

ANNUAL REPORT

2017-18



Central Pollution Control Board
Ministry of Environment, Forest & Climate Change
Website: www.cpcb.nic.in

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CHAPTER - I

INTRODUCTION

Under the provisions of The Water (Prevention & Control of Pollution) Act, 1974, the Central Government constituted the '**Central Board for the Prevention and Control of Water Pollution**' on September 23, 1974. The name of the Central Board was amended to **Central Pollution Control Board (CPCB)** under the Water (Prevention & Control of Pollution) Amendment Act, 1988 (No. 53 of 1988). The Central Pollution Control Board has been entrusted with the added responsibilities of Air Pollution Control since May, 1981 under the provisions of the Air (Prevention and Control of Pollution) Act, 1981. The enactment of the Environment (Protection) Act, 1986, which is umbrella legislation for enforcement of measures for protection of environment and several notifications of Rules under the Act widened the scope of activities of the Central Board.

The CPCB has been continuously playing a key role in abatement and control of pollution in the country by generating, compiling and collating data, providing scientific information, rendering technical inputs for formation of national policies and programmes, training and development of manpower and through activities for promoting awareness at different levels of the Government and Public at large.

1.1 FUNCTIONS OF THE CENTRAL BOARD

The main functions of CPCB, as spelt out in The Water (Prevention and Control of Pollution) Act, 1974, and The Air (Prevention and Control of Pollution) Act, 1981, are:

- (i) To promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution; and,
- (ii) To improve the quality of air and to prevent, control or abate air pollution in the country.

In addition to the main functions of promoting cleanliness of streams and wells, improving the quality of air and to prevent, control or abate air pollution, CPCB has been assigned following National Level functions:

- Advise the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air;
- Plan and cause to be executed a nation wide programme for the prevention, control or abatement of water and air pollution;
- Co ordinate the activities of the State Boards and resolve disputes among them;
- Provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water and air pollution, and for their prevention, control or abatement;
- Plan and organise training of persons engaged in programmes for prevention, control or abatement of water and air pollution;
- Organise through mass media, a comprehensive mass awareness programme on prevention, control or abatement of water and air pollution;

- Collect, compile and publish technical and statistical data relating to water and air pollution and the measures devised for their effective prevention, control or abatement;
- Prepare manuals, codes and guidelines relating to treatment and disposal of sewage and trade effluents as well as for stack gas cleaning devices, stacks and ducts;
- Disseminate information in respect of matters relating to water and air pollution and their prevention and control;
- Lay down, modify or annul, in consultation with the State Governments concerned, the standards for stream or well, and lay down standards for the quality of air;
- Establish or recognize laboratories to enable the Board to perform, and;
- Perform such other functions as and when prescribed by the Government of India.

1.2 FUNCTIONS OF THE CENTRAL BOARD AS STATE BOARD FOR THE UNION TERRITORIES

- Advise the Governments of Union Territories with respect to the suitability of any premises or location for carrying on any industry which is likely to pollute a stream or well or cause air pollution;
- Lay down standards for treatment of sewage and trade effluents and for emissions from automobiles, industrial plants, and any other polluting source;
- Evolve efficient methods for disposal of sewage and trade effluents on land;
- Develop reliable and economically viable methods for treatment of sewage, trade effluents and air pollution control equipment;
- Identify any area or areas within Union Territories as air pollution control area or areas to be notified under The Air (Prevention and Control of Pollution) Act, 1981; and
- Assess the quality of ambient air and water, and inspect wastewater treatment installations, air pollution control equipments, industrial plants or manufacturing processes to evaluate their performance and to take steps for the prevention, control and abatement of air and water pollution.

1.3 DELEGATION OF POWERS BY CENTRAL POLLUTION CONTROL BOARD

As per the policy decision of the Government of India, the Central Pollution Control Board, delegated its powers and functions from time to time under Section 4, Sub Section 4 of The Water (Prevention and Control of Pollution) Act, 1974 and Section 6 of The Air (Prevention and Control of Pollution) Act, 1981 with respect to various Union Territories to respective Pollution Control Committees under the administrative control of local Administration (Annexure-I).

CHAPTER-II

CONSTITUTION OF THE CENTRAL BOARD

- 2.1** According to the provisions of The Water (Prevention & Control of Pollution) Act, 1974, the Central Board consists of the following members:
- A full time Chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;
 - such number of officials, not exceeding five, to be nominated by the Central Government to represent Government;
 - such number of persons, not exceeding five, to be nominated by the Central Government, from amongst the members of the State Boards, of whom not exceeding two shall be from amongst the members of the local authorities;
 - such number of non officials, not exceeding three to be nominated by the Central Government, to represent the interest of agriculture, fishery or industry or trade or any other interest which, in the opinion of the Central Government, ought to be represented;
 - two persons to represent the companies or corporations owned, controlled or managed by the Central Government, to be nominated by the Government; and
 - A full time Member Secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government.
- 2.2** List of Board Members during the year 2017- 2018 is provided at Annexure-II. The organisation structure of the Central Pollution Control Board is provided at Annexure-III. Staff strength as on March 31, 2018 is furnished in Annexure-IV.

CHAPTER-III

MEETINGS OF CENTRAL POLLUTION CONTROL BOARD

3.1. MEETINGS OF THE CENTRAL BOARD

During the reporting period (i.e. April 1, 2017 to March 31, 2018), four meetings of the Central Board were held as under:

S.No.	Meeting No.	Date	Place
1.	177 TH	June 21, 2017	CPCB, Delhi
2.	178 TH	September 19, 2017	CPCB, Delhi
3.	179 TH	December 21, 2017	CPCB, Delhi
4.	180 TH	March 22, 2018	CPCB, Delhi

3.2 MAJOR DECISIONS TAKEN BY THE BOARD

1. Agreed for the Revision of rates for monitoring and analysis of samples under NWMP.
2. Agreed to the proposal for creation of two posts in Technical Cadre.
3. Agreed to the proposal and accorded approval for issue of medical cards to CPCB retired employees and their dependent family members for taking treatment as per CGHS/CSMA rates from CPCB empanelled hospitals / diagnostic centers.
4. Accepted and approved the proposal for renewal of recognition of Central Laboratory, Pollution Control Board, Assam, Bamunimaidam, Guwahati – 781 021, Kamrup (M), Assam, along with names of the proposed Government Analysts.
5. Appointment of Consulting Engineers in Central Pollution Control Board.
6. Accepted and approved the proposal for renewal of recognition of Central Laboratory, Telangana State Pollution Control Board, Paryavarana Bhawan, A-III, Industrial Estate, Sanath Nagar, Hyderabad-500018, along with names of the proposed Government Analysts.
7. Agreed for the revision of Delegation of Powers particularly with reference to financial matters.
8. Accorded the approval to undertake the project “Development of Model for Pollution Load Assessment” and Water Quality improvement Plan Basin Sub-Basin inventory of Rivers under National Hydrology Project with defined time lines for each activity.
9. Accorded its approval for engaging external professional organization for procurement of CAAQM Stations

3.3 NATIONAL CONFERENCE

The 62nd Conference of Chairmen & Member Secretaries of Pollution Control Boards/ Committees (SPCBs/PCCs) was organised during June 27, 2017 at New Delhi.

The major issues discussed during the meeting are as follows:

- Rejuvenation of Polluted River stretches- Water Quality assessment, water quality criteria and establishing RTWQMS;

- Performance of Sewage Treatment Plants and the proposed standards for treated sewage.
- Water Quality Management Plans:
- Air quality management in cities exceeding ambient air quality standards – Action Plans – Graded plan being implemented in Capital and National Capital Region
- Strengthening ambient air quality monitoring network – Manual and continuous and monthly / annual air quality trends
- Status of actions taken in compliance with the order of Hon'ble Supreme Court dated 22.02.2017 in the matter of WPC No. 375/2012, Paryavaran Suraksha Samiti vs. Union of India
- Compliance of Industries with Standards (17 categories, Red, Orange, Green) ensuring industries do not operate without valid consents and SPCBs / PCCs keep vigil and check compliance with on-line data
- Common form for consent to establish and consent to operate
- Assessment of Comprehensive Environmental Pollution Index (CEPI) in 100 Polluted Industrial Areas (PIAs) during 2017-18 by CPCB
- Implementation of Solid Waste Management Rules, 2016; Compliance with Hon'ble NGT order (corrected Judgment) dated 02.01.2017 in the matter of Almitra H. Patel Vs Union of India & Ors. (199/2014 and 61/2017)
- Implementation of Hazardous Waste Management Rules, 2016 – Compliance with Hon'ble Supreme Court Order – Recycling Hazardous Waste under Rule 9 and Compliance by the Recyclers, Performance of TSDFs
- Implementation of Plastic Waste Management Rules, 2016 – Regulating manufacture of Plastic film < 50 μ , co-processing in cement plants
- Implementation of Bio-medical Waste Management Rules, 2016 Performance of Common Bio-Medical Waste Facilities, available technologies and discharging of duties and responsibilities as per Rules - Guidelines
- Implementation of E-Waste Rules, 2016 – Responsibilities and duties under the Rules and issues relating to EPR and un-organized recycling / dismantling
- Implementation of C&D Rules – Duties and responsibilities under the Rules - Guidelines
- Status of E-Samiksha, India E-track, Apps for public participation and other e-Governance measures.
- The agenda items received from various State Boards were presented by CPCB and clarifications provided on the issues.

CHAPTER-IV

COMMITTEES CONSTITUTED BY THE BOARD & THEIR ACTIVITIES

4.1 CONSTITUTION OF TECHNICAL EXPERT COMMITTEE FOR “EVALUATION OF PROPOSAL FOR UTILIZATION OF THE HAZARDOUS AND OTHER WASTES UNDER RULE 9 OF THE HAZARDOUS AND OTHER WASTES (MANAGEMENT AND TRANSBOUNDARY MOVEMENT) RULES, 2016”.

Technical Expert Committee (TEC) to evaluate and recommend proposals for utilization of the hazardous and other wastes under Rule 9 of the Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016, has been constituted by the Competent Authority, Central Pollution Control Board vide order no. B-29016(SC)/1(55-IV)/16/HWMD/1997 dated 25/11/2016. The said TEC has been reconstituted vide office order no. B-29016(SC)/1(55-IV)/18/HWMD/16943-948 dated 06/02/2018 and the tenure of the said Committee is valid for two years which may be extended further by the Chairman, Central Board.

TEC is a recommendatory body, who shall recommend acceptance or rejection of a proposal for utilisation of hazardous and other wastes as a supplementary resource or for energy recovery, or after processing, received from various applicants or suggest improvements after its scientific evaluation to CPCB. In case of acceptance of utilization proposal, the TEC shall recommend for trial run studies for the proposed hazardous waste utilization to be conducted in the applicant’s unit and suggest trial run monitoring protocol identifying parameters (pollutants) of concern for the said utilization and standards thereof. On the basis of successful demonstration of trial run studies, Standard Operation Procedures (SoPs) and checklist for minimal requisite facilities for the proposed hazardous waste utilization shall be recommended by TEC. During 2017-18, four TEC meetings have been conducted for evaluation and recommendation of such utilization proposals.

CHAPTER - V

AIR, WATER AND NOISE MONITORING NETWORK

5.1 WATER QUALITY MONITORING

5.1.1 Monitoring of Aquatic Resources under National Water Monitoring Programme (NWMP)

Under The Water (Prevention & Control of Pollution) Act, 1974, Central Pollution Control Board (CPCB) implements a nationwide water quality monitoring under National Water Quality Monitoring Programme (NWMP) at 3000 locations in association with the concerned State Pollution Control Boards (SPCBs) & Pollution Control Committees (PCCs). Details with respect to state-wise number of water quality monitoring locations are provided in Table – 5.1.

Table – 5.1: State-wise details of monitoring locations

NAME OF THE STATE/UT	CANAL	DRAIN/ INDUSTRIAL DRAIN	LAKE	POND	RIVER	SEA/MARINE/ CREEK	STP	TANK	WATER TREATMENT PLANT (RAW WATER)	WELL	GRAND TOTAL
Andhra Pradesh	3	3	2	-	24	-	-	-	-	18	50
Arunachal Pradesh	-	-	-	-	29	-	-	-	-		29
Assam	-	-	2	26	85	-	-	1	-	50	164
Bihar	-	-	2	2	96	-	-	-	-	70	170
Chandigarh	-	3	1	-	-	-	-	-	-	7	11
Chhattisgarh	-	-	1	1	29	-	-	-	-	8	39
Dadra & Nagar Haveli	-	-	-	-	5	-	-	-	-	6	11
Daman & Diu	-	-	-	-	7	-	-	-	-	6	13
Delhi	2	9	4	-	4	-	-	-	6	67	92
Goa	3	-	8	-	28	1	-	-	-	10	50
Gujarat	2	-	21	2	53	3	-	1	-	83	165
Haryana	12	-	3	-	8	-	-	-	2		25
Himachal Pradesh	-	4	5	-	81	-	-	-	-	41	131
Jammu & Kashmir	-	-	25	-	45	-	-	-	-	12	82
Jharkhand	-	-	4	1	40	-	-	-	-		45
Karnataka	-	-	39		80	-	-	83	-	1	203
Kerala	3	-	16	2	73	-	-	-	-	34	128
Lakshadweep	-	-	-	1	-	-	-	-	-	15	16

NAME OF THE STATE/UT	CANAL	DRAIN/ INDUSTRIAL DRAIN	LAKE	POND	RIVER	SEA/MARINE/ CREEK	STP	TANK	WATER TREATMENT PLANT (RAW WATER)	WELL	GRAND TOTAL
Madhya Pradesh	-	-	20	12	109	-	-	-	-	47	188
Maharashtra	-	10	-	-	156	34	-	-	-	50	250
Meghalaya	-	-	7	-	40	-	-	-	-	7	54
Mizoram	-	-	1	2	32	-	-	1	-	20	56
Nagaland	-	-	2	-	16	-	-	-	-	10	28
Odisha	9	-	7	8	127	4	-	-	-	48	203
Puducherry	-	-	2	-	6	-	-	-	-	19	27
Punjab	-	7	3	3	38	-	-	-	-	22	73
Rajasthan	3	-	16	-	17	-	-	-	-	87	123
Sikkim	-	-	-	-	14	-	-	-	-	-	14
Tamil Nadu	-	-	8	-	45	-	-	-	-	2	55
Telangana	-	13	13	10	30	-	-	10	-	14	90
Tripura	5	-	3	5	29	-	-	-	-	21	63
Uttar Pradesh	1	-	2	2	75	-	-	-	2	40	122
Uttarakhand	4	-	2	-	30	-	3	-	-	19	58
West Bengal	2	-	10	-	41	-	-	-	-	49	102
Total	50	49	234	90	1533	42	3	96	10	893	3000

5.1.2 Criteria for Prioritization of Polluted River Stretches:

Criteria for prioritization of polluted river stretches is detailed in Table – 5.2.

Table – 5.2: Priority wise criteria for Polluted River Stretches with respect to Bio-chemical Oxygen Demand (BOD) and Faecal Coliform (FC) exceedances

Priority class	Criteria
Priority-I	BOD > 30 mg/l/FC > 100000 MPN/100ml
Priority-II	BOD between 30 and 20 mg/l/FC between 50001 and 100000 MPN/100ml
Priority-III	BOD between 20 and 10 mg/l/FC between 5001 and 50000 MPN/100ml
Priority-IV	BOD between 10 and 6 mg/l/FC between 2501 and 5000 MPN/100ml
Priority-V	BOD between 6 and 3 mg/l/FC between 501 and 2500 MPN/100ml

5.1.2.1 Identification of Polluted River Stretches

Assessment of Water Quality of rivers and streams revealed that the aquatic resources are polluted due to discharge of treated and untreated waste water from municipal as well as industrial sources. As per the assessment of the water quality data for the parameters BOD and Faecal Coliform (MPN/ 100ml) carried out during the year 2015 and comparison with the water quality criteria, it is observed that there are 317 polluted river stretches' in the country. State-wise number. of towns and polluted river stretches are given in Table-5.3.

Table – 5.3: State-wise details of number of towns and number of Polluted River Stretches

Name of the State/UT	Number of Polluted River Stretches	No. of Towns
Andhra Pradesh	5	10
Assam	31	50
Bihar	15	22
Chhatisgarh	3	11
Daman, Diu, Dadra Nagar Haveli	1	2
Delhi	1	1
goa	15	21
Gujarat	14	27
Haryana	2	7
Himachal Pradesh	6	10
Jammu & Kashmir	7	16
Jharkhand	6	10
Karnataka	16	23
Kerala	23	34
Madhya Pradesh	20	41
Maharashtra	56	170
Manipur	3	4
Meghalaya	7	7
Nagaland	3	4
Odisha	18	31
Puducherry	1	1
Punjab	2	5
Rajasthan	1	5
Sikkim	3	9
Tamil Nadu	8	24
Telangana	9	19
Tripura	2	4
Uttar Pradesh	13	36
Uttarakhand	9	11
West Bengal	17	44
Total	317	659

5.1.2.2 Restoration plan for Polluted River Stretches

Central Pollution Control Board (CPCB) has formulated “Restoration of Polluted River Stretches – Concept and Plan” based on the comprehensive study on polluted river stretches. The suggested phases for restoration of polluted water shed management may be

- (1) Recognition phase
- (2) Restoration phase;
- (3) Protection phase; and
- (4) Improvement phase.

The restoration plan has a number of steps, which include –

- (i) The reconnaissance visit including first round of sampling of river/stream/drains and demarcation on the water shed map.
- (ii) The next step is identification of sources of pollution and quantification of pollution load vis-a-vis the treatment facilities for municipal wastewater and industrial effluents.
- (iii) The third step is towards the treatment technologies, prevailing discharge standards, available flow in the river/stream and review of discharge standards/stream flow.
- (iv) The fourth step will be assessment of water quality trend of river/stream and to work out augmentation of river/stream flow.
- (v) The fifth step is to disseminate the information gathered during the four steps on assessment/ interventions and monitoring of improvement in water quality.

5.1.2.3 Workshop on “Restoration of Polluted River Stretches – Concept and Plan”

Workshop on “Restoration of Polluted River Stretches – Concept and Plan” was organized for Stakeholder organizations such as State Pollution Control Boards (SPCBs), State Water Resources Departments, State Urban Development Departments on January 8, 2018, wherein the concept plan was shared and discussed in detail. As a follow-up of the workshop, it was suggested to the State Pollution Control Boards (SPCBs)/ Pollution Control Committee (PCCs) and the respective States/ Union Territories to constitute ‘Monitoring Committees’ of the stakeholder organizations for sewage and industrial effluent management. Central Committee constituted by CPCB shall review the progress of these Committees.

5.1.3 Assessment of water quality of River Cauvery and its tributaries in compliance to the Hon’ble Supreme Court order.

In pursuance to the Hon’ble Supreme Court order dated 07.07.2017 in the matter of Original Suit No. 02 of 2015 filed by Tamil Nadu State Vs State of Karnataka, Central Pollution Control Board alongwith the Officials of Tamil Nadu Pollution Control Board and Karnataka State Pollution Control Board carried out assessment of water quality of river Cauvery and its tributaries at the interstate locations and the assessment reveals that –

- Water quality of river Cauvery was observed meeting the water quality criteria during September, November-December 2017
- River Thenpennaiyar is polluted based on the exceedance of values of BOD, Faecal Coliform and very low concentration of Dissolved Oxygen which is not meeting the water quality criteria.
- Water quality of river Arkavathi met the water quality criteria during the month of November, 2017, whereas during September-October 2017, Faecal Coliform exceedance was observed and in December, 2017 exceedance of BOD was observed.

5.1.4 Assessment of Water Quality of Rivers Viz., Kali, Hindon & Krishni and drains meeting Hindon river; Assessment of Ground Water Quality in Six Districts viz. Saharanpur, Ghaziabad Meerut, Muzaffarnagar, Samli and Baghpat.; Joint Inspection of 316 Industries located in Six Districts of UP

In compliance to the Hon’ble National Green Tribunal (NGT) (PB), New Delhi Order dated 16.1.2018 in the matter of O.A. No. 231/ 2014 and O.A. No. 66/ 2015 filed by Doaba Paryavaran Samiti Vs State of Uttar Pradesh & Others, Central Pollution Control Board

alongwith Uttar Pradesh Pollution Control Board (UPPCB) and Uttar Pradesh Jal Nigam carried out assessment of rivers Viz., Hindona, Kali & Krishna as well as drains contributing to the pollution load of River Hindon. The assessment indicate that:

I. Ground Water Quality

- a) 93 out of 168 ground water sample locations were contaminated with one or more parameters [such as sulphate, fluoride, Heavy metals i.e., Cd, Cu, Pb, Fe, Ni, Zn, Hg, Total Cr and Mn].
- b) 93 non-complying ground water sampling locations w.r.t to Bureau of Indian Standard Drinking Water Specifications i.e., IS:10500-2012 which are located at:- 01 in Baghpat, 44 in Ghaziabad, 13 in Greater Noida, 1 in Meerut, 15 in Muzaffar Nagar, 16 in Saharanpur and 3 in Shamli.

II. River Water Quality

- (a) River Kali (West) after confluence of river Sheela is complying with bathing water quality criteria.
- (b) In all other locations of river Hindon, river Sheela, river Krishna and river Yamuna at D/s of Tilwara Village (or A/c of River Hindon with river Yamuna) are not meeting the water quality criteria for bathing.
- (c) Presence of high number of Fecal Coliform bacteria indicates disposal of sewage.

III. The Drains

Six drains in catchment of River Hindon & Its tributaries are carrying high organic load, which is measured in terms of Biochemical Oxygen Demand (BOD).

IV. Compliance Status of Industries

- (a) Out of total 317 industries, 221 were in operation.
- (b) Out of 221 operating units, 213 units have installed ETPs.
- (c) Out of 213 units installed ETPs, 195 ETPs were in operation and 18 were not in Operation.
- (d) 119 out of 195 industries were not complying with the effluent discharge standards (Non-complying Units: 119+18=137).

V. The Action Plan

'Action Plan for Rejuvenation of River Hindon' proposed based on response of stakeholders. The findings were filed by CPCB before the Hon'ble NGT for consideration.

5.1.5 Assessment of water quality of river Yamuna in the matter Manoj Mishra versus Union of India & Ors in compliance to the Hon'ble NGT orders – Rise of ammonia levels in river Yamuna at Wazirabad Barrage

In pursuance to the Hon'ble NGT order dated February 22, 2018, teams from CPCB carried out water quality monitoring of river Yamuna and the drains contributing to pollution load in river Yamuna on 23.02.2018 in Delhi and Haryana. The analysis results of the water quality of River Yamuna and the drains in Haryana State with respect to ammoniacal nitrogen (as N) as well as other pollutants as observed is given in the following Table 5. 4.

Table 5.4 Water Quality of River Yamuna and the Drains

S. No.	Location	Date	Dissolved Oxygen (mg/l)	pH	Conductivity (µmhos/cm)	COD (mg/l)	BOD (mg/l)	TDS (mg/l)	Chloride (mg/l)	Ammonical Nitrogen (as N) (mg/l)
Haryana State										
1	River Yamuna- Upstream Khojkipur, Panipat	23.02.2018	9.4	8.1	446	12	3	254	19	0.9
2	River Yamuna- Downstream Khojkipur, Panipat	23.02.2018	4.4	7.7	790	38	8	414	85	3.9
3	Drain No. 2, Khojkipur, Panipat	23.02.2018	NA	7.9	NA	335	121	NA	NA	20
4	Drain No.8, Dahesra, Sonapat	23.02.2018	11.5	8.3	2300	08	02	1338	378	2.1
5	Drain No.6 Dahesra, Sonapat	23.02.2018	NA	7.9	NA	309	132	NA	NA	30
Delhi-Haryana Border										
6	River Yamuna- Palla	23.02.2018	6.8	8.1	1122	35	6	638	159	4.2
Delhi State										
7	Wazirabad Reservoir	23.02.2018	8.9	8.3	1102	37	4	616	157	3.5
8	ITO Barrage	23.02.2018	Nil	7.3	2130	174	48	1084	348	27.9
NA- Sample Not Analysed										

The analysis results were filed before the Hon'ble NGT for consideration.

5.1.6 Water Quality status in Delhi stretch of Yamuna River in the year 2017

Central Pollution Control Board is regularly monitoring about 40 km. long Delhi stretch of Yamuna River from Palla to downstream of Okhla barrage at 4 locations i.e. Palla, Nizamuddin Bridge, Okhla at Kalindi Kunj (Okhla U/s) and Okhla D/s on monthly basis. Water quality trend of the river in this studied stretch during the year 2013-2017 in terms of Dissolved Oxygen (DO), Bio-chemical Oxygen Demand (BOD) and Total Coliform (TC) is depicted in Figure 5.1 – 5.3. The values of DO observed during the year 2017 reflect that the level of this parameter was well above the prescribed limit of 4.0 mg/l except in the month of July at Palla and is in the range from 3.7 – 11.8 mg/l with annual mean of 7.6 mg/l which is less in comparison with 2016. DO in the river depletes significantly after Wazirabad barrage and remain critical in remaining part of the studied river stretch. The value of this parameter from Wazirabad D/s to Okhla barrage D/s, after joining Shahdara drain was observed in the range of 0.5 – 5.0 mg/l which reflects that DO is always violating the prescribed standard of 5.0 mg/l at Okhla D/s and 4.0 mg/l at other two locations

except in the month of September at Nizamuddin bridge. At these monitoring locations the annual average values of DO in 2017 are slightly high in comparison to previous year.

BOD at Palla generally meets the prescribed standards of 3 mg/l and was found in the range of 1 – 7 mg/l with annual average of 2.5 mg/l which is lower in comparison to 2016. At Okhla D/s BOD values were found well above the limit of 3 mg/l and was in the range of 8-80 mg/l with annual average of 36 mg/l, which indicates reduction in its value as compared with previous year. At remaining two locations i.e. Nizamuddin Bridge and Okhla U/s where BOD is not a criteria parameter, its values were found in the range of 4 – 37 mg/l and 3-32 mg/l respectively. Annual average values of BOD at these locations reflect declining trend in comparison to previous year.

TC was found meeting the standard of 5000 MPN/100 ml at Palla on eight out of twelve rounds of analysis and its values were ranged between 490 - 160000 MPN/100 ml. At Okhla D/s TC with significantly high counts i.e. 28000 – 22000000 MPN/100 ml was always found violating prescribed standard of 500 MPN/100 ml. At Nizamuddin Bridge and Okhla U/s where TC is also not a criteria parameter, its values were in the range of 200000-400000000 MPN/100 ml & 170000-16000000 MPN/100 ml respectively. Comparison of annual average values observed in the year 2016 and 2017 indicates that at all the monitoring locations TC reflect declining trend.

Free ammonia (NH_3) which is a criteria parameter for two locations i.e. Nizamuddin Bridge and Okhla U/s, was found exceeding the prescribed limit of 1.2 mg/l except twice at Nizamuddin Bridge. The annual average of this parameter at Nizamuddin Bridge and Okhla U/s was 16.4 mg/l and 13.0 mg/l respectively. At Palla free ammonia was in the range of Below detection limit (BDL) – 3 mg/l, whereas, at Okhla D/s it was in the range of 2.3 – 36.0 mg/l. In comparison to 2016, annual average of free ammonia was showing declining trend at Palla and Okhla U/s whereas in remaining two locations it is inclining. As observed in the year 2016, in 2017 also pH was the only parameter that meets the prescribed standards of 6.0 – 9.0 for Palla and 6.5 – 8.5 for the remaining three studied locations.

Yamuna River water quality in Delhi stretch is not only depends on wastewater that it received from various drains but also depends on other factors also e.g. quantity of water received from Western Yamuna canal through Najafgarh drain, input from Hindon cut canal, quantity of fresh water released from Wazirabad and Okhla barrage, fluctuations in the intensity and duration of rainfall etc.

