Generation from human settlement
  2. Lechate due to unscientific disposal of Municipal Solid waste
  3. Run of rain water from agricultural fields
  4. Uncontrolled Sand Dredging
  5. Non availability of minimum flow in river
  6. Increase in Water Hyacinth

7. Accumulation of silts due to obstructions in river

- **Major Issues of MSW**

1. Municipal Solid Waste segregation is unscientific
2. Non Operational treatment facilities due to technical problems
3. Technology Failure facilities viz. waste to energy plant not operational due to non-generation of required quality and required quantity of lean gas
4. Indigenous Proven technology is not available
5. Open dumping created Ground Water Pollution
6. Strong opposition by local population for not allocating a new site for MSW disposal

- **Chandrabhaga river Pollution related issues**

1. Floating Population of pilgrims creates pollution load on river Chandrabhaga
2. MSW treatment facility is unscientific
3. Environmental Management Plans not prepared and not yet implemented
4. Villages situated on the bank of river are discharging untreated sewage into river Chandrabhaga

- **Major Issues related to Pollution Due to Old Distillery Units**

1. Unscientific storage of spent wash by old distilleries already caused ground water pollution
2. Reclamation /Bio-remediation is not possible
3. During rainy season seepages find its way into nearby water body/river
4. CREP guidelines to be adopted by distillery units in phase wise manner
5. Leachates due to unpredictable rain fall causing pollution

6.8 Thane

- **Implementation Of MSW Rule**

1. Urbanization in recent decades has created problems of scientific disposal of Municipal Solid Waste in Urban Local Bodies. Urban Local Bodies have not made provision for source segregation, treatment and disposal of solid waste thereby violating provisions of MSW Rules
2. Unscientific dumping of Municipal Solid Wastes in the area invites the complaints of pollution and smell nuisance from local people
3. No physical source segregation of MSW which creates problem of smell nuisance during transportation due to mixing of wet and dry waste
4. Dumping of MSW in CRZ prone area creates adverse effect on environment, mangroves and nearby aquatic life

5. Need of awareness among public and urban local bodies regarding implementation of the Rules are necessary

- **Treatment of Domestic Waste Water by ULB**

1. It is a major thrust area which need to be attended by ULB so as to conserve natural resource of water. There is need of reuse and recycle of treated waste water considering its scarcity
2. The quantum of water consumption for Urban Local Bodies in jurisdiction of Regional Office, Thane is @ 600 MLD and domestic waste water generation is @ 500 MLD Presently, partly treated / untreated domestic waste water is being discharged into nearby creeks which create adverse effect on nearby environment & aquatic life
3. Urban Local Bodies have to be motivated by facilitating them with subsidies for provision of STP and other environmental management infrastructure

- **Paneri Nalla pollution**

Paneri Nalla is located near Palghar. On the bank of this paneri nalla there are three private industrial eStates. The Industries located on the bank of Paneri Nalla as well as Palghar Municipal Council are discharging their effluent into the nalla resulting severe pollution complaints

- **MIDC Tarapur**

1. Tarapur MIDC is largest chemical zone in Maharashtra. CPCB has declared critically polluted area and cumulative CEPI index is 72.01 (Water CEPI : 56, Air CEPI : 60.75 & Land CEPI : 51.25). The major contribution in the CEPI was due to water pollution, air pollution use of carcinogenic chemicals, nearby locality and allied aspects
2. Action plan has been prepared to reduce the CEPI index. The implementation of Tarapur action Plan is under progress
3. Most of the industries have installed advance air pollution control measures so as to limit process emissions. The industries will compelled to switch over to clean fuel so as to limit TPM, SOx levels due to burning of fossil fuels. The pipeline work of GAIL is under progress
4. CETP has proposed to carryout expansion of existing CETP by installing additional capacity plant of 50 MLD which will reduce impact of water pollution so as to minimize CEPI score
5. It is necessary to study feasibility for setting up sewage treatment plant (STP) in Boisar area

6. MIDC have proposed to develop site for scientific treatment and disposal of Municipal Solid Waste generated from industrial area and nearby villagers. The development of treatment facility along with landfill site will improve CEPI score in the said area
7. Present evaluation of CEPI score is not possible due to non-availability of methodology and technology adopted by CPCB. Also, Board is not having such type of technocrats to cope up with CEPI evaluation

- **Illegal Industries in Corporation area**

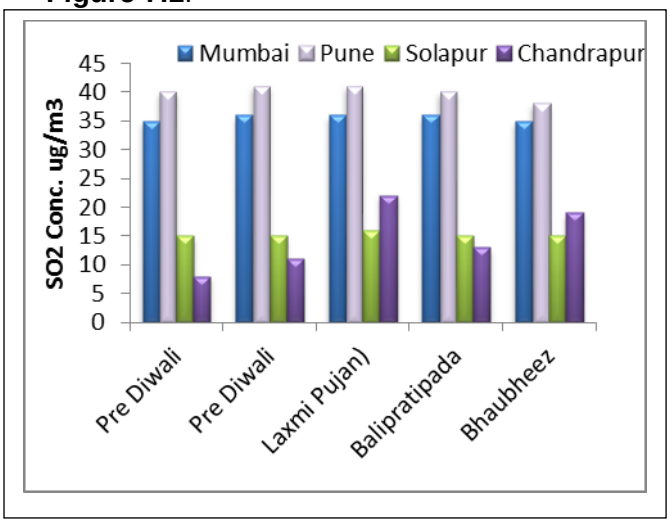
1. The jurisdiction of this office consists of Municipal Corporation area of Thane, Mira Bhayander& Vasai-Virar City which is densely populated area
2. Most of the industries are being operated with trade licenses under Shop & Establishments issued by Corporations
3. These industries have not obtained consents from the Board and operating without provision of adequate pollution control measures
4. There are frequent complaints of air / water pollution and nuisance thereof from nearby residents
5. It is necessary to carryout extensive survey of the Corporation area specifically Vasai-Virar city Municipal Corporation to identify such type of illegal industrial establishments to curb pollution nuisance. It is proposed to offload the work of survey to outside agency considering manpower crunch with the office

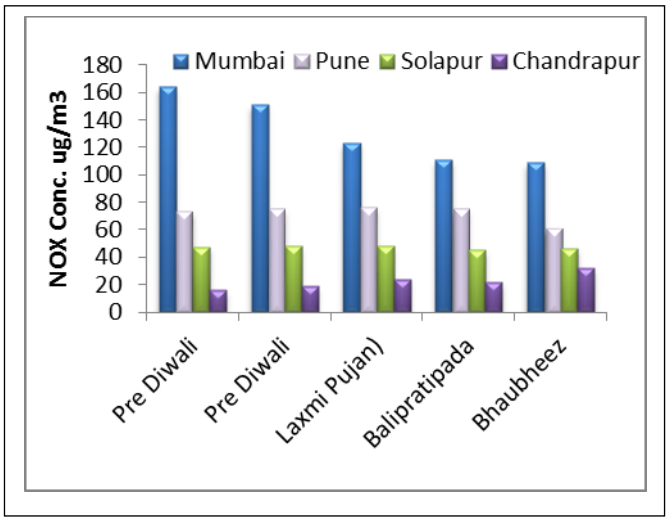
7.0 ENVIRONMENTAL STUDIES & SURVEYS

7.1 Air quality assessment during Diwali 2015 at few regions of Maharashtra

Historically, the origin of Diwali can be traced back to ancient India, when it was probably an important harvest festival. However, there are various legends pointing to the origin of Diwali or 'Deepawali.' Some believe it to be the celebration of the marriage of Lakshmi with Lord Vishnu whereas; in Bengal the festival is dedicated to the worship of Mother Kali, the dark goddess of strength. Lord Ganesha, the elephant-headed God, the symbol of auspiciousness and wisdom, is also worshiped in most Hindu homes on this day. In Jainism, Deepawali has an added significance to the great event of Lord Mahavira attaining the eternal bliss of nirvana. Diwali also commemorates the return of Lord Rama along with Sita and Lakshman from his fourteen yearlong exile and vanquishing the demon-king Ravana. In joyous celebration of the return of their king, the people of Ayodhya, the Capital of Rama, illuminated the kingdom with earthen diyas (oil lamps) and burst crackers. All the simple rituals of Diwali have significance and a story to tell. The illumination of homes with lights and the skies with firecrackers is an expression of obeisance to the heavens for the attainment of health, wealth, knowledge, peace and prosperity. According to one belief, the sound of fire-crackers is an indication of the joy of the people living on earth, making the gods aware of their plentiful State.

In order to assess the ambient air quality during Diwali festival period, Maharashtra Pollution Control Board (MPCB) has taken initiative to carry out Noise monitoring at Mumbai, Pune, Solapur & Chandrapur city at few locations during on 9-10.11.2015 (Pre-diwali), 11.11.2015 (Lakshmi-Pujan), 12.11.2015 (Balipratipada) and 13.11.2015 (Bhaubeej). The main aim of the project is to determine the trends and variations in air quality at various areas of the city in different land uses and to create awareness about air pollution through availability of scientific data. The results of monitoring carried out during this period are represented in **Figure 7.1**.





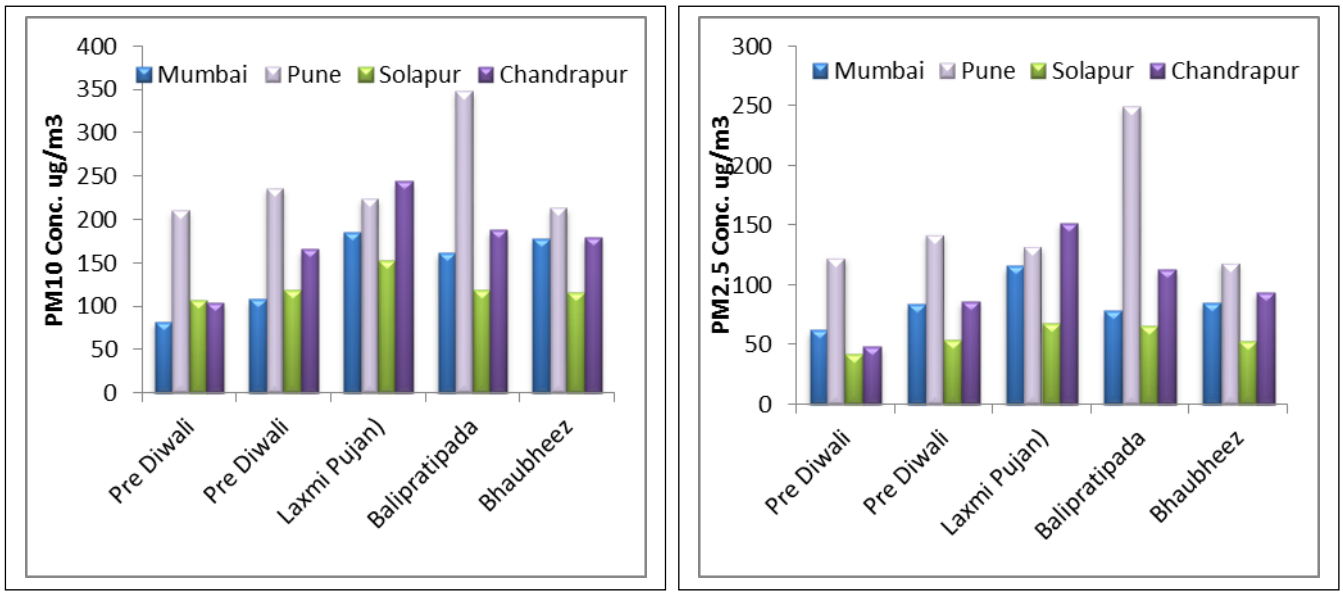


Figure 7.1 Air quality assessed during Diwali 2015 in State.

From **Figure 7.1** SO_2 concentration is higher in Mumbai in Pune region on all days while in Solapur & Chandrapur region it is less almost half of the other regions. Overall concentration of all samples was observed to be within the prescribed limits of NAAQM.

NOX concentration in Mumbai region is exceeding beyond the prescribed limits on all days. While in other region it is observed well within the limits. Lowest concentration is found at Chandrapur region.

PM_{10} & $PM_{2.5}$ concentration is observed to be higher amongst all the regions though at all the locations concentration is exceeding the prescribed limits of NAAQM.

5.2 Monitoring of Ambient Noise pollution During Ganesh Festival, 2015

Ganesh Festival is one of the main festivals in Maharashtra. Large numbers of people participate in the immersion procession culminating the 10 days festival. Vocal music and musical instruments during the festival often lead to high levels of noise. Since last few years Maharashtra Pollution Control Board is monitoring ambient noise levels in Ganesh Festival Period.