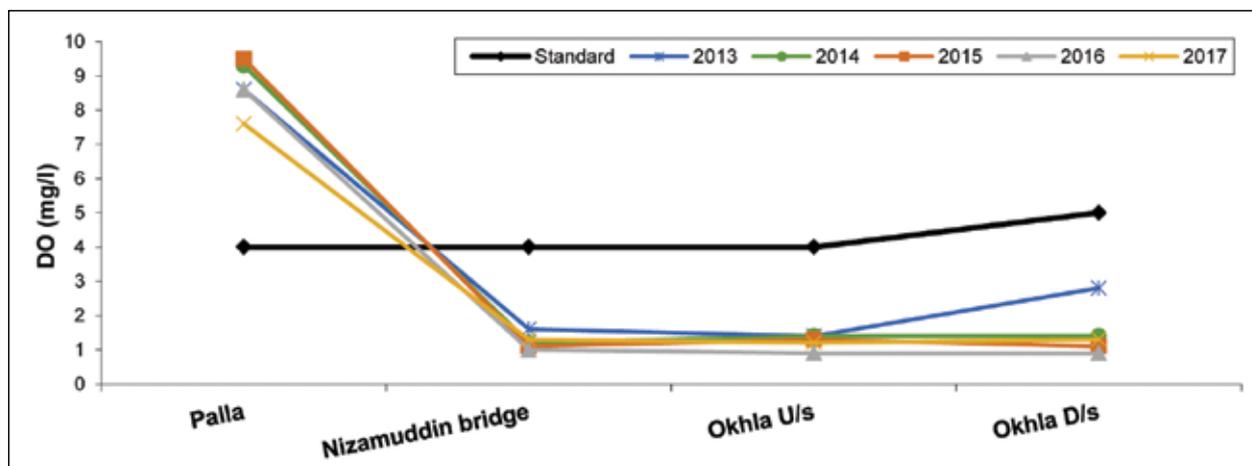


Figure-5.1 : Water quality trend of river Yamuna in terms of DO

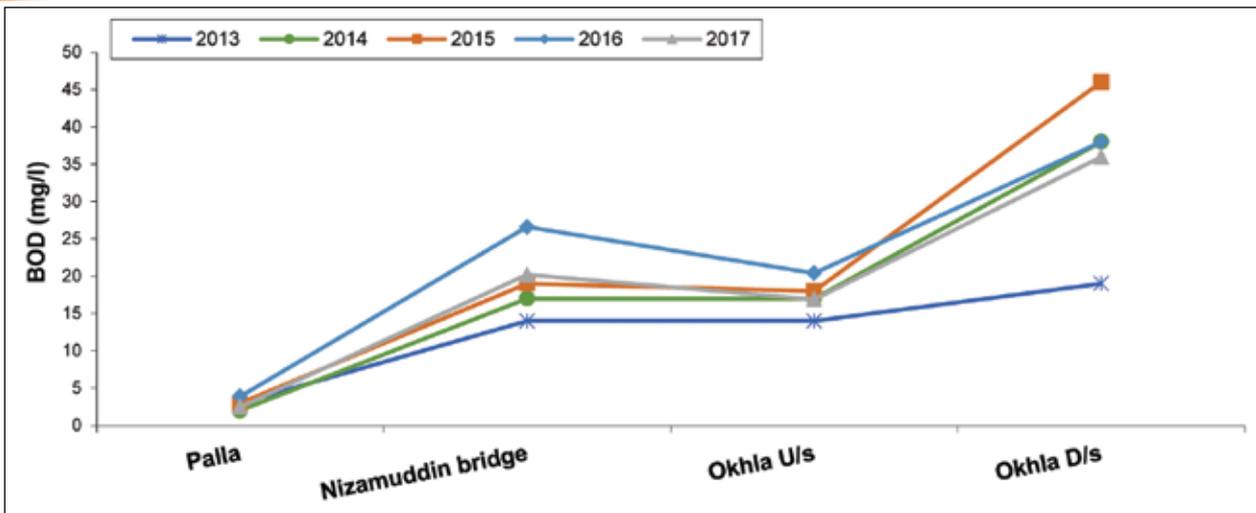


Figure-5.2 : Water quality trend of river Yamuna in terms of BOD

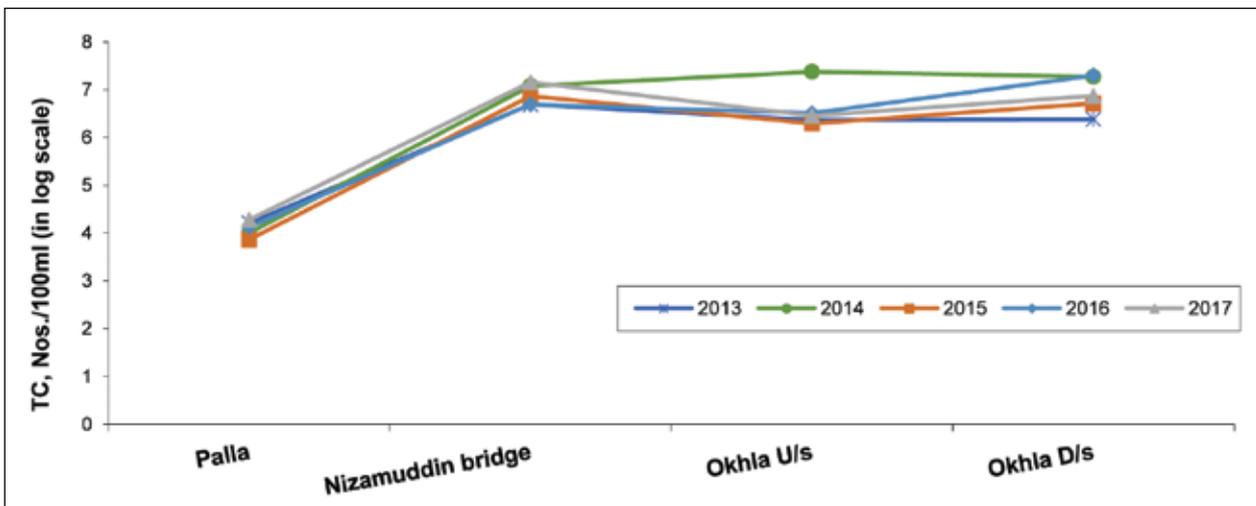


Figure-5.3: Water quality trend of river Yamuna in terms of TC

5.1.7 Discharge and pollution load contributed by major drains in 2017 at NCT- Delhi

There are twenty-three major wastewater drains in NCT-Delhi, out of which 20 drains join Yamuna River and rest joins Agra/Gurgaon canal. These drains are being monitored regularly on monthly basis except Sonia Vihar drain which is being monitored on quarterly basis. Measurement of discharge of Sonia Vihar could not be done due to unavailability of suitable site for measurement. Monthly trend of total discharge and load of Bio-chemical Oxygen Demand (BOD load) as received by the river and canals through these drains during the year 2017 is depicted in Figure-5.4 and 5.5. Total discharge of these drains was fluctuated from 37 m³/s (December) to 42 m³/s (November) whereas, total BOD Load was ranged from 146 TPD (September) to 402 TPD (March). The collective average of these drains for the year 2017 in terms of discharge and BOD load was about 39.94 m³/s and 271 Tons/day (TPD) respectively. Out of total BOD load and discharge of the monitored drains, Yamuna River receives about 83 percent of BOD load and about 91 percent of discharge and rest joins canals. In 2017, this contribution in river and canal is high as compared to previous year. Najafgarh and Sahadara drain alone contributes about 64% of total BOD load and 72% of total discharge of the 22 major drains of Delhi.

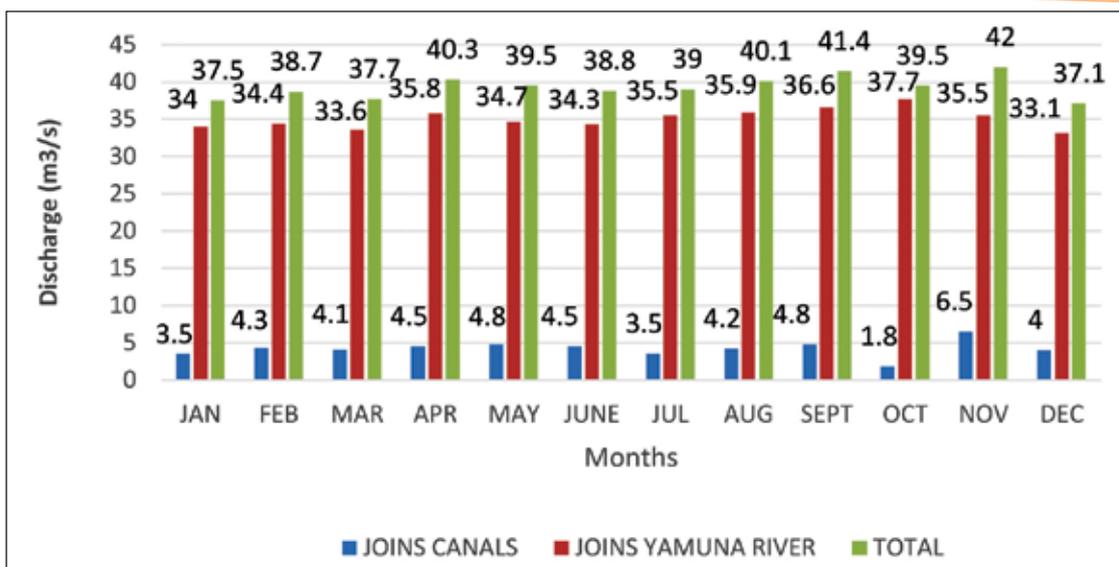


Figure-5.4: Discharge trend of major drains of NCT-Delhi (2017)

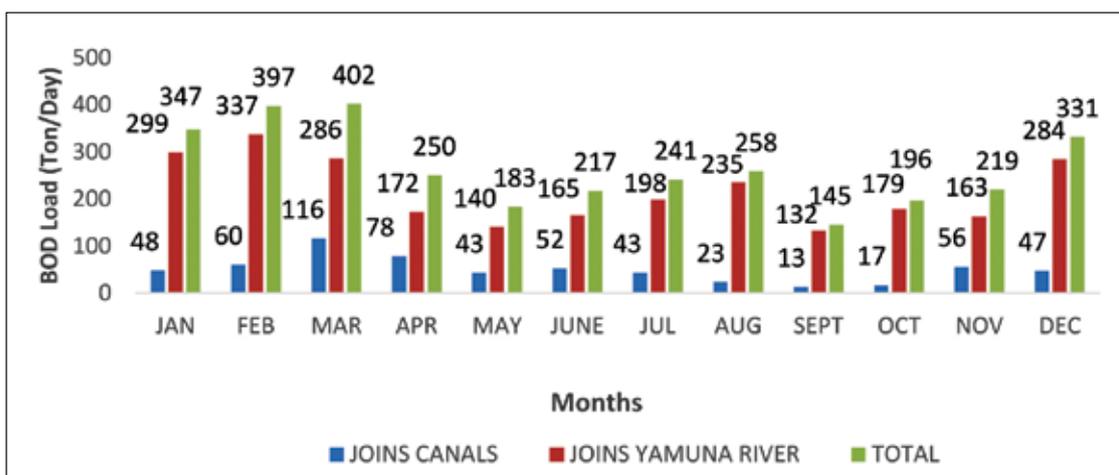


Figure-5.5: Trend in BOD load of major drains of NCT-Delhi (2017)

5.1.8 Directions issued to SPCBs for ensuring necessary measures to control river pollution

Under Section 18 of The Water (Prevention & Control of Pollution) Act, 1974, Central Pollution Control Board (CPCB) has been empowered to issue directions to the SPCBs/ PCCs for ensuring compliance to the provisions. Based on the assessment reports, CPCB issued directions under Section 18 (1) (b) of the Water Act, 1974, as detailed in **Table 5.5**

Table 5.5 Directions issued to SPCBs/PCCs for ensuring Compliance and for submission of Action Taken Report

Issue for River Pamba	CPCB vide letter dated 22.09.2017 issued Directions under section 18(1) (b) of the Water (Prevention and Control of Pollution) Act, 1974 to Kerala SPCB in the matter of pollution in River Pamba
Restoration of Polluted River Stretches	CPCB vide letter dated 21.09.2017 issued directions under section 18(1) (b) of the water (Prevention and Control of Pollution) Act, 1974 to the Commissioners of 46 Million Plus cities and 20 State Capitals for rejuvenation/ improving Sanitary conditions of open drains carrying sewage – sludge including Delhi

Issue for Lutfullapur District, Baghpat	Directions issued to UPPCB under section 18(1) (b) of the Water (Prevention and Control of Pollution) Act, 1974 in the matter of water stagnation at village Lutfullapur Dist, Baghpat due to disposal of untreated/Partially treated Effluent and sewage at Khekra area Mandola and trans Delhi signature City, as a follow-up of the meeting held at MoEF & CC in March 2018.
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5.1.9 National Ganga River Basin Authority (NGRBA) :

The Central Government has set up the 'National Ganga River Basin Authority' (NGRBA) vide gazette notification dated 20.2.2009 as a collaborative institution of Central and State Governments under the Environment (Protection) Act of 1986 for abatement of pollution of River Ganga. The objective of the authority is to ensure effective abatement of pollution and conservation of the river Ganga by adopting a holistic approach with the river basin as the unit of planning.

5.1.9.1 Activities under different Projects running by NGRBA

There are three projects being carried out under the National Ganga River Basin Authority Programme are as follows:

Table – 5.6 : Details of Projects under NGRBA Cell

S. No.	Project	Funding Agency	Project Duration	Total Budget (Rs. Crores)	Status
1.1	Pollution Inventorization, Assessment and Surveillance on River Ganga (PIAS)	MoEF & CC	5 Years	34.77 (Sanctioned on 29 th March, 2011)	Started from 1 st April, 2011, ended on 28.03.2016
1.2	Pollution Inventorization, Assessment and Surveillance on River Ganga (PIAS)	MoEF & CC	3 Months	NIL (Sanctioned on 04.04.2016 w.e.f. 29.03.2016)	extended upto 28.06.2016
1.3	Pollution Inventorization, Assessment and Surveillance on River Ganga (PIAS) (Extended)	MoWR, RD & GR	1 Years (Reviewed Proposal)	3.8 (Sanctioned on 08.09.2016 w.e.f. 29.06.2016)	Extended upto 28.06.2017.
1.4	Pollution Inventorization, Assessment and Surveillance on River Ganga (PIAS) (Extended)	MoWR, RD & GR	3 Months	NIL 8th August, 2017 effective from 29.06.2017, ended on 28.09.2017.	Extended upto and ended on 28.09.2017.
1.	Pollution Inventorization, Assessment and Surveillance on River Ganga (PIAS)	MoWR, RD & GR	3 Years	42.99th November, 2017 effective from 29.09.2017	Newly sanctioned Started from 29.09.2017 to be ended upto 28.09.2020
2.	Water Quality Monitoring (WQM) System for River Ganga	The World Bank	7 Years	94.45	Sanctioned on 19 th July, 2013
3.	Strengthening of Environmental Regulators (SER)- CPCB	The World Bank	8 Years	69.26	Sanctioned on 19 th July, 2013

1. Pollution Inventorization, Assessment & Surveillance on River Ganga (PIAS)

The “Pollution, Inventorization, Assessment & Surveillance on River Ganga (PIAS)” project is funded by the Ministry of Environment & Forests and was sanctioned for Rs. 34.77 crores on 29th March, 2011 for 5 Years. Further, the project was extended for 3 Months upto 28.03.2016. A review proposal was submitted to NMCG on 04.03.2016 and revised review proposal on 05.05.2016 for further extension of the PIAS (extended) project. The PIAS (extended) project was sanctioned on 08.09.2016 w.e.f. 29.06.2016 for 1 year. Further, the project was extended for 3 Months upto 28.09.2017. The project is completed and the Completion Report is submitted to NMCG.

A new project entitled “Pollution, Inventorization, Assessment & Surveillance on River Ganga (PIAS)” is sanctioned on 9th November, 2017 effective from 29.09.2017 which is funded by the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR) and was sanctioned for Rs. 42.9 crores for 3 Years.

Under these projects NGRBA Cell, CPCB has carried out different activities under monitoring, surveillance of Water quality of River Ganga from its origin to confluence to Bay of Bengal such as in-depth monitoring of Grossly Polluting Industries (GPIs), Sewage Treatment Plants (STPs), Common Effluent Treatment Plants (CETPs) and major drains falling into the river of River Ganga and its tributaries, River Ramganga, River Kali East & River Pandu.

The objective of the project is to inventorise the pollution sources (both point and non-point) and to assess the pollution load being discharged into the River Ganga directly or indirectly through tributaries, namely Ramganga and Kali-East. The activities carried out under the project during the year 2017-18 are as follows:

Table 5.7 : Activities carried out under PIAS and brief status

S. No.	Activities	No. of Inspections (Inventory)	Compliance Status		
			Complying	Non-complying	Non – operational / closed
1.	Compliance verification of Grossly Polluting Industries (GPIs)	1343 (1109)	380	508	221
2.	Adequacy Assessment of Common Effluent Treatment Plants (CETPs)	16 (08)	01	05	01
3.	Performance evaluation of Sewage Treatment Plants (STPs)	90 (68)	28	04	33
4.	Periodic Pollution assessment of major drains falling into the river Ganga	277 (257)	-		

Inventory of GPIs, CETPs, STPs and drains is updated annually.

1. 1. Compliance verification of Grossly Polluting Industries (GPI)

There are 1109 GPIs located in the 5 Ganga states (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal). Total number of 1179 GPI inspections are done by CPCB under NGRBA in this year.

Directions under section 5 of Environment (Protection) Act, 1986 & under section 18(1) (b) of Water Act, 1974 were issued to GPIs for the compliance of standards of prescribed water quality criteria during April, 2017 to November, 2017. Overall status of direction compliance of GPIs are given in table 5.8;

Table – 5.8: Status of direction compliance of GPIs

S.N.	Activities	No. of Inspections	Compliance Status		
			Complying	Non-complying/ Closure Direction	Non – operational/ closed
1.	Compliance verification of Grossly Polluting Industries (GPIs)	1179	325	622	225

CPCB issued Direction under Section 5 of the Environment (Protection) Act, 1986 to all 1109 GPIs for installing online effluent and emission monitoring devices to develop a self-regulatory mechanism to ensure compliance of the pollution control norms by the GPIs. Online Continuous Effluent Monitoring System (OCEMS) is a system which generates and transmits data 24x7 and set to generate SMS alerts on the basis of average value of set parameters generated in 15 Minutes for exceedance of the parameters, with respect to the notified standards.

Table – 5.9 Status of online monitoring system in Grossly Polluting Industries on River Ganga

Total No. of GPI	1109
Self-Closed/exempted	236
No. of units to Install OCEMS	873
No. units Connected to CPCB Server	753

751 GPIs are done as a special drive by Technical Institutions engaged by CPCB. List of Technical Institutions engaged by CPCB for execution of special drive is as follows;

Table 5.10: List of Technical Institutions engaged by CPCB

S. No.	Name of Institutes	Region/District	No. of GPIs Allotted	No. of units covered (as on 30.05.2017)
1.	IIT Roorkee	Moradabad, Meerut, Bijnor, Amroha, Haldwani, US Nagar	29	29
2.	IIT BHU, Varanasi	Kanpur, Unnao	166	166
3.	IIT Kanpur	Kanpur, Farrukhabad	19	19
4.	IIT Kharagpur	Hooghly, Dankuni, Thakurpukur, Burdwan, Durgapur,	10	10

S. No.	Name of Institutes	Region/District	No. of GPIs Allotted	No. of units covered (as on 30.05.2017)
5.	NIT Patna	Muzaffarpur, Bhagalpur, Begusarai, Munger, Patna, Rohtas	15	15
6.	IIT Delhi	Ghaziabad	12	12
7.	CPPRI, Sharanpur	Meerut, Etah, Sambhal, Bijnor, Hapur	30	30
8.	PCRI BHEL, Haridwar	Haridwar, US Nagar, Farrukhabad, Bulandshahar	36	36
9.	Jadavpur University, Kolkata	Haldia, Howrah, Kolkata	13	13
10.	MNNIT Allahabd	Kanpur, Unnao	84	84
11.	CLRI Chennai	Kanpur, Unnao	237	237
12.	CPCB	Bhadohi, Chandauli, Mau, Mirzapur, Unnao, Varanasi, Kanpur, Aligarh, Allahabad, Bareilly, Etah, Jaunpur, Kasganj, Sonbhadra	100	100
	TOTAL	751		751

Sector wise status of compliance of 1109 Grossly Polluting Industries during 2017-2018 are as under;

Table – 5.11: Compliance status of Grossly Polluting Industries during 2017-2018

S. No.	Sector	Compliance	Non-Complying		Closed	Under NGT	Total
			Closure Direction	Show Cause Notice			
1	Tannery	21	74	14	10	1	120
2	Textile	2	46	1	4		53
3	Sugar	26	31	30	14		101
4	Slaughter House	3		1	5		9
5	Pulp & Paper	18	10	3	2	1	34
6	Others	9	8	2	3		22
7	Pharmaceutical	1					1
8	Petrochemical	1					1
9	Fertilizer	4					4
10	Food & Beverages	3		1	4		8
11	Chemical	10	4				14
12	Distillery	25	10	2	19		56
13	Power Plant					5	5
	Total	123	183	54	61	7*	428

* Decision to be taken by Hon'ble NGT.

1.2. Status of Adequacy Assessment of Common Effluent Treatment Plants (CETPs):

There are 8 Common Effluent Treatment Plants (CETPs) inventorised by CPCB which are located at the bank of river Ganga or its tributaries affecting the water quality of river Ganga directly or indirectly. Status of CETPs are given as follows;

1. CETP at UEM-SIDCUL, Haridwar, Uttarakhand.
2. CETP Leather Technology Park, Banthar, Unnao
3. CETP at UPSIDC Industrial Area, Site – II, Unnao, Uttar Pradesh.
4. CETP at Jajmau, Kanpur, Uttar Pradesh.
5. CETP Sitarganj, Uttarakhand
6. IIE SIDCUL CETP, Pant Nagar, Uttarakhand
7. Rooma Industrial Area, Kanpur
8. Textile Center, Pilkhuwa, Uttar Pradesh

Total 16 monitoring of CETPs have been done covering 07 CETPs during the current year. Out of 08 CETPs, 07 were covered during 2017-18 and 06 found operational (Rooma CETP was not functional & under stabilization). Based on latest inspection out of 06 operational CETPs, 05 were observed non-complying (only CETP Pant Nagar was found complying). Overall status of inspection of CETPs are as follows;

Table 5.12: Status of CETPs in Ganga Main stem

S. No.	Name of CETP	Member unit connected (operational-number varies)	Type of Industries	Designed capacity /day in MLD	Operational Status	Date of Last Inspection	Compliance status
1	CETP Jajmau, Kanpur, U.P.	400	Tanneries	36.0	Operational	15.02.2018	Non-complying
2	Leather Technology Park, Banthar, Unnao, U.P.	42	Tanneries	4.15	Operational	08.08.2017	Non-complying
3	UPSIDC, Site-II, Unnao, U.P.	21	Tanneries	2.15	Operational	15.02.2018	Non-complying
4	UEM- SIDCUL CETP, Haridwar Uttarakhand	424	Heterogeneous (mixed)	4.5	Operational	23.03.2018	Non-complying
5	CETP Sitarganj, Uttarakhand	96	Heterogeneous	4.0	Operational	27.11.2017	Non-complying
6	IIE SIDCUL CETP, Pant Nagar, Uttarakhand	310	(mixed)	4.0	Operational	27.11.2017	Complying
7	Rooma Industrial Area, Kanpur, U.P.	12	Textile	1.55	Non-Operational	01.11.2017	Under stabilization process
8	Textile Center, Pilkhuwa, U.P.	Info. Not Available	Textile	2.10	-	-	-

***Total number of inspections are 16.**

Action Taken by CPCB for CETP

1. Issued Show Cause notices on dated 11/04/2017 under Section 5 of Environment (Protection) Act, 1986 to **Ganga Pollution Control Unit, U.P. Jal Nigam, Lucknow** for CETP, Jajmau to take necessary action to stop the tanneries from discharging trade effluent beyond their sanctioned capacity and submit time bound action plan/DPR for augmentation and upgradation of CETP.
2. Issued Show Cause notices on dated 19/01/2018 under Section 5 of Environment (Protection) Act, 1986 to **Rooma Pollution Control Association, Uttar Pradesh State Industrial Development Corporation (UPSIDC), Rooma, Kanpur** to submit feasibility report and time bound action plan to make CETP fully operational and complying w.r.t. treated effluent quality standards.

1.3. Status of Performance evaluation of Sewage Treatment Plants (STPs):

There are 68 Sewage Treatment Plants (STPs) inventorised by CPCB which are located at the bank of river Ganga or its tributaries affecting the water quality of river Ganga directly or indirectly. The latest status of (STPs) monitored are given as follows;

Table 5.13 Sewage Treatment Facility in Ganga Front Towns Inventoried under PIAS

S. No.	State	No. of STP	No. of STPs monitored	Operational	Installed Capacity of STPs (MLD)	Towns covered by 67 STPs
1.	Uttarakhand	13	03	03	189.4	8
2.	Uttar Pradesh	19	19	19	533	8
3.	Bihar	4	0	-	109	1
4.	Jharkhand	0	-	-	0	0
5.	West Bengal	32	28	02	427.15	27
	Total	68	50	24	1258.55	44

- Out of 68 STPs, 50 were covered during 2017-18.
- Based on latest STPs inspections, out of 50 STPs, 24 were observed operational and 26 were non-operational. All 26 non-operational STPs are located at West Bengal. Out of 24 operational STPs, 20 were observed complying and 4* were observed non-complying.
*1. Jajmau, Kanpur (130 MLD), 2. Fatehgarh, Farukkabad (2.7 MLD) 3. Salori Allahaabd (29 MLD) 4. Pakkapokhra (14 MLD) (inspection report of Jajmau STP was received on 8th May, 2018)

Table 5.14 : Monitoring Status of STPs carried out under PIAS

Year	No. of inspection	No. of STPs Visited	Operational	Complying	Non-complying	Non-operational
		A=(B+E)	B = (C+D)	C	D	E
2017-18	90	50	24	20	04	26

Major observations

- STP Sarai Jwalapur, located at Uttarakhand, Diesel Locomotive Works (DLW), Naini, Jajmau (130 MLD), Kodra, Naini, Numaydahi, Mirzapur (Vindhyachal) & Narora (NAPS) of Uttar Pradesh are operating under capacity. The major reason is non-availability of sewerage system.
- In most of the STPs either disinfection system is not working or not installed. Higher values of TC & FC have been observed in treated water.

- STPs of West Bengal needs proper maintenance & renovation. The separation bunds were observed broken and pumps were also not functional. Water hyacinth and algal growth is also observed in Ponds.

Action Taken by CPCB for Sewage Management

- To explain the reason of **non-compliance** w.r.t. general discharge standards & **non-operational** STPs and
- To submit feasibility report either to make the existing STP operational or setting up new STP in a time bound manner and
- To submit a time bound action plan for augmentation and upgradation of non-complying STPs to ensure compliance with the notified standards.

1.4. Status of Pollution Assessment of major drains falling into the river Ganga:

There are 226 Drains inventorised by CPCB, out of which 168 drains are discharging into river Ganga directly and 58 drains through tributaries rivers Ramganga (27), Kali-east (26) and Pandu (05). Out of 168 drains discharging into river Ganga directly, 151 drains are identified as priority drains (having flow equal to or more than 1MLD) and out of 58 drains of tributaries 54 drains are identified as priority drains. Latest status of assessment conducted during pre-monsoon drain monitoring of 2018 are given as follows;

Table 5.15 Drains discharged into main stem of River Ganga monitored during January to December, 2017

State/ Phase/Segment	No. of drain monitored
Uttarakhand	-
Uttar Pradesh	43
Bihar	23
Jharkhand	02
*West Bengal	44
Total	112

Table – 5.16 : Drains discharged into main stem of River Ranganga, Kali East and Pandu monitored during January to December, 2017

State/ Phase/Segment	No. of drain monitored
Ramganga, Uttar Pradesh	08
Kali East, Uttar Pradesh	27
Pandu, Uttar Pradesh	04
Total	39

Note

@/# No. of Frequency drain monitored 2-times/ 3-times during the January to December, 2017.

* Non-Priority drains/ New drains monitored during the January to December, 2017.

2017 This number of drains monitored was collected from weekly and monthly progress reports

2018 No. of Drains identifying and monitoring during pre-monsoon, 2018 is under progress.

Action Taken Status of Priority Drains:

1. Total No. of 257 drains were monitored/identified during Post-Monsoon, 2016. Out of 257 drains 210 drains are identified as Priority Drains having flow more than one MLD/equal to one MLD.
2. List of 210 priority drains is uploaded into CPCB website.
3. Compilation Identified/ Priority drains report of Phase-I, Segment-B (Haridwar D/s to Kanpur D/s (Unnao) was submitted to NMCG as well as H'ble NGT during March-April, 2017.
4. Similarly, compilation Identified/ Priority drains report of Phase-II, (Unnao Allahabad D/s to Varanasi D/s) was also submitted to NMCG as well as H'ble NGT during February, 2018.
5. Compilation Identified/ Priority drains report of Phase-III (UP Border to Jharkhand) and Phase-IV (Jharkhand Border to West Bengal, Bay of Bengal) is also submitted to NMCG and same report has been submitted to the H'ble NGT on 15th May, 2018.
6. As per NGT matter CPCB has sent a request to prepare an action plan for each drain discharging into main stem of river Ganga in phase III & IV.
7. In compliance to NGT order dated 23.01.2018, a meeting was held on 09.02.2018 at NMCG and monitored 38 drains which are discharging into River Ganga and 27 drains which are discharging into river Krishna, Hindon, Yamuna etc.

Table - 5.17: Summary of identified and Priority Drains Monitored during Pre-Monsoon, 2018 (Discharged into River Ganga)

State/ Phase/Segment	No. of Priority Towns	No. of Drain Monitored	No. of Priority Drains	Flow of Priority Drains in MLD	BOD Load of Priority Drains in TPD
UttarakhandPhase-I Segment-A(Gangotri to Roorkee D/S)	05	14	14	403.21	23.19
Uttar PradeshPhase-I Segment-B(Haridwar D/S to Kanpur D/S to Unnao)	07	32	30	578.81	55.08
Uttar PradeshPhase-II(Unnao D/S to UP Border)	06	37	26	1125.73	66.44
BiharPhase-III(UP Border to Jharkhand)	05	22	21	1087.18	39.47
JharkhandPhase-III(UP Border to Jharkhand)	01	02	02	42.56	2.48
West Bengal Phase-IV(Jharkhand Border to Bay of Bengal)	34	61	58	7375.02	241.17
Total	58	168	151	10,612.51	427.83

Table - 5.18: Summary of Identified and Priority Drains Monitored during Pre-Monsoon, 2018 (Discharged into Ramganga, Kali East and Pandu Rivers)

State/ Phase/ Segment	No. of Priority Towns	No. of Drain Monitored	No. of Priority Drains	Flow of Priority Drains in MLD	BOD Load of Priority Drains in TPD
RamgangaPhase-I Segment-B(Haridwar D/S to Kanpur D/S to Unnao)	04	27	24	525.48	92.68
Kali EastPhase-I Segment-B(Haridwar D/S to Kanpur D/S to Unnao)	10	26	25	645.01	72.44
PanduPhase-I Segment-B(Haridwar D/S to Kanpur D/S to Unnao)	01	05	05	353.51	30.36
Total	15	58	54	1524.00	195.48

5.1.9 Water Quality Monitoring on River Ganga Basin:

World Bank funded NGRBA projects seek to undertake real time water quality monitoring of River Ganga besides bio monitoring and monitoring through community under the NGRBA programme. This project was sanctioned on 19th June, 2013 for an amount of Rs. 94.45 crores. The activities carried out under the project during the year 2017-18 are as follows:

5.1.9.1 Real Time Water Quality Monitoring Network

CPCB established 36 Real Time Water Quality Monitoring Stations (RTWQMS) under Namami Gange Programme in March, 2017 of River Ganga, tributaries and drain covering Uttarakhand, Uttar Pradesh, Bihar & West Bengal. There are 20 stations installed on main stem of River Ganga. Seven on tributaries [Banganga (Sukratal), Ramganga (Moradabad & Farrukhabad), Kali East (Farrukhabad), Pandu (Kanpur), Varuna (Varanasi). Nine stations on drains covers city of Haridwar (U.K.), Allahabad(U.P), Patna (Bihar), Srirampore, Ballykhal & Chitpur (West Bengal).

The Real Time data from these 36 stations have been displayed through a web portal in PMO and NMCG. The established network was part of the designed monitoring network of 113 stations under National Ganga River Basin programme and these stations are provided with sensors for 17 parameters [BOD, DO, EC, pH, Temperature, Ammonia, Chloride, COD, TSS, Turbidity, Colour, Fluoride, Nitrate, Potassium, BTX, TOC & Water Level].

5.1.9.2 Verification of analytical facilities in the laboratories of State Pollution Control Boards along the river Ganga

Ganga River water quality has declined over the years due to increasing anthropogenic activities. To restore quality of the river, Government of India is making various efforts under the scheme called National Mission for Clean Ganga (NMCG). The success of these efforts depends on careful identifications of water quality issues and accordingly implementation of effective water quality projects. Thus it is essential to measure the Ganga river water quality frequently and regularly to judge the effectiveness of various river water quality restoration programme in which State Boards laboratories located along the Ganga River plays significant role.

Recent judicial cases on the River Ganges heard many times showed serious remarks on analysis of water samples from the River Ganges due to insufficient facilities at state level, especially on the states falling in Ganga Basin. Furthermore, CPCB is mandated to make sure that all the surface water bodies are pollution-free by preventing or abating water pollution. In this regard, one of the initiatives has been taken for strengthening of laboratories (central as well as regional level) of State Pollution Control Boards. In this regard a study was carried out to have an idea about the capabilities of State Board laboratories in generating environmental data with the assurance of quality and scope of further improvement. Under the study 17 laboratories of all 5 Ganga States Pollution Control Boards were visited to verify analytical facilities in these laboratories. The compiled information in the form of report was submitted to concerned State Boards and Regional Directorate of CPCB (West Bengal & Lucknow) for information and comments. The findings of the study summarized in the table below:

Table – 5.19 Existing and Proposed Upgradation in Five Ganga States

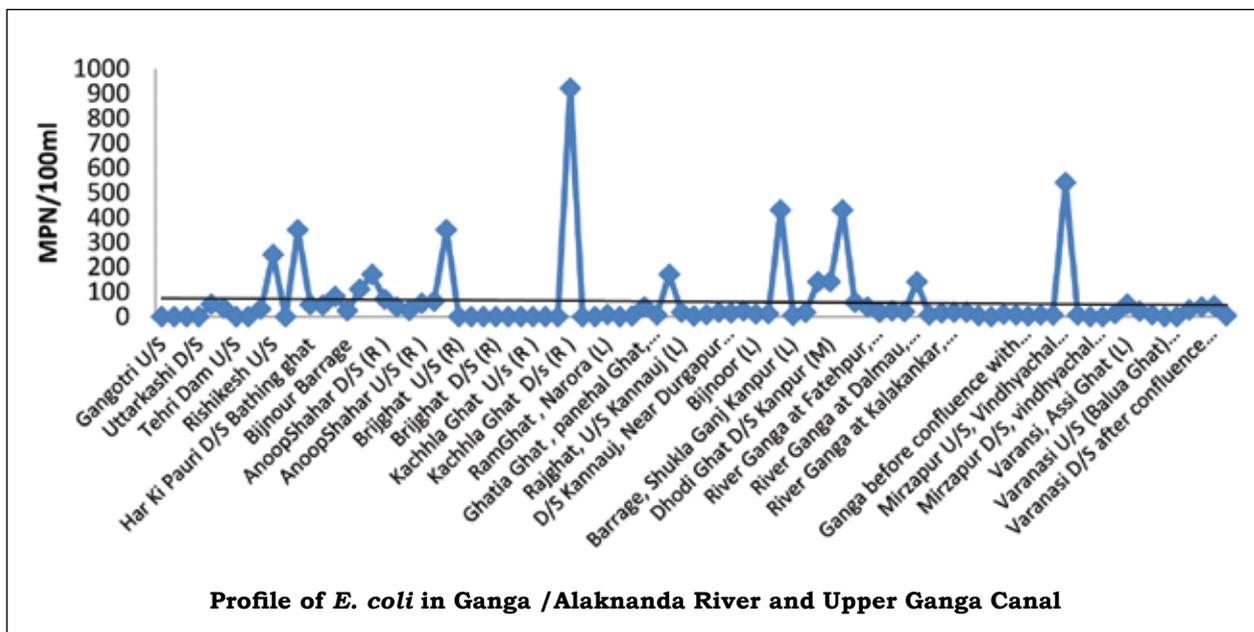
State	SI. No.	Name of the city
Uttarakhand	1.	Kashipur
	2.	Dehradun
	3.	Roorkee
Uttar Pradesh	4.	Bijnor
	5.	Ghaziabad
	6.	Bulandshahar
	7.	Kanpur
	8.	Lucknow
	9.	Allahabad
	10.	Varanasi
	11.	Raebareli
Bihar	12.	Patna
	13.	Barauni

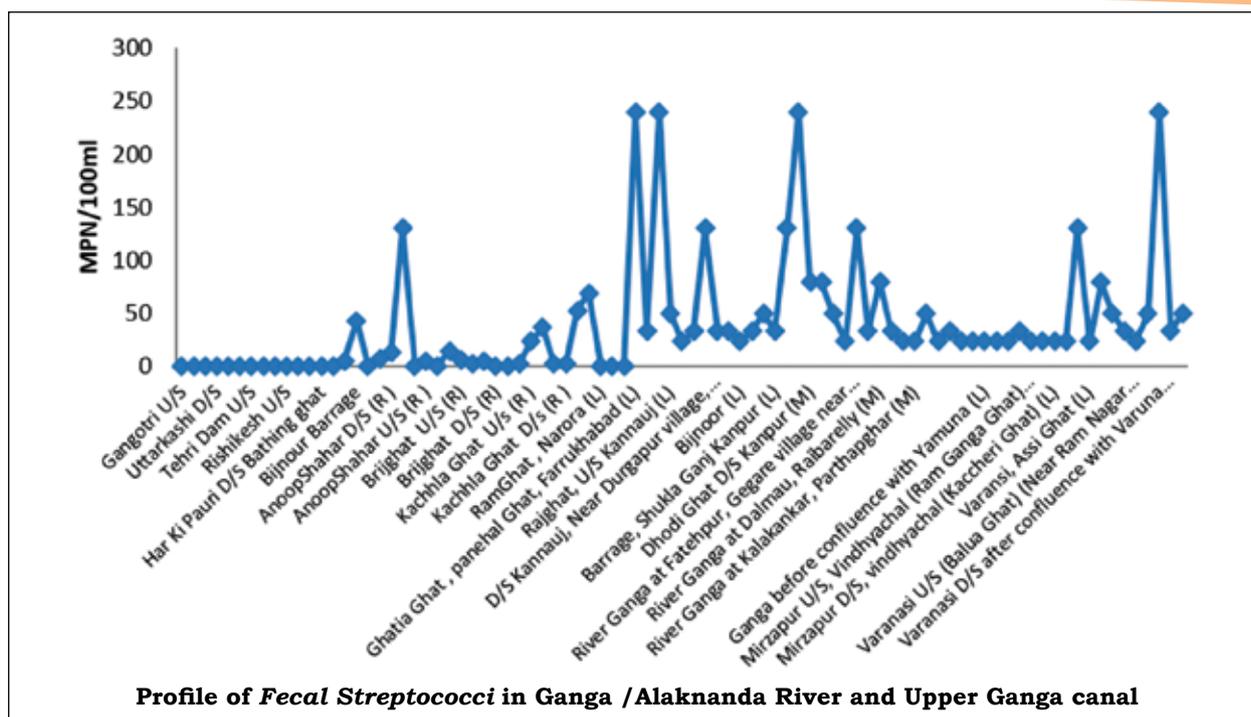
State	SI. No.	Name of the city
Jharkhand	14.	Ranchi (Hatia)
	15.	Dumka
West Bengal	16.	Kolkata
	17.	Malda or Berhampore

5.1.9.3 Microbial characterization of Ganga river water

Ganga River water quality has declined over the years as a result of increasing anthropogenic activities. To restore quality of the river, Government of India taking various efforts under the scheme called National Mission for Clean Ganga (NMCG). The success of these efforts depends on careful identifications of water quality issues and accordingly implementation of effective water quality projects. Microbial contaminations especially pathogenic bacteria is a major and critical issue in all the riverine system of the country including river Ganga. An effort is being made through a study to evaluate a profile of river Ganga not in terms of indicator microbes of pathogens but also in terms of few common pathogens having significance considering the human health. The study was undertaken with the assistance of All India Institute of Medical Sciences, Rishikesh (Uttarakhand) and Institute of Medical Science, Banaras Hindu University (Uttar Pradesh). The study was carried out in the Ganga River stretch from Gangotri to Varanashi at 36 locations along with 1 location each of Alkanada River, a tributary of Ganga and Upper Ganga canal, downstream of religious bathing ghat i.e. Har ki Pauri. The outcome of the study was submitted to NMCG in the form of a report.

The profiling of studied river/canal stretch in terms of *Escherichia coli*, *Fecal streptococci*, *Salmonella* and *Cryptosporidium* (a parasitic protozoa) are summarised below:





Ganga River locations where *Cryptosporidium* and *Salmonella* were observed

Sl. No.	Name of Location	Presence of <i>Cryptosporidium</i>	Presence of <i>Salmonella</i>
1.	Panchal ghat, Farukhabad	✓	-
2.	D/S Kannuj	✓	-
3.	Dodighat D/S Kanpur	✓	✓
4.	River Ganga at Dalmau	✓	-
5.	River Ganga at Kalakankar (Raebareli)	✓	✓
6.	Rasoolabad U/S, Allahabad	✓	✓
7.	R. Ganga after Sangam D/S, Allahabad	✓	-
8.	R. Ganga before confluence with Yamuna, Allahabad	✓	-
9.	Mirzapur D/S	✓	✓
10.	Varanasi U/S	✓	-
11.	Varanasi Assighat	✓	✓
12.	Varanasi D/S after confluence with R. Varuna	✓	✓

5.1.9.4 Biological health assessment of River Ganga through Bio-monitoring

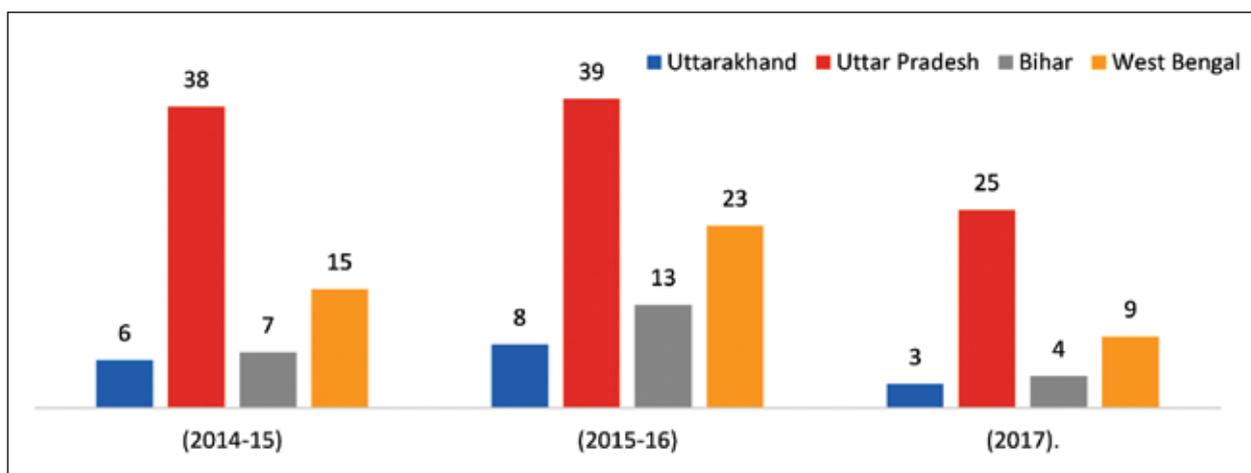
The River Ganges owes vital significance to its multi-spectral blessings ranging from biological, ecological, economic, geo-hydrological, meteorological, socio-cultural, religious, recreational and so on, thus meeting considerably in particular the daily human basic needs and generally the biological needs of other living forms for survival across the vast expanse of its catchment and beyond. The River Ganga which is the main and vital component of Gangetic hydrological system supports a dynamic lotic ecosystem. The ecosystem has prominent biological structure which naturally tends to support diverse forms of biota (flora and fauna) thus contributing in sustaining aquatic bio-diversity. A biological system of the river can be considered healthy when its inherent potential is realized, its condition

is stable, its capacity for self-repair when perturbed, is preserved, and minimal external support for management is needed. Water quality management system based on physical and chemical parameters alone is insufficient to assess the quality status in terms of “Health” of River Ganga. Assessment of aquatic biota of river provides understanding about the biological integrity of aquatic ecosystem, thus serving as continuous in-situ biological monitor to integrate the cumulative impacts from both aquatic driving forces as well as from stressors. Biological surveillance of benthic macro-invertebrate communities with special emphasis on characterizing taxonomic richness and composition is therefore the most sensitive view of river health and is essential to identify the biological responses of river to human activities.

In the present investigation, bio-monitoring of River Ganga has been carried out to determine the impact of various human activities on biological health of the entire river stretch from Uttarakhand to West Bengal. The other objective is to classify the river stretch on the basis of Biological water quality criteria, a combination of Saprobic and diversity score.

Total 41 bio-monitoring locations were explored for Benthic Macro Invertebrate fauna to assess biological health status of river Ganga during pre-monsoon period (March-June 2017). The Report prepared based on the study was submitted to NMCG.

Year-wise comparison of the progress made during three rounds (2014-15, 2015-16 & 2017) of Bio-monitoring of River Ganga for assessment of river biological health is depicted in Figure below:



No. of Bio-monitoring locations covered for biological water quality evaluation of River Ganga

The state-wise comparative picture on the status of biological health of River Ganga during 2014-15, 2015-16 and 2017 is summarized in tables given below:

2014-15

State	No. of Locations	Diversity Score*	Saprobic Score*	Biological Water Quality	Biological Water Quality Class
Uttarakhand	6	6.026	0.49	Slight	B
Uttar Pradesh	38	4.975	0.659	Moderate	C
Bihar	7	5.208	0.653	Moderate	C
West Bengal	15	5.087	0.602	Moderate	C

* Based on average data.

2015-16

State	No. of Locations	Diversity Score*	Saprobic Score*	Biological Water Quality	Biological Water Quality Class
Uttarakhand	8	6.262	0.67	Slight	B
Uttar Pradesh	39	5.023	0.641	Moderate	C
Bihar	13	5.174	0.637	Moderate	C
West Bengal	23	5.119	0.612	Moderate	C

* Based on average data.

2016-17

State	No. of Locations	Diversity Score*	Saprobic Score*	Biological Water Quality	Biological Water Quality Class
Uttarakhand	3	0.570	6.370	Slight	B
Uttar Pradesh	25	0.590	4.590	Moderate	C
Bihar	4	0.710	4.880	Moderate	C
West Bengal	9	0.560	5.710	Moderate	C

* Based on average data.

5.2 AMBIENT AIR QUALITY MONITORING

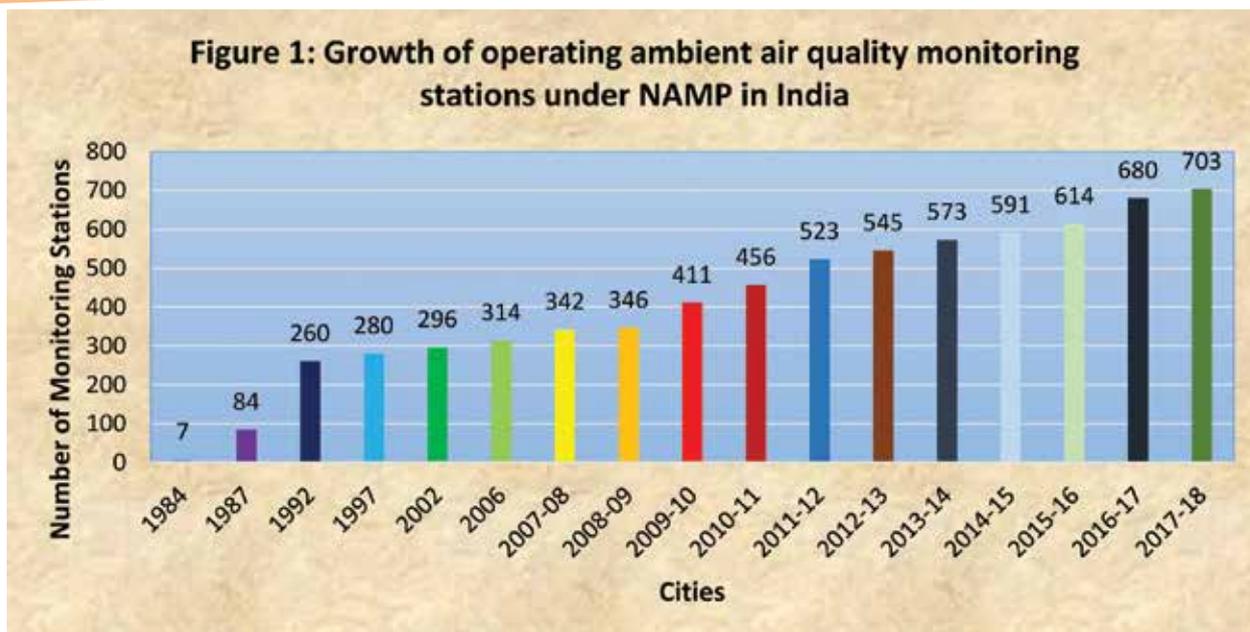
In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981. According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 '**Air pollution**' has been defined as 'the presence in the atmosphere of any air pollutant.' As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 '**Air Pollutant**' has been defined as 'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment'. Therefore **ambient air quality standard** is developed as a policy guideline that regulates the effect of human activity upon the environment so that pollutant emission into the air can be regulated. Standards may specify a desired state or limit alterations.

5.2.1 National Ambient Air Quality Monitoring Programme (NAMP)

Central Pollution Control Board is executing a nation-wide National Air Quality Monitoring Programme (NAMP). NAMP was started in 1984 with 7 stations in Agra and Anpara. The growth of operating Ambient Air Quality Monitoring Stations in the country is given in figure 1. The ambient air quality monitoring network has 703 operating stations covering 307 cities/towns in 29 States and 6 Union Territories.

Parameters monitored under NAMP

Under NAMP three criteria pollutants viz. PM₁₀ (Particulate Matter having an aerodynamic diameter less than or equal to 10 µm), Sulphur dioxide (SO₂) and Nitrogen dioxide (NO₂) were identified for regular monitoring at all locations. Other notified parameters like Carbon monoxide (CO), Ammonia (NH₃), Ozone (O₃), PM_{2.5} (Particulate Matter having an aerodynamic diameter less than or equal to 2.5 µm), Benzo(a)pyrene {B(a)P}, Lead (Pb) and Nickel (Ni) are



being monitored at selected locations. The monitoring of meteorological parameters such as wind speed, wind direction, relative humidity and temperature has been also integrated with the monitoring of air quality.

Objectives of NAMP

- i) To determine the status and trends of ambient air quality;
- ii) To ascertain whether the prescribed ambient air quality standards are violated;
- iii) To identify non-attainment cities with respect to national standards and;
- iv) To obtain the knowledge and understanding necessary for developing preventive and corrective measures.

Agencies involved in the Network (NAMP)

The monitoring under the NAMP is being carried out with the help of Central Pollution Control Board; State Pollution Control Boards; Pollution Control Committees and National Environmental Engineering Research Institute (NEERI), Nagpur. CPCB co-ordinates with these agencies to ensure uniformity, consistency of air quality data and provides technical and financial support to them for operating the monitoring station.

5.2.2 Status of Ambient Air Quality in million plus cities

All the cities belong to the Industrial, Residential, Rural & others areas except for Agra and Srinagar which falls in the Ecologically Sensitive area category. Out of 46 cities, Vasai Virar and Srinagar do not have operating stations and ambient air quality data for Faridabad and Raipur are not available under NAMP. The analysis of air quality data of 42 cities during 2017 with respect to SO₂ revealed that all 42 cities (100%) are within the National Ambient Air Quality Standard (NAAQS). As for NO₂, 10 cities (24%) namely Delhi, Howrah, Kanpur, Dombivali, Kolkata, Meerut, Pimpri-Chinchwad, Pune, Navi Mumbai and Thane exceed the NAAQS. With respect to PM₁₀, 41 cities (98%) do not comply with the NAAQS. With respect to PM_{2.5}, out of 18 cities monitored, 10 cities (56%) exceed the NAAQS. Number of cities exceeding the NAAQS (Based on annual average data) is given in Table 5.20.

**Table – 5.20: Number of million plus cities exceeding the NAAQS 2017
(Based on annual average data)**

Category	Number of million plus cities (population > 10 lacs)							
	Residential / industrial / rural / commercial areas				Ecologically sensitive area			
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}
Not exceeding NAAQS (NE)	42	32	1	8	1	1	0	0
Exceeding NAAQS (E)	0	10	41	10	0	0	1	1
Inadequate data/No data	2	2	2	26	0	0	0	0
No operational monitoring station	1	1	1	1	0	0	0	0
No monitoring station	1	1	1	1	0	0	0	0
Total metro cities (as per Census 2011)	46	46	46	46	1	1	1	1

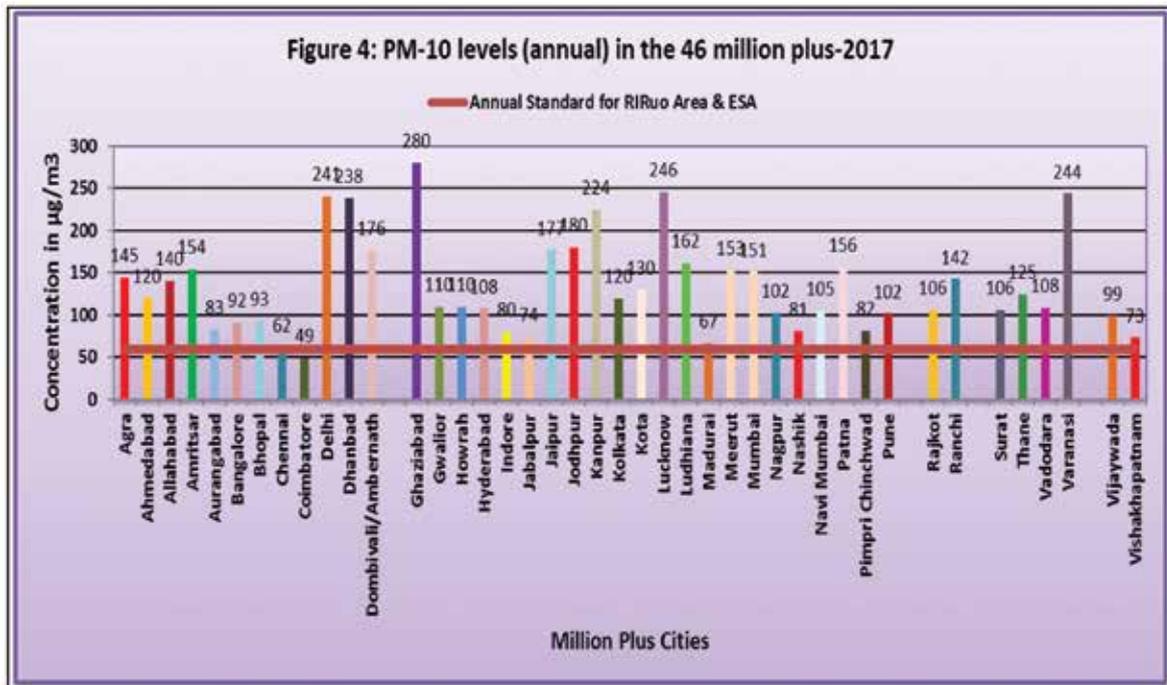
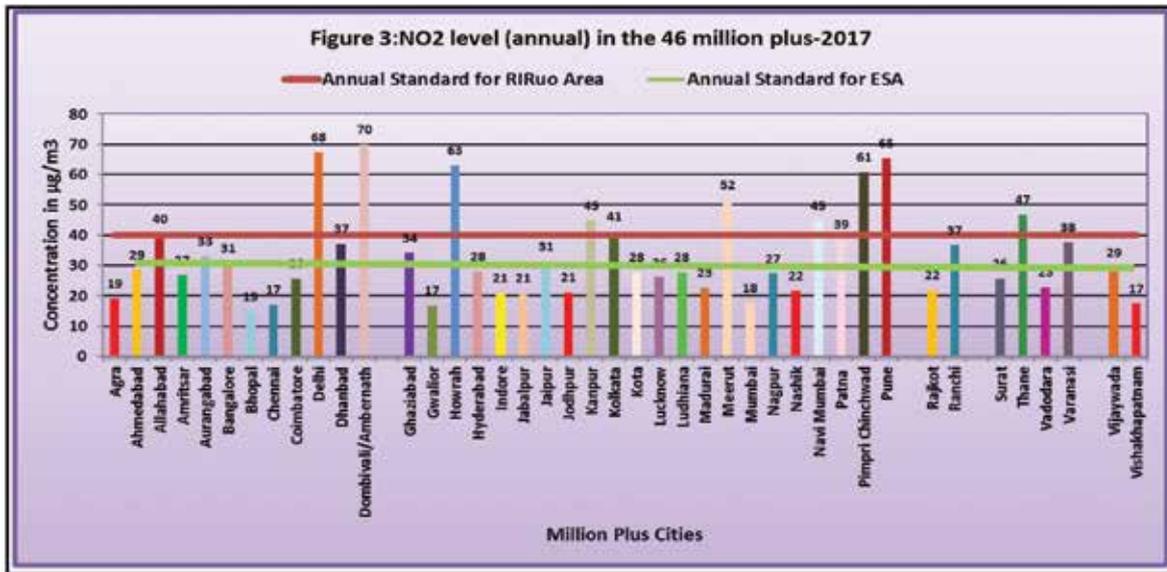
Table – 5.21: Air Quality in Million Plus Cities of India – 2017

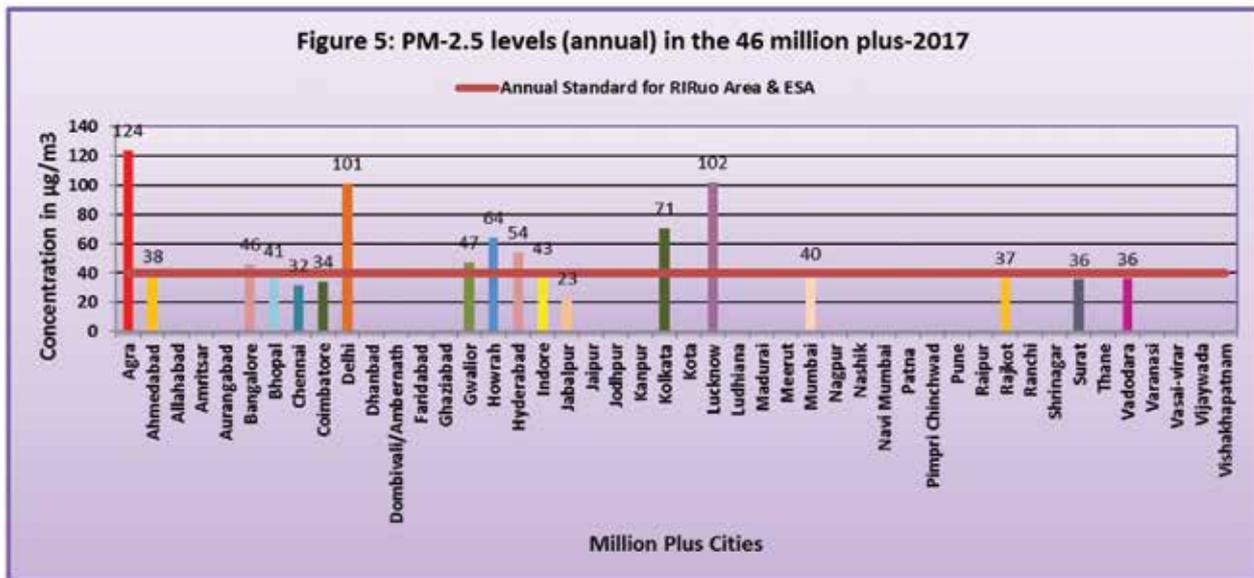
Sl. No.	State	Cities	Type & category of city	Number of Operating stations	SO ₂	NO ₂	PM ₁₀	PM _{2.5}
1.	Uttar Pradesh	Agra	ES	6	4	19	184	124
2.	Gujarat	Ahmedabad	RIRuO	9	14	29	120	38
3.	Uttar Pradesh	Allahabad	RIRuO	5	4	40	140	-
4.	Punjab	Amritsar	RIRuO	3	11	27	154	-
5.	Maharashtra	Aurangabad	RIRuO	4	10	33	83	-
6.	Karnataka	Bangalore	RIRuO	9	2	31	92	46
7.	Madhya Pradesh	Bhopal	RIRuO	8	4	15	93	41
8.	Tamilnadu	Chennai	RIRuO	11	9	17	62	32
9.	Tamilnadu	Coimbatore	RIRuO	3	5	26	49	34
10.	Delhi	Delhi	RIRuO	10	7	68	241	101
11.	Jharkhand	Dhanbad	RIRuO	3	15	37	238	-
12.	Maharashtra	Dombivali/ Ambarnath	RIRuO	2	27	70	176	-
13.	Haryana	Faridabad	RIRuO	2	-	-	-	-
14.	Uttar Pradesh	Ghaziabad	RIRuO	2	22	34	280	-
15.	Madhya Pradesh	Gwalior	RIRuO	2	10	17	110	47
16.	West Bengal	Howrah	RIRuO	4	11	63	110	64
17.	Telangana	Hyderabad	RIRuO	10	6	28	108	54
18.	Madhya Pradesh	Indore	RIRuO	3	11	21	80	43
19.	Madhya Pradesh	Jabalpur	RIRuO	2	10	21	74	23

Sl. No.	State	Cities	Type & category of city	Number of Operating stations	SO ₂	NO ₂	PM ₁₀	PM _{2.5}
20.	Rajasthan	Jaipur	RIRuO	6	8	31	177	-
21.	Rajasthan	Jodhpur	RIRuO	9	6	21	180	-
22.	Uttar Pradesh	Kanpur	RIRuO	9	7	45	224	-
23.	West Bengal	Kolkata	RIRuO	20	6	41	120	71
24.	Rajasthan	Kota	RIRuO	6	8	28	130	-
25.	Uttar Pradesh	Lucknow	RIRuO	8	8	26	246	102
26.	Punjab	Ludhiana	RIRuO	4	10	28	162	-
27.	Tamilnadu	Madurai	RIRuO	3	14	23	67	-
28.	Uttar Pradesh	Meerut	RIRuO	2	7	52	153	-
29.	Maharashtra	Mumbai	RIRuO	3	3	18	151	40
30.	Maharashtra	Nagpur	RIRuO	7	9	27	102	-
31.	Maharashtra	Nashik	RIRuO	4	12	22	81	-
32.	Maharashtra	Navi Mumbai	RIRuO	6	22	45	105	-
33.	Bihar	Patna	RIRuO	2	5	39	156	-
34.	Maharashtra	Pimpri Chinchwad	RIRuO	1	23	61	82	-
35.	Maharashtra	Pune	RIRuO	3	21	65	102	-
36.	Chattisgarh	Raipur	RIRuO	3	10	27	103	-
37.	Gujarat	Rajkot	RIRuO	2	16	22	106	37
38.	Jharkhand	Ranchi	RIRuO	1	19	37	142	-
39.	Jammu & Kashmir	Shrinagar	RIRuo	4	@	@	@	@
40.	Gujarat	Surat	RIRuO	3	16	26	106	36
41.	Maharashtra	Thane	RIRuO	3	18	47	125	-
42.	Gujarat	Vadodara	RIRuO	5	16	23	108	36
43.	Uttar Pradesh	Varanasi	RIRuO	5	10	38	244	-
44.	Maharashtra	Vasai-virar	RIRuo	0	#	#	#	#
45.	Andhra Pradesh	Vijaywada	RIRuO	3	6	29	99	-
46.	Andhra Pradesh	Vishakha-patnam	RIRuO	8	9	17	73	-

NB. Figures within parentheses represent total number of operating monitoring stations in the state # no monitoring station in the city @ monitoring station sanctioned but not yet operational; RIRuO – Residential/ industrial/ rural/ other area, ES – Ecologically sensitive area; NAAQS of 50 µg/m³ for SO₂, 40 µg/m³ for NO₂, and 60 µg/m³ for PM₁₀ for Residential/ industrial / other area & 20 µg/m³ for SO₂, 30 µg/m³ for NO₂, and 60 µg/m³ for Ecologically sensitive area; , '-' Data not available.; Data for 2017 is as available on date.