This report is based on the extensive noise monitoring study conducted by Maharashtra Pollution Control Board at 132 locations all over Maharashtra covering 26 corporations for the 5 days period during Ganesh Festival i.e. on 11th, 18th ,21st, 23rd & 21st September, 2015 for 24hrs on First day of monitoring and from 18.00 hrs. to 24.00 hrs continuously for 6 hours, in the remaining days, comprising residential, commercial and silence zones. The

details of number noise monitoring locations in different Municipal Corporation all over Maharashtra as provided in **Table 7.1.**

Table 7.1 Noise Monitoring Locations of Maharashtra During Ganesh Festival

Sr. No.	Municipal Corporation	Number of Locations
1.	Mumbai	25
2.	Navi Mumbai	05
3.	Thane	09
4.	Pune	20
5.	Nashik	05
6.	Aurangabad	05
7.	Nagpur	05
8.	Kalyan	03
9.	Amravati	03
10.	Jalgaon	03
11.	Kolhapur	03
12.	Sangli	03
13.	Mira – Bhyander	03
14.	Vasai – Virar	03
15.	Ulhas Nagar	03
16.	Bhiwandi – Nizampur	03
17.	Chandrapur	03
18.	Nanded – Waghala	03
19.	Ahmednagar	03
20.	Dhule	03
21.	Malegaon	03
22.	Pimpiri – Chinchwad	03
23.	Parbhani	03
24.	Latur	03
25.	Akola	03
26.	Solapur	04

Hourly Noise Levels on 17th, 18th, 21st, 23rd and 27th September, 2015 during Ganesh Festival at 132 different locations in Maharashtra. In the present study, hourly and day wise Leq. has been calculated to compare the results obtained from various locations. Details of obtained level w.r.t. each region is graphically represented in **Figure 7.2.**

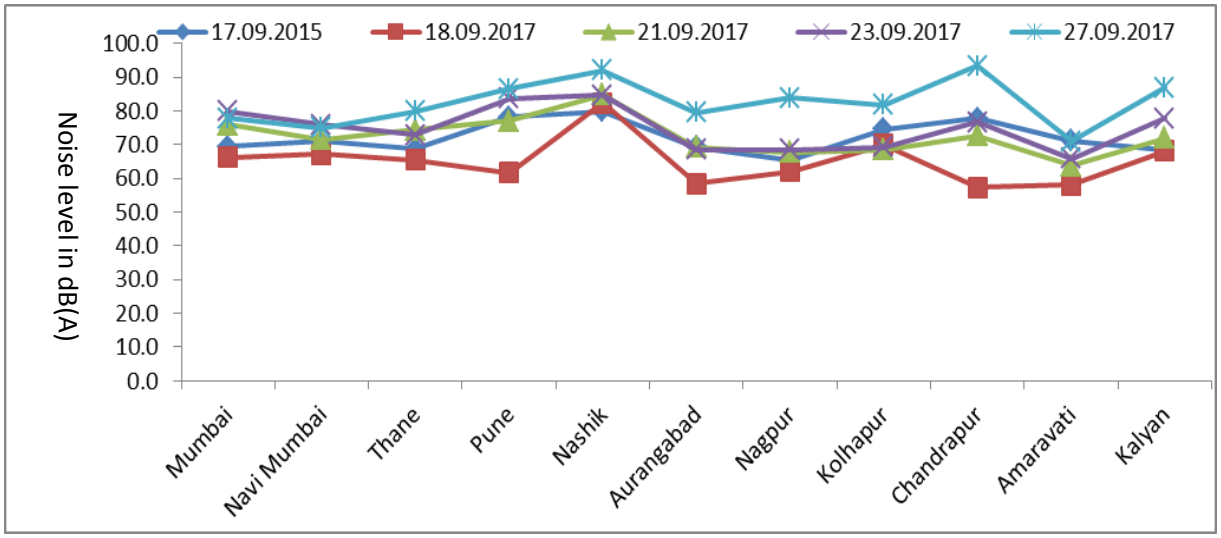


Figure 7.2 Noise Level during Ganesh Festivals

The Highest average Noise Level i.e. 92.0dB(A) during Ganesh Festival is found in region Nashik on 27.09.2015 which was last day of Festival, whereas lowest level i.e. 57.4 dB(A) was recorded in the region Chandrapur on 18.09.2017.

5.3 Noise Monitoring During Diwali Festival Report on Festival 2015

Maharashtra Pollution Control Board has conducted an extensive noise monitoring study during Diwali Festival, 2015 at 158 selected locations for 3 days i.e. on 11th November *(Laxmi-Pujan),* 12th November *(Balipratipada)* and 11th November *(Bhaubeej)* continuously for 24 hours at each location, comprising residential, commercial and silence zones.

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. Details of 158 Monitoring locations of Maharashtra are presented in **Table 7.2**

Table 7.2 Noise Monitoring Locations of Maharashtra during Diwali

Sr. No.	Municipal Corporation	Number of Locations
1.	Mumbai	45
2.	Navi Mumbai	10
3.	Thane	05
4.	Pune	15
5.	Nashik	05
6.	Aurangabad	05
7.	Nagpur	10
8.	Kalyan	03
9.	Amravati	03
10.	Jalgaon	03
11.	Kolhapur	08
12.	Sangli	03

13.	Mira – Bhyander	03
14.	Vasai – Virar	03
15.	Ulhas Nagar	03
16.	Bhiwandi – Nizampur	03
17.	Chandrapur	03
18.	Nanded – Waghala	03
19.	Ahmednagar	03
20.	Dhule	03
21.	Malegaon	03
22.	Pimpiri – Chinchwad	03
23.	Parbhani	03
24.	Latur	03
25.	Akola	03
26.	Solapur	04
	TOTAL	**158**

Average Noise Level [Day Time] of all regions are presented in **Table 7.3** and Graphical presentation is given in **Figure 7.3**

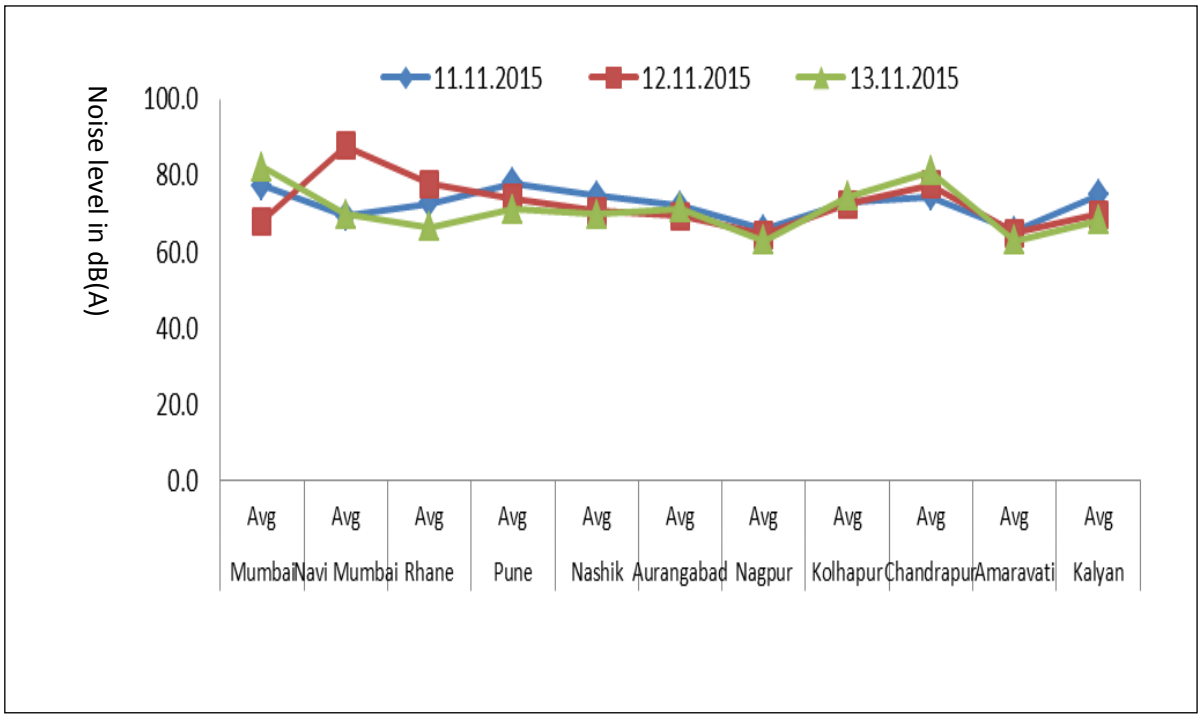


Figure 7.3 Average Noise Level [Day Time] During Diwali Festival 2015

The highest average Noise level i.e. 87.8dB(A) during Day Time was recorded in the region Navi Mumbai on 12.11.2015 and lowest average Noise Level i.e. 62.9 dB(A) was recorded in the region Amravati on 13.11.2017.

Average Noise Level [Night Time] of all regions are presented in **Figure 7.4**

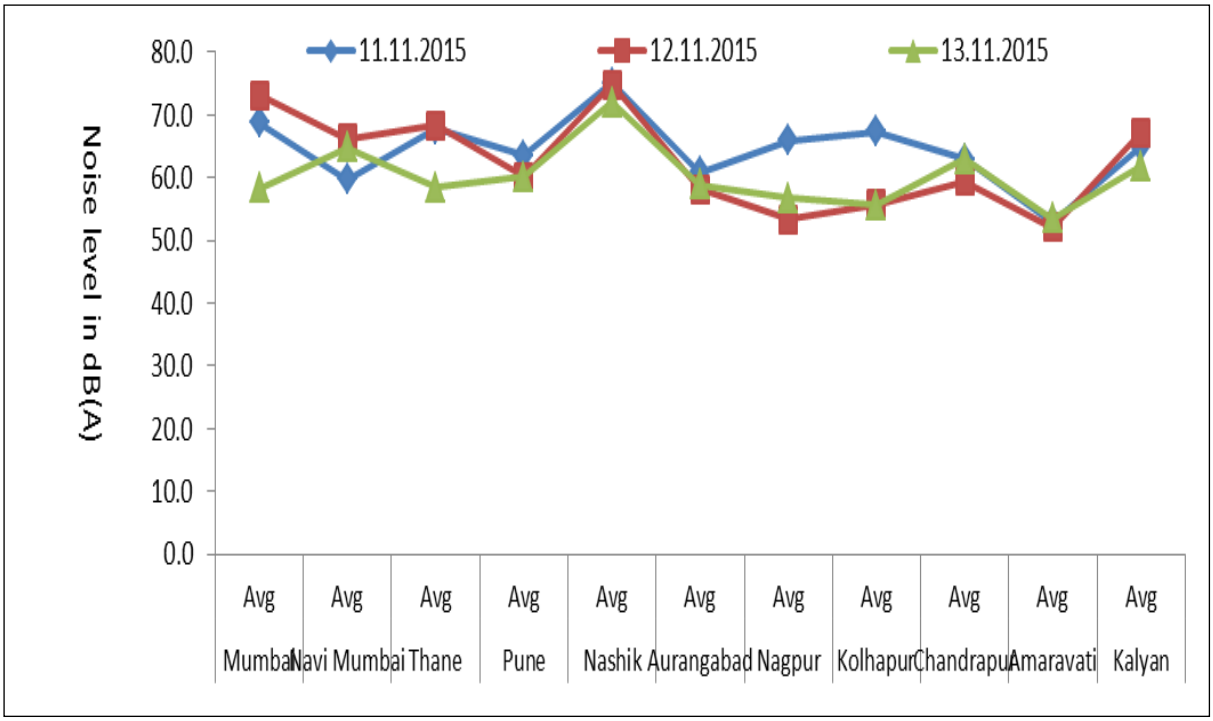


Figure 7.4 Average Noise Level [Night Time] During Diwali Festival 2015

The highest average Noise level i.e. 75dB(A) during Night Time was recorded in the region Nashik on 11.11.2015 and lowest average Noise Level i.e. 52.2dB(A) was recorded in the region Amravati on 12.11.2017.

5.4 Conclusion

The noise level in many regions was lesser this year as compared to last year and even the noise of fire crackers was also very much limited. But still the noise level was beyond the permissible limit or in other words it was more than what a human ear or an animal can resist. Even in the night time after 10 PM also loud noise was created with bursting of crackers which leave difficulties to babies, old people and even stray dogs and other animals.

It cannot be ignored that the impact of noise is correlated with the distance. MPCB has carried out noise level measurements in specified locations. The levels received may be different from any other and people staying nearby any place where fire crackers are busted may receive more decibel noise levels. Thereby this study can't be concluded that noise pollutions and its effects where really less. While each year goes, there is difference in the levels of noise created and people have also taken precautions in making their festival eco-friendly. More awareness and ill effects of the use of fire crackers should be made which may ultimately lessen the levels of noise pollution with other pollutions.

8.0 ENVIRONMENTAL TRAINING

Training constitutes as an integral and continuous process for any learning and development. Understanding advancements in technology and new provisions in the environmental aspects, quality of the work, responsibilities in the respective field and overall development in the field of environment and work all boils down to effective training programs imparted on each accountable member of the Staff and Officers of the Board.

It is therefore one of the primary function of the Board to plan & organize these programs of training of varied capacity in different aspects of prevention, abatement and control of pollution. The Board deputes its Staff & Officers for training of different aspects for knowledge in environment protection & pollution control, cleaner technologies, waste minimization and amendments in respective Acts & Rules to adequately equip them to perform their duties with highest efficiency.

During this year of consideration, the Board had deputed 109 officers to attend training in technical, scientific and administrative courses organizing 23 training programs during the year.

The various training courses/workshops/seminars/lectures attended by the Staff and the Officers of the Board held during the year 2015-2016 are summarized in **ANNEXURE 5**.