The air quality scenario with respect to SO₂, NO₂, PM₁₀ and PM_{2.5} in million plus cities during 2017 is represented in figure 2, 3, 4 and 5





Measures for Air Quality Management:

Following steps have been taken for air quality management in the country.

1. Stringent BS – IV vehicle norms have been implemented from April 2017. Further, BS – VI vehicle norms are notified to be implemented from 1st April, 2020.
2. Direction under Section 18 (1)(b) of Air (Prevention and Control of Pollution) Act, 1981 comprising 31 action points for prevention, control or abatement of air pollution and improvement of ambient air quality in non-attainment cities and towns has been issued to concerned SPCBs.
3. Emission standards of industries are revised from time to time. Recently standards for power plants, cement and other 21 industrial sectors & industrial boilers have been revised.
4. Preparation of city specific action plans for identified Non-attainment cities, with a clear road map of source specific actions and responsible agencies is being prepared. Process of finalization for implementation is underway.
5. National Ambient Air Quality Standards were notified on November 2009. CPCB have prescribed 12 parameters, namely, PM₁₀, PM_{2.5}, SO₂, NO₂, CO, NH₃, Ozone, Lead, Benzene, Benzo-a Pyrene, Arsenic and Nickel.
6. Central Pollution Control Board along with State Pollution Control Boards and Pollution Control Committees are monitoring ambient air quality at 703 monitoring stations located in 307 cities/towns covering 29 states and 6 union territories across the country under National Air Quality Monitoring Programme (NAMP). CPCB has installed 124 Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in 66 cities the country.
7. National Air Quality Index developed and disseminated for effective communication of air quality status to public.
8. Directions issued to Director (Agriculture) for 06 regions under section 5 of E (P) Act, 1986 regarding agriculture stubble burning in NCR states & Punjab.
9. The Ministry of Environment, Forest and Climate Change (MoEF&CC) has launched the National Clean Air Programme (NCAP) for curb the air pollution in the country.

10. Steps have been taken for controlling vehicular pollution across the country by various concerned Ministries like Ministry of Road Transport & Highways (MoRTH), Ministry of Petroleum & Natural Gas (MoPNG), Ministry of New & Renewable Energy (MNRE), Ministry of Heavy Industries (MoHI), Ministry of Environment & Climate Change (MoEF&CC), Ministry of Urban Development (MoUD), Central Pollution Control Board (CPCB) State Pollution Control Boards (SPCBS and concerned state government departments. Some of the major initiatives for vehicular Pollution Control includes:

- Implementation of BS-IV emission norms across the country.
- Supply of BS-IV fuel quality
- BS-VI emission norms proposed to be implemented across the country from 1st April, 2020
- Uses of alternate clean fuels such as electric vehicles, fuel cells, CNG, LPG etc have been promoted across the country through various schemes and policies.
- Fuel efficiency norms have been implemented for passenger cars.
- PUC norms for On-road vehicles have been made stringent .
- Public transport in Delhi is running of CNG only.
- Public transport system has been improvised and augmented.
- Metro Rail System as public transport has been successfully commissioned across the Delhi-NCG. Further Metro Rail system has also been initiated in major cities of the country like Mumbai, Chennai, Bangalore, Kolkata etc.
- Better traffic management policies have been adopted.
- Entry of non-destined vehicles has been restricted.
- Road infrastructure in terms of bye pass, flyovers, expressways etc have been enhanced for smooth flow of traffic.
- Environment Protection Charges (EPC) have been imposed on diesel vehicles with engine capacity of 2000cc and above in Delhi NCR as per the directions of the Hon'ble Supreme Court.
- Environmental Compensation Charges(ECC) have been imposed on commercial vehicles entering Delhi as per the directions of the Hon'ble Supreme Court
- The Hon'ble NGT vide its order dated July 18, 2016 has directed for deregistration of all 10 year old diesel vehicles in Delhi NCR.

5.3 NATIONAL AMBIENT NOISE MONITORING NETWORK

CPCB in association with State Pollution Control Boards has established National Ambient Noise Monitoring Network in 07 metropolitan cities and installed 70 Nos. of Noise Monitoring System in Mumbai, Delhi, Kolkata, Chennai, Bangalore, Lucknow and Hyderabad (10 Nos. of stations in each city). Based on the Ambient Noise Level data for the year 2017, following observations are made:

1. During day time, 14 out of 16 stations in residential zone, 13 out of 25 in commercial zone, 2 out of 12 in industrial zone and 17 out of 17 in silence zone are non-complying with ambient noise standards.

2. Similarly, during night time 16 out of 16 stations in residential zone, 20 out of 25 in commercial zone, 3 out of 12 in industrial zone and 16 out of 17 in silence zone are non-complying with ambient noise standards.

Noise levels recorded during 2011-15, CPCB has issued direction to concerned 07 SPCBs/ PCCs under Section 18 (1) b of Air (Prevention and Control of Pollution) Act, 1981 (dated 26/04/2016) and under section 5 of Environment (Protection) Act, 1986 (dated 06/02/2017) to concerned designated authorities asking to take corrective measures for control of noise pollution.

CHAPTER - VI

PRESENT STATE OF ENVIRONMENT, ENVIRONMENTAL PROBLEMS AND COUNTER MEASURES

6.1 AMBIENT AIR QUALITY OF DELHI

A comparative profile of Ambient Air Quality being monitored in the city of Delhi for the year 2015, 2016 & 2017 and presented as under:

- **Sulphur dioxide (SO₂)**

The annual mean concentration of Sulphur dioxide during the years 2015 - 2017 is shown in Figure 6.1. Sulphur dioxide concentrations recorded at all six locations, are well within the standard limit prescribed under NAAQS (2009).

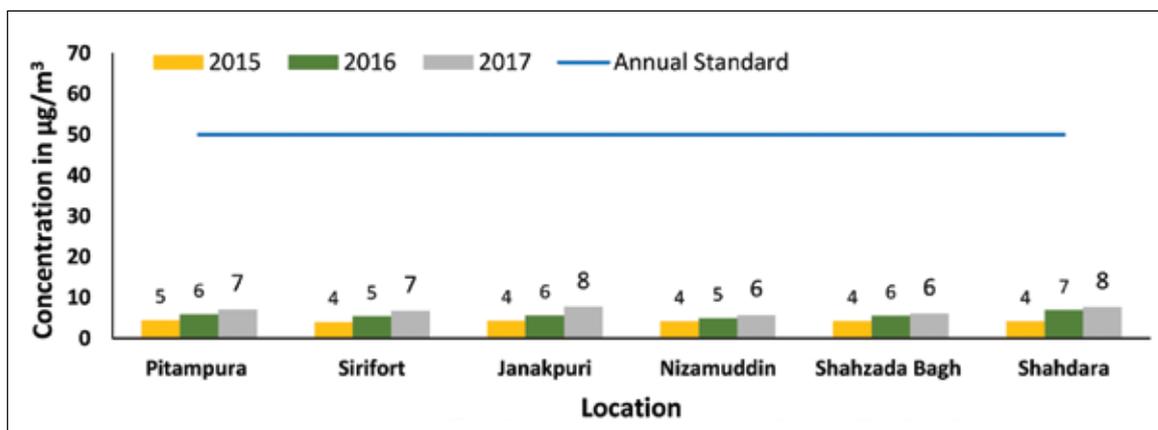


Figure 6.1 Sulphur dioxide concentration in Delhi (2015-2017)

- **Nitrogen dioxide (NO₂)**

The annual mean concentration of Nitrogen dioxide during the year 2015 - 2017 is shown in Figure 6.2. A mixed trend was observed in NO₂. The concentrations of nitrogen dioxide recorded decreasing trend at two locations, whereas, in increasing trend at four locations was observed in 2017 compared to previous year. The concentration of NO₂ ranged between

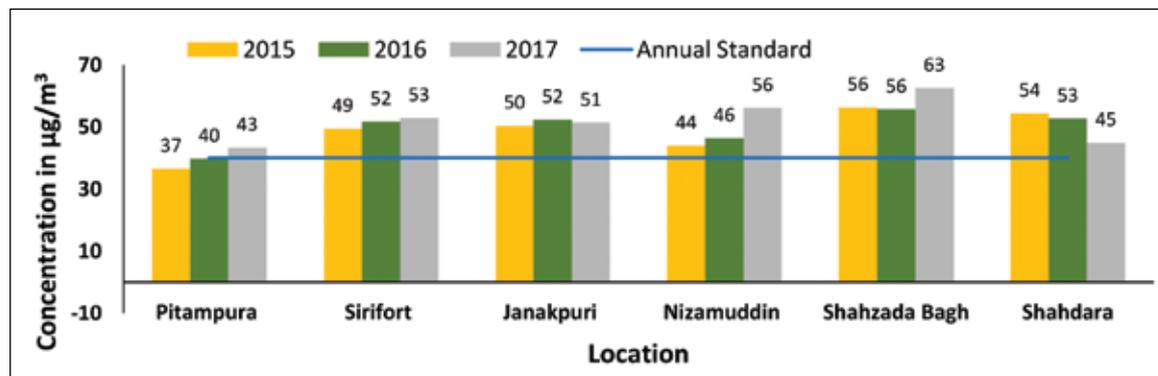


Figure 6.2 Nitrogen dioxide concentration in Delhi (2015-2017)

43 $\mu\text{g}/\text{m}^3$ (Pitampura) to 63 $\mu\text{g}/\text{m}^3$ (Shahzada Bagh) during the year 2017. The concentration of NO_2 exceeded the national standards at all locations during the year 2017.

- Particulate Matter (PM_{10})**

The concentration of PM_{10} monitored at all locations shows a decreasing trend in the year 2017 compared to previous year (Figure 6.3). The concentration of PM_{10} at all locations exceeded the annual national standard and ranged between 199 $\mu\text{g}/\text{m}^3$ (Pitampura) to 292 $\mu\text{g}/\text{m}^3$ (Shahzada Bagh & Janakpuri) during the year 2017.

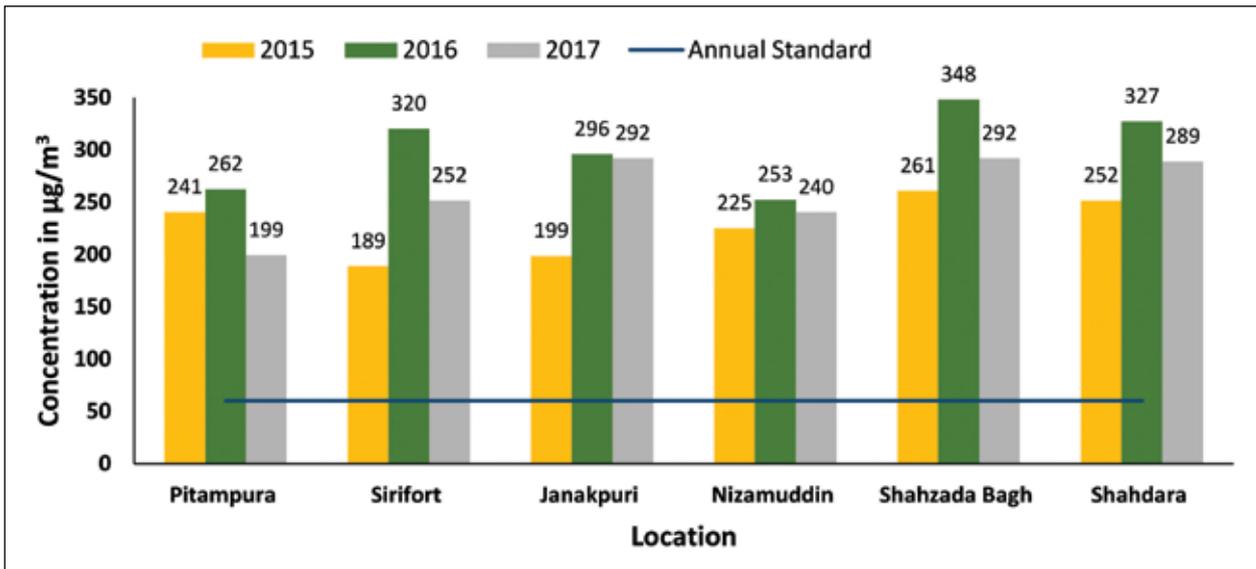


Figure 6.3 PM_{10} Concentration in Delhi (2015-2017)

- Particulate Matter ($\text{PM}_{2.5}$):**

The annual mean concentration of $\text{PM}_{2.5}$ shows a decreasing trend at all locations except at Sirifort during the year 2017 in comparison with annual average of year, 2016 (Figure 6.4). The annual mean concentration of $\text{PM}_{2.5}$ ranged between 83 $\mu\text{g}/\text{m}^3$ (Nizamuddin) and 117 $\mu\text{g}/\text{m}^3$ (Pitampura) during the year 2017 and exceeded the prescribed national annual standard at all the locations.

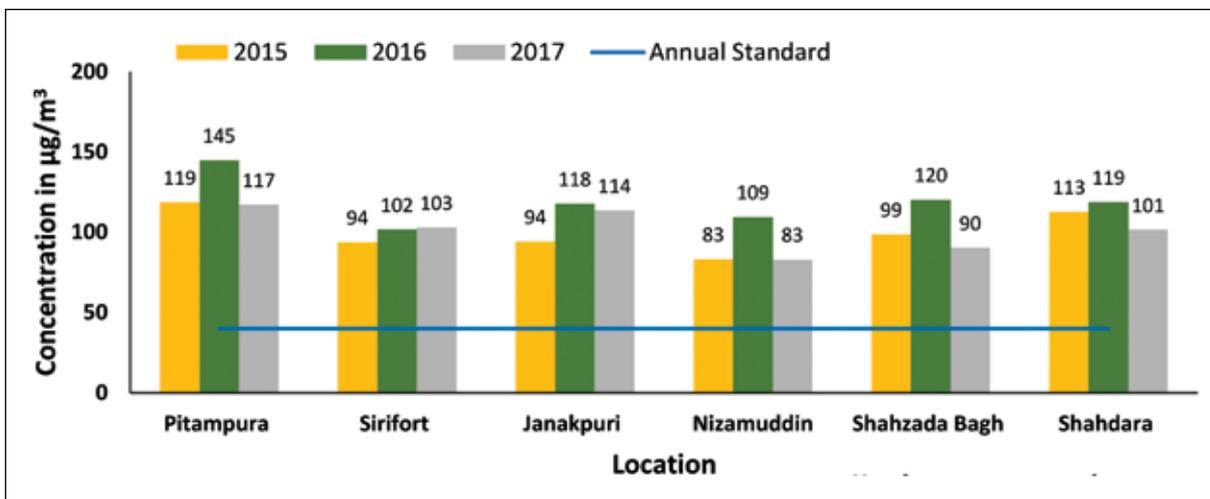


Figure 6.4 $\text{PM}_{2.5}$ concentration in Delhi (2015-2017)

- Particulate Metals and Metalloid in the Ambient Air of Delhi (2016 & 2017):**

In compliance to the mandate under the Air Act (1981), Central Pollution Control Board is monitoring the metal parameters included in NAAQS, 2009, lead, nickel and arsenic in PM₁₀ at eight locations (Pitampura, Sirifort, Nizamuddin, Janakpuri, Shahdara, Shahzadabagh, East Arjun Nagar and traffic intersection BSZ Marg ITO) in Delhi.

The concentration of metals (Pb & Ni) and metalloid (As) during 2017 were found greater than the concentration reported during year 2016.

The concentration of metals (Pb & Ni) and metalloid (As) during 2016 and year 2017 are described as follows:

- Particulate Lead in PM₁₀:**

The annual mean concentration of particulate lead in the ambient air of Delhi is shown in Figure 6.5.

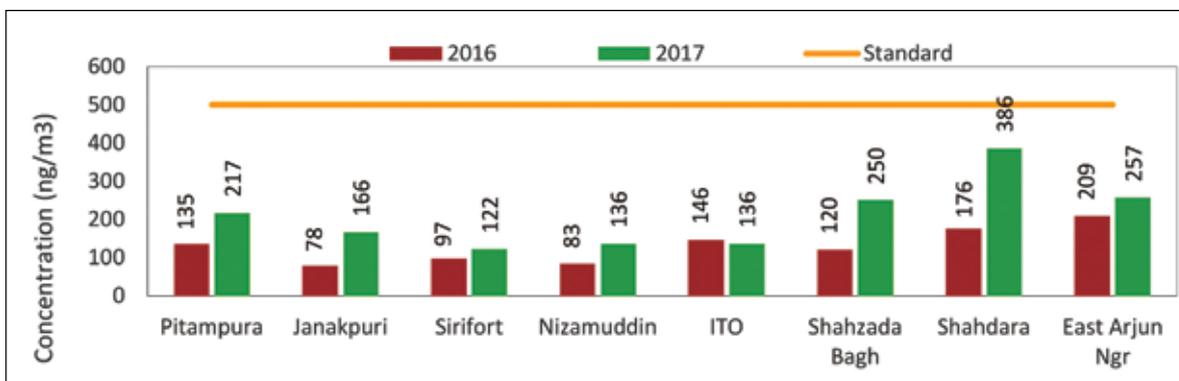


Figure 6.5 Conc. of Particulate Lead in ambient air in Delhi (2016 & 17)

The annual mean concentration of particulate lead in the year 2016 and 2017 were observed in the range of 78.0 ng/m³ to 209.0 ng/m³ and 122.0 ng/m³ to 386.0 ng/m³ respectively in the ambient air of Delhi. The maximum concentration of particulate lead was observed at East Arjun Nagar (209.0 ng/m³) in 2016, and Shahdara (386 ng/m³) in 2017. The minimum concentration of lead found at Janakpuri (78.0 ng/m³) in 2016 and Sirifort (122.0 ng/m³) in 2017. Lead concentration is within the limit (500 ng/m³) prescribed in NAAQS, 2009, across Delhi.

- Particulate Nickel in PM₁₀:**

The annual mean concentration of particulate (PM₁₀) nickel in the ambient air of Delhi is shown in Figure 6.6.

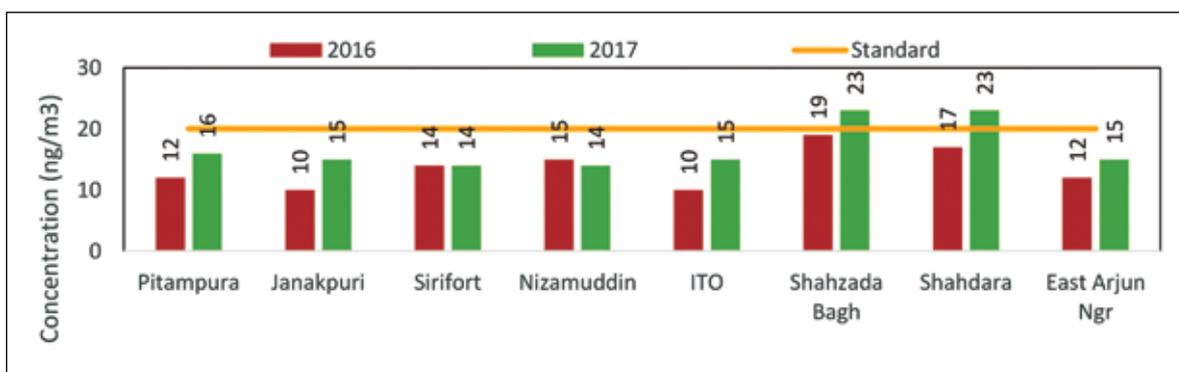


Figure 6.6 Conc. of Particulate Nickel in ambient air in Delhi (2016 & 17)

The annual mean concentration of particulate nickel (in PM_{10}) was observed in the range of 10.0 ng/m^3 to 19.0 ng/m^3 (2016) and 14.0 ng/m^3 to 23.0 ng/m^3 (2017) in Delhi. In 2016 concentration of Nickel observed within permissible limit across Delhi; however, the concentrations reported are moderately high enough and almost touching the limits. The observed concentration value of Nickel is exceeded the permissible limits of 20.0 ng/m^3 at Shahzadabagh and Shahdara in the year 2017.

- Particulate Arsenic in PM_{10} :**

The annual mean concentration of particulate metalloid (arsenic) in the ambient air of Delhi is shown in Figure 6.7.

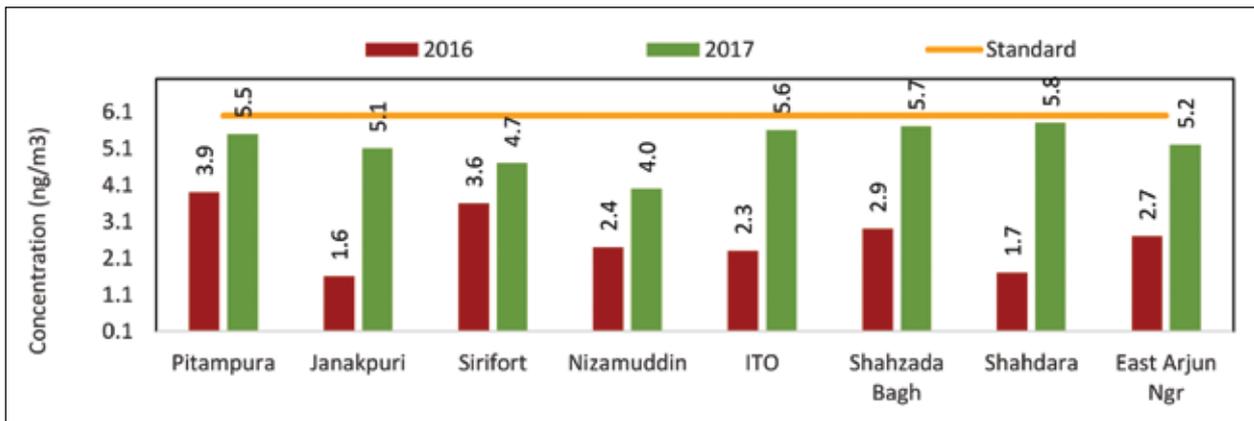


Figure 6.7 Conc. of Particulate Arsenic in ambient air in Delhi (2016 & 17)

Concentrations of Arsenic were observed within the prescribed standard limit (6.0 ng/m^3) across Delhi. The mean values ranges from 1.60 ng/m^3 to 3.90 ng/m^3 . (2016) and 4.0 ng/m^3 to 5.8 ng/m^3 . (2017).

- Benzene:**

Benzene is a toxic substance commonly found in ambient air, especially in the urban environment. Emitted primarily from traffic, benzene has been identified as a carcinogen, inflicting deleterious effects on human health. The annual standard for Benzene is $05 \text{ } \mu\text{g/m}^3$. There is no short-term standard for benzene.

Benzene is an industrial solvent and also a component of gasoline. Evaporative emissions account for some of the benzene in ambient air. However, benzene can also be produce in combustion processes including those in automobiles and can be emitted with the exhaust into the environment.

The most common method of sampling for benzene is by adsorption on charcoal tubes. Air is drawn through the tube at a known flow rate using a pump. At the completion of sampling, the benzene adsorbed by the charcoal is eluted with a solvent (Carbon Di Sulphide) and determined by gas chromatography.

CPCB undertook a study to measure Benzene at CPCB Ambient air quality monitoring station during 2017. The Annual average concentration of Benzene at Parivesh Bhawan found $5.42 \text{ } \mu\text{g/m}^3$. Minimum Average concentration found in the month of July ($2.21 \text{ } \mu\text{g/m}^3$) while maximum average concentration reported during the month of November ($9.96 \text{ } \mu\text{g/m}^3$).

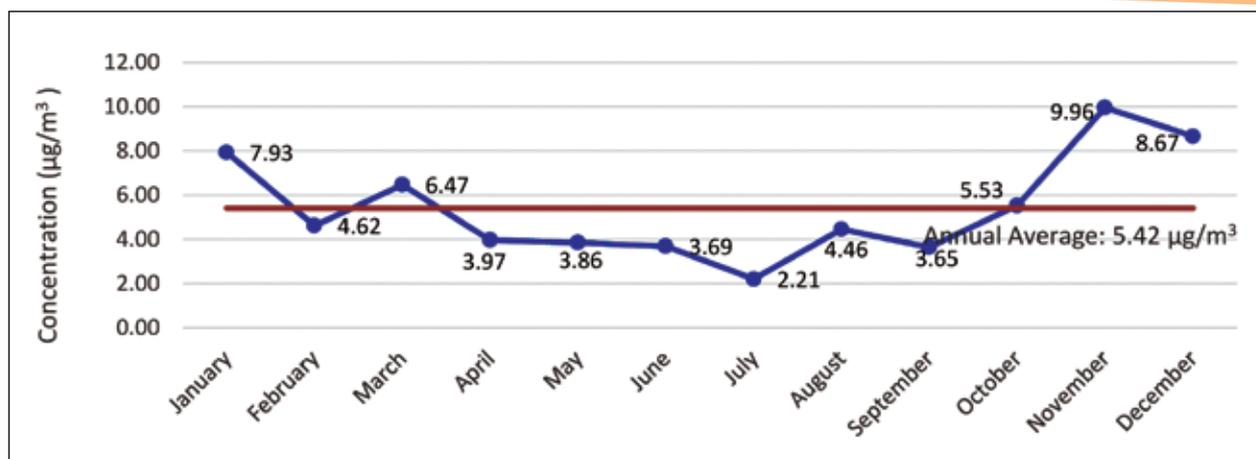


Figure 6.8 Benzene Concentration (Parivesh Bhawan, Delhi) 2017

- Air Quality at ITO (Traffic Intersection), Delhi**

The air quality at ITO Traffic intersection is being monitored during the last many years. The location was temporarily shifted near to Pragati Maidan Metro Station during 2014 -15 and restored back to ITO intersection in 2016. The air quality during the last three years (2015 – 2017) in kerb side area is presented in Figure 6.9.