9.0 ENVIRONMENTAL AWARENESS & PUBLIC PARTICIPATION

For sustainable development it is necessary to promote and create environmental awareness among communities, businesses and governments. Therefor the Board organizes various environmental awareness programs across the State of Maharashtra. During the year following programs on environmental awareness were conducted by the Board:

Month	Subject	Details
April 2015	World Earth Day, Public awareness article published by the newspapers : Times of India and Maharashtra Times	On April 22, on account of World Earth day, special articles were published in the newspapers of Maharashtra Times and Times of India.
April 2015	On 22nd April 2015 World Earth Day, Public awareness articles were published by the leading newspapers : DNA, Hindustan Times and Mid-day	On April 22, after publishing a special edition of World Earth Day, special correspondence was published for DNA, Hindustan Times and Mid-Day newspapers.
April 2015	On account of World Earth Day 22nd April, 2015, Public awareness articles were published by the leading newspapers : Dainik Samana, Sakal and Divya Marathi	On the occasion of World Earth Day, special issues of Environmental Publications were published in the leading newspapers.
April 2015	Financial Assistance for Photothon 2015	Photothon 2015 is an innovative competition for photographers, wherein 24 hours are allotted to photograph any environmental issue and five photographs of which are presented by the participants. Best Photograph, Best Small Photograph and Best Photographer were the special awards presented to the winners. The competition was held in March 2015 at Mahim Nature Garden in Mahim, at 12.00 noon.

April 2015	On account of World Earth Day 22nd April, 2015, Public awareness articles were published by the leading newspapers : Loksatta, Indian Express and Lokmat	On April 22, the newspapers Loksatta, Indian Express and Lokmat published special articles of World Earth Day.
April 2015	On 22nd April , 2015 World Earth day special report published by Ved Prakashan	On the occasion of World Earth Day, a special report was published in the Ved Prakarshan on environmental issues.
June 2015	Environmental Short Movies Competition 2015 and Environmental Short Movies Festival from 5th to 7th June 2015's Financial Assistance	On 5th of June, 2015, the Environmental Short Movies Festival was jointly organized by MPCB and Ministry of Environment and Forests, Government of Maharashtra at Yashwantrao Chavan Center, Mumbai on the 5th, 6th and 7th of June, 2015. More than 250 environment enthusiasts were present on this occasion. This year, a seminar was also organized by directors, producers, environmental experts and researchers. On the occasion of World Environment Day, on June 5th, the theme of the Environment Short Movie Competition 2015, was announced by the Chief Minister. The competition was held for both commercial and amateur groups.
June 2015	On 5th June 2015, on occasion of World Environment Day leading newspapers published Dainik Sakal, Divya Marathi, Samna published special articles	The World Environment Day's special columns were published in Dainik Sakal, Samna and Divya Marathi on the pressing environmental issues.
June 2015	On June 5th , 2015, the World Environment Day leading newspapers DNA, Hindustan Times, Midday	On occasion of World Environment Day, special publications were published in the newspapers of DNA, Hindustan Times and Mid-Day newspapers for public awareness.

	published public awareness articles	
June 2015	On June 5, 2015, the World Environment Day, Loksatta, Indian Express and Lokmat newspapers published special public awareness articles	The editions of the Indian Express, Lokmat and Loksatta on occasion of World Environment Day published in the in which a special one-pager for public awareness.
June 2015	Financial Assistance for Bhamba Foundation by Public awareness program on 5th of June 2015, World Environment Day	On 5th of June, 2015, on the occasion of World Environment Day celebrations the We Love India foundation organized Environmental awareness program, Environmental conveyances, Canvas Paintings, Public awareness campaigns and other activities at Bandra. In addition to the participants of the program, celebrity movie stars, sportspersons and Minister of State for Environment graced the occasion.
June 2015	On 5th June 2015, World Environment Day Environment Club of India, Pune's Financial Donations	Financial assistance for environmental awareness of World Environment Day was granted by Environment Club of India, Pune.

Vasundhara Award distribution on the eve of World Environment Day 2015

World Environment Day Inauguration Programme
(Participation of Hon'ble Shri. Ramdasji Kadam, Minister for Environment & Forest, GoM, Hon'ble Shri. Pravin Pote – Patil, Minister for State Environment, GoM, Hon'ble Smt. Malini Shankar, principal Secretary, Environment Department, GoM, Hon'ble Dr. P. Anbalagan, Member Secretary, MPCB in World Environment Day 2015 inauguration function held at Mumbai)

Short film award distribution by Hon'ble Shri. Ramdasji Kadam, Environment Minister, GoM on the eve of World Environment Day 2015 at Mumbai

June 2015	On 5th of June 2015, World Environment Day, Bhima Shankar Foundation's Financial Grant	Financial assistance was provided for environmental awareness among school students on behalf of Bhima Shankar Foundation. In this initiative, Bhima Shankar Foundation has organized ten such programs in the rural areas of Pune district for the promotion of essay competition, elocution competition, plantation, cycling and fuel conservation.
July 2015	Financial grant to Environmental Education Program for the campaign 'Paryavaranachi Vaari Pandharicha Daari'.	On the occasion of Ashadhi Ekadashi, a campaign for environmental awareness was organized on the theme of 'Paryavaranachi Vaari Pandharicha Daari' in the region of Alandi to Pandharpur. Since the situation of the environment in the city and rural areas are similar in the present day, around 10 lakh devotees of Pandharpur were sent a message for plastic waste removal, proper use of water, electricity and natural resources, use of limited electrical power for agriculture, use of organic fertilizers, proper waste management of wet waste dry waste. This message was made public through the folk art, popularly known as Kirtan, Bharud, and Porvada. In this fifteen-day-long Sangeet natak Academy award winner, Smt. Chandabai Tiwari, famous Shahir Shree Devanand Mali and Hari Bhakta Pandit Shri. Dnyaneshwar Maharaj Wabale made public awareness through Bharud, Porvada, Kirtan respectively. This year's launch was inaugurated at Pune by Additional Chief Secretary, Environment Department, Smt. Malini Shankar, Member Secretary, MPCB, Mr. P. Anbalagan, with his expert of folk arts and Dr. Prakash Khandge, Commissioner, Pune Municipal Corporation. This was

		organized on the eve of Ashadi Ekadashi graced by the presence of Hon'ble Chief Minister Devendra Fadnavis, Mrs. Amruta Fadnavis, Guardian Minister of Solapur, Mr.Vijay Deshmukh and other dignitaries.

Inauguaration of environmental awareness program based on theme "Paryavranchi Vaari Pandharicha Daari"

A campaign for environmental awareness based on theme "Paryavranchi Vaari Pandharicha Daari"

June 2015	On 5th of June 2015 Financial Assistance for Green Idea 2015 was organized by Mumbai Tarun Bharat and Samarth Bharat Vyaspeeth	On the occasion of World Environment Day, the event of 'Green Idea' was organized in Thane with a joint venture of Mumbai Tarun Bharat and Samarth Bharat Vyasapeeth, Thane. Financial subsidy was provided by MPCB for the event.
June 2015	On 5th of June, 2015 public awareness articles were published by the newspapers Maharashtra Times and Times of India	Public awareness messages were published in all the editions of the Times of India and Maharashtra Times on occasion of World Environment Day.
August 2015	Financial Assistance for 92.7 BIG FM Big Green Ganesha event	The 92.7 BIG FM and MPCB s organized Big Green Ganesh in Mumbai city. In this initiative, people were invited to organize the Big Green Ganesha Van at various places in Mumbai City and citizens were given an opportunity to donate waste papers and newspapers for this program. Ganesh idols were then made out of this waste by 92.7 BIG FM radio channel. This program was held in the Sahyadri State guest house, in presence of Hon'ble Chief Minister of Maharashtra, Shri. Devendra Fadnavis, Minister of Environment, Shri Ramadasbhai Kadam, Minister of State, Shri Pravin Potte Patil, Additional Chief Secretary, Environment Department, Mrs. Malini Shankar, Member Secretary Dr. P. Anbalagan, 92.7 BIG FM Director Mr.Tarun Katiyal wherein school children were donated the waste newspapers who made the eco-friendly Ganesh Murtis . At the same time, exhibition of eco-friendly Ganesh murti was also organized. A special studio was set up in the city of Lalbagh in Mumbai city for a total of 10 days in Ganesh Festival. During this time, the Chief Minister, the Minister of Environment, Minister of State

		for Environment, famous cine artiste's public awareness messages were also broadcasted.

Hob'ble Chief Minister visiting exhibition of eco-friendly Ganesh idols held at Sahyadri Guest House, Mumbai. Hon'ble CM accompanied by Minister of Environment, Shri. Ramadasbhai Kadam & Member Secretary Dr. P. Anbalagan

Big Green Ganesha Festival

August 2015	Eco-Friendly Ganeshotsav Financial grants by ZEE 24-TAAS	The State-level competition for domestic Eco-Friendly Ganeshotsav Competition 2015 was organized in association with MPCB and ZEE 24-TAAS. More than 700 participants participated in this competition. The event was presented in the presence of Hon'ble Minister Shri Ramadasbhai Kadam, Additional Chief Secretary of Environment, Mrs. Malini Shankar, and Member Secretary of the Board of Directors Mr. P. Anbalagan. The special program for this project was broadcasted.
August 2015	Eco-Friendly Ganeshotsav Financial grants by ABP-MAZA	On behalf of MPCB and ABP MAZA News channel, eco-friendly Ganeshotsav was celebrated in the housing societies of the major cities of the State, for which a special campaign was organized. The special broadcast was broadcasted in the news of this channel on the occasion of Ganeshotsav celebrated in the housing societies of Mumbai, Pune, Nashik and Nagpur. At this time special talk shows were organized for half an hour by ABP MAZA channel. In addition to this, Adinath Kothare, a popular Marathi filmmaker, and Urmila Kanetkar, promoted this for organizing eco-friendly Ganesh Utsav in the entire State. The winners of the competition were awarded certificates by MPCB and Bappa's Prasad at their homes. Both the artists also visited the HQ of MPCB. The special story was broadcasted on ABP MAZA VAHINI.
August 2015	Financial grant for the Eco-friendly domesti Ganesh Festival 2015, organized by Loksatta and MPCB	Eco-friendly domestic Ganeshotsav decoration competition was organized jointly by MPCB and Loksatta at six-divisional level of Loksatta daily in Mumbai, Pune, Nashik,

		Nagpur, Ahmednagar and Aurangabad. More than 2000 participants participated in this competition. In this competition, the prize distribution ceremony was held in the presence of the Minister of State of the Environment, Additional Chief Secretary, Environment Department, Mrs. Malini Shankar & Member Secretary, Dr. P. Anbalagan. It was published in the Loksatta newspaper.
August 2015	Eco Friendly Ganesh Utsav's Financial Grant by UFO Digital Movies	Messages from the Marathi and Hindi film industry artiste to celebrate Eco-friendly Ganesh Festival were broadcasted for two weeks in 205 digital cinemas in the entire State.
August 2015	Financial Assistance for Eco Friendly Ganeshotsav by Lokmat-Marathi	A one page supplement was published by the Lokmat Mumbai newspaper to celebrate Eco-Friendly Ganesh Festival
August 2015	Eco Friendly Dahi Handi 2015	The Eco Friendly Dahihandi Festival 2015 was organized in association with the IDEAL Book Company and the MPCB. In this program, awareness campaign was organized to increase awareness about noise pollution in association with famous Marathi film industry artists wherein a rally was organized in an open-deck BEST bus. On the day before Dahi Handi, street artists also performed street plays in Dadar and Lalbagh area, while on the day of Dahi handi the rally was organized in the presence of famous artists of Zee TV and E-TV. The handi was broken near Chhabildas High School in Dadar, in presence of famous cine & TV artists and MPCB officials.
August 2015	Public Awareness for Eco-Ganesha Program organized by Dainik Sakal and MPCB	Dainik Sakal and MPCB collaborated to spread awareness of celebrating eco-friendly Ganesh festival by was publishing this message in the daily edition of the Dainik Sakal.