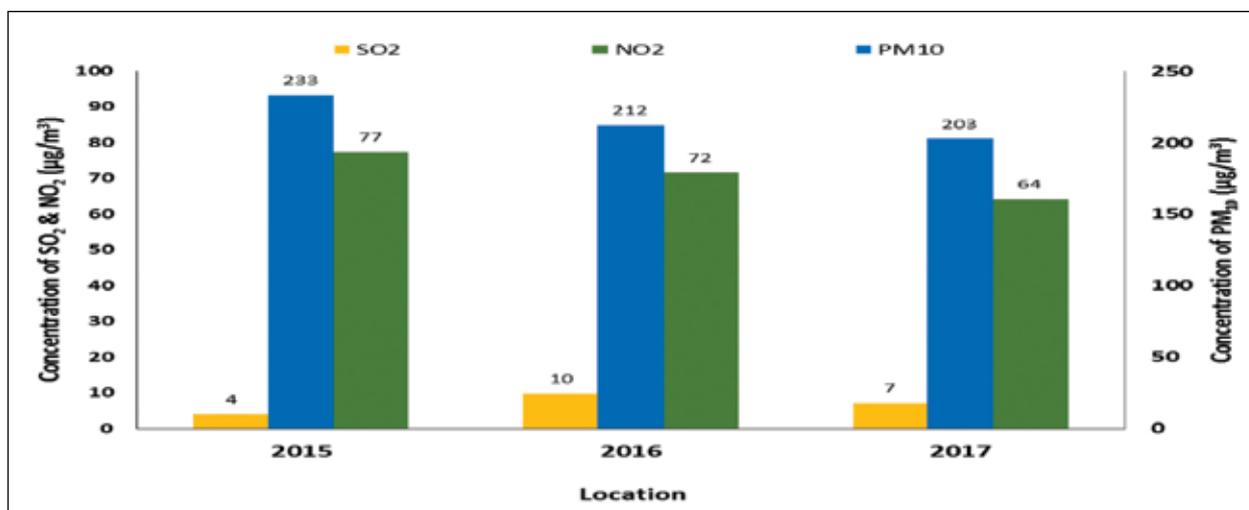


Figure 6.9 Pollutants Concentration at ITO Intersection, Delhi (2015-2017)

6.2 CONTINUOUS AMBIENT AIR QUALITY MONITORING NETWORK IN DELHI-NCR

National Capital Region (NCR) is unique example of inter-state regional planning and development for a region with NCT-Delhi as its core. The NCR as notified covers the whole of NCT-Delhi and certain districts of Haryana, Uttar Pradesh and Rajasthan, covering an area of about 53, 817 sq. kms (**as on March 2017**). Four constituent Sub-Regions of NCR are as follows:

- The Haryana Sub-Region comprises thirteen districts: Bhiwadi, Faridabad, Gurgaon, Jhajjar, Jind, Karnal, Mewat, Mahendragarh (Narnaul), Panipat, Palwal, Rewari, Rohtakand Sonapat.

- The Uttar Pradesh Sub-Region comprises seven districts: Baghpat, Bulandshahr, Ghaziabad, Gautam Budh Nagar, Hapur, Meerut, Muzaffarnagar.
- The Rajasthan Sub-Region comprises two districts: Alwar and Bharatpur
- Delhi, which constitutes only about 2.9% of the land area of the Region.

Presently, 23 districts (plus Delhi NCT) are in Delhi-NCR. Recently, Shamli (U.P.) has also been added in Delhi-NCR region.

The monitoring activity in Delhi-NCR is shared by Central Pollution Control Board, Delhi Pollution Control Committee, India Meteorological Department, Haryana PCB, Uttar Pradesh PCB and Rajasthan PCB using Continuous Ambient Air Quality Monitoring Stations (CAAQMS), depicted and tabulated as under:



Present, CAAQMS Network in Delhi-NCR

Air Quality of Delhi and National Capital Region(NCR):

The annual average air quality status of Delhi-NCR is presented in the table. Monthly variation of particulate matter is shown in the figure.

- The Annual average values of Particulate Matter (PM₁₀ and PM_{2.5}) exceeded the permissible limits (as per NAAQS 2009) in all CAAQM stations across Delhi-NCR in 2017

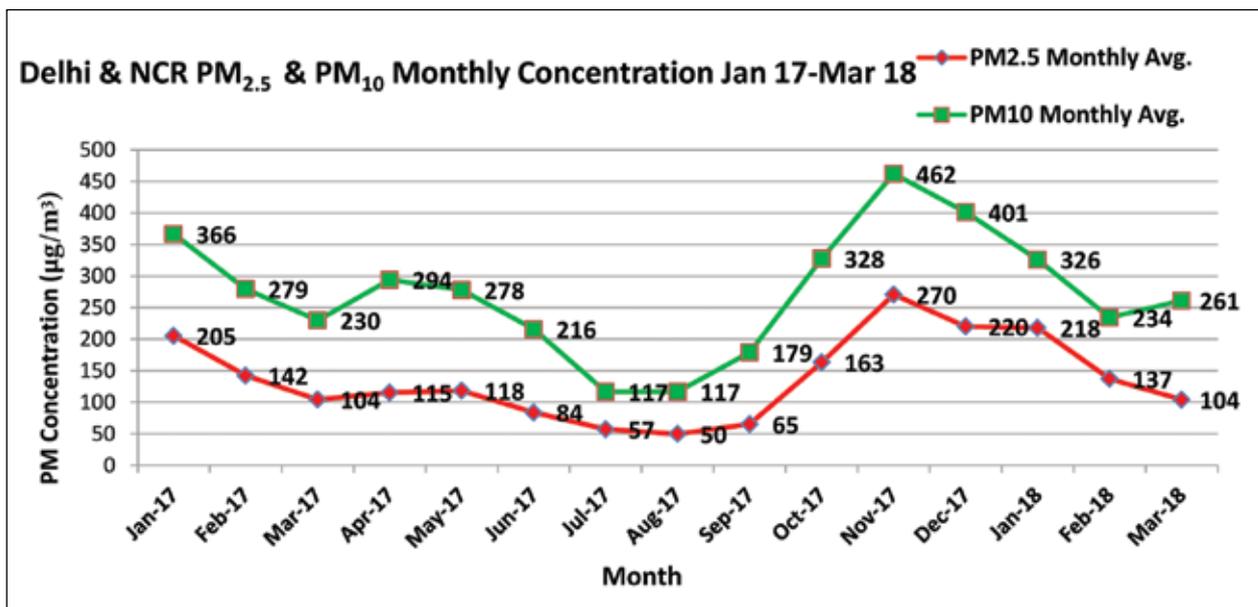
- Annual mean concentration of Nitrogen Dioxide (NO₂) was also found exceeding the permissible limit in Delhi and Faridabad in 2017.
- Sulphur Dioxide (SO₂) were found within permissible limit (as per NAAQS 2009 standards) in all stations across Delhi.
- Ammonia: Observed within the permissible limits in all stations across Delhi as per NAAQS 2009 Standard.
- Benzene was found exceeding the permissible limit at Anand Vihar and RK Puram in Delhi in 2017
- Others parameters like CO which is having only hourly and 8-hourly Standards (notified in NAAQS 2009) also remained within prescribed limits in 2017

**Table -5.22: Annual Air Quality Status of Delhi-NCR
(Average Concentration of Pollutants in µg/m³)**

Station	Parameter	Standard	2015	2016	2017
DMS, Shadipur	NO ₂	40	57	49	27
	SO ₂	50	10	17	13
	PM ₁₀	60	254	*	*
	PM _{2.5}	40	88	145	120
	Benzene	5	3	4	4
IHBAS, Dilshad Garden	NO ₂	40	41	71	54
	NH ₃	100	46	30	40
	SO ₂	50	10	12	12
	PM ₁₀	60	187	*	*
	PM _{2.5}	40	93	146	97
NSIT, Dwarka	NO ₂	40	42	25	33
	SO ₂	50	9	9	9
	PM ₁₀	60	245	*	*
	PM _{2.5}	40	90	143	124
	Benzene	5	3	3	3
ITO	NO ₂	40	78	41	41
	PM ₁₀	60	*	292	187
	PM _{2.5}	40	*	216	126
	NH ₃	100	*	*	50
Sirifort	NO ₂	40	*	126	74
	PM _{2.5}	40	*	216	116
	NH ₃	100			47
DTU	NO ₂	40	*	114	35
	PM _{2.5}	40	*	326	144
	NH ₃	100	*	*	46
MandirMarg	NO ₂	40	56	58	NA
	NH ₃	100	80	33	19
	SO ₂	50	15	16	NA
	PM ₁₀	60	183	246	157
	PM _{2.5}	40	97	120	74

Station	Parameter	Standard	2015	2016	2017
Punjabi Bagh	NO ₂	40	74	78	70
	SO ₂	50	19	19	22
	PM ₁₀	60	253	279	192
	PM _{2.5}	40	127	140	86
	Benzene	5	1.3	1.1	1.2
AnandVihar	NO ₂	40	77	82	76
	SO ₂	50	21	20	23
	PM ₁₀	60	502	457	366
	PM _{2.5}	40	159	176	107
	Benzene	5	6	13	5.2
R K Puram	NO ₂	40	70	74	52
	SO ₂	50	18	27	27
	PM ₁₀	60	242	275	192
	PM _{2.5}	40	117	136	94
	Benzene	5	7	7	9
Sector 16 A, Faridabad	NO ₂	40	47	38	41
	SO ₂	50	24	32	26
	PM ₁₀	60	*	*	*
	PM _{2.5}	40	117	152	161
	Benzene	5	6	3.15	1.32
Gurgaon	NO ₂	40	13	16	20
	SO ₂	50	7	7	8
	PM ₁₀	60	224	113	*
	PM _{2.5}	40	*	116	152

NOTE: PM_{2.5} values from March 2015 to Dec 2015



(Note: based only for those CAAQM Stations whose Data available for entire year in 2017)

6.3 CONTINUOUS AMBIENT AIR QUALITY MONITORING NETWORK (CAAQMS) NETWORK IN INDIA (MARCH 2018)

The Continuous Ambient Air Quality Monitoring Stations (CAAQMS) Network in the country is expanding, presently 63 cities have been covered out of proposed 106 cities. Total CAAQM Stations across India is 121, depicted as under:

S.No.	State	City	CAAQMS Installed
1	Andhra Pradesh	1. Amaravathi	1
		2. Vijaywada	1
		3. Vishakhapatnam	2
		4. Tirupati	1
		5. Rajamahendravaram	1
2	Arunachal Pradesh	1. Itanagar	**
3	Assam	1. Guwahati	**
4	Bihar	1. Patna	1
		2. Gaya	1
		3. Muzafarpur	1
5	Gujarat	1. Ahmedabad	1
		2. Anklewshwar	**
		3. Vapi	**
		4. Vatva	**
		5. Gandhi Nagar	**
		6. Rajkot	**
		7. Vadodara	**
		8. Surat	**
6	Haryana	1. Faridabad	1
		2. Panchkula	1
		3. Rohtak	1
		4. Gurugram	1
7	Himachal Pradesh	1. Shimla	**
8	Jammu & Kashmir	1. Srinagar	**
9	Jharkhand	1. Ranchi	**
		2. Dhanbad	**
		3. Jorapokhar	1
10	Karnataka	1. Bengaluru	5
11	Kerala	1. Tiruvanthapuram	1
12	Madhya Pradesh	1. Bhopal	**
		2. Gwalior	**
		3. Indore	**
		4. Jabalpur	**
		5. Ujjain	1
		6. Pithampur	1
		7. Mandideep Raisen	1
		8. Vindhyanchal Singrauli	1
		9. Dewas	1
		10. Satna	1

S.No.	State	City	CAAQMS Installed
13	Maharashtra	1.Mumbai	1
		2.Pune	1
		3.Solapur	1
		4.Nagpur	1
		5.Nashik	1
		6.Dombivali	**
		7.Chandrapur	2
		8.Aurangabad	1
		9.Pimpri-Chinchwad	**
		10.Navi Mumbai	1
		11.Vasai Virar	**
		12.Kalyan Dombivali	**
		13.Thane	1
14	Manipur	1.Imphal	**
15	Meghalaya	1.Shillong	**
16	Mizoram	1.Aizawl	**
17	Nagaland	1.Kohima	**
18	Odisha	1.Bhubneshwar	**
		2.Angul-Talcher	1
		3.Jharsugda	1
		4.Brajrajnagar	1
19	Punjab	1. Amritsar	1
		2. Ludhiana	1
		3.Mandi Gobind Garh	1
		4. Khanna	**
		5.Jalandhar	1
		6.Patiala	1
20	Rajasthan	1.Jaipur	3
		2.Jodhpur	1
		3.Bhiwadi	1
		4.Alwar	1
		5.Ajmer	1
		6.Kota	1
		7.Pali	1
		8.Udaipur	1
21	Sikkim	1.Gangtok	**
22	Tamil Nadu	1.Chennai	3
		2.Coimbatore	**
		3.Manali	**
		4.Madurai	**
23	Telangana	1.Hyderabad	6
24	Tripura	1.Agartala	**

S.No.	State	City	CAAQMS Installed
25	Uttar Pradesh	1. Varanasi	1
		2. Kanpur	1
		3. Agra	1
		4. Lucknow	4
		5. Ghaziabad	1
		6. Noida	2
		7. Muradabad	1
		8. Meerut	**
		9. Allahabad	**
		10. Firozabad	**
26	Uttarakhand	1. Dehradun	**
27	West Bengal	1. Kolkata	2
		2. Howrah	2
		3. Haldia	1
		4. Durgapur	1
		5. Asansol	1
		6. Darjeeling	**
		7. Siliguri	1
28	Chhattisgarh	1. Raipur	**
29	Andaman & Nicobar Island	1. Portblair	**
30	Chandigarh	1. Chandigarh	**
31	Dadar Nagar & Haveli	1. Silvassa	**
32	Daman & Diu	1. Daman	**
33	Delhi	1. Delhi	38
34	Puducherry	1. Puducherry	**
	Total	106(63+43)#	121@

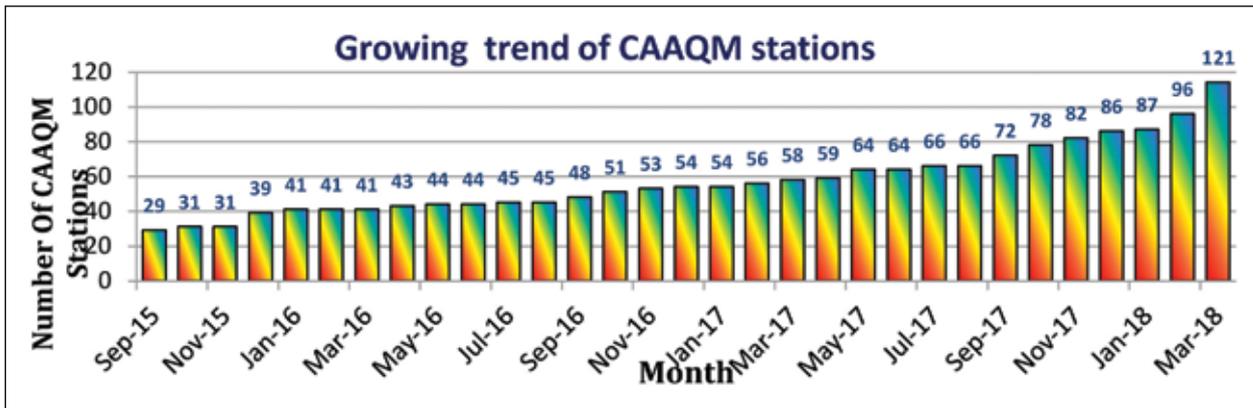
#Cities**** CAAQMs to be installed in cities****@CAAQMs already installed - 121****Total cities planned to be covered=106****CAAQMs already installed=63 cities****CAAQMs to be installed=43 cities****Total CAAQM stations Planned to be installed=210**

Proposed to be installed=89 (8 expected to be installed in mid 2018 +60 CAAQM Stations are proposed under CPSU-CSR Fund +21 Stations under MoEF&CC on sharing basis with SPCBs/ PCCs).

6.4 NATIONAL AIR QUALITY INDEX

Air pollution has been a matter of environmental and health concerns, particularly in urban areas. Central Pollution Control Board along with State Pollution Control Boards has been operating National Air Monitoring Program (NAMP) covering 240 cities of the country. In addition, continuous monitoring systems that provide data on real-time basis are also installed in few cities.

Hon'ble Prime Minister launched National **Air Quality Index (AQI)** on 6th April, 2015 to monitor air quality in major urban cities across the country on a real-time basis and to enhance public awareness. Air Quality Index (AQI) is one such tool for effective dissemination of air quality information to people as a part of this, Union Environment Ministry proposed to extend the measurement of air quality on real time basis in 22 state capitals and 44 other cities with a population of more than one million. This index will help the people know about the level of pollution in the ambient air on daily basis. The AQI Display has been increased from the initial 10 cities to currently 51 cities in 16 states of India. At present, total 121 Continuous Ambient Air Quality Monitoring Stations all over the country are connected with NAQI. The growing trend of stations across India is as shown:



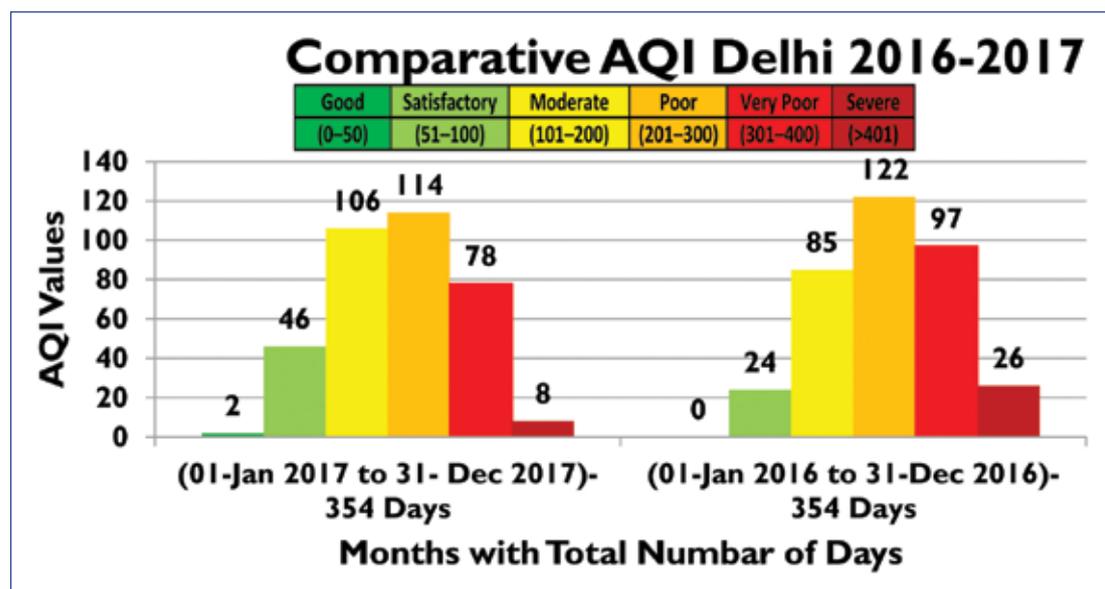
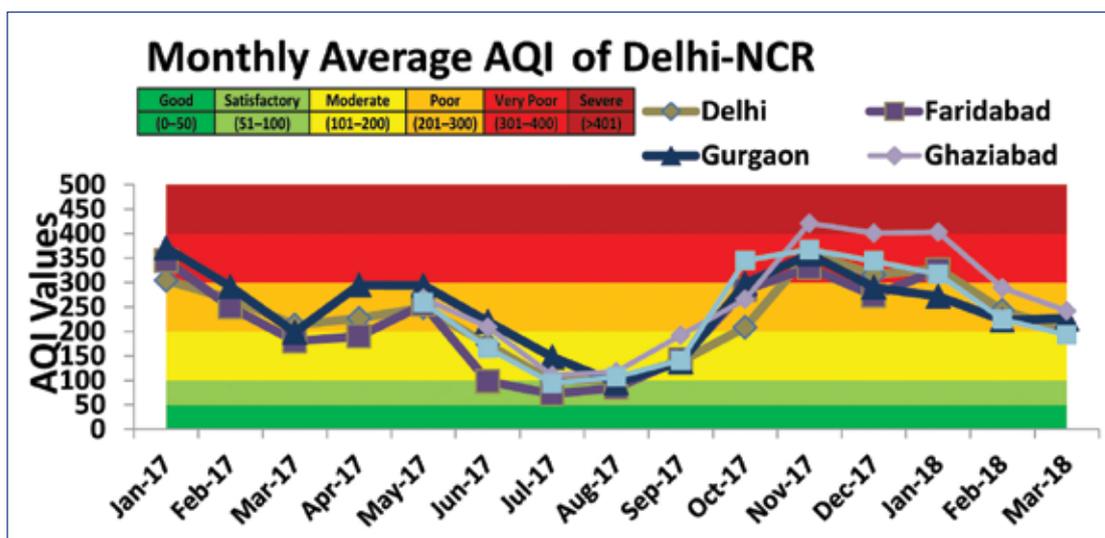
The proposed AQI will consider eight pollutants (PM₁₀, PM_{2.5}, NO₂, SO₂, CO, O₃, NH₃, and Pb) in which one of PM₁₀ or PM_{2.5} parameter is mandatory. There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. The AQI values and corresponding ambient concentrations (health breakpoints) as well as associated likely health impacts for the identified eight pollutants are as follows

AQI Category, Pollutants and Health Breakpoints								
AQI Category (Range)	PM ₁₀ 24-hr	PM _{2.5} 24-hr	NO ₂ 24-hr	O ₃ 8-hr	CO 8-hr (mg/m ³)	SO ₂ 24-hr	NH ₃ 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5 -1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

*One hourly monitoring (for mathematical calculations only)

AQI	Associated Health Impacts
Good (0-50)	Minimal Impact
Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people.
Moderately polluted (101-200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure, and discomfort to people with heart disease
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases.
Severe (401-500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

• **National Air Quality Status of Delhi-NCR:**



Both severe and very poor category was brought down to 8 and 78 from 26 and 97 days on respective categories in 2017 compared to 2016. Moderate days increased to 106 in 2017 from 85, recorded in 2016. Satisfactory days were also near to double in 2017 and the year also registered 02 good days. All these may be attributed to the extensive measures undertaken under GRAP and other regular intervention in pollution mitigation in Delhi.

• **AQI in different months – Delhi & NCR:**

Cities	Months	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Average AQI Values
		(0-50)	(51-100)	(101-200)	(201-300)	(301-400)	(>401)	
Delhi	May-15	*	1	5	18	6	*	242
	Jun-15	*	3	13	8	1	*	192
	Jul-15	*	11	16	3	1	*	138
	Aug-15	*	3	25	2	*	*	147
	Sep-15	*	4	12	13	1	*	194
	Oct-15	*	1	2	17	9	*	264
	Nov-15	*	*	*	2	20	8	360
	Dec-15	*	*	3	11	16	*	293
	Jan-16	*	*	*	2	23	6	370
	Feb-16	*	*	1	13	15	*	293
	Mar-16	*	*	7	16	4	*	238
	Apr-16	*	*	*	25	5	*	271
	May-16	*	*	5	19	7	*	246
	Jun-16	*	*	15	12	2	*	208
	Jul-16	*	6	15	4	*	*	146
	Aug-16	*	17	13	*	*	*	105
	Sep-16	*	1	24	5	*	*	163
	Oct-16	*	*	4	20	4	3	271
	Nov-16	*	*	*	3	17	10	374
	Dec-16	*	*	*	1	24	6	365
	Jan-17	*	*	2	9	20	*	304
	Feb-17	*	*	2	22	4	*	267
	Mar-17	*	*	12	19	*	*	213
	Apr-17	*	*	13	12	5	*	227
	May-17	*	*	7	17	7	*	273
	Jun-17	*	2	18	10	*	*	173
	Jul-17	2	16	13	*	*	*	98
	Aug-17	*	18	13	*	*	*	103
	Sep-17	*	9	18	3	*	*	139
	Oct-17	*	*	5	10	14	1	285
Nov-17	*	*	*	3	20	7	361	
Dec-17	*	*	2	10	18	1	316	
Jan-18	*	*	*	10	17	4	328	
Feb-18	*	*	6	18	4	*	243	
Mar-18	*	*	18	13	*	*	203	

Note: ‘*’ Indicates Data not available or Data not fall in the category

Cities	Months	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Average AQI Values
		(0-50)	(51-100)	(101-200)	(201-300)	(301-400)	(>401)	
Gurugram	Feb-16	*	*	1	2	4	*	301
	Mar-16	*	*	1	1	4	*	292
	Apr-16	1	*	3	5	2	*	230
	May-16	2	2	12	8	4	*	189
	Jun-16	*	1	10	3	*	*	169
	Jul-16	3	7	2	*	*	*	68
	Aug-16	10	13	1	*	*	*	60
	Sep-16	1	8	7	2	*	*	106
	Oct-16	*	5	8	8	1	*	176
	Nov-16	*	*	6	8	7	7	295
	Dec-16	*	*	*	4	15	8	354
	Jan-17	*	*	*	2	14	7	371
	Feb-17	1	*	1	9	11	1	292
	Mar-17	*	3	10	11	1	*	198
	Apr-17	*	*	3	9	13	3	295
	May-17	*	1	*	2	9	1	312
	Jun-17	5	2	2	6	6	2	220
	Jul-17	5	4	8	7	2	1	148
	Aug-17	4	16	6	2	*	*	95
	Sep-17	*	9	15	5	*	*	138
	Oct-17	*	*	7	8	10	*	266
Nov-17	*	*	*	2	21	6	358	
Dec-17	*	*	3	9	15	*	290	
Jan-18	*	*	2	19	8	*	272	
Feb-18	*	1	10	13	4	*	223	
Mar-18	*	*	12	9	5	*	226	

Note: '*' Indicates Data not available or Data not fall in the category

Cities	Months	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Average AQI Values
		(0-50)	(51-100)	(101-200)	(201-300)	(301-400)	(>401)	
Faridabad	May-15	*	2	9	8	6	3	239
	Jun-15	1	9	13	4	*	*	136
	Jul-15	10	12	5	3	1	*	100
	Aug-15	4	19	3	4	*	*	100
	Sep-15	1	13	10	*	*	*	100
	Oct-15	*	*	12	13	5	*	222
	Nov-15	*	*	1	6	17	6	350
	Dec-15	*	*	*	5	19	4	345
	Jan-16	*	*	*	*	4	15	413
	Feb-16	*	*	1	16	7	*	271
	Mar-16	*	2	5	6	*	*	186
	Apr-16	*	*	7	9	2	1	228
	May-16	*	4	16	6	2	2	192
	Jun-16	*	9	16	4	*	*	134
	Jul-16	*	17	7	*	*	*	91
	Aug-16	1	21	6	*	1	*	88
	Sep-16	1	12	13	4	*	*	127
	Oct-16	*	1	2	12	4	4	292
	Nov-16	1	*	2	3	9	15	375
	Dec-16	*	1	1	1	14	10	361
	Jan-17	*	1	*	4	18	4	345
	Feb-17	*	*	6	13	7	*	250
	Mar-17	*	2	16	11	*	*	180
	Apr-17	*	2	14	7	3	*	190
	May-17	*	*	4	13	7	1	274
	Jun-17	*	13	10	6	6	2	98
	Jul-17	5	16	5	*	*	*	72
	Aug-17	4	9	4	*	*	*	85
	Sep-17	1	4	8	4	*	*	143
	Oct-17	*	*	2	6	5	3	298
Nov-17	*	*	*	10	13	6	331	
Dec-17	*	*	4	11	13	*	273	
Jan-18	*	*	*	8	21	2	326	
Feb-18	*	*	3	17	8	*	266	
Mar-18	*	*	21	10	*	*	185	

Note: ‘*’ Indicates Data not available or Data not fall in the category

Cities	Months	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Average AQI Values
		(0-50)	(51-100)	(101-200)	(201-300)	(301-400)	(>401)	
Ghaziabad	May-17	*	1	5	10	12	1	268
	Jun-17	1	1	10	9	7	*	209
	Jul-17	*	14	13	2	*	*	110
	Aug-17	*	13	17	1	*	*	118
	Sep-17	*	4	13	10	2	*	192
	Oct-17	*	*	1	8	12	9	345
	Nov-17	*	*	*	*	10	19	421
	Dec-17	*	*	*	4	9	18	401
	Jan-18	*	*	*	1	15	15	403
	Feb-18	*	*	5	9	14	*	289
	Mar-18	*	*	12	12	7	*	242

Note: ‘*’ Indicates Data not available or Data not fall in the category

Cities	Months	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Average AQI Values
		(0-50)	(51-100)	(101-200)	(201-300)	(301-400)	(>401)	
Noida	May-17	*	1	5	11	9	*	259
	Jun-17	*	4	9	5	1	*	166
	Jul-17	*	20	10	*	*	*	94
	Aug-17	*	12	12	1	*	*	107
	Sep-17	2	6	20	1	1	*	141
	Oct-17	*	3	10	4	10	2	246
	Nov-17	*	*	*	6	14	10	367
	Dec-17	*	*	2	9	10	10	344
	Jan-18	*	*	1	12	14	4	317
	Feb-18	*	*	9	14	4	*	225
	Mar-18	*	*	19	11	1	*	193

Note: ‘*’ Indicates Data not available or Data not fall in the category

6.5 SODAR SYSTEM AND AUTOMATIC WEATHER STATION:

A monostatic SODAR system and an automatic weather station are in continuous operation at Parivesh Bhawan. The data obtained from the SODAR system is analyzed to get mixing height. Mean mixing height in different months and in periods of high/low convective activity are given in the following table.