Marathi film celebrities participated in Eco-Friendly Dahi Handi event held at Lalbaug, Mumbai during August 2015

Figure 6.13 Eco Friendly Dahi Handi Event

August 2015	Public Awareness for Eco-Ganesha Program organized by DNA and MPCB	DNA and MPCB has organized Eco- Ganesh idol in the selected mall of Mumbai city based on the auspicious tribute to celebrate the eco-friendly Ganesh festival. In this initiative of the DNA, the MPCB was involved as a co-

		coordinator. Famous actors from Hindi film industry were involved in this program. The prize ceremony was held in the presence of the Public Relations Officer
August 2015	Financial Assistance to Times Green Ganesha as a Public Awareness Program	Eco Green Ganesha was organized in association with MPCB, Environment Department, Maharashtra Government and Times of India Group. Eco-friendly Ganesh competition was organized for Sarvajanik Ganeshotsav Mandal and Housing Societies in Mumbai city. In this campaign, a public awareness program was organized at various malls, cinema theaters in Mumbai city for Eco-friendly Ganesh idols, a Eco Ganesh idol workshop was organized for schools students and cleaning the Visarjan sites at Girgaum Chowpatty, Juhu Beach and Versova beach, during Ganesh Visarjan. This initiative was inaugurated at Lala Lajpat Rai School in the presence of popular actors. The film was produced by a The Times of India for spreading these messages which was publicized for 15 consecutive days.
August 2015	Eco-Ganeshas awareness campaign organized by Dainik Samana and MPCB	In association with the Daily Samana, the eco-friendly public Ganeshotsav competition was organized at the centers of Mumbai, Pune and Aurangabad. The event was presented in the presence of Hon. Minister Shri Ramdasbhai Kadam, Additional Chief Secretary of Environment, Mrs. Malini Shankar and Member Secretary of the Board of Directors Mr. P. Anbalagan.
August 2015	Financial grant for displaying awareness messages on eco-friendly Ganesh Utsav on Times OOH! BEST Bus	Public awareness message was displayed for a period of 15 days on the bus stand of the BEST bus stops in the city of Mumbai to celebrate Ganesh Utsav. This message was

	Stop Shelter	published on the total of 70 bus stops.
October 2015	Governor's Now Magazine's Public Awareness Message	Governor's Now Magazine published a special edition of the State government for completing a year. Environment awareness messages were published in the articles.
November 2015	Diwali UFO Digital Cinema Public awareness message	UFO Digital Movies' message with Marathi and Hindi film industry artists to celebrate eco-friendly Diwali were broadcasted for two weeks in 205 digital cinemas in the State.
November 2015	Diwali Innovation Set	An innovative Diwali set was created to celebrate the pollution-free Diwali on Diwali Festival 2015. The Diwali set included Diwali gift card, Four Pantya, Vati, Aromatic essence, Rangoli of five colors, white rangoli, rangoli mesh and Rangoli template papers, fragrant soaps, small calendars. Similarly, a beautiful box was prepared for the commodity and the name of the Maharashtra Pollution Control Board and public awareness messages were inscribed. The Diwali sets were distributed among all the ministers in the ministry, all secretaries , CMO's officials / employees, officers / employees of the Environment Department, the MPCB Headquarters in Mumbai and Regional Offices of Thane, Raigad, Navi Mumbai, Kalyan and centralized laboratory 's officers/employees and also to important government offices in Mumbai city. The program was first of its kind by MPCB.
November 2015	Public awareness message of Diwali on TV	Chief Minister, Minister of Environment, Minister of State for Environment's message of "Celebrate pollution free Diwali" was broadcasted in the channels: ZEE 24 TAAS, ABP MAZA, IBN Lokmat, Star PRAVAH, Mi Marathi, TV9 Maharashtra, Sam TV,

		Jayamaharashtra, etc.
November 2015	Diwali FM Radio Public awareness Message	The message of public awareness of the Chief Minister, Minister of Environment, Minister of Environment, environment minister, "Celebrate pollution-free Diwali" was broadcasted on FM radio channels.
November 2015	Diwali Bus Stop Nagpur	The message of the Chief Minister, Minister of Environment, Minister of Environment, Minister of Environment, "Celebrate pollution-free Diwali" was published for a period of 15 days at a 50 lit bus stops in Nagpur city.
November 2015	Diwali TIMES OOH! Bus Stop Mumbai	Chief Minister, Minister of Environment, Minister of State for Environment, Minister of State for Information's message of "Celebrate pollution free Diwali", was published for a period of 15 days at 70 lit and non-lit bus stops in the city of Mumbai.
November 2015	Mumbai Doordarshan Dipotsav	To celebrate pollution free Diwali, Sahyadri channel of Mumbai Television had presented a special program for five days in order to preserve the richness of Diwali. In this program, the message from Chief Minister, Environment Minister, and Minister of State for Environment for a pollution-free Diwali was disseminated.
November 2015	Publishing Diwali Magazine Issue 2016 for Environmental Awareness	In the selected Diwali magazine issue, the people of the State were spread messages of celebrating eco-friendly Diwali
December 2015	Mi Kanjurkar Pratishthan-Environmental Public awareness program	A festival showing the identity of the culture of Konkan was organized by Mi Kanjarkar Pratishthan. The program was attended by MPCB officials as an awareness program for the environment and pollution in Konkan.
March 2016	Ecofolks Green Theater Festival, Inter School Theater Competition in	Green Theater Festival, an Inter-School Drama Competition was organized jointly by Ecofolks and MPCB. The competition was

	Mumbai Pune, Aurangabad, Kolhapur, Nagpur and Nashik	organized in Mumbai, Pune, Nagpur, Aurangabad, Kolhapur and Nashik. This competition was held in two rounds, viz .primary round and final round. The primary round was held also in Latur, Nanded for the Aurangabad division. More than 300 schools took part in this competition.
March 2016	Public awareness message on television shows for eco-friendly Holi festival	For celebration of eco-friendly Holi festival 2016, the message by acclaimed artists' in Marathi and Hindi films public in interest was broadcasted over the leading television channels of the State.
March 2016	To disseminate public messages from FM channels for Holi festival-2016	Public awareness songs were broadcasted in the State for eco-friendly Holi celebrations in 2016 by leading FM radio channels of the State.
March 2016	Eco--friendly Holi messages on bus stop shelters in Nagpur city	Public awareness messages were published on 50 bus stations in Nagpur city to celebrate eco-friendly Holi.
March 2016	Financial grant for Photothon 2016	Photothon 2016 is an innovative competition for photographers, in which five photographs are presented which are clicked in 24 hours on any environmental issue. Best Photo, Best Small Photo and Best Photographer were the Special Awards for the winners. The competition was held in March 2016 at Mahim Nature Garden in Mahim, at 12.00 noon. The prize distribution ceremony was held at the main function of World Environment Day.
March 2016	Holi public awareness messages on environment by TIMES OOH! on BEST bus stop shelters	Public awareness messages were published on eco-friendly celebration of Holi on 70 Bus-stops in Mumbai city.

10.0 IMPLEMENTATION OF ACTS & RULES UNDER ENVIRONMENT PROTECTION ACT, 1986

Maharashtra Pollution Control Board (MPCB) is implementing various environmental legislations in the Maharashtra, mainly including Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Water (Prevention and Control of Pollution), Cess Act, 1977 and some of the provisions under Environmental (Protection) Act 1986. MPCB is functioning under the administrative control of Environment Department Govt. of Maharashtra. List of various Acts & Rules implemented by MPCB is as follows:

1. Water (Prevention & Control of Pollution) Act, 1974
2. Air (Prevention & Control of Pollution) Act, 1981
3. Maharashtra Water (Prevention & Control of Pollution) Rules, 1983
4. Maharashtra Air (Prevention & Control of Pollution) Rules, 1983
5. Maharashtra Biodegradable & Non-biodegradable Waste (Control) Act, 2006 and Maharashtra Plastic Carry Bags (Production & Usage) Rules, 2006
6. Environment (Protection) Act, 1986 and Rules & Amended Rules made thereunder, which are as follows:
    - i) The Environment (Protection) Rules, 1986 and Environment (Protection) Amendment Rules, 2016
    - ii) The Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016
    - iii) The Bio-Medical Waste (Management) Rules, 2016
    - iv) The Solid Waste (Management) Rules, 2016
    - v) The Construction & Demolition Waste (Management) Rules, 2016
    - vi) The Plastic Waste (Management) Rules, 2016
    - vii) The E-waste (Management) Rules, 2016
    - viii) The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
    - ix) The Plastic Manufacture, Sale and Usage Rules, 1999
    - x) The Noise Pollution (Regulation & Control) Rules, 1999
    - xi) The Batteries (Management & Handling) Rules, 2001
    - xii) The Wetlands (Conservation & Management) Rules, 2010
    - xiii) Notifications:
        - a. Environment Impact Assessment Notification, 2006
        - b. Coastal Regulation Zone Notification, 2011

11.0 PROSECUTIONS LAUNCHED & CONVICTION SECURED

11.1. Status of Legal Enforcement Upto March, 2016

I) Status of cases filed before Trial Courts

A)	Name of the Act	No. of cases filed	No. of cases disposed off	No. of cases pending
1.	Water (Prevention & Control of Pollution) Act, 1974	464	400	64
2.	Air (Prevention & Control of Pollution) Act, 1981	149	149	NIL
3.	Environment (Protection) Act, 1986 & Rules made thereunder	264	25	239

II) Status of Writ Petitions / PILs filed before Hon'ble High Court of Judicature at Bombay Bench at Mumbai/Aurangabad/Nagpur

Sr. No.	No. of Writ Petitions/PILs filed	No. of Writ Petitions/PILs disposed off	No. of Writ Petitions pending
1	893	438	455

III) Status of cases before the Hon'ble Supreme Court of India

Sr. No.	No. of Special Leave Petitions filed	No. of Special Leave Petitions disposed off	No. of Special Leave Petitions pending
1	69	38	31

IV) Status of Appeal/Application filed before the National Green Tribunal, New Delhi and Pune

Sr. No.	No. of Appeals / Applications filed	No. of Appeals / Applications disposed off	No. of Appeals / Applications pending
1	290	126	164

11.2. Maharashtra Right to Information Act, 2005

The said Act provide for setting out the practical regime of right to information for citizens to secure access to information under the control of public Authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commission and for matters connected therewith or incidental thereto.

There were 32 applications pending from April, 2015 to March, 2016. The Board received 32 Applications under Section 6(1) of the Maharashtra Right to Information Act, 2005 during the year. Out of these applications, 25 were disposed off and 7 applications were pending upto March, 2016.

Being aggrieved by the order passed by the Public Information Officer, the One Appeal was preferred by the Appellant under Section 19(1) of the Maharashtra Right to Information Act, 2005 before the Appellate Authority from April, 2015 to March, 2016. One Appeal was disposed off and no Appeals were pending upto March, 2016.

12.0 FINANCE AND ACCOUNTS

Annual Accounts of Maharashtra Pollution Control Board for the Financial Year 2015-16 are prepared as per section 40 of the Water (P&CP) Act, 1974 and as per the guidelines given in the Water (P&CP) Rule 1983, in the form Receipt & Payments, Income & Expenditure and Balance Sheet along with schedule of Fixed Assets.

The Comptroller & Auditor General of India (CAG) has allotted the statutory audit work of Board to M/s. Om Prakash S. Chaplot & Co., Chartered Accountant. The final Audit of Accounts was done by M/s. Om Prakash S. Chaplot & Co., Chartered Accountant for the Financial Year 2015-16.

The Audited Final Accounts submitted to the Board for approval & adoption. After approval of the Board same will be submitted to Environment Department, Govt. of Maharashtra and Account General Maharashtra.

The gist of annual Receipts and Payment Accounts, Income & Expenditure Accounts and Balance Sheet for the year 2015-16 is given in this chapter.

A) Total Income of Board for the year 2015-16 is Rs. 394.67Crores.

1. Consent Fees Rs. 262.02Crores
2. Analysis Charges Rs. 11.13Crores
3. Interest on Investment Rs. 90.07Crores
4. Reimbursement of Cess Rs. 19.90Crores
5. Other Income Rs. 11.55Crores

B) Total Expenditure of Board for the year 2015-16 is Rs. 76.87Crores.

1. Salary Expenditure Rs. 30.42Crores
2. Expenditure from Cess Rs. 3.38Crores
3. Expenses on Projects from Cess Fund Rs. 13.67Crores
4. Office Administration Expenditure Rs. 24.21Crores
5. Capital Expenditure Rs. 5.19Crores

C) Investment in Fixed Deposits as on 31.03.16 Rs. 1281.25 Crores.

Details of accounts for the year 2015-16 are attached as **Annexure 6**.

13.0 IMPORTANT MATTERS DEALT WITH BY THE BOARD

I. The MoEF&CC had published the CEPI index in which it was mentioned that the pollution level in Chandrapur city was on higher rank. Board has prepared Chandrapur Action Plan to control air pollution in the Chandrapur district and it is under implementation

II. The MoEF&CC had published the CEPI index in which it was mentioned that the pollution level in Navi Mumbai, Dombivali and Kalyan city was on higher rank. Board has prepared Chandrapur Action Plan to control air pollution in the Chandrapur district and it is under implementation

III. The representative of NEERI and IIT Bombay has been appointed for preparation of Wani Action Plan to reduce pollution level of Wani area. The joint survey was carried out by the representative NEERI, IIT Bombay and MPCB officials for evaluation of pollution potential and preparation of Wani Action Plan is under progress

IV. For the estimation of air pollutant, preparation of baseline air quality monitoring data for preparation of action plan and ensure effective implementation of Air Acts, increased monitoring of air samples

V. Coal washery industries have been directed for effective implementation of guidelines so as to reduce water/air pollution

VI. Thermal Power plants, Sponge iron industries and steel industries have been instructed to use washed coal with ash content lower than 34%, to adopt clean technology and to comply the MoEF&CC Notification about the same

VII. Draft guidelines to avoid air pollution problems for traditional brick manufacturing units prepared by this section. The guidelines are under process for approval and publication from Environment Department

VIII. Draft guidelines for Railway siding to avoid air pollution problems prepared by this section. The guidelines are under process for approval and publication from Environment Department

IX. Online application & payment for Consent Certificates; Dedicated Web Portal “ecMPCB” launched which facilitates Online acceptance of consent applications and online processing including online payment gateway and delivery of consents through a dedicated Web Portal

X. Consent licenses are issued and renewed for a minimum period of 5 years/ terms

XI. Randomized Risk Based Inspection for industries; Effective from Nov., 2015 all inspection are as per Risk Based Randomized Method, which brings in total transparency and eliminates discretion

XII. Become the 1st State to notify a comprehensive Enforcement policy for environmental compliances

XIII. Policies for regulation of tyres for end of life cycle process (Tyre Pyrolysis), Ready Mix Concrete Plants, Railway Sidings and Brick Kiln etc.

XIV. The Consents granted is increased from 12088 (2014-15) to 15084 (2015-16) including 983 consents through Consent Committee and 919 through Consent Appraisal Committee

XV. MPC Board has scored 92 out of 100 in implementation of DIPP's Ease of doing business reforms and topped 1st amongst all the Departments in Maharashtra The special efforts in implementation of reforms for Ease of Doing Business under Make in Maharashtra programme is well appreciated by the Hon'ble Chief Minister of Maharashtra and Minister for Industries, Govt. of Maharashtra by giving "Certificate of Appreciation" to the Member Secretary, MPCB

XVI. Arranging technical discussions and seminars to create awareness among metal and mining industries to adopt cleaner technologies

XVII. To avoid air pollution problems, the Board has informed to all thermal power plants to use coal as fuel having ash contain less than 34% and implementation of MoEF&CC Notification about the same

XVIII. To avoid air pollution problems, the Board has informed to all thermal power plants for the implementation of MoEF&CC Notification dated 03.11.2009 & 25.01.2016 of utilization of fly ash in the construction projects, in the brick manufacturing unit & in cement industry

XIX. To lessen effect of temperature rise and adverse effect of $PM_{2.5}$, the Board is encouraging industries and various organizations for tree plantations, use of renewable energy resources by giving rewards on 5th June every year

XX. The Board had initiated auto renewal of Consent for the plain renewal of Consent for industries which will submit a self-certification of environmental regulations. Presently, all consent applications for establish, first operate, expansion and plain renewals are considered uniformly by the Board, through the delegation of powers defined under consent management scheme. With the increased number of industries and also, the requirements of industries for amendment for products and expansion, the work load on MPCB for consent management has increased significantly. This additional workload of consent management has decreased scope of activities of the Board and the limited available manpower, thereby resulting in delay in grant of consents at various levels. The regulations provide four months' time to MPCB for consideration of consent application and it has been observed that the time taken for Consent management is exceeding this time frame in many cases,

which may attract 'Deemed consent* provisions. Therefore, it is decided to accept applications henceforth for Auto-Renewal of Consent to Operate of all the Red, Orange & Green Category industries along with Self-Certification and Commitment letter, and grant auto-renewal as per the delegation of power within stipulated time period without any delay.

The key features of this scheme are as under:

a. This scheme will be applicable for all the industries under Red Orange & Green category
b. The auto renewal of consent will be applicable when there is no increase in overall production capacity and also, in pollution load
c. This scheme is applicable, only in case if there is marginal increase (upto max 10%) in the capital investment which is due to infrastructure development clean technology, pollution control system and better production management, without increase in production or pollution load, the industry shall submit corresponding fees for consent to establish and also difference in consent to operate fees since the blocks year the capital investment is made on pro-rata basis
d. In case, if there is increase in Capital investment by over 10% then the application for grant of renewal of Consent under Auto-renewal Policy will not be considered. The industry needs to apply in prescribed consent application form
e. In case, if the capital investment is decreased, then the application for grant of renewal of Consent under Auto-renewal Policy will not be considered. The industry needs to apply in prescribed consent application form
f. For the auto-renewal, industries under purview of CC/CAC shall submit format of self-certification on compliances of earlier Consent conditions duly signed by person authorized by Company's Board and shall submit the copy of the said Resolution along with the prescribed fees at SRO/RO Offices
g. For the auto-renewal of industries other than CC/CAC purview, industry shall submit format of self-certification on compliances of earlier Consent conditions duly signed by the Board of Directors/ Partners/ Proprietor/ Unit Head of the industry along with the prescribed fees at SRO/RO Offices and, also industry shall submit Commitment towards compliance of the Consent conditions & the Environmental Laws in prescribed format
h. The auto renewal can be availed for the period of five Years for Red category of industries and for a minimum period of Six Years & maximum period of five terms for Orange & Green -3 Category of industries excluding Sugar industries as per Board's Circular dtd. 03/12/2015 regarding grant of renewal of Consent to Operate subject to payment of requisite fees
i. The industry shall submit it in prescribed format along with the prescribed fees either at MPCB HQ or RO/SRO offices. In case, the application is submitted at RO/SRO offices,

RO/SRO shall ensure that the same shall be forwarded to HQ within 3 days along with details of fees paid and DD details and DR details. The renewal will be reflected in MPCB website within 7 days

XXI. It is observed that most of the information contained in the application form like details of Hazardous Waste / Chemicals, Applicability of Environmental Clearance etc. is not related to the Green Category of industry and it confuses small entrepreneurs while filling application hence it has been decided to simplify consent procedure for green category. The CAC in its meeting held on 24/06/2015 had decided to introduce Simplified Consent application form for obtaining Consent for 'Green' category of industries with the approval of the Environment Dept. Also, Board in its 165th meeting held on 14/10/2015 had approved Simplified Consent application form for Green category of industry subject to approval of GoM. Environment Department, GOM vide letter No. SEAC-2016/C.R.-11/TC-2 dtd. 11/02/2016 had approved draft of Simplified Consent Application form for Green Category industry. Hence, for the ease of doing business, it has been decided to adopt Simplified Consent application form for Green Category industry and it is directed to accept Simplified Consent application form for Green Category industry.

XXII. Central Pollution Control Board has issued modified directions dated 07/03/2016 regarding classification of industries into Red/Orange/Green/White depending on pollution potential of industry in which IT/ITES Park is not included in any category. But, Industry which have installed D.G Set of capacity greater than 5 MVA with average running 12 Hrs/Day is categorized as ‘Red’ Category industry which have installed D.G Set of capacity greater than 1 MVA and less that 5 MVA is categorized as ‘Orange’ Category. Boards, categorization committee's decision dated 01.11.2015 to consider IT /ITES in Green category was reviewed in the Consent Appraisal Committee's meeting held on 27.04.2016 & policy decision was taken to categorize the IT & ITES industries /park depending on pollution potential based upon CPCB's modified direction dated 07.03.2016 regarding classification of industries and it has been classified as below by issuing circular dated 26.05.2016;

Green	:	up to 1000KVA
Orange	:	>1000KVA & < 5000KVA
Red	:	>5000KVA

XXIII. As per the Hon’ble National Green Tribunal’s order dated 15.10.2015,Board has amended the consents of the coal based thermal power plants and coal mines by the incorporation of the conditions for implementation of MOEF&CC Notification dated 02.01.2014 for use /supply of coal having ash contents less than 34%.

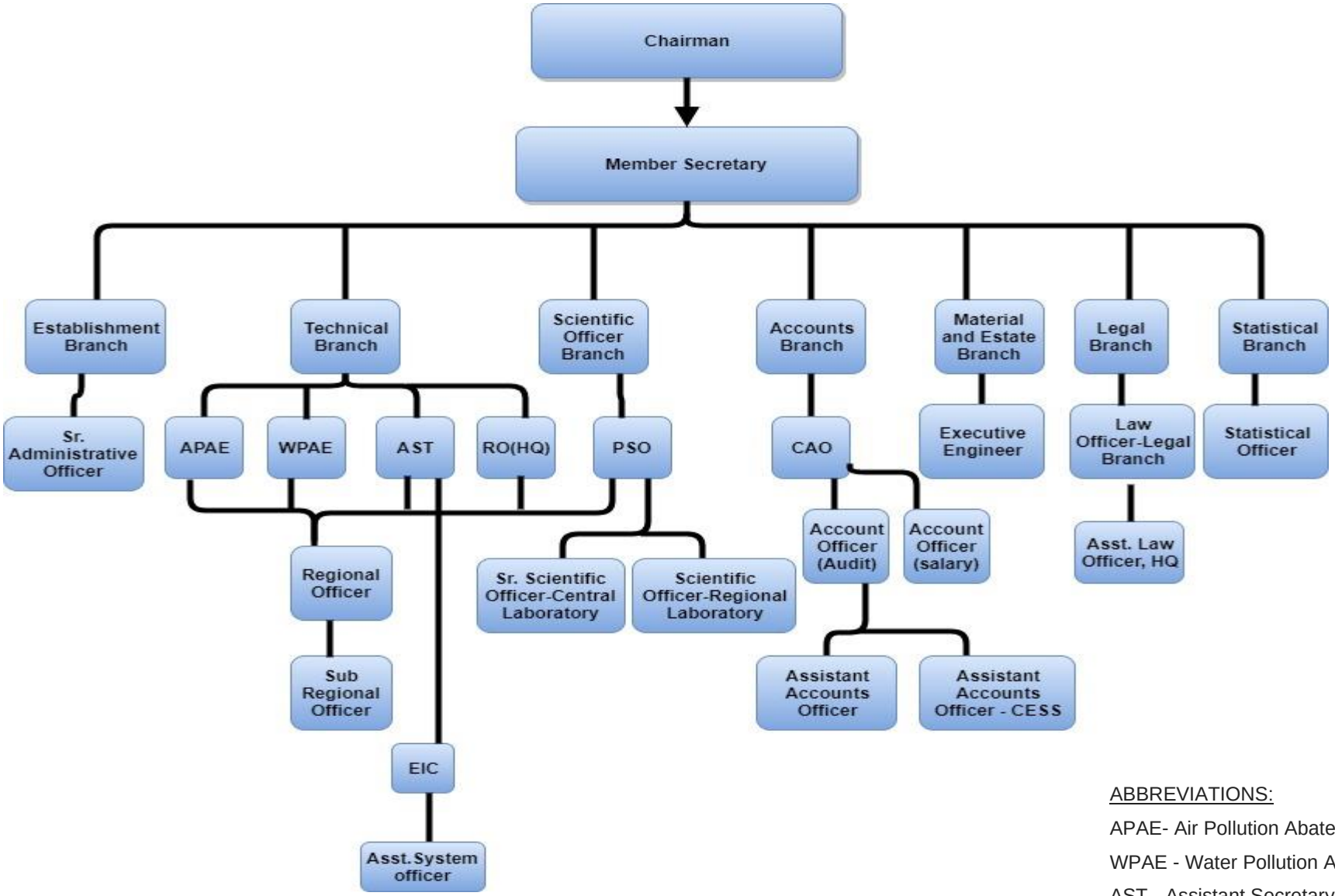
Board has amended the consents of the coal based thermal power plants and coal mines by the incorporation of the conditions for implementation of MOEF&CC Notification dated 03.11.2009 about utilization of the Fly ash for the construction projects, cement industries and brick manufacturing units, etc.

XXIV. For the preparation of the action plan to reduce pollution levels in the Aurangabad, Chandrapur and Kalyan area seminars were conducted with the stack holders.

To reduce depletion of ozone layer, Board organize “Ozone” day program to create awareness along peoples to discontinue use of ozone depleting materials. Also, acted towards making policy for restricting industrial use of Ozone depleting substances

ANNEXURE

ANNEXURE 1A – ORGANISATIONAL STRUCTURE



ABBREVIATIONS:

APAE- Air Pollution Abatement Engineer,

WPAE - Water Pollution Abatement Engineer,

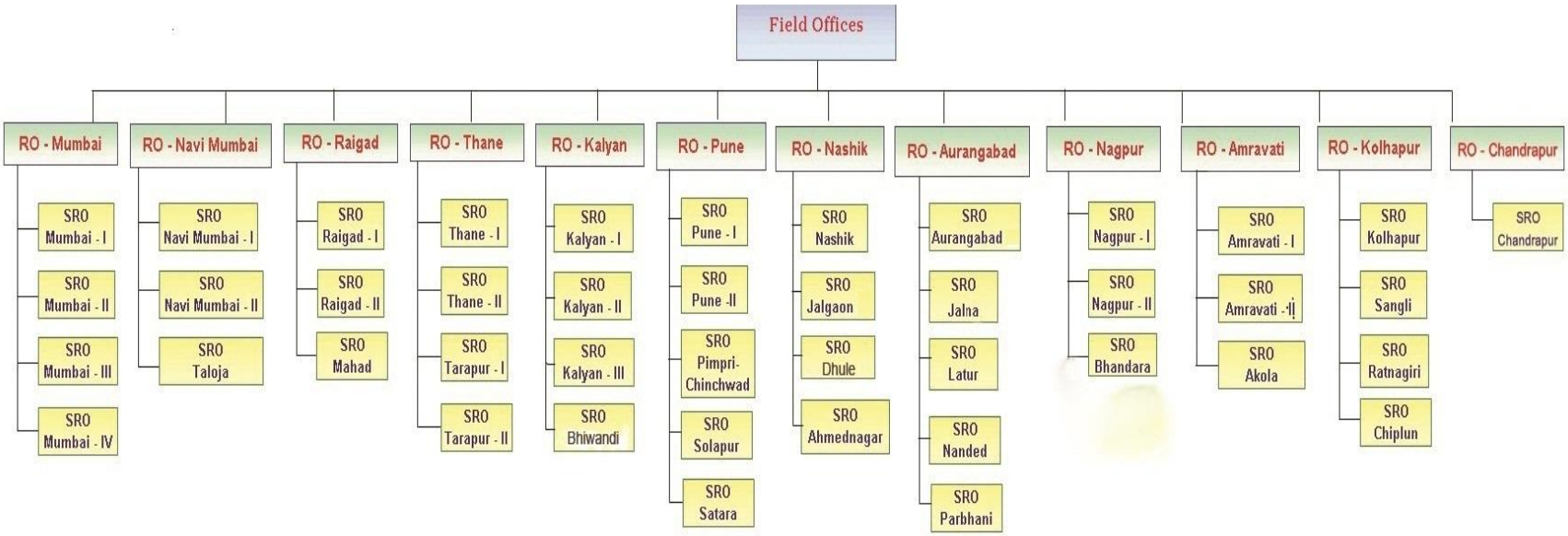
AST - Assistant Secretary (Technical),

RO (HQ) - Regional Officer (Head Quarter),

CAO - Chief Accounts Officer,

EIC - Environmental Information Center

ANNEXURE 1B – FIELD OFFICE CHART



ABBREVIATIONS:

SRO: Sub Regional Officer

RO: Regional Officer

ANNEXURE 2 - STAFF STRENGTH AS ON 31/03/2016

Sr.No.	CADRE	SANCTIONED	FILLED IN	VACANT
I	A-TECHNICAL			
1	Water Pollution Abatement Engineer	1	1	0
2	Air Pollution Abatement Engineer	1	1	0
3	Asst=Secretary (Technical)	1	1	0
4	Executive Engineer	1	1	0
5	Regional Officer	14	9	5
6	Sub-Regional Officer	53	38	15
7	Deputy Engineer	1	0	1
8	Field Officer	206	177	29
9	Statistical Officer	1	1	0
10	Statistical Assistant	1	1	0
11	Draughtsman	1	0	1
12	Field Inspector	42	12	30
13	Asst. Draughtsman	2	0	2
14	Tracer	6	2	4
15	Electrician	2	1	1
16	Instrument Fitter	1	1	0
	TOTAL	**334**	**246**	**88**

Sr.No.	CADRE	SANCTIONED	FILLED IN	VACANT
II	B-LEGAL			
1	Senior Law Officer	2	0	2
2	Law Officer	2	1	1
3	Asst.Law Officer	3	2	1
4	Legal Assistant	4	2	2
	TOTAL	**11**	**5**	**6**

Sr.No.	CADRE	SANCTIONED	FILLED IN	VACANT
III	C-SCIENTIFIC			
1	Princiipal Scientific Officer	1	1	0
2	Senior Scientific Officer	3	1	2
3	Scientific Officer	9	6	3
4	Junior Scientific Officer	26	23	3
5	Junior Scientific Asst.	40	32	8
6	Laboratory Asst.	7	6	1
	TOTAL	**86**	**69**	**17**

Sr.No.	CADRE	SANCTIONED	FILLED IN	VACANT
IV	D- Accounts & Administration			
1	Chief Accounts Officer	1	1	0
2	Senior Administrative Officer	1	1	0
3	Material Officer	1	0	1
4	Private Secretary	2	1	1
5	Accounts Officer	2	1	1
6	Administrative Officer	1	0	1
7	Asst. Secretary	1	0	1
8	Asst. Accounts/Admin Officer	11	7	4
9	Head Accountant / O.S.	20	14	6
10	Senior Clerk	50	41	9
11	Junior Clerk	64	61	3
12	Senior Steno	5	5	0
13	Junior Steno	27	16	11
14	First Clerk	17	12	5
15	Daftari	14	6	8
16	Drivers	74	62	12
17	Roneo Operator	1	0	1
18	Naik	2	0	2
19	Chowkidar	20	13	7
20	Peons	88	55	33
21	Sweeper	3	3	0
	TOTAL	**405**	**299**	**106**

ANNEXURE 3 - DETAILS OF REGIONAL & SUB-REGIONAL OFFICES WITH THEIR JURIDISCTIONS

Sr No	Regional Office	Address	Jurisdiction	Phone	Fax
1	**Amravati**	**18/25, Aashirwad building, Daffrin Hospital Road, Shree Kurshn Peth, Amravati-444601**	**Amravati, Akola, Buldhana, Vashim and Yavatmal district.**	**0721-2563594, 0721-2563592**	**0721-2563597**
Sub-Regional Offices					
i	S.R.O. Amravati I	18/25, Aashirwad building, Daffrin Hospital Road, Shree Kurshn Peth, Amravati-444601	Amravati district.	0721-2563593	0721-2563593
ii	S.R.O. Amravati II	18/25, Aashirwad building, Daffrin Hospital Road, Shree Kurshn Peth, Amravati-444601	Vashim District.	0721-2563594	0721-2563592
iii	S.R.O. Akola	Sub-Regional Office, Akola Opp. Vijay Smruti, Mahashabde Hospital, Birla Road, Ramdas Peth, Akola-444001.	Akola and Buldhana District.	0724-2442344	0724-2442344
2	**Aurangabad**	**Paryavaran Bhavan, A - 4/1, MIDC Area , Chikalthana, Near Seth Nandlal Dhoot Hospital, Jalna Road , Aurangabad - 431 210**	**Aurangabad, Jalna, Parbhani, Hingoli, Nanded, Beed,Latur**	**0240 - 2473462**	**0240 - 2473461**
Sub-Regional Offices					
i	S.R.O.Aurangabad I	Paryavaran Bhavan, A - 4/1 , MIDC Area , Chikalthana, Near Seth Nandlal Dhoot Hospital , Jalna Road , Aurangabad - 431 210	Aurangabad district.	0240 - 2473463	0240 - 2473462
ii	S.R.O.Jalna	Sub-Regional Office, Jalna, plot no. p 3/1 and p 3/2, Jalna Aurangabad Road, Hotel Aadarsh place, MIDC Colony	Jalna and Beed.	02482 - 220120	02482 - 220120

iii	S.R.O.Latur	Dev Towers, Opposite Tahsil Office, Latur - 413512	Latur, Osmanabad district.	02382 - 252672	-
iv	S.R.O.Nanded	Sub-Regional Office, Nanded H no. 1/1/353, Jelevar Complex, Paidewadi road, Nanded - 431602	Nanded distritct.	02462 - 242492	02462 - 242492
v	S.R.O.Parbhani	Devkripa Building, Rangnath Maharaj Nagar, Nandkheda Road, Parbhani - 431401	Parbhani, Hingoli, distritct. Tal - Parli-Vaijyanath	02452 - 226687	-
3	**Kalyan**	**Maharashtra Pollution Control Board, Sidhivinayak Sankul,3rd and 4th Floor, Station Road,KalyanD(West)**	**Kalyan, Bhiwandi, Ulhasnagar, Badlapur, Wada Murbad and Shahapur talukas of Thane District.**	**0251-2027343 0251-2310212**	**0251-2310192**
Sub-Regional Offices					
i	S.R.O. Kalyan I	Maharashtra Pollution Control Board, Sidhivinayak Sankul, 3rd and 4th Floor, Station Road, Kalyan (West	Kalyan, Bhiwandi taluka .	0251 - 2310167	-
ii	S.R.O. Kalyan II	Maharashtra Pollution Control Board, Sidhivinayak Sankul, 3rd and 4th Floor, Station Road, Kalyan (West)	Ulhasnagar , Badlapur taluka .	0251 - 2310167	-
iii	S.R.O. Kalyan III	Maharashtra Pollution Control Board, Sidhivinayak Sankul, 3rd and 4th Floor, Station Road, Kalyan (West)	Wada , Murbad, Shahapur Taluka	0251 - 2310167	-
iv	S.R.O. Bhiwandi	Maharashtra Pollution Control Board, Sidhivinayak Sankul, 3rd and 4th Floor, Station Road, Kalyan (West)	Sarvali MIDC and Bhiwandi District	0251 - 2310167	-
4	**Kolhapur**	**Maharashtra Pollution Control Board, Udyog Bhavan Building, Near Collectarate Office, Kolhapur - 416 002**	**Sangli, Kolhapur and Sindhudurga district.**	**0231-2652952 0231-2660448**	**0231-2660448**

Sub-Regional Offices					
i	S.R.O. Kolhapur	Udyog Bhavan Building , Near Collectarate Office, Kolhapur-416 002	Kolhapur district.	0231 - 2652952	0231 - 2660448
ii	S.R.O. Sangli	300/2 , Udyog Bhavan , Near Government Rest House , Vishrambaug , Sangli - 416 416	Sangli district.	0233 - 2672032	0233-2323732
iii	S.R.O. Ratnagiri	Revenue Department Employees Co-Op Credit Society Ltd., Office Building, Collectors Office Compound, Zandgaon , Ratnagiri - 415 639	Sindhudurga district and Rajapur, Lanja, Ratnagiri , Deorukh and Sangmeshwar taluka	02352 - 220813	02352 - 220713
iv	S.R.O. Chiplun	Parkar Complex, 1st floor, Behind Nagar Parishad Office, Chiplun Taluka. Chiplun Dist . Ratnagiri - 415 605	Chiplun, Guhagar, Khed,Dapoli and Mandangad taluka of Ratnagiri district	02355 - 261570	02355-261570
5	**Mumbai**	**Maharashtra Pollution Control Board, Raikar Chambers, "A" wing, 216, 2nd floor, Deonar Gaon Road, Near Jain Mandir, Govandi (E), Mumbai-400 088**	**Mumbai Municipal Corporation Area**	**25505928**	**25505926**
Sub-Regional Offices					
i	S.R.O. Mumbai-I	201-202, Raikar Chambers, Govandi Station Road, near Jain Temple, Govandi, Mumbai 400 088.	Mumbai Island, Ward No. A.B.C D. FF(South) F(North) G(South) and G(North).	25505926	-
ii	S.R.O. Mumbai-II	201-202, Raikar Chambers, Govandi Station Road, near Jain Temple, Govandi, Mumbai 400 088.	Part Of Mumbai Suburb, Ward No. M(East) M(West), H(East) H(West) and L.	25505926	-
iii	S.R.O. Mumbai-III	201-202, Raikar Chambers, Govandi Station Road, near Jain Temple, Govandi, Mumbai 400 088.	Part Of Mumbai Suburb, Ward No. K(East) K(West), S, N, and (P (South).	25505926	-

iv	S.R.O. Mumbai-IV	201-202, Raikar Chambers, Govandi Station Road, near Jain Temple, Govandi, Mumbai 400 088.	Suburb of Mumbai, Ward No. P(North), R(North), R(South) and T.	22640345	-
6	**Nagpur**	**Udyog Bhavan , 5th floor , Near Sales Tax Office, Civil Line , Nagpur - 440 001**	**Nagpur, Wardha, Bhandara,Gondia, Chandrapur and Godchiroli district.**	**0712 - 2565308**	**0712 - 2560851**
Sub-Regional Offices					
i	S.R.O. Nagpur I	Udyog Bhavan , 5th floor , Near Sales Tax Office, Civil Line , Nagpur - 440 001	Nagpur district.	0712-2560152	0712-2560139
ii	S.R.O. Nagpur II	Udyog Bhavan , 5th floor , Near Sales Tax Office, Civil Line , Nagpur - 440 001	Wardha district , Hingana taluka, (excluding Nagpur Municipal Corporation area) Umred, Bhivapur, Kuhi and Nagpur Gramin taluka of Nagpur district.	0712-2560152	-
iii	S.R.O. Bhandara	Sub-Regional Office, Bhandara, Petkar Building, Sant Tukodji Ward, Bhandara-441 904	Bhandara and Gondia district.	07184-258913	07184-260629
7	**Nashik**	**Udyog Bhavan, First Floor, Trimbak Road, Near ITI, Satpur, Nashik - 422007**	**Nashik , Ahmednagar, Jalgaon , Dhule, Nandurbar district.**	**0253 - 2365150**	**0253 - 2365150**
Sub-Regional Offices					
i	S.R.O.Nashik	Udyog Bhavan, First Floor, Trimbak Road, Near ITI, Satpur, Nashik - 422007	Nashik distrct.	0253 - 2365161	0253 - 2365161
ii	S.R.O. Jalgaon	Late Shri Bhikamchand Jain Municipal Market Building , Hall No. A , 3rd floor, Jalgaon - 425 001	Jalgaon district.	0257 - 2221288	0257 - 2221288

iii	S.R.O. Dhule	2nd Floor, Fulchand Plaza, B.C. College Road,Near S.S.V.P.S. Engineering College,Near vidya Nagari,Devpur, Dhule- 424 001	Dhule , Nandurbar district.	07184-260629	07184-260629
iv	Ahmednagar	Bharat Timber, 1st floor, Tilak Road, Opposite Sanket Hotel , Ahmednagar , 414 001	Ahemdnagar district.	0241 - 2470852	0241 - 2353852
8	**Navi Mumbai**	**Maharashtra Pollution Control Board, Raigad Bhavan, 7th floor, Sector - 11, C.B.D Belapur, Navi Mumbai**	**Part of Thane and Raigad district as mentioned against the Sub-Regional Offices.**	**022-27572739**	**022-27571586**
Sub-Regional Offices					
i	S.R.O.Navi Mumbai-I	Raigad Bavan, 7th floor Sector - 11, C.B.D Belapur, Navi Mumbai	Mahape, Kopar-khairne, Sarvali, Ghansoli, Rabale, Airoli, Dighe	022-27572740	-
ii	S.R.O. Navi Mumbai - II	Raigad Bavan, 7th floor Sector - 11, C.B.D Belapur, Navi Mumbai	Vashi, Ravane, Turbhe, Sanpada, Belapur	022 27572740	022 27571586
iii	S.R.O. Taloja	Raigad Bavan, 7th floor Sector - 11, C.B.D Belapur, Navi Mumbai	MIDC Taloja and Uran Taluka.	022 27572740	022 27571586
9	**Pune**	**Jog Center, 3rd floor, Mumbai Pune Road, Wakdewadi, Pune - 411003.**	**Pune Satara and Solapur district.**	**020 - 25811627**	**020 - 25811029**
Sub-Regional Offices					
i	S.R.O.Pune-I	Jog Center, 3rd floor, Mumbai Pune Road, Wakdewadi, Pune - 411003.	Pune Corporation area ,Daund , Indapur , Baramati,Purandar , Bhor and Velhe taluka of Pune district.	020 - 25811694	-

ii	S.R.O. Pune - II	Jog Center, 3rd floor, Mumbai Pune Road, Wakdewadi, Pune - 411003.	Haveli taluka : (excluding Pimpri Chinchwad Corporation Area.) Khed , Mulshi, Ambegaon, Junnar, Maval and Shirur taluka of Pune district..	020 - 25816451	-
iii	S.R.O.Pimpri-Chichwad	Jog Center, 3rd floor, Mumbai Pune Road, Wakdewadi, Pune - 411003.	Pimpri Chinchwad Municipal Corporation area including MIDC Pimpri , Bhosari and Akurdi.	020-25810222	-
iv	S.R.O.Satara	Sub-Regional Office, Satara New Government Bhavan, 2nd Floor, Near S.T. Sand, Sadar Bazar, Satara - 415 001..	Satara district..	02162-233527/ 237789	02162-233527
v	S.R.O.Solapur	4/B, Bali Block, Civil Lines, Oppsite Government Milk Scheme, Saat Rasta, Solapur - 413003.	Solapur district..	0217-2319850	217
10	**Raigad**	**Maharashtra Pollution Control Board, Raigad Bhavan, 6th floor, Sector - 11, C.B.D Belapur, Navi Mumbai- 400 614**	**Part of Raigad district as mentioned against the Sub-Regional Offices under him.**	**022-27572620**	**022-27562132**
Sub-Regional Offices					
i	S.R.O.Raigad-I	Maharashtra Pollution Control Board, Raigad Bhavan, 6th floor, Sector - 11, C.B.D Belapur, Navi Mumbai.	Khalapur taluka and Panvel taluka (Except MIDC - Taloja).	022-27572739	022-27572620
ii	S.R.O. Raigad II	Maharashtra Pollution Control Board, Raigad Bhavan, 6th floor, Sector - 11, C.B.D Belapur, Navi Mumbai.	Pen , Karjat, Sudhagad taluka.	022- 022-27572739	-
iii	S.R.O. Mahad	Samaik Suvidha Kendra Building, MIDC - Mahad, District Raigad - 402 309	Mahad Mhasla, Mangaon, Shriwardhan and Poladpur taluka.	02145 - 232372	02145-232373
11	**Thane**	**Maharashtra Pollution**	**Part of Thane**		**022-**