Mixing Height in Delhi (2017-18)

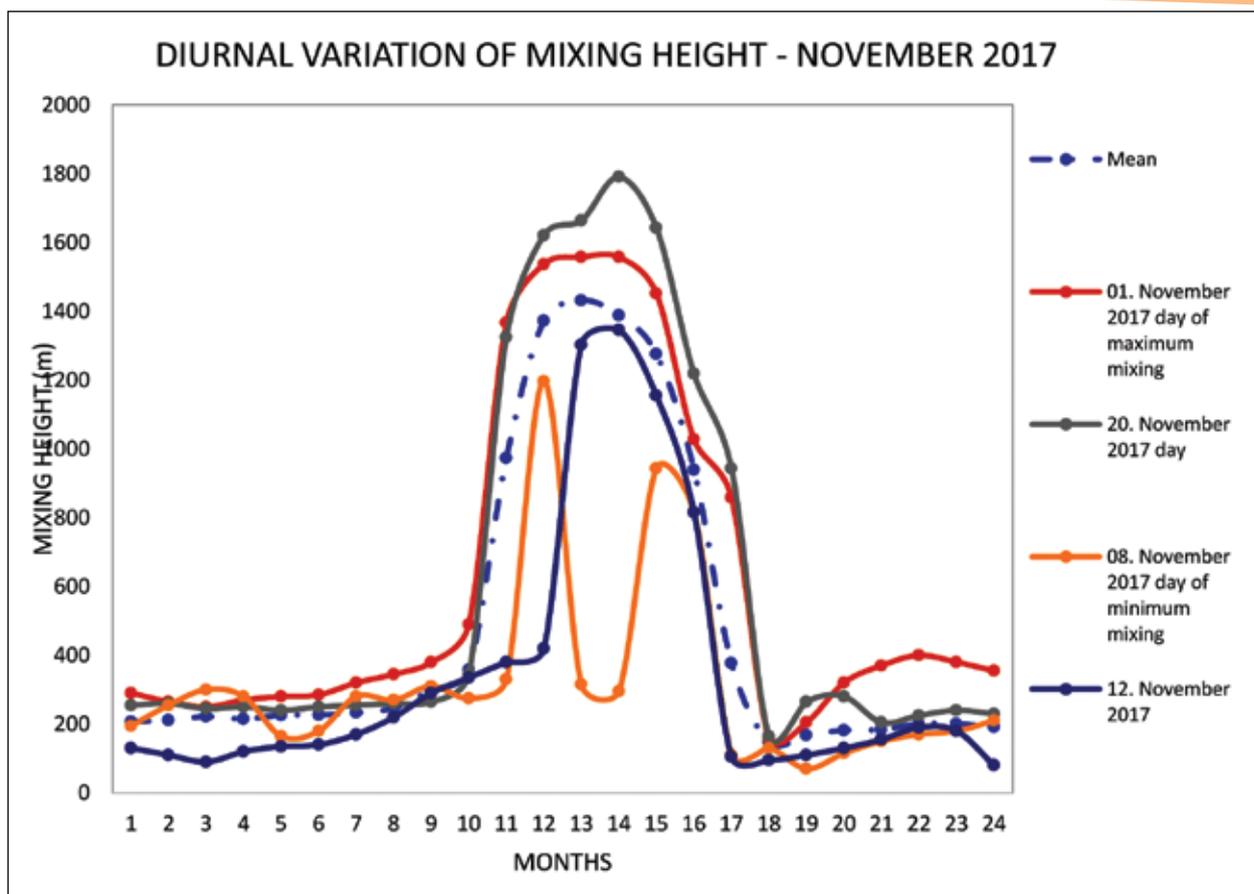
Month	Monthly Mean (m)	Mean mixing height in period of high convective activity (m)	Mean mixing height in period of low convective activity (m)
April	679	1290	371
May	567	1169	231
June	526	1039	165
July	559	994	167
August	514	1038	147
September	611	1070	234
October	583	1299	328
November	480	1099	265
December	512	1237	241
January	586	1557	325
February	677	1451	364
March	792	1535	361

In 2017-18 the monthly mean mixing height was minimum in November i.e. 480 metres. In 2017-18 mean mixing height in the period of low convective activity was minimum in August i.e. 147 meters followed by June i.e.165 meters.

In 2017-18 duration of high convective activity (when thermal plumes exist in SODAR echogram) was minimum in November, December and January. It was mostly starting at 10 am or 11am and remaining up to 4 pm or 5 pm. In Summer-monsoon period, the period of high convective activity was mostly from 8 am, 9am or 10 am to 6 pm or 7 pm. In October it was from 9am or 10 am to 5 pm or 6 pm. In February and March the period of high convective activity was from 10 am to 6 pm or 7 pm.

- **Diurnal variation of mixing height:**

Diurnal variation of mixing height for the month of November 2017 which was minimum in 2017-18 is shown in figure.



- Meteorological data:**

The meteorological data collected by automatic weather station working at Parivesh Bhawan is given in the table.

MONTHLY MEAN OF METEOROLOGICAL PARAMETERS (2017-18)

Months	Wind Speed (m/s)	Prominent Wind Directions	Temp. (°C)	Relative Humidity (%)	Pressure (hPa)	Solar Radiation (W/m ²) _{6 AM - 6 PM}	No. of Rainy days#
April	3.2	W & SW	33.5	27.4	979.0	446	Nil
May	3.0	SE, SW & S	33.9	37.4	977.0	395	3
June	3.3	SW, SE & S	32.6	54.2	973.3	202	7
July	3.7	SE & E	30.6	70.7	972.7	375	8
August	3.7	SW & SE	30.7	71.7	973.9	342	-
September*	-	-	-	-	-	-	-
October*	-	-	-	-	-	-	-
November	1.9	NW & N	21.9	54.9	986.9	193	Nil
December	2.3	NW & N	17.7	56.4	989.5	153	1
January	2.5	NW	15.3	64.9	987.3	144	1
February	3.1	NW	20.1	52.7	987.3	174	Nil
March	2.9	NW	26.2	44.0	983.2	346	Nil

*Automatic weather station was unmounted for calibration. #Days with rain e^{2.5} mm.

6.6 CHARACTERIZATION OF PM₁₀ & PM_{2.5} DURING FESTIVAL SEASON IN DELHI

The high particulate concentration in ambient air is a serious issue in urban areas in particular. Physical as well as chemical characteristics of particulate matter in ambient air are directly related with haze formation having a direct impact on health, crop yield and aesthetic air quality.

The CPCB Air Laboratory had carried out special investigation for characterization of PM₁₀ and PM_{2.5} during festival season in October month. The study is taken up at two locations Bahadur Shah Zafar Marg ITO intersection and Parivesh Bhawan East Arjun Nagar in Delhi. The ITO intersection is a kerbside air quality monitoring stations and one of the busiest traffic intersection of Delhi. Parivesh Bhawan location is characterised by residential cum offices/institutional activities around the monitoring location.

Speciation monitoring for PM_{2.5} & PM₁₀ is conducted by employing 4-channel Partisol 2300 samplers using specific filter media for further analysis of samples by ED-XRF, Thermal Optical Carbon Analyser and Ion Chromatographs. Samples were collected for 24 hour covering different days of the week including holidays.

The water-soluble portion of suspended particles associates itself with liquid water in the atmosphere when relative humidity increases, thereby changing the light scattering properties of these particles. Polyatomic ions such as sulfate, nitrate, ammonium and phosphate are quantified by Ion chromatography.

The inorganic Ions were determined using Ion Chromatography for PM₁₀ & PM_{2.5} of samples collected on 47 mm Teflon filters.

INORGANIC IONS IN PM_{2.5} OF DELHI					
Location	Date	PM_{2.5}	Cl⁻	NO₃⁻	SO₄²⁻
ITO, BSZ Marg	12.10.2017	327	0.5	2.4	20.5
	17.10.2017	139	0.4	2.8	13.3
	19.10.2017	297	7.2	6.4	55.0
	21.10.2017	214	1.3	7.6	18.5
	24.10.2017	154	2.1	6.1	18.5
	26.10.2017	161	0.6	7.0	17.4
	29.10.2017	171	1.2	9.7	22.0
Parivesh Bhawan	12.10.2017	114	1.0	3.1	18.8
	19.10.2017	492	15.3	13.4	128.0
	24.10.2017	185	1.8	10.0	14.9
	29.10.2017	195	2.0	14.1	26.7
All values of concentrations are in µg/m³ of air					

The concentration values observed after the investigation reveals that the Sulphate is the major anion present in PM₁₀ as well as PM_{2.5}. The Nitrate is also found in substantial concentration in both fractions of particulate matter. On the festival day of Diwali the sulphate concentration in PM_{2.5} is found to be much higher than the concentrations on others days i.e 128 µg/m³ at Parivesh Bhawan and 55 µg/m³ at ITO, BSZ Marg. The similar trend of sulphate is observed in PM₁₀.

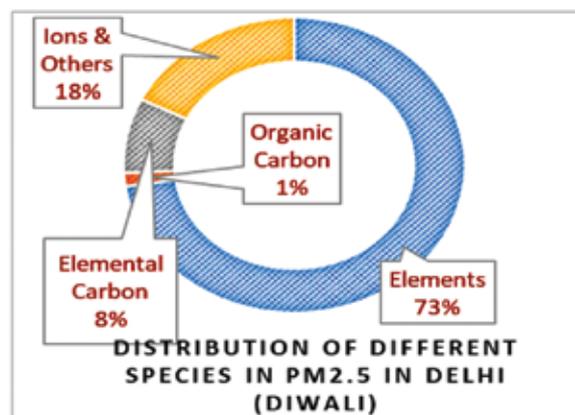
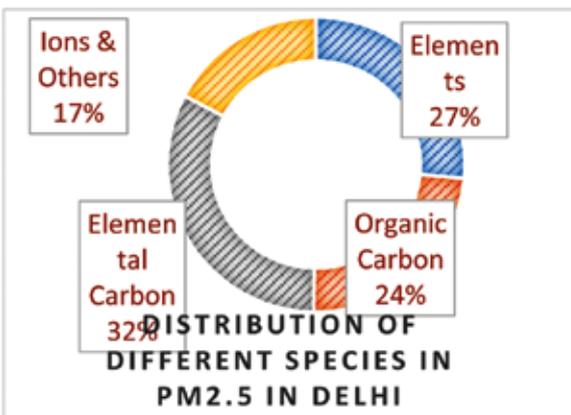
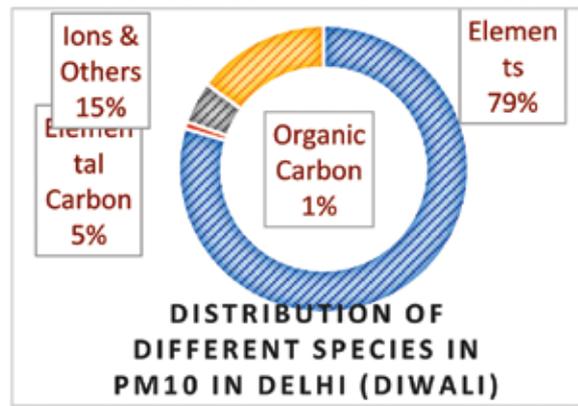
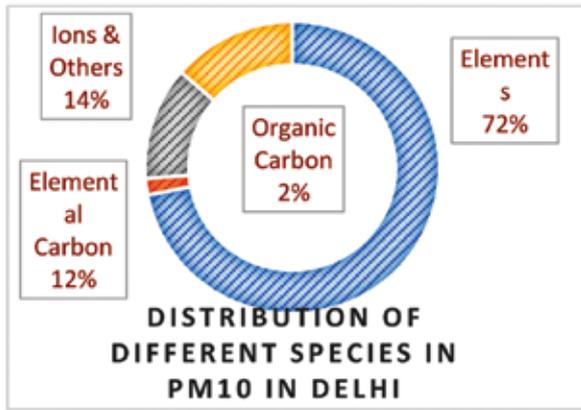
INORGANIC IONS IN PM ₁₀ OF DELHI					
Location	Date	PM ₁₀	Cl ⁻	NO ₃ ⁻	SO ₄ ²⁻
ITO, BSZ Marg	12.10.2017	328	2.1	9.9	25.5
	17.10.2017	472	3.7	11.6	20.3
	19.10.2017	517	7.5	12.2	74.2
	21.10.2017	416	3.2	16.1	24.2
	24.10.2017	362	2.6	13.3	18.3
	26.10.2017	431	2.4	18.3	23.8
	29.10.2017	375	2.4	16.6	26.9
Parivesh Bhawan	12.10.2017	228	2.4	6.9	22.7
	19.10.2017	746	22.1	20.2	166.8
	21.10.2017	426	9.2	23.8	28.1
	24.10.2017	380	5.4	18.5	25.6
	26.10.2017	482	7.1	20.6	26.5
	29.10.2017	370	4.9	20.9	34.0
All values of concentrations are in µg/m³ of air					

The high sulphate concentration indicates towards the conversion of sulphur dioxide or other sulphur compounds through dry deposition or other factors influencing dispersal of pollutants. Chloride is also present in both fraction of particulate matter. Further detail investigation is required to find out the contributing sources of nitrate, sulphate and chloride present in ambient air.

Elemental Analysis of Air Particulate by Energy Dispersive X-ray Fluorescence (EDXRF) applies to the analysis of ambient air particulate collected on 47mm diameter Teflon Filters.

The measured concentrations of different elements found in the particulate matter is evaluated for PM₁₀ and PM_{2.5} in ambient air. In PM₁₀ the highest contribution of aluminium is observed at Parivesh Bhawan and ITO, BSZ Marg. The silicon is second most abundant element found in the particulate matter. The significant percentage of silicon particulate matter indicates substantial dust suspension contribution in fine fraction of particulate matter.

The following charts shows the distribution of various species in the particulate matter on Diwali and other days.



6.7 DEEPAWALI MONITORING 2017

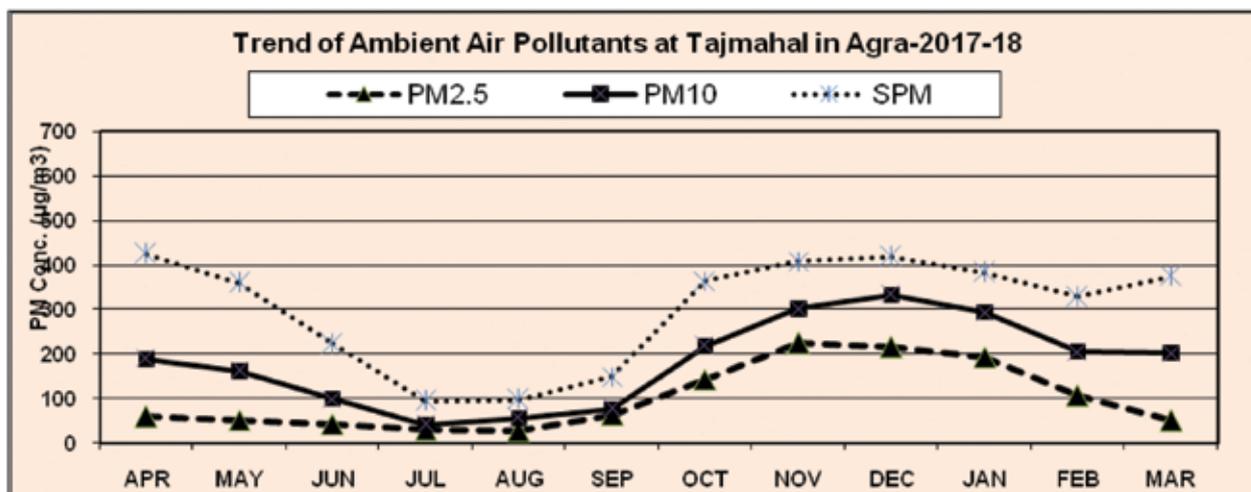
CPCB has prepared a report on Deepawali festival monitoring 2017. This report is a compilation of ambient Noise (345 locations in 129 cities) and ambient air quality (305 locations in 125 cities) data covering 27 states and 04 UTs in the country. The data of previous year have also been incorporated for comparison and disseminate the information in website for the public awareness.

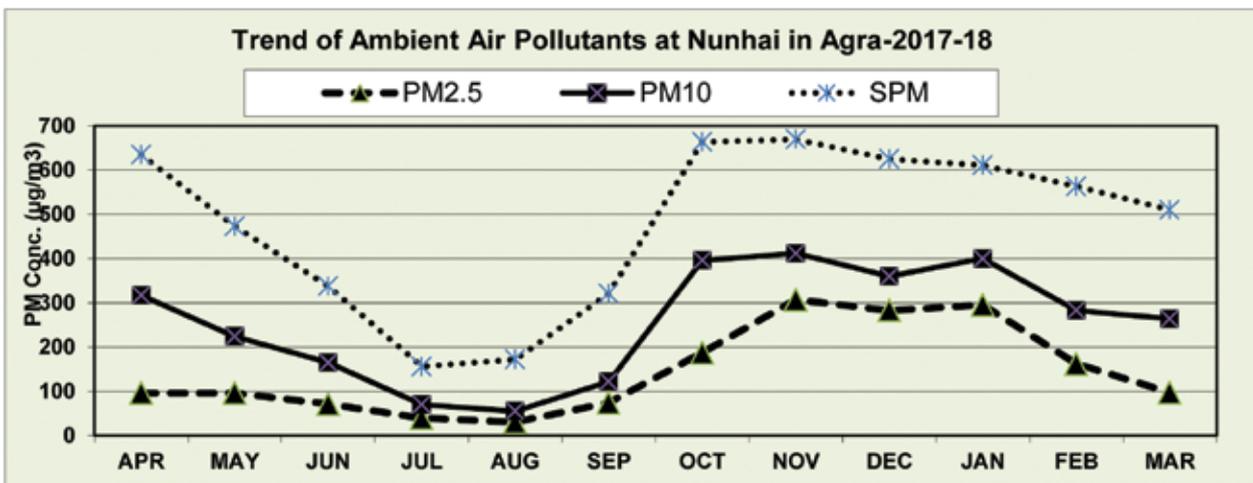
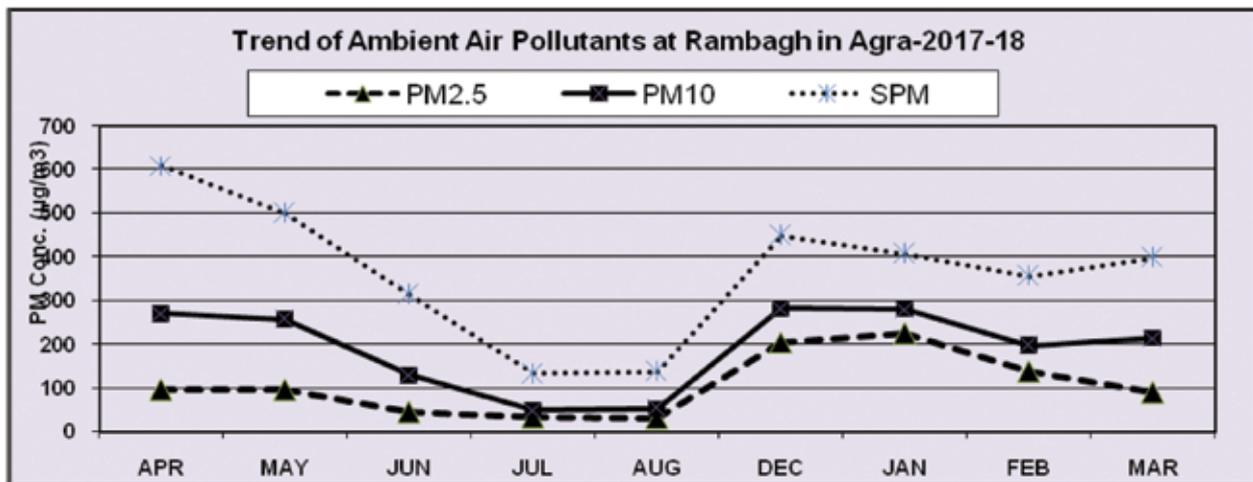
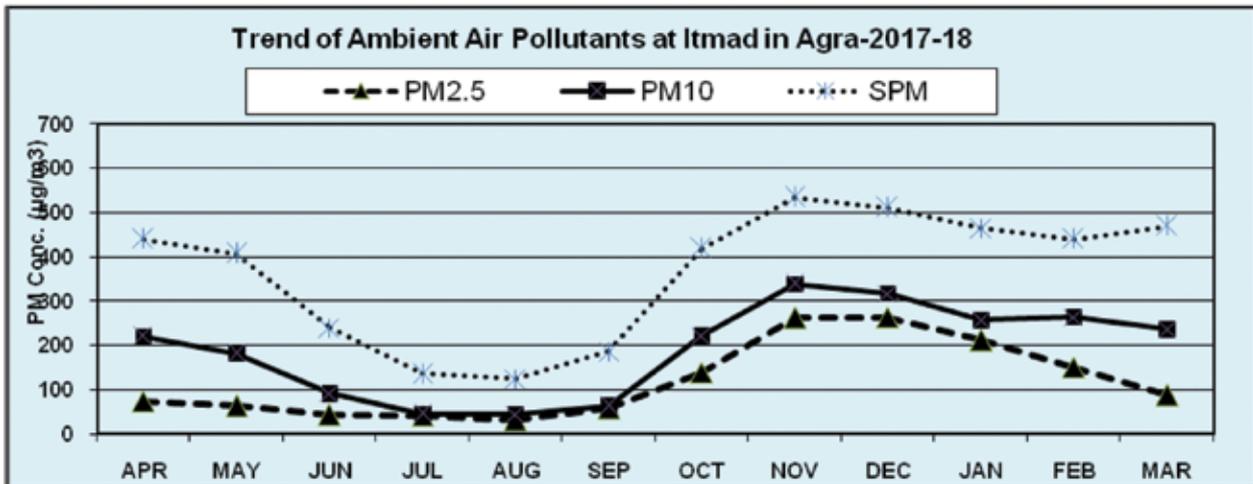
6.8 AMBIENT AIR QUALITY MONITORING IN AGRA:

Ambient air quality is being monitored by CPCB in Agra at four location viz. Tajmahal, Etmad-ud-daulah, Rambagh (all protected monuments) and Nunhai (Industrial Area) since 2002. The summary of the AAQM during 2017-18 in Agra is presented at table:

The AAQM data indicated that PM_{2.5} has been found 2.5 – 3.6 times above the annual standard i.e.40µg/m³ in Agra; while PM₁₀ has been found 3.0 – 4.26 times above the annual standard i.e.60µg/m³ at all stations. SO₂ is well within the annual standard limit i.e.20µg/m³. The level of NO₂ has been found below than the annual standard i.e.30µg/m³, at all AAQM stations,.

AAQM Data-2017-18 (all values are in $\mu\text{g}/\text{m}^3$ except SD,EF)						
		SO ₂	NO ₂	PM _{2.5}	PM ₁₀	SPM
Tajmahal	Avg	4	18	101	181	302
	max	5	30	224	333	424
	min	4	9	27	41	95
	EF	0	1	3	3	4
	SD	0	7	74	98	126
Etmad	Avg	5	22	119	190	364
	max	7	34	263	338	534
	min	4	11	31	43	124
	EF	0	1	3	3	5
	SD	1	7	86	105	149
Rambagh	Avg	4	23	106	192	367
	max	5	30	224	282	609
	min	4	12	31	49	132
	EF	0	1	3	3	5
	SD	0	5	71	94	157
Nunhai	Avg	5	25	145	256	478
	max	6	36	307	412	670
	min	4	11	30	55	156
	EF	0	1	4	4	7
	SD	1	8	101	129	187
	Annual Std.	20	30	40	60	70 (as per 1991)



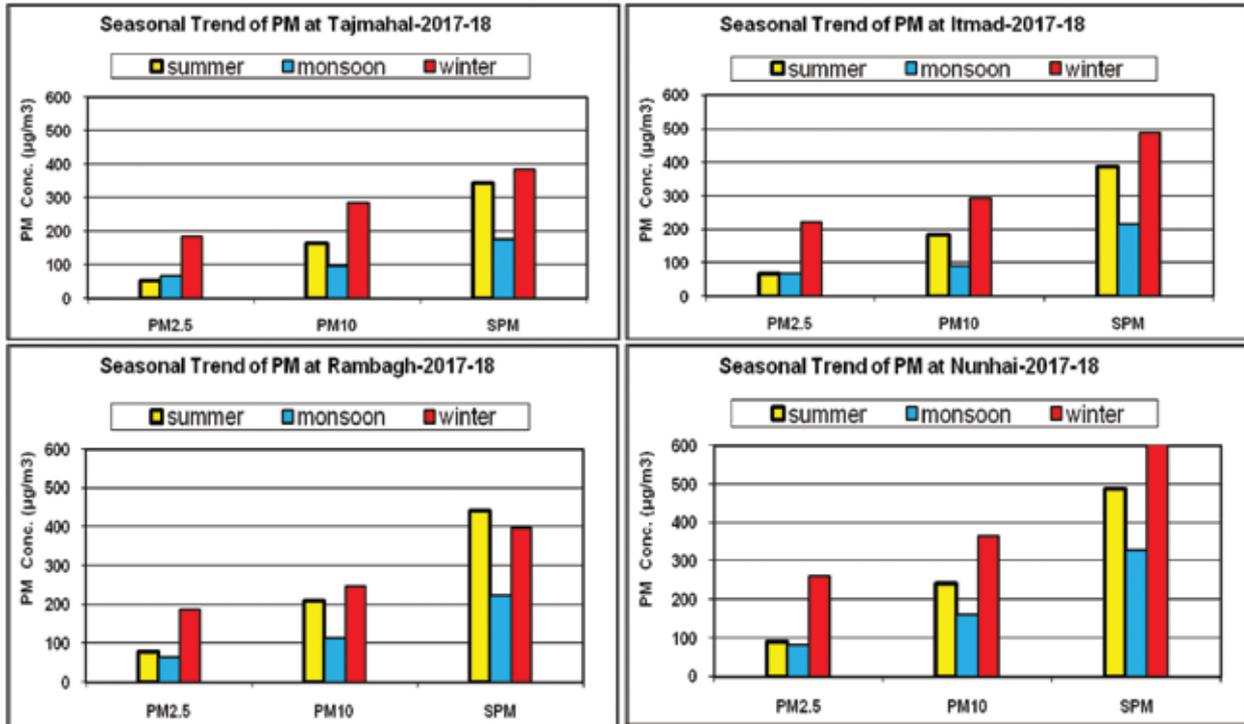


6.8.1 Seasonal Air Quality data Analysis of Agra:

The annual air quality data of four stations have been categorised in seasonal. In Agra months can be clearly categorised as summer (Mar.- June), monsoon (July – Sep.) and winter (Oct.- Feb.) season. The data analysis clearly indicated that SO₂ is almost below detection limit during all seasons. NO₂ has been found higher during winter months and least during monsoon followed by summer at all stations. PM_{2.5} ranges 185µg/m³ – 262µg/m³ during

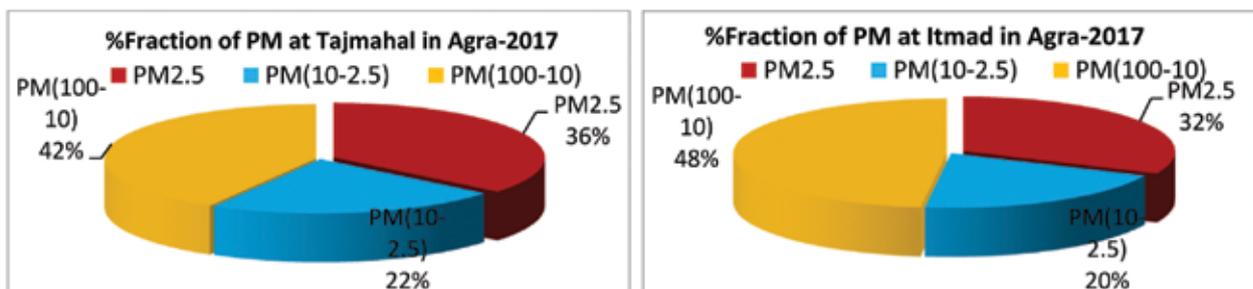
winter, $51\mu\text{g}/\text{m}^3 - 90\mu\text{g}/\text{m}^3$ during summer and $65\mu\text{g}/\text{m}^3 - 83\mu\text{g}/\text{m}^3$ during monsoon in all stations. Data shows higher values during winter as compared to other seasons.

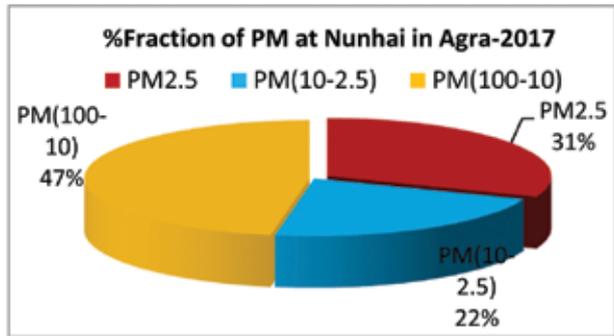
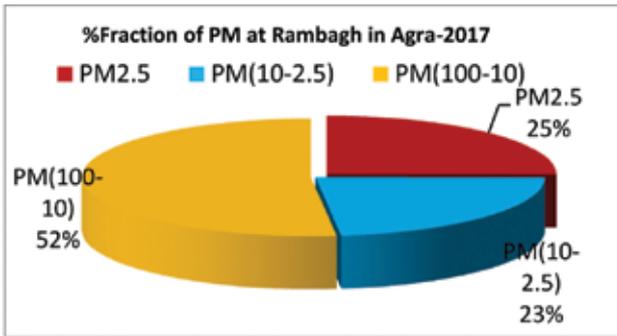
The concentration of PM10 ranges between $247\mu\text{g}/\text{m}^3 - 364\mu\text{g}/\text{m}^3$ during winter, $163\mu\text{g}/\text{m}^3 - 243\mu\text{g}/\text{m}^3$ during summer and $93\mu\text{g}/\text{m}^3 - 161\mu\text{g}/\text{m}^3$ during monsoon. SPM concentration ranges also found higher during winter compared to summer or monsoon except at Rambagh, where during summer was more than winter, this may be due to dry loose top soil of Rambagh garden and dry Yamuna river bed. During winter seasons, there is inverse atmospheric conditions and low mixing height, so pollutants do not disperse easily.



6.8.2 Particulate Matter Profile in Agra:

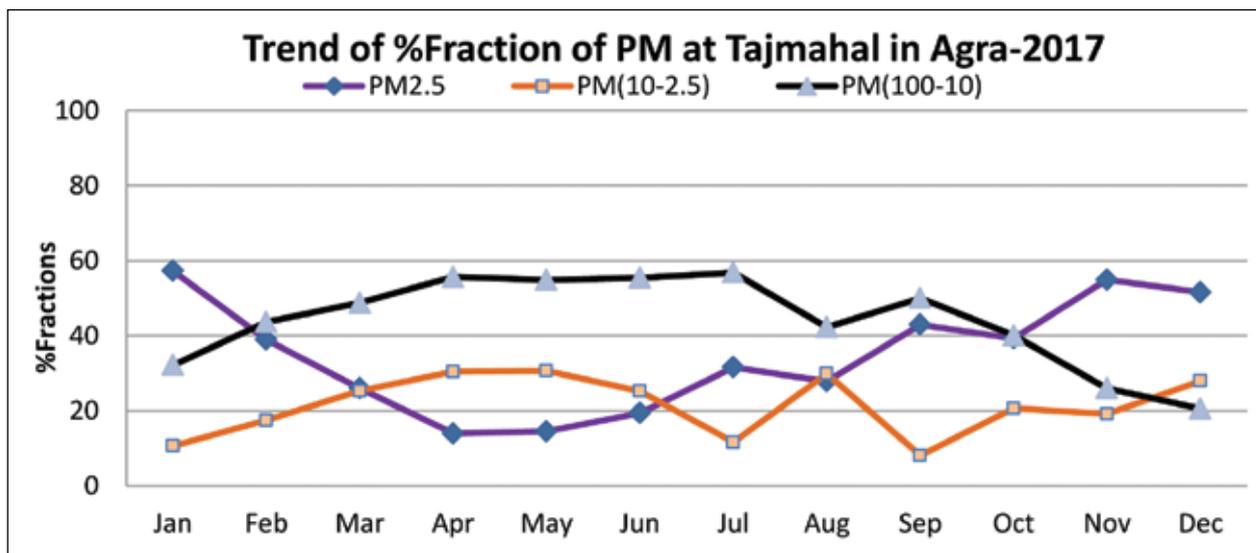
The monitoring of PM2.5 was also carried out at all four stations during the year (2017) along with PM10 & PM100. The PM2.5 values found between $81\mu\text{g}/\text{m}^3 - 137\mu\text{g}/\text{m}^3$; which is exceed the annual standard of PM2.5 i.e. $40\mu\text{g}/\text{m}^3$ at all locations in Agra. The %fraction of PM2.5 in SPM ranges between 25% (Rambagh) - 36% (Tajmahal); while at Itmad 32% & at Nunhai it is found 31%. The fraction of PM2.5 in PM10 ranges 55% - 63% in Agra. The percentage fraction of PM2.5 is higher at Tajmahal than any other stations in Agra, which may be due to vehicles (mainly tourist's vehicles) movement & parking near Tajmahal east & west gate parking. The data of PM2.5 as well as fractional distribution of particulate matter in Agra is presented below:

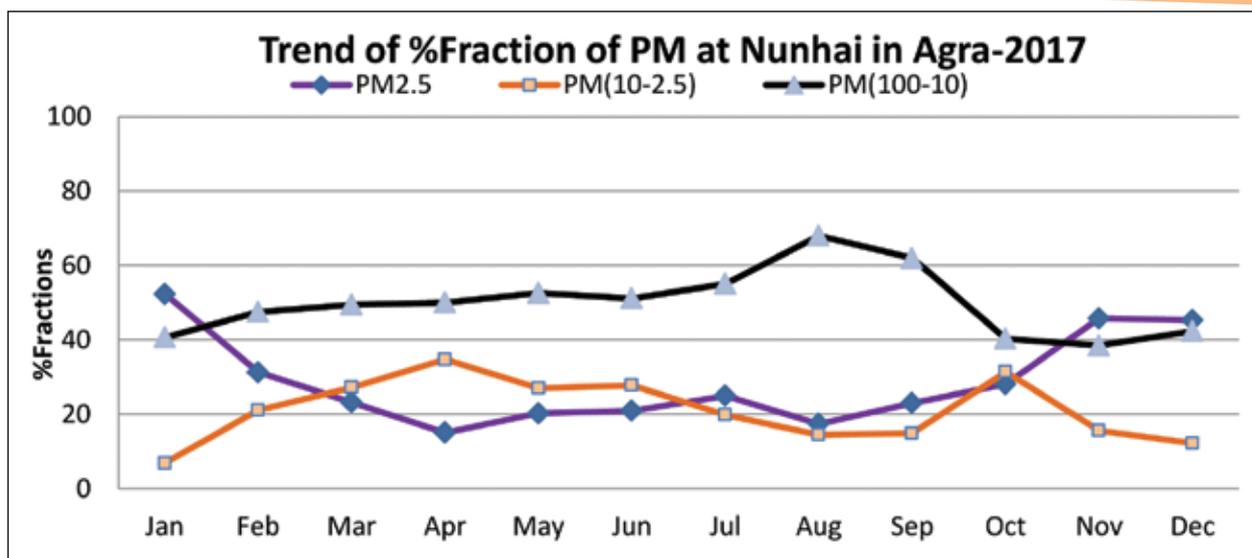




Fine Particulate Matter in Agra-2017					
Monitoring stations	Annual Average (PM _{2.5})	Min.	Max.	% PM _{2.5} in SPM	% PM _{2.5} in PM ₁₀
Tajmahal	103	27	224	36	60
Itmad-ud-daula	105	31	263	32	63
Rambagh	81	31	182	25	55
Nunhai	137	30	307	31	57

All values are in $\mu\text{g}/\text{m}^3$





6.8.3 Yearly Trend of Air Quality in Agra (2002-2017):

As per the direction of the Hon'ble Supreme Court, CPCB is monitoring the ambient air quality in Agra at Four location viz. Tajmahal, Etmad-ud-daulah, Rambagh (all are protected monuments) and Nunhai (Industrial Area) since 2002 to till now. The AAQM data collected during 2002 to 2017 of four monitoring parameters has been plotted as below.

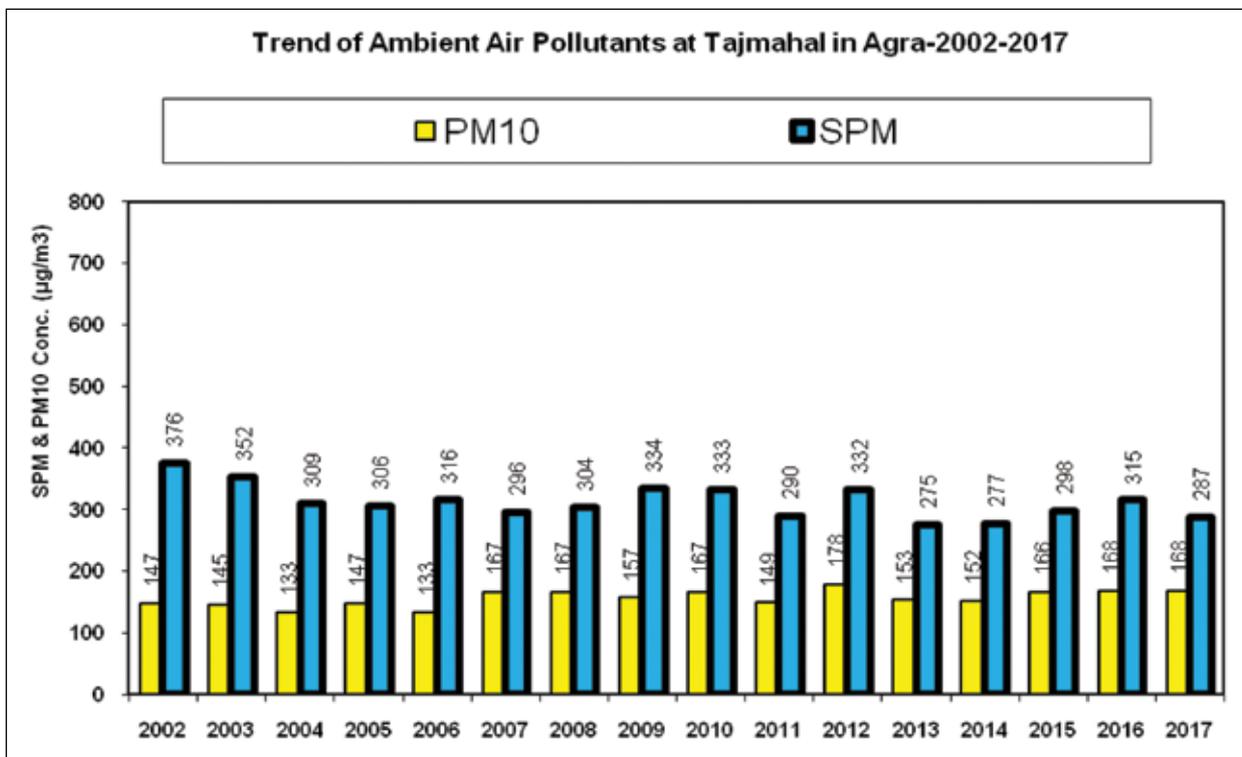
Decreasing trend in SPM was observed at all the four monitoring stations, similarly decreasing trend was also observed in PM10 from year 2016 to 2017 at all stations, except at Rambagh, may be due to national highway construction activity.

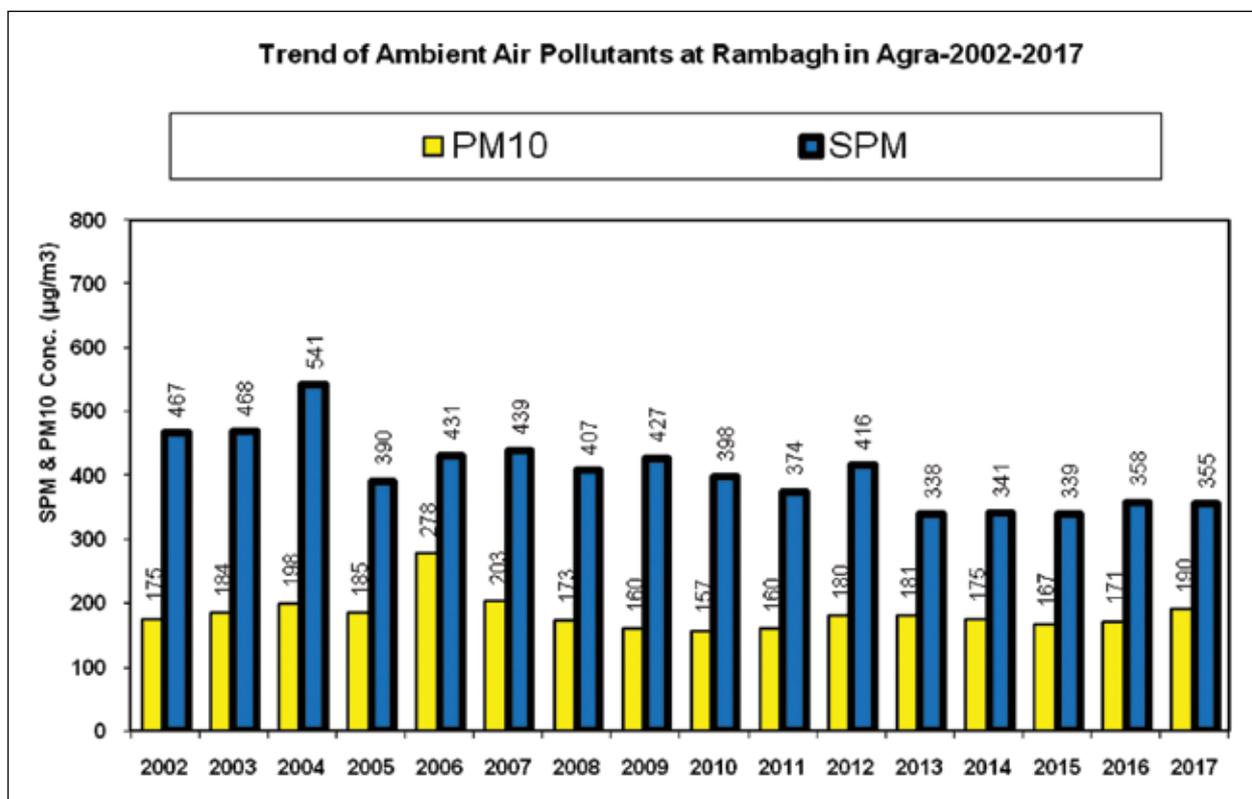
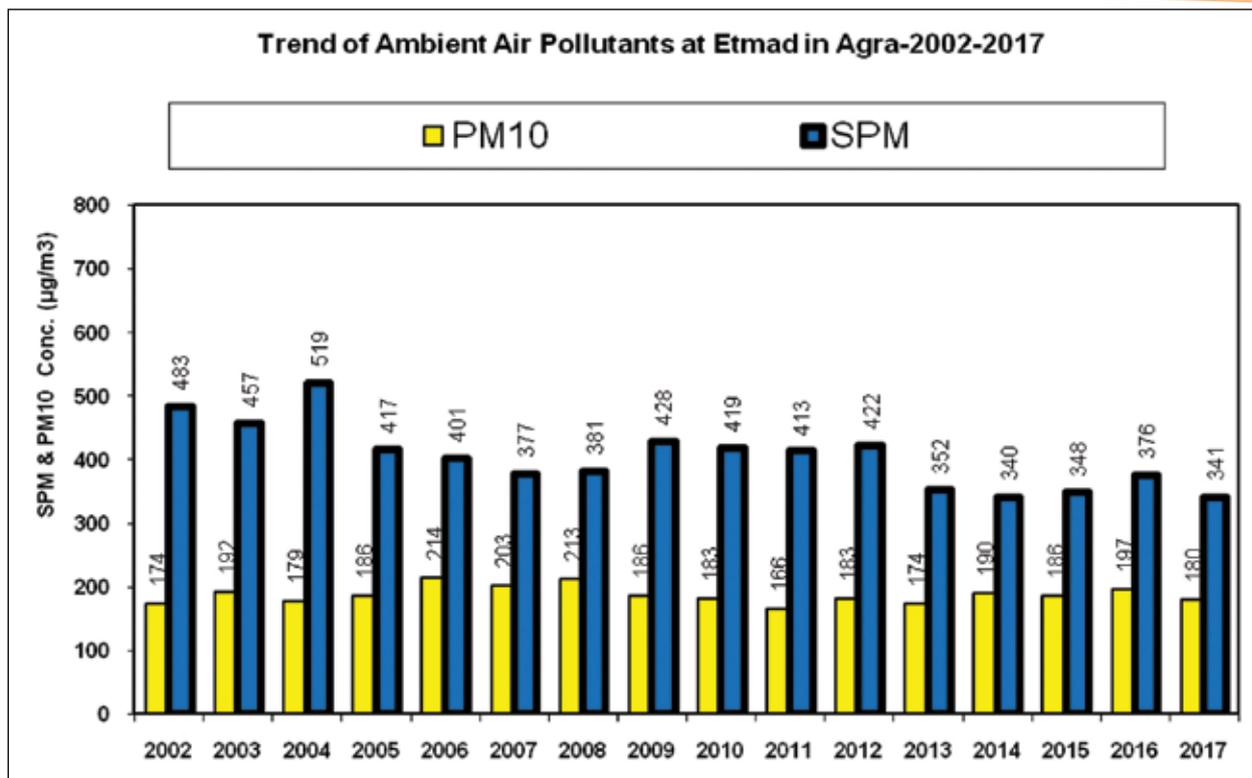
The SO₂ and NO₂ remained almost static with very little variation year to year, except at Nunhai where appx. 28% fall in annual average of NO₂ was observed from year 2016 to 2017 and within the annual standards in all stations.

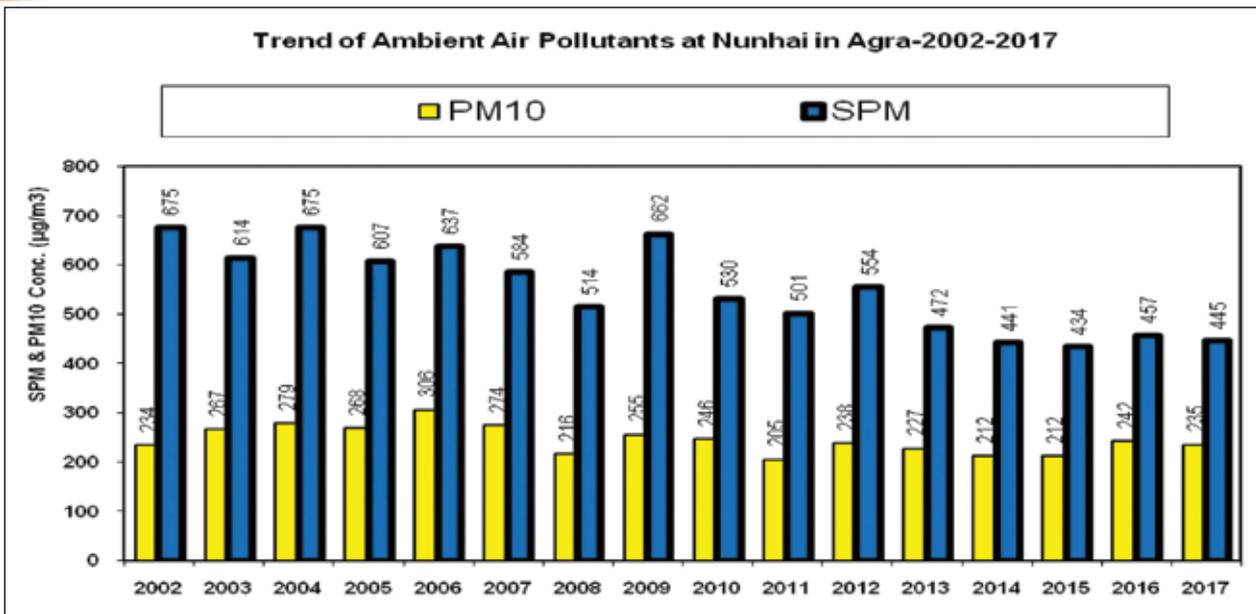
Annual Average AAQM Data at 04 CPCB Monitoring Stations in Agra										
Monitoring Stations →	Tajmahal					Etmad-ud-daulah				
Parameters →	SO ₂	NO ₂	PM2.5	PM10	SPM	SO ₂	NO ₂	PM2.5	PM10	SPM
Years ↓										
2002	5	22		147	376	5	25		174	483
2003	4	22		145	352	5	27		192	457
2004	5	18		133	309	6	26		179	519
2005	9	22		147	306	10	25		186	417
2006	6	22		133	316	7	24		214	401
2007	6	23		167	296	5	27		203	377
2008	7	22		167	304	7	29		213	381
2009	6	20		157	334	5	25		186	428
2010	5	20		167	333	4	23		183	419
2011	4	20		149	290	4	24		166	413
2012	5	18		178	332	4	22		183	422
2013	4	17	96	153	275	4	23		174	352
2014	4	15	92	152	277	4	21		190	340
2015	4	16	85	166	298	4	25		186	348
2016	4	18	95	168	315	4	25	95	197	376
2017	4	17	103	168	287	5	23	115	180	341

Monitoring Stations →	Rambhagh					Nunhai				
	SO ₂	NO ₂	PM2.5	PM10	SPM	SO ₂	NO ₂	PM2.5	PM10	SPM
Parameters →										
Years ↓										
2002	5	27		175	467	5	33		234	675
2003	4	22		184	468	4	34		267	614
2004	6	23		198	541	6	34		279	675
2005	8	25		185	390	11	34		268	607
2006	7	25		278	431	7	34		306	637
2007	5	25		203	439	5	37		274	584
2008	5	25		173	407	6	38		216	514
2009	5	25		160	427	5	36		255	662
2010	4	25		157	398	5	34		246	530
2011	4	25		160	374	5	34		205	501
2012	4	25		180	416	5	34		238	554
2013	4	25		181	338	5	35		227	472
2014	5	24		175	341	5	33		212	441
2015	4	26		167	339	4	34		212	434
2016	4	27	97	171	358	5	36	115	242	457
2017	4	26	110	190	355	5	26	137	235	445

Note: all above monthly average values are in $\mu\text{g}/\text{m}^3$, **24hrly Average Standard:** SO₂: 80 $\mu\text{g}/\text{m}^3$, NO₂: 80 $\mu\text{g}/\text{m}^3$, PM10: 100 $\mu\text{g}/\text{m}^3$, PM2.5: 60 $\mu\text{g}/\text{m}^3$ **Annual average Standard:** SO₂: 20 $\mu\text{g}/\text{m}^3$, NO₂: 30 $\mu\text{g}/\text{m}^3$, PM10: 60 $\mu\text{g}/\text{m}^3$, PM2.5: 40 $\mu\text{g}/\text{m}^3$

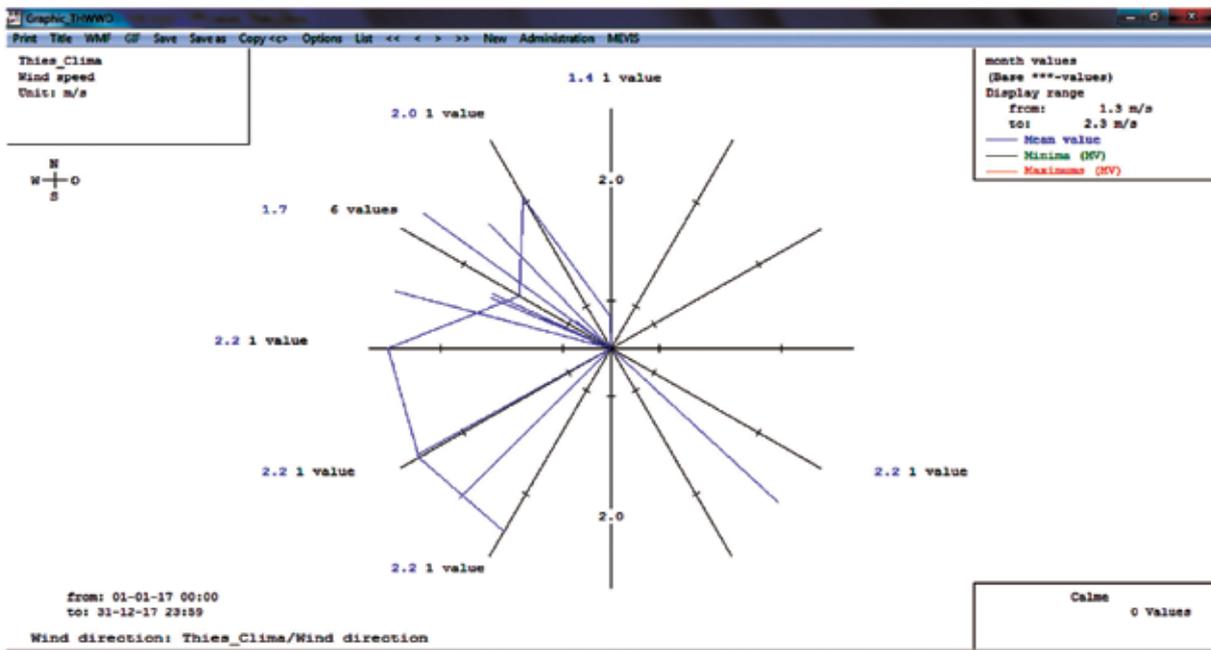






6.8.4 Meteorological data:

In year 2017, the ambient temperature varied from 5.8°C (Jan.17) to 45.1°C (June 17) and Relative Humidity (%) is higher during July-Sep. (during monsoon) & winter (Dec.-Jan.2017) due to fog. Maximum rain fall (25.8 mm) was occurred during July month and Wind direction was found generally mixed and wind speed was recorded upto 17.4m/s (max.).



Windrose-2017

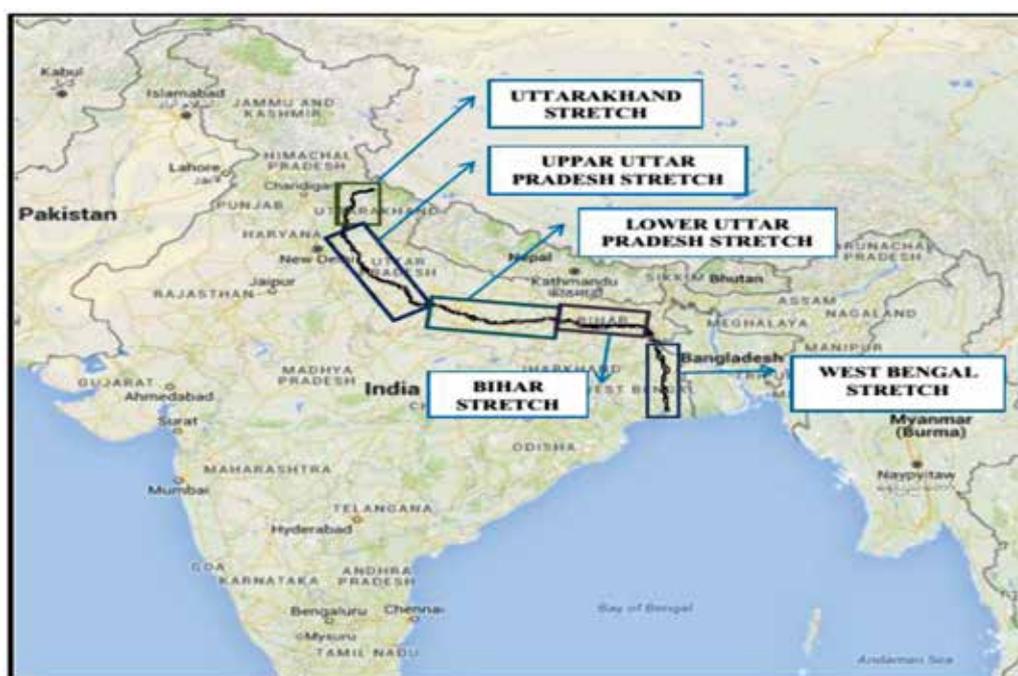
Wind direction data shows during year 2017, monitoring station at tajmahal is receiving air pollutants mostly from the direction of North and North-West.

CHAPTER VII

ENVIRONMENTAL RESEARCH

7.1 MONITORING OF MICRO-POLLUTANTS (PESTICIDES + TRACE HEAVY METALS) IN GANGA RIVER FROM GAUMUKH (ORIGIN) TO GANGA SAGAR (CONFLUENCE TO SEA)

Trace Organics Laboratory of Central Pollution Control Board has undertaken monitoring of micropollutants (pesticides & trace heavy metals) in water and sediments conducted in three rounds of sampling in different seasons. Samples were collected from River Ganga at 69 locations between Gaumukh (origin) to Ganga Sagar (confluence to sea) flowing through states of Uttarakhand, Uttar Pradesh, Bihar and West Bengal.



Maps showing Ganga River basin and monitoring stretch in Uk, UP, Bihar and WB States

The sampling team and duration of sampling in different stretch of Ganga River was as follows:

Ganga River Stretch	Monitoring Rounds					
	First Round (Year 2015-16)		Second Round (Year 2016-17)		Third Round (Year 2017-18)	
	Monitoring Duration	Monitoring Team	Monitoring Duration	Monitoring Team	Monitoring Duration	Monitoring Team
Uttarakhand	17 to 21 Oct, 2015	CPCB- Delhi	03 to 07 Oct, 2016	CPCB- Delhi	31 May to 9 June, 2017	CPCB- Delhi
Uttar Pradesh	01 to 06 Nov, 2015	CPCB- Delhi	13 to 18 Oct, 2016	CPCB- Delhi	22 to 27 May 2017	CPCB- Delhi; UPPCB
Bihar	18 to 26 Feb, 2016	CPCB- Delhi	15 to 24 Nov, 2016	CPCB- Delhi	11 to 20 May 2017	CPCB- Delhi; BSPCB

Ganga River Stretch	Monitoring Rounds					
	First Round (Year 2015-16)		Second Round (Year 2016-17)		Third Round (Year 2017-18)	
	Monitoring Duration	Monitoring Team	Monitoring Duration	Monitoring Team	Monitoring Duration	Monitoring Team
West Bengal	12 to 20 March, 2016	CPCB- Delhi; RD-Kolkata; WBPCB	28 Nov to 08 Dec, 2016	CPCB- Delhi; RD-Kolkata; WBPCB	01 to 09 May, 2017	CPCB- Delhi; RD-Kolkata; WBPCB
Uttarakhand	17 to 21 Oct, 2015	CPCB- Delhi	03 to 07 Oct, 2016	CPCB- Delhi	31 May to 9 June, 2017	CPCB- Delhi
Uttar Pradesh	01 to 06 Nov, 2015	CPCB- Delhi	13 to 18 Oct, 2016	CPCB- Delhi	22 to 27 May 2017	CPCB- Delhi; UPPCB
Bihar	18 to 26 Feb, 2016	CPCB- Delhi	15 to 24 Nov, 2016	CPCB- Delhi	11 to 20 May 2017	CPCB- Delhi; BSPCB
West Bengal	12 to 20 March, 2016	CPCB- Delhi; RD-Kolkata; WBPCB	28 Nov to 08 Dec, 2016	CPCB- Delhi; RD-Kolkata; WBPCB	01 to 09 May, 2017	CPCB- Delhi; RD-Kolkata; WBPCB

Following four groups of pesticides (Total 31 Nos.) and heavy metals (Total 14 Nos.) have been monitored in the water and sediment samples from predetermined monitoring locations at the entire stretch of river Ganga.