		Control Board, Plot No P-30, 5th floor Office Complex Building Mulund Checknaka, Thane - 400 604	**district as mentioned against the Sub-Regional Offices.**	**022-25802272**	**25805398**
Sub-Regional Offices					
i	SRO Thane I	Plot No. P-30, 5th floor, Office Complex Building Mulund Checknaka, Thane.	Thane Municipal Corporation Area.	022-25829582	022 25805398
ii	S.R.O.Thane II	Plot No. P - 30, 5th floor, Office Complex Mulund Checknaka ,Thane.	Thane taluka excluding Thane Municipal Corporation Area Vasai taluka.	022-25829582	022-25805398
iii	S.R.O.Tarapur	MIDC Office Building, Boisar Station,Post Taps,Tarapur,Dist Thane.	Tarapur MIDC and related area.	02525 - 273314	-
iii	SRO Tarapur II	MIDC Office Building Boisar Station, Post Taps, Tarapur , Dist Thane	Dahanu , Talasari , Mokhada,Javhar and Vikramgadh taluka and Palghar taluka (Except SRO-Tarapur- I jurisdiction).	02525 - 261581	02525 - 273314
12	**Chandrapur**	**Mahaveer Tower, 2nd floor, Mul Road, Chandrapur, 442 401**	**Chandrapur, Yavatmal, Gadchiroli district.**	**07172-251965**	**07172-251965**
Sub-Regional Offices					
i	S.R.O.Chandrapur-I	Mahaveer Tower, 2nd floor, Mul Road, Chandrapur, 442 401	Chandrapur, Yavatmal district.	07172-272410	07172-251965

ANNEXURE 4 – REGIONWISE INDUSTRY STATISTICS

Industry Statistical Report													
RO Office	**Green**			**Green Total**	**Orange**			**Orange Total**	**Red**			**Red Total**	**Grand Total**
	LSI	**MSI**	**SSI**		**LSI**	**MSI**	**SSI**		**LSI**	**MSI**	**SSI**		
RO Amravati		4	4315	4319	8	10	1920	1938	51	13	320	384	6641
RO Aurangabad	11	14	5376	5401	34	70	2004	2108	202	71	851	1124	8633
RO Chandrapur		2	430	432	15		410	425	149		247	396	1253
RO Kalyan		22	1472	1494	79	57	929	1065	135	107	1769	2011	4570
RO Kolhapur	1	22	9101	9124	30	48	3656	3734	240	75	1663	1978	14836
RO Mumbai		27	1845	1872	421	300	660	1381	170	54	480	704	3957
RO Nagpur	3	3	1665	1671	62	21	2215	2298	395	15	1253	1663	5632
RO Nashik	44	35	6117	6196	109	55	2312	2476	399	58	2036	2493	11165
RO Navi Mumbai	6	59	1540	1605	134	178	952	1264	168	31	1089	1288	4157
RO Pune	105	266	7070	7441	1098	511	4587	6196	1168	235	3558	4961	18598
RO Raigad		19	425	444	86	31	324	441	148	31	383	562	1447
RO Thane	1	13	1273	1287	251	24	451	726	190	33	950	1173	3186
Grand Total	**171**	**486**	**40629**	**41286**	**2327**	**1305**	**20420**	**24052**	**3415**	**723**	**14599**	**18737**	**84075**

ANNEXURE 5 - DETAILS OF TRAINING PROGRAMS ATTENDED BY MPCB OFFICIALS DURING YEAR APR-2015- MAR-2016

Sr. no	Training Date	Location	Subject	Name of Officers
1	23-24 April, 2015	Industrial Management Academy, New Delhi, at Hotel Ramada, Plaza Palm Grove, Juhu Beach, Mumbai.	"Right to Information Act 2005:Obligations & Strategies"	Utkarsh Shingare, FO, JD(WPC)
2	15-17 April, 2015	Navi Mumbai, As per NGT (WZ), Pune Bench, Order No. 157(THC)/2013	"Advances in Air Pollution Monitoring & Analysis"	28 Participants Mr. Kishor Gavankar, JSO Mr. Anil R Patil, JSA Mr. S. H. Nagare, JSO Mr. Sangam Taide, JSA Mrs. Madhura R. Pore JSA Mrs. Swapna Satam, JSA Mr. Devanand Jadhav, JSA Mr. Suresh V. Bhosale, SO Mrs. Sumitra S Mahajan, JSO Dr. Mahesh Rakh, JSO Mr. Dattatraya V. Nehe, JSO Mr. Ravindra P. Raut, JSA Mr. B. S. Gadhan, SO Mr. A.V. Mandavkar, JSO Mr. A. N. Sandansing, JSO Mr. S. A. Salunkhe, JSA Shri. D. R. Nanekar, JSA Mr. V. R. Thakur, SO Mr. S. R. Badgujar, JSO Mr. S. D. Mali, JSO Mr. S. K. Baviskar, JSO Mr. R. B. Sorte, SO Mr. G. S. Nagre, JSA Mrs. Anjana S. Sengupta, JSA Mr. Abhijit Wagh, JRF, Mr. S. A. Deshpande, JSA Mr. B. N. Sangle, JSO, Dr. Padmanabh Khadkikar, JSO
3	23-24 April, 2015	The Imperial, New Delhi, Indian Infrastructure, New Delhi.	"3rd Annual Conference on Sewage Treatment Plans"	Shri Shashikant Patil, FO, RO(HQ) & Shri Ketan Patil, FO, AS(T) Sec.
4	May-4 to 8 2015	Gowathi Assam C.S.E, Delhi	Waste Management Policies Issue Challenges an way forward	Kartik S Langote, F.O., J. D. (WPC) Sec.,S. L. Chavan, FO, AS(T), D. R. Bansod, FO AS(T)

5	05.08 May, 2015	Engineering Staff College, Hederabad.	"Continuing Professional Development Programme on "Laboratory Management System Awarness & Internal Auditing (As per ISO/IEC:17025:2005 & NABL Requirement)s	Mrs. Swa[ma Satam, JSA, C.Lab., Mrs. Meeta Deshmukh, JSA, R.Lab., Nashik, Mr. Ravindra Raut, JSA, R.Lab., Pune.
6	14 & 15 May, 2015	HICC, Hyderabad	Conference on "Green Cementech-2015 Theme: Make India Cement Plants World Class in Green	Shri V.M. Motghare, JD(APC) Shri N.N. Gurave, I/c. R.O.(HQ) Dr. A.N. Harshwardhan, R.O. Chandrapur
7	27-29 August, 2015	YASHADA, Pune	"Project Management for e-Governance"	Shri Dinesh Sonawane, Asst. System Officer, Ms. Ragini Butale, JSO, PSO Sec.
8	17-21 August, 2015	NEERI, Nagpur	Characterization of Domestic Waste Water and Design, Operation & Maintenance of Treatment Plants with Particular reference to Natural Treatment Technology	Mrs. Hema Deshpane, SRO, Nagpur-I Shri Gajanan Khadkikar, FO, Nagpur-I Shri Gajanan Nagare, JSA, Regional Lab., Nagpur Shri Surendra Karankar, F.O. R.O. Chandrapur
9	07-09 October, 2015	NGRI, Hyderabad	Monitoring Techniques of Organic Pollutants (PAH and VOC)	Pradeep Jagtap, F.O., SRO Mumbai-IV Shri S.K. Baviskar, JSO, C.Lab., N.M.
10	25-27 August, 2015	Centre for Development Advanced Computing, C-DAC, Pune	Decision support system from Air Quality Management	Shri V.M. Motghare, JD(APC) Shri P.M. Joshi, R.O. Chandrapur Shri S.L. Waghmare, SRO, Tarapur-I Shri M.R. Lad, SRO, Kalyan-I

11	04 December, 2015	Green Chemistry Foundation, Goregaon, Mumbai Hotel Countryyyard, Mumbai	Conference on "Green Chemistry"	Dr. A.N. Harshwardhan, R.O. Raigad Shri S.L. Waghmare, SRO, Tarapur-I Shri Nitin R. Shinde, SRO, Kalyan-II Shri T.g. Yadav, SRO Taloja
12	08-09 October, 2015	I.C.T., Matunga, Mumbai	"International Conference "SusChemE" on catalyzing research and technology innovation for sustainable future."	Shri J.B. Sangewar, R.O., Kalyan Dr. A.N. Harshwardhan, RO-Raigad T.G. Yadav, SRO, Taloja, S.R. Said, SRO-Mumbai-III V.N. Patil, SRO, Thane-I
13	09-11 November, 2015	EPTRI, Hyderabad	"Clean Development Mechanicsm (CDM): CDM Project implementation for Industrial Sector, Wasteland Sector, Mining and Carbon Trading"	P.M. Joshi, R.O. Chandrapur. Devidas Koparkar, SRO, Pune-II, Kiran Hasabnis, SRO, Nagpur-II
14	30.10.2015	GAD, GoM, Dist. Training Institute, Mumbai & YASHADA, Pune, Assembly Hall, 6th Floor, Mantralaya, Mumbai	Implementation of "Maharashtra Lokseva Hakka Adhiniyam, 2015	N.N. Gurav, I/c. R.O.(HQ). R.B. Andhale, SRO, Mumbai-II Amar Durgule, SRO, Mumbai-I
15	31.10.2015	CIDCO Bhavan, Navi Mumbai, M.S. MCZMA, Mantralaya, Mumbai	Meeting/Workshop on CRZ Notification-2011.	Dr. Y.B. Sontakke, JD (WPC). Dr. A.N. Harshwardhan, RO-Raigad Dr. Prakash Mumndhe, SRO, Mumbai-IV
16	26-27th Nov., 2015	Aqua Foundatoin, India Habitant Centre, Lodhi Road, New Delhi.	"IX World Aqua Congress "Reviving Tradintinal Water & Environment Conservation Technique.	Dr. Y.B. Sontakke, JD (WPC) Sanjay Bhosale, SRO Nashik

17	10-11th Dec. 2015	SIES, Nerul, Navi Mumbai	"National Conference on Environment Monitoring Assessment and Pollution Contrl	S.C. Kollur, SO, JD(APC), Section. V.V. Killedar, F.O. RO-Raigad Smt. Madhurima Joshi, FO-RO-Navi Mumbai, Yogesh Patil, F.O. JD(APC)
18	20th November, 2015	Coastguard Region (West), Conference Room 3rd floor, at Head Quarters, Coast Guard, Mumbai	"The Initial Planning Conference for Conduct of the Sixth National Level Pollution Response Exercise"	D.K. Khedkar, RO-Mumbai N.S. Lohalkar, I/c. RO-Navi Mumbai Dr. A.N. Harshwardhan, RO-Raigad
19	5 to 7 January, 2016	central Laboratory,MPCB, Navi Mumbai	"ISO 9001 and OHSAS:18001 Internal auditor's training"	19 Participants Mr. S. C. Kollur, SO & I/C, C. Lab Ms. V. D. Pednekar, JSO Mrs. Swapna Satam JSA Shri. S. S. Doke, RO Shri. Ravindra Raut, JSA Shri A Kurale, JSA Shri Sunil Salve JSA Shri. Mita R. Deshmukh, JSA Shri. Bipin Bhandare, JSO Shri. Gajanan Nangare, JSA Shri. V. V. Shinde, RO Shri. Suresh Mali, JSO Shri. A. F. Deshmane, I/c. RO Shri. B. N Sangale, JSO, I/C, Lab Shri. Saran Deshpande, JSA Shri. Anil Sandansing, JSO Shri. Dhananjay Nanekar, JSA Shri Anil Patil, JSA Shri. S. N. Nagare, JSO
20	18 to 22 January, 2016	Centre for Science and Environment, New Delhi	Water Quality Management	Shri G.D. Khadkikar, F.O., SRO Nagpur-I Mrs. S.S. Patil, F.O., R.O. Nashik
21	1 to 19 January, 2016	Centre for Science and Environment, New Delhi (2nd Week) At Ahmedabad (3rd Week)	"Two week Foundation Course and one week specialization course on compliance monitoring and enforcement	Shri Nitin Shinde, SRO, Kalyan-II Shri Manchak Jadhav, F.O., A.S.(T) Section Shri Abhijeet R. Kasbe, F.O., SRO, Chiplun

22	21 to 22 January, 2016	Nagpur	19th National Conference on e-Governance	Shri Dinesh Sonawane, Asst. System Officer, MPCB, Mumbai
23	4 to 6 March, 2016	Vigyan Bhavan, New Delhi organized by NGT, Principal Bench, New Delhi	International Conference organized by NGT, New Delhi on Global Environmental issues and south Asia Workshop on Compliance and Enforcement of Multilateral Environmental Agreements	Shri V.M. Motghare, JD (APC) Shri P.K. Mirashe, AS(T) Dr. Y.B. Sontakke, JD(WPC) Dr. A.R. Supate, PSO Shri N.N. Gurav, I/c. RO(HQ)

MAHARASHTRA POLLUTION CONTROL BOARD

Receipt & Payment Account for the Year 2015-16 (UNAUDITED)

Previous Year 2014-15		Receipt	Schedule No.	Current Year 2015-16		Previous Year 2014-15		Payment	Schedule No.	Current Year 2015-16	
Major Head	Sub Head			Amount	Amount	Major Head	Sub Head			Amount	Amount
161794646.37		OPENING BALANCE			178731519.23			I) CAPITAL EXPENDITURE			
	161536993.95	i) Cash at Bank		178476457.81		24867254.00		Fixed Assets Purchased	J		51868499.00
	257652.42	ii) Cash in Hand		255061.42							
	0.00	iii) Cash Balance Imprest Account		0.00				II) REVENUE EXPENDITURE			
						296741225.00		1) SALARY & ALLOWANCES			304220241.35
0.00		1) GRANT RECEIVED			0.00		285266982.00	i) Core Activity Segment		290389613.35	
	0.00	a) From State Governement		0.00			11474243.00	ii Cess Activity Segment		13830628.00	
	0.00	b) From Government of India		0.00							
						22556550.00		2) CPF BOARD CONTRIBUTION			18721347.00
1030000.00		2) FINANCIAL ASSIATANCE			2859707.00		21814537.00	i) Core Activity Segment		17975501.00	
	0.00	a) From State Governement		0.00			742013.00	ii) Cess Activity Segment		745846.00	
	1030000.00	b) From Government of India		2859707.00		9481439.00		3) GRATUITY FROM CESS FUND			5118175.00
					0.00						
512858378.00		3) REIMBURESEMENT OF CESS			199040754.00	132693087.00		4) OFFICE EXPENDITURE	A		144653147.13
						15516203.00		5) RUNNING EXPENDITURE OF LAB.	B		17786405.00
1779476235.95		4) REVENUE RECEIPT			2759108968.65	15312182.00		6) EXPENDITURE FOR VEHICLES	C		14018589.75
	1630048245.61	a) Consent Fees		2620240742.45		15478205.00		7) MAINTAINANCE & REPAIRS			14537703.00
	16932572.00	b) Bio Medical Authorisation Fees		27603905.00			7586368.00	i) Land & Building		3412526.00	
	132495418.34	c) Analysis Charges		111264321.20			544866.00	ii) Furniture & Fixture		2880959.00	
							7346971.00	iii) S.I. & O.A.		8244218.00	
74132212.00		5) OTHER RECEIPT	H		84631621.15						
						171373231.00		8) EXPENDITURE FROM CESS FUND	D		33756814.00
704008596.64		6) INTEREST ON INVESTMENT			900779753.58	39732749.00		9) PROJECTS EXP. From Cess Fund	E		136745300.00
681986.00		7) PROFIT ON SALE OF ASSETS			322000.00	9687771031.74		10) INVESTMENT (New)			12655185294.52
						17895466.00		11) MISCELLENEOUS ADVANCES			12655094.00
9449592.00		9) MISCELLENEOUS ADVANCES			16352777.00	86970.00		12) SECURITY DEPOSIT WITH OTHERS			96000.00
7383392506.01		10) INVESTMENT (MATURED)			9530471031.74	1975763.00		13) SUNDRY PAYABLES			854822.65
						0.00		14) CREDITOR			768386.00
2607964.00		11) SUNDRY PAYABLES			2367960.00	0.00		15) Paid to MoEF from Capital Receipt			941124.00
780758.00		12) CREDITORS			59029.00	178731519.23		CLOSING BALANCES			262798178.95
							178476457.81	i) Cash at Bank	F	260442826.13	
							255061.42	ii) Cash in Hand	G	240110.82	
							0.00	iii) Revenue Demand Draft in Hand		2115242.00	
10630212874.97					13674725121.35	10630212874.97					13674725121.35

Chief Accounts Officer
Maharashtra Pollution Control Board

Member Secretary
Maharashtra Pollution Control Board

Chairman
Maharashtra Pollution Control Board

For M/s Om Prakash S. Chaplot & Co.
Chartered Accountants
M/s Om Prakash S. Chaplot & Co. MUMBAI Chartered Accountants
Yash Punj...
M. No. - 415552
Partner

MAHARASHTRA POLLUTION CONTROL BOARD

Income & Expenditure Account for the Year 2015-16 (AUDITED)

Previous Year 2014-15		Expenditure	Schedule No.	Current Year 2015-16		Previous Year 2014-15		Income	Schedule No.	Current Year 2015-16	
Major Head	Sub Head			Amount	Amount	Major Head	Sub Head			Amount	Amount
296741225.00		A) SALARY & ALLOWANCES			304220241.35			1) GRANT RECEIVED			
	285266982.00	a) Core Activity Segment		290389613.35				a) From State Governement			0.00
	11474243.00	b) Cess Activity Segment		13830628.00				b) From Government of India			0.00
22556550.00		B) CPF BOARD CONTRIBUTION			18721347.00	1030000.00		2) FINANCIAL ASSIATANCE			2859707.00
	21814537.00	i) Core Activity Segment		17975501.00				a) From State Governement		0.00	
	742013.00	ii) Cess Activity Segment		745846.00			1030000.00	b) From Government of India		2859707.00	
132693087.00		4) OFFICE EXPENDITURE	A		144653147.13	512858378.00		3) REIMBURESEMENT OF CESS			199040754.00
15516203.00		5) RUNNING EXPENDITURE OF LAB	B		17786405.00						
15312182.00		6) EXPENDITURE FOR VEHICLES	C		14018589.75	1779476235.95		4) REVENUE RECEIPT			2759108968.65
15478205.00		7) MAINTAINANCE & REPAIRS			14537703.00		1630048245.61	a) Consent Fees		2620240742.45	
	7586368.00	i) Land & Building		3412526.00			16932572.00	b) Bio Medical Authorisation Fees		27603905.00	
	544866.00	ii) Furniture & Fixture		2880959.00			132495418.34	c) Analysis Charges		111264321.20	
	7346971.00	iii) S.I. & O.A.		8244218.00							
						74132212.00		5) OTHER RECEIPT	H		84631621.15
22186628.00		8) EXPENDITURE FROM CESS FUND	D		33756814.00						
171373231.00		9) PROJECTS EXP. From Cess Fund	E		136745300.00						
						704008596.64		6) INTEREST ON INVESTMENT			900779753.58
33532181.06		I) DEPRECIATION	I		32359966.63						
						681986.00		7) PROFIT ON SALE OF ASSETS			322000.00
2346797916.53		**J) Excess of Income Over Expenditure**			3229943290.52						
							0.00				
3072187408.59					3946742804.38	3072187408.59					3946742804.38

Chief Accounts Officer
Maharashtra Pollution Control Board

Member Secretary
Maharashtra Pollution Control Board

Chairman
Maharashtra Pollution Control Board

For M/s Om Prakash S. Ch... & Co.
Chartered Accountants

Yash Pur...
M. No. - 41655...
Partner

M/s Om Prakash S. Chaplot & Co. * Chartered Accountants * MUMBAI

MAHARASHTRA POLLUTION CONTROL BOARD

Balance Sheet at the Year End 31st March, 2016 (UNAUDITED)

Previous Year 2014-15		Liability	Schedule No.	Current Year 2015-16		Previous Year 2014-15		Assets	Schedule No.	Current Year 2015-16	
Major Head	Sub Head			Amount	Amount	Major Head	Sub Head			Amount	Amount
1262962387.48		A) CAPITAL FUND			1319557762.48			1) WORKS (Form K-IV)			
		1) Grant received from Govt. for capital expenditure (Including capital value of assets transferred from Ex Directorate to MSWPIC & WHO Delhi)						2) FIXED ASSETS	J		
						462008366.62		a) Land & Building			452343995.85
	1238095133.48	Amount utilised up to previous year (Opening Balance)		1262962387.48		22650123.58		b) Laboratory Equipments			56787816.98
	24867254.00	Add:- Transfer from Excess of Income over Expenditure for Capital Expenses		51868499.00		36282655.32		c) Vehicle			38729244.77
	0.00	Add:- Transfer from Capital Receipt for procurement of Lab. Equipment.		4726876.00		91076778.87		d) Furniture & Fixture			85581492.59
						64735744.29		e) Scientific Instruments			62819650.86
5668000.00		B) CAPITAL RECEIPT from MoEF			0.00						
						9687771031.74		3) INVESTMENT	K		12812485294.52
2490467.00	2565750.00	C) Fund from UNIDO		2490467.00	1454486.00						
	75283.00	Less :- Expenditure		1035981.00		252273744.29		4) CURRENT ASSETS			332738721.01
14410133.65		D) CURRENT LIABILITIES			15213914.00		72445255.06	a) MISCELLENEOUS ADVANCES	L	68747572.06	
	12456455.65	1) Sundry Payables / Deposits	N	13969593.00							
	1953678.00	2) Creditors	O	1244321.00			1096970.00	b) SECURITY DEPOSIT WITH OTHER	M	1192970.00	
1606700404.66		E) RESERVE & PROVISIONS			1862927997.87			c) CLOSING BALANCES			
	1579322102.57	1) Pension Fund	P	1830667870.78			178476457.81	i) Cash at Bank	F	260442826.13	
	27378302.09	2) Gratuity Fund	Q	32260127.09			255061.42	ii) Cash in Hand	G	240110.82	
							0.00	iii) Revenue Demand Draft in Hand		2115242.00	
7724567051.92		**F) INCOME & EXPENDITURE APPROPRIATION ACCOUNT**	R		10642332056.23						
10616798444.71					13841486216.58	10616798444.71					13841486216.58

Significant Accounting Policies and Notes on Accounts — S

Chief Accounts Officer
Maharashtra Pollution Control Board

Member Secretary
Maharashtra Pollution Control Board

Chairman
Maharashtra Pollution Control Board

For M/s Om Prakash S. Chaplot & Co.
Chartered Accountants
MUMBAI

For M/s Om Prakash S. Chaplot & Co.
Chartered Accountants
Yash Punjabi
M. No. - 41553
Partner

Maharashtra Pollution Control Board

Fixed Assets (Schedule - J)

Financial Year 2015-16

Sr. No.	Descriptions of Fixed Assets	Gross Block				Depreciation			Net Block	
		Opening Balance as on 01/04/2015	Additions	Deletion	Total	As at 31/03/2015	For the Year	As at 31/03/2016	As at 31/03/2016	As at 31/03/2015
1	Land & Building	578,022,494.37	-	-	578,022,494.37	116,014,127.75	9,664,370.77	125,678,498.52	452,343,995.85	462,008,366.62
2	Laboratory Equipments	236,090,417.88	35,321,351.00	-	271,411,768.88	213,440,294.30	1,183,657.60	214,623,951.90	56,787,816.98	22,650,123.58
3	Vehicles	85,292,831.06	7,823,794.00	-	93,116,625.06	49,010,175.74	5,377,204.55	54,387,380.29	38,729,244.77	36,282,655.32
4	Furniture & Fixture	173,002,724.38	2,869,612.00	-	175,872,336.38	81,925,945.51	8,364,898.28	90,290,843.79	85,581,492.59	91,076,778.87
5	Scientific Instuments & Office Appliances	184,509,432.68	5,853,742.00	-	190,363,174.68	119,773,688.39	7,769,835.43	127,543,523.82	62,819,650.86	64,735,744.29
Total Rs.		1,256,917,900.37	51,868,499.00	-	1,308,786,399.37	580,164,231.69	32,359,966.63	612,524,198.32	696,262,201.05	676,753,668.68

Chief Accounts Officer
Maharashtra Pollution Control Board

Member Secretary
Maharashtra Pollution Control Board

Chairman
Maharashtra Pollution Control Board

For M/s Om Prakash S. Chaplot & Co.
Chartered Accountants

Yash Punjawat
M. No. - 415552
Partner

M/s Om Prakash S. Chaplot & Co. * Chartered Accountants * MUMBAI

Maharashtra Pollution Control Board

Kalpataru Point, Sion [E], Mumbai - 400022

Website: www.mpcb.gov.in

DESIGNED BY:

technogreen environmental solutions