Pesticides group and compounds analyzed	Heavy metals analyzed	
Organochlorine Pesticides (13 Nos.): α -HCH, β -HCH, γ -HCH, δ -HCH, Endosulfan-I, Endosulfan-II, Endosulfan sulfate, <i>p,p'</i> -DDE, <i>p,p'</i> -DDD, <i>p,p'</i> -DDT, Aldrin, Dieldrin, Heptachlor	Arsenic	Iron
	Mercury	Manganese
	Cadmium	Nickel
	Lead	Selenium
Organo-phosphorous pesticides (8 Nos.): Chlorpyrifos, Dimethoate, Ethion, Malathion, Methylparathion, Phorate, Quinolphos, Profenophos	Chromium	Vanadium
	Copper	Zinc
	Cobalt	Antimony
Synthetic Pyrethroids (6 Nos.): α -Cypermethrin, Deltamethrin, Fenpropethrin, Fenvalerate, λ -Cyhalothrin, β -Cyfluthrin		
Herbicides (4 Nos.): Pendimethalin, Alachlor, Butachlor, Fluchloralin		

7.2 MONITORING OF PESTICIDE RESIDUES AT NATIONAL LEVEL - SPONSORED PROJECT BY MINISTRY OF AGRICULTURE

Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, New Delhi and nodal department i.e. Project Coordinating Cell, All India Network Project (AINP) on Pesticide Residues, Indian Agricultural Research Institute New Delhi has been continuously sponsoring a project "Monitoring of Pesticide Residue at National Level" to Central Pollution Control Board, Delhi since October, 2006. Surface water sampling locations have been selected and Monitored in National Capital Region i.e. Uttar Pradesh (Amroha, Bulandshahar, Ghaziabad, Guatam Budh Nagar & Bagpat), Haryana (Sonapat, Panipat,) and Delhi (Palla, Wazirabad, ITO, Nizamuddin Alipur, Kanjhawala, Najafgarh). During the year, the Monitoring of Pesticide Residue has been undertaken on monthly basis in 70 - 80 surface water samples. The following groups of Pesticides being monitored on monthly basis:

Pesticide group	Pesticides monitored (33 Nos.)
Organochlorine Pesticides: (14 Nos.)	α -HCH, β -HCH, γ -HCH, δ -HCH, Endosulfan-I, Endosulfan-II, Endosulfan sulfate, Dicofol, <i>p,p'</i> -DDE, <i>p,p'</i> -DDD, <i>p,p'</i> -DDT, Aldrin, Dieldrin, Heptachlor
Organophosphorous pesticides: (9 Nos.)	Chlorpyrifos, Dimethoate, Ethion, Malathion, Methylparathion, Phorate, Phosphamidon, Quinolphos, Profenophos
Synthetic Pyrethroids: (6 Nos.)	α -Cypermethrin, Deltamethrin, Fenpropethrin, Fenvalerate, λ -Cyhalothrin, β -Cyfluthrin
Herbicides: (4 Nos.)	Pendimethalin, Alachlor, Butachlor, Fluchloralin

7.5 ESTIMATION OF TRACE METALS IN AMBIENT AIR DUE TO FIRE CRACKERS IN THE DIFFERENT PARTS OF INDIA DURING DEEPAWALI 2017.

As per the direction of Hon'ble Supreme Court a Study was carried out to by the Central Pollution Control Board, Delhi, to assess the impact of various elements being emitted through the fire crackers during Deepawali celebration at various parts of India including Delhi NCR. The monitoring of ambient air was carried out during the Pre-Deepawali, Deepawali and Post Deepawali at the identified locations by the Air Laboratory and various Regional Directorate of CPCB and the analysis for elements was performed at Instrumentation Laboratory.

Mostly, fire crackers are made up of using four major chemical ingredients like fuel, metal containing colorants, oxidant and binder. In fire crackers, Charcoal acts as a fuel, wherein Nitrates, Chlorates and Perchlorates act as oxidizing agents. The Dextrin, a type of starch, works as a binder. The metal containing colorants are used to get different colors of various shapes in air during the cracking of fire cracker. The color producing elements are as follows:

Sl. No.	Name of the element	Color produced	Nature towards environment
1.	Strontium as Strontium carbonate (SrCO_3)	Red	Chronic renal failure, Bone diseases, Bone deformities, Impaired bone growth and Bone tumours.
2.	Lithium as Lithium carbonate (LiCO_3)	Red	Anorexia, dry mouth, nausea, vomiting, diarrhea, tremor of the hands, faintness of musculature, thirst, leukocytosis, and concentration and memory disturbances (especially with older people)
3.	Calcium as Calcium chloride (CaCl_2)	Orange	Cough, Sore throat, Dry skin, Redness, Burning sensation, Nausea and Vomiting.
4.	Sodium as Sodium chloride (NaCl_2)	Yellow	Cough, Sore throat, Redness, Pain, Abdominal pain and Vomiting.
5.	Barium as Barium chloride (BaCl_2)	Green	Irritating to the eyes, the skin and the respiratory tract. Exposure could cause hypocalcaemia, resulting in cardiac disorders and muscular disorders.

Sl. No.	Name of the element	Color produced	Nature towards environment
6.	Copper as Copper chloride (CuCl ₂)	Blue	Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin and hair.
7.	Mixture of Strontium and Copper compound	Purple	Bone deformities, Impaired bone. Head ache, nausea, vomiting, diarrhea, abdominal pain. Affect skin, liver and kidneys.

CPCB had received 136 digested samples of filter paper for the analysis of elements in PM₁₀ and 71 air filter samples directly to be analysed for 41 elements in PM_{2.5} collected through Respirable Dust Sampler (RDS). These samples were analysed using Inductively Coupled Plasma – Mass Spectrometer (ICP-MS) and Energy Dispersive X-Ray Fluorescence Spectrometer (EDXRF) respectively. As per the composition of the fire crackers and air pollution point of view majorly thirteen elements were considered to be studied. These elements were Aluminum (Al), Arsenic (As), Barium (Ba), Chromium (Cr), Copper (Cu), Iron (Fe), Potassium (K), Lithium (Li), Nickel (Ni), Lead (Pb), Antimony (Sb) and Strontium (Sr).

The study had been carried out separately during pre-Deepawali day, on Deepawali day and Post- Deepawali day to find out the entrance of metals due to fire crackers in ambient air.

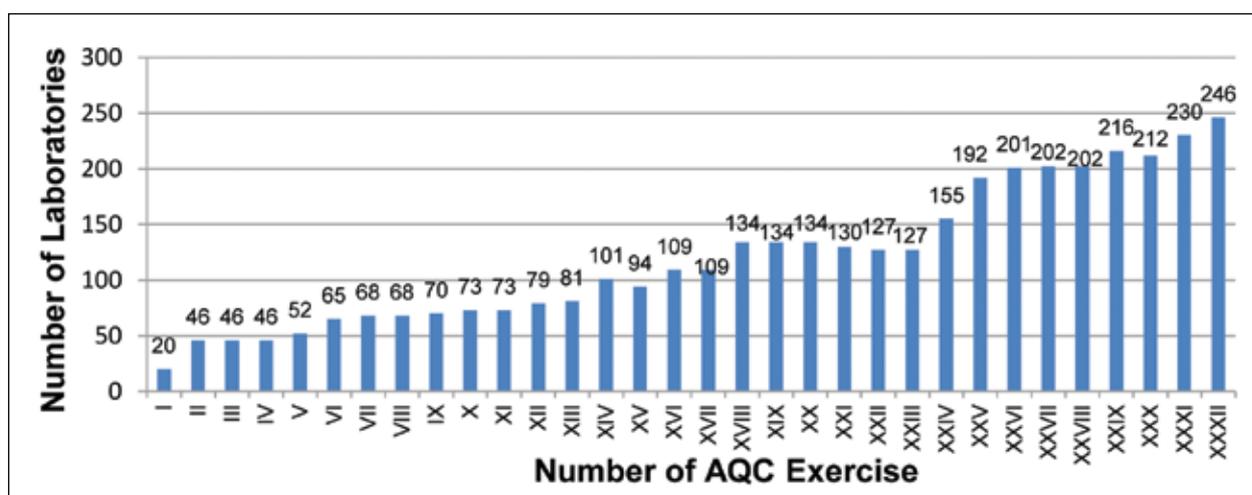
The Location wise details of samples collected analysed are as given below:

S.No.	Location	PM ₁₀	PM _{2.5}
01	Delhi	33	14
02	Noida	3	3
03	Ghaziabad	3	5
04	Meerut	12	9
05	Faridabad	3	3
06	Alwar	9	-
07	Bhiwadi	9	-
08	Bharatpur	9	-
09	Bhopal	3	3
10	Lucknow	6	6
11	Bangalore	6	6
12	Kolkata	12	13
13	Vadodara	27	9
	Total	136	71

The analysis was completed and report was prepared.

7.6 ORGANIZATION OF ANALYTICAL QUALITY CONTROL (AQC) EXERCISE FOR WATER SAMPLES

One of the main mandate of Central Pollution Control Board (CPCB) is to maintain vast water quality monitoring network with the aim to evaluate the status and trend of water quality of various water bodies. Accordingly, CPCB is monitoring water quality at numerous locations under Global environmental monitoring system (GEMS), National water quality monitoring programme (NWQMP), National Mission for Clean Ganga (NMCG) etc. in collaboration with State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs). Ensuring the quality of generated water quality data becomes the key challenge to the water testing laboratories. The quality of data must be of the desired quality to formulate the policy by the decision maker based on the data generated in the monitoring programmes. Further, there are more than 250 laboratories recognised under E(P) Act, 1986 verifying the efficiency of all these laboratories to generate reliable and accurate analysis data is essential. Therefore, to obtain relevant and reliable data, the outcome of various analytical processes required to be verified through analytical quality control (AQC) exercise. To achieve this objective a programme called “Analytical Quality Control (AQC)” for water analysis was initiated by CPCB in the year 1991. The programme has been organised at regular intervals and so far 32 rounds of exercise completed successfully. The growth of AQC programme is depicted in Fig. 1.



Growth of AQC Programme

32nd round of AQC exercise was conducted in 2017-involving 103 labs of SPCBs/PCCs and 136 number of private E(P) Act, 1986 in which 17 number of new laboratories participated first time in AQC programme. The water quality parameters which were covered in this round of exercise are detailed below:

S.No.	Name of parameter	S.No.	Name of the parameter
1	NH ₃ - N	6	Potassium
2	TKN - N	7	pH
3	TDS	8	COD
4	FDS	9	BOD
5	Sodium	10	Phosphate as P

Two batches of samples were used in said round of exercise. The qualifying criteria for AQC exercise is e”60%. The performance of the involved laboratories using first batch of sample was in the range of 41.6 to 81.0 % with average of 67.4% (Fig. 2). With second batch of sample the performance of laboratories was 41.3 to 86.3% with the average 67.1% (Fig. 3).

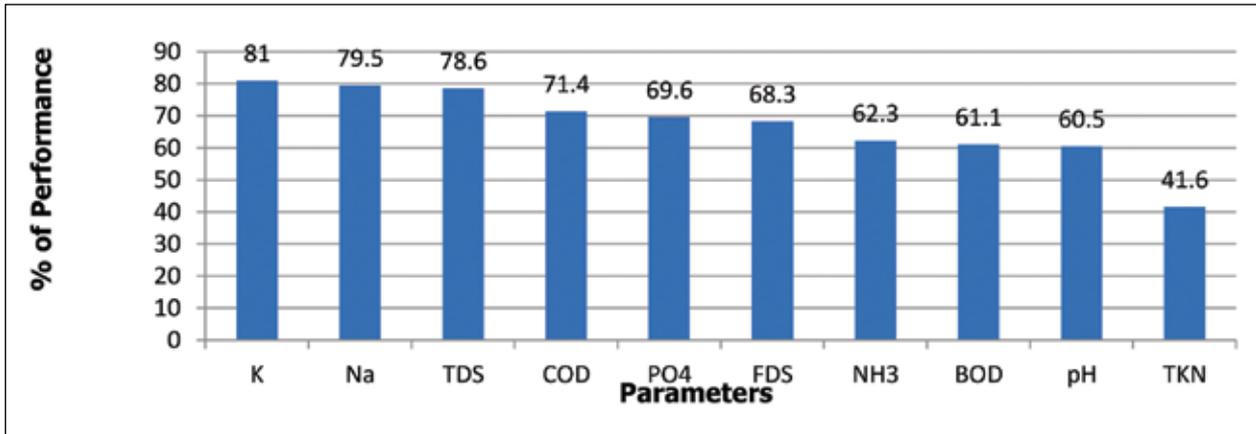
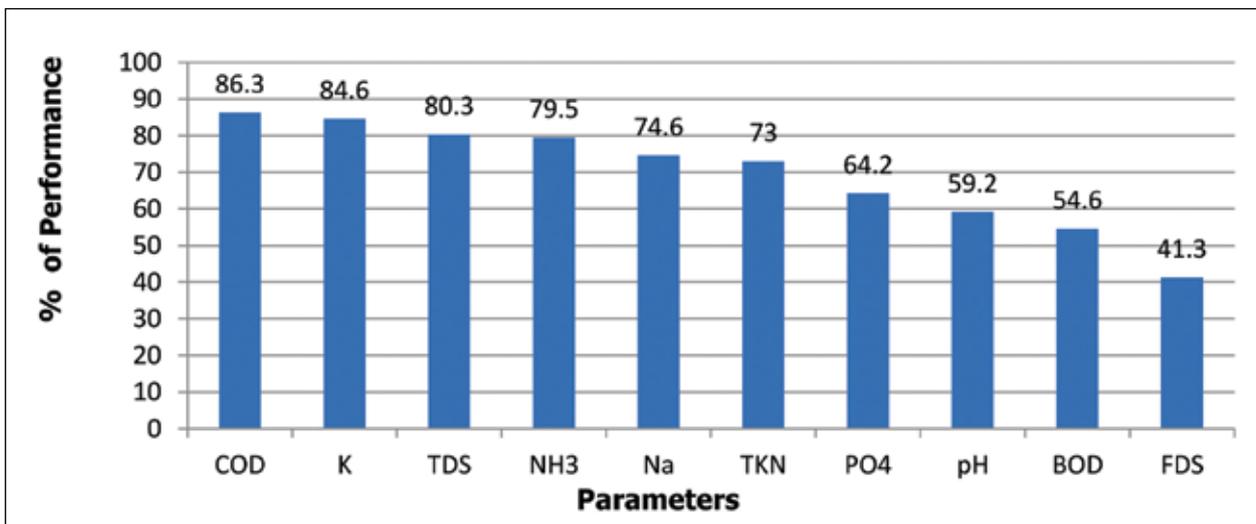


Fig. Parameter wise performance of 32nd AQC (1st Batch)



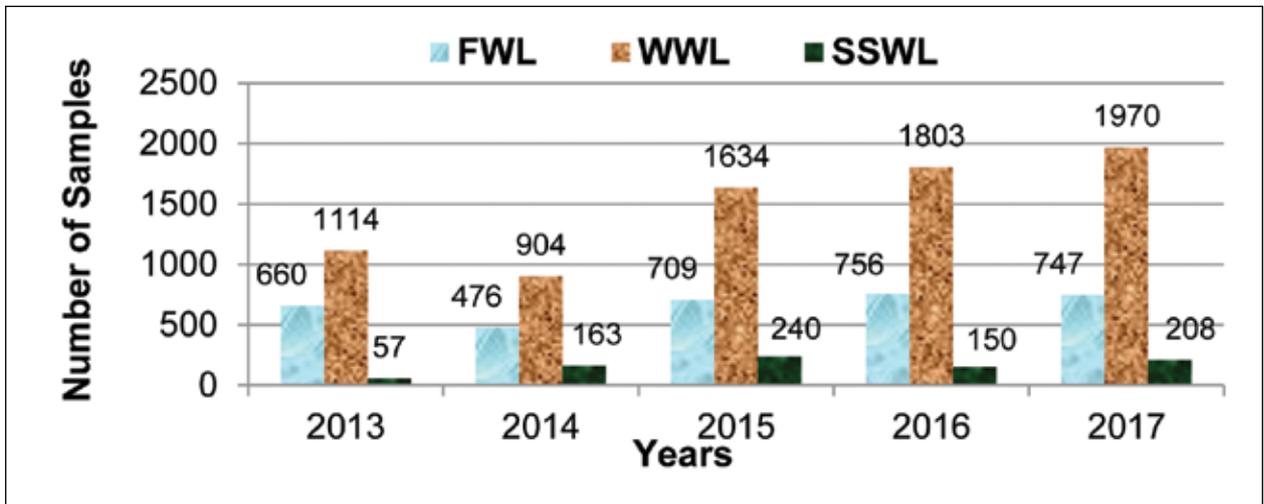
Parameter wise performance of 32nd AQC (2nd Batch)

The findings of the AQC exercise reveals that there is scope to enhance the analytical capabilities of the involved laboratories by adopting following steps:

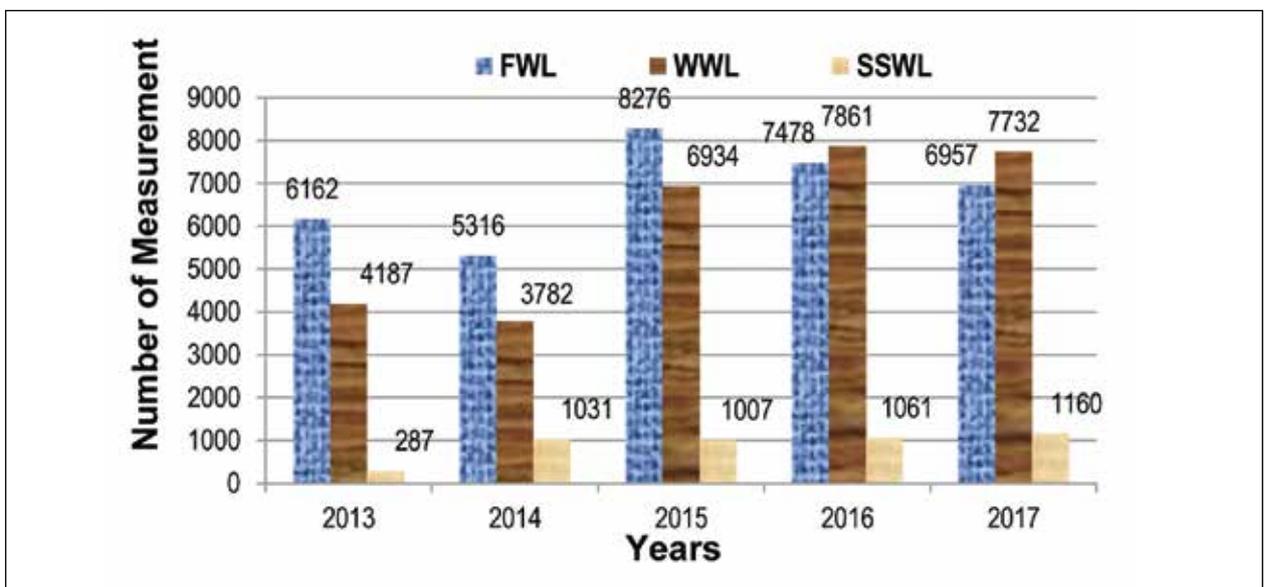
- Strengthening of the Internal AQC System and internal quality plan
- Periodic calibration of instruments, equipment and glassware along with intermediate check
- Using good quality of chemicals.
- Ensuring good quality of distilled water
- Improving working environment and housekeeping.
- Providing training to laboratory staff on regular basis.
- Conducting Regional Workshop at various regions

- Adopting good quality assurance system.
- Use of updated and validated analytical methods
- Participating in Inter-laboratory comparison exercises

Total 2925 number of samples for 15849 measurements have been analysed by the water laboratory in the year 2017. The breakup of the analysis based on the type of sample is depicted in Fig. 4 & 5. There is a gradual increase in the number of samples analysed by the lab since 2014. However, number of measurements reflects fluctuating trends with minimum number 10129 in the year 2014 and maximum 16400 in the year 2016. Increase in the number of samples received by the laboratory for analysis special waste water samples might be due to increase in the number of samples collected in compliance of various Courts/NGT directions and increase in the activities of NMCG.



Trend of sample numbers analysed by Water Laboratory



Trend of measurements done by Water Laboratory in samples

CHAPTER VIII

ENVIRONMENTAL TRAINING

During the year 2017-18, CPCB has organized 22 training programmes through reputed training/R&D/Professional institutes in various priority areas related to environment. The details are as under:

1. Sampling and Analysis of Specific Pollutants
2. Water Quality Monitoring of Surface, Ground, Waste Water/ Effluents
3. Effective Management of Hazardous Waste including E-Waste
4. Advance Instrumental Analytical Techniques
5. Design, Operation, Maintenance and Performance of STP, CETP, CBMWTFs
6. Real Time Data Acquisition, Transmission & Interpretation of Online Monitoring Systems
7. Calibration, QA/QC, Interlab Comparison and Proficiency Testing
8. Biological Monitoring, Analysis & Testing
9. Integrated Waste Management - Bio Composting, Landfill Gas Management & Control and Waste to Energy
10. Investigation, Remediation and Management of Soil & Groundwater Contaminated Sites
11. Occupational Health & Safety Assessment System 18001: 2007 and Risk Management
12. Clean Development Mechanism (CDM) and Carbon Trading
13. Air Quality Management – Plans using decision support system UrbAir India
14. Source Emission Monitoring for Parameters Notified under Source Emission
15. Indoor & Outdoor Air Pollution, Standards and Impact on Human Health
16. Cleaner Technologies & Waste Minimization of Industrial Pollution and Four R's



17. Air Quality Monitoring (Ambient, Source, Noise)
18. Green Chemistry and Cleaner Technology
19. Environmental Legislations, Interpretation, Enforcement, Legal and Statutory Requirements – Case Studies
20. Environmental Data Interpretation, Compilation, Analysis, Presentation and Reporting – Hands-on Training and Case Study
21. Vehicular Emission and Exhaust Monitoring (Receptor and Dispersion Modelling)

22. Continuous Ambient Air Quality Monitoring & Source Emission

- More than three hundred officials from CPCB, State Pollution Control Boards/ Committees and other Government Agencies were participated and benefited from the above training programmes.
- Fourteen CPCB officials participated in training programmes organized by other organizations viz. CSE, DST, IIPA, etc.
- Six CPCB officials participated in international training programmes/workshop/ seminars etc. during 2017-18 sponsored by the National/International Agencies/Organizations.
- Students from various Universities/Engineering Colleges/Institutes were also imparted training through internship/summer training on their specialized subjects during their winter and summer vacations.



CHAPTER IX

ENVIRONMENTAL AWARENESS AND PUBLIC PARTICIPATION

9.1 PUBLICATIONS PRINTED DURING THE YEAR 2017-18

During the year 2017-18 Central Pollution Control Board printed following Publications:

1. Compendium of Gazette Notification of Waste Management Rules – 2016.
2. Benthic Macro Invertebrates of River Ganga
3. Annual Report-2015-16 (English)
4. Annual Report-2015-16 (Hindi)

9.2 EXHIBITIONS

During the year 2017-18 Central Pollution Control Board participated in following exhibitions:

1. 21st National Exhibition on the theme of “India Progressing Towards A Great Nation” during 24th to 27th August 2017 at Kolkata.
2. 105th Indian Science Congress: Pride of India Expo 2018 during 16th to 20th March 2018 at Manipur Central University, Imphal.
3. Kendriya Vidyalaya, AGCR Enclave, Delhi

9.3 DEEPAWALI AWARENESS CAMPAIGN

Deepawali awareness campaign was promoted among the public and letters were addressed to various departments, regulatory authorities, universities, education institutions, schools and colleges requesting them to create awareness among public and students to avoid bursting of crackers. In public interest advertisement were released leading newspaper at National Level to observe Environmentally Friendly Deepawali.

9.4 WORLD ENVIRONMENT DAY CELEBRATION AT ZONAL OFFICES OF CPCB

(I) REGIONAL DIRECTORATE –LUCKNOW

World Environment Day 2017 was celebrated at Regional Directorate (North), Lucknow, with the objective to raise awareness on environment & to mobilize action by all stakeholders.

Following awareness activities were carried out:

- Banner display at PICUP Bhawan;
- In-house Plantation within the PICUP Bhawan premises;
- Conference on the theme of World Environment Day;
- Pamphlet distribution;
- Issuance of press release & awareness message in newspapers;
- Mass cleaning of the pond was organised along with, poster presentation and tree plantation.



(II) PROJECT OFFICE - AGRA

CPCB, Project Office Agra team celebrated world environment day (June 05, 2017) through mass awareness activities like interaction with general public, distribution of pamphlets with information on environmental issues were undertaken in Agra. Stickers with messages of environment protection were distributed and pasted on the vehicles at various locations including places around the CPCB ambient air quality monitoring stations i.e. Tajmahal, Itmad-ud-daulah, Rambagh and Nunhai industrial area in Agra.

(III) REGIONAL DIRECTORATE- BENGALURU

Regional Directorate, Bengaluru organized series of events on 5th & 6th of June, 2017 to create awareness about the significance of a healthy environment and promote positive environmental actions along with Karnataka State Pollution Control Board and Andhra Pradesh Pollution Control Board. Awareness programme on Environment was conducted at Gangamma Thimmaiah Government School located at Shivanagar, Bengaluru. More than 100 students from Primary school and school teachers took part in the programme. Students were made aware of the issues and present scenario of our Environment and students role in Environmental Protection.



(IV) REGIONAL DIRECTORATE-VADODARA

The Western Regional Directorate organized event of drawing competition, seminar and elocution in association with the M. S. University of Baroda to celebrate World Environment Day.

(V) REGIONAL DIRECTORATE-BHOPAL

Regional Directorate, Bhopal organized series of events on the occasion of World Environment Day to create awareness:

1. Conducted Drawing competition at N.T.T. Nagar stadium, Bhopal;
2. Organized Workshop at Hotal Palash, Bhopal;
3. Organized Exhibition at N.T.T. Nagar, Bhopal.
4. Tree Plantation.

9.5 केन्द्रीय बोर्ड में राजभाषा नीति का कार्यान्वयन

केन्द्रीय प्रदूषण नियंत्रण बोर्ड अपने मुख्यालय सहित छः क्षेत्रीय निदेशालयों— लखनऊ, भोपाल, बडौदरा, कोलकोता, बंगलुरु तथा शिलांग और एक परियोजना कार्यालय—आगरा में भारत सरकार की राजभाषा नीति का कार्यान्वयन कर रहा है। हिन्दी अनुभाग द्वारा भारत के संविधान में निहित संघ की नीति के अनुसार राजभाषा अधिनियम, 1963 और राजभाषा (संघ के शासकीय प्रयोजनों के लिए प्रयोग) नियमों के साथ-साथ, भारत सरकार द्वारा समय-समय पर जारी किए आदेशों का अनुपालन सुनिश्चित किया जाता है। राजभाषा अधिनियम, 1963 की धारा 3(3) के तहत संकल्प, साधारण आदेशों, नियमों, अधिसूचनाओं प्रशासनिक या अन्य प्रतिवेदनों, प्रेस विज्ञप्तियां, संसद के एक या दोनों पटलों पर प्रस्तुत की जाने वाली रिपोर्टें, करार, संविदाएं, निविदाएं, सूचना आदि को द्विभाषी रूप में ही जारी किया जाता केन्द्रीय प्रदूषण नियंत्रण बोर्ड के क्षेत्राधिकार के अंतर्गत निष्पादित किए जाने वाले काम-काज का विवरण इस प्रकार है:-

- क. रिपोर्टाधीन वर्ष के दौरान केन्द्रीय बोर्ड में राजभाषा अधिनियम/नियम तथा राजभाषा नीति संबंधी सभी प्रावधानों/आदेशों का अनुपालन सुनिश्चित किया जा रहा है। राजभाषा अधिनियम, 1963 की धारा 3(3) के तहत जारी सभी दस्तावेजों को द्विभाषी रूप में ही जारी किया गया। कार्यालय में राजभाषा अधिनियम, 1976 के नियम 8(4) के तहत सभी प्रवीणता प्राप्त अधिकारियों/कर्मचारियों को अपना काम-काज हिन्दी में करने के लिए व्यक्तिशः आदेश जारी किए गए हैं।
- ख. केन्द्रीय बोर्ड में कार्यरत 80 प्रतिशत से अधिक अधिकारियों/कर्मचारियों को हिन्दी में प्रवीणता/कार्य साधक ज्ञान प्राप्त होने पर कार्यालय को राजभाषा नियम, 1976 के नियम 10(4) के तहत अधिसूचित किया गया है। सभी अनुभागों में कार्यरत अधिकारियों एवं कर्मचारियों द्वारा टिप्पणियां हिन्दी में की जा रही हैं। केन्द्रीय बोर्ड द्वारा 'क' 'ख' और 'ग' क्षेत्र के साथ पत्राचार हिन्दी में किया जा रहा है।
- ग. प्रत्येक वर्ष की भांति इस रिपोर्टाधीन वर्ष के दौरान भी केन्द्रीय प्रदूषण नियंत्रण बोर्ड में कार्यरत अधिकारियों एवं कर्मचारियों के लिए 04 पूर्ण दिवसीय हिन्दी कार्यशालाओं का आयोजन किया गया था। कार्यशालाओं में 100 अधिकारियों एवं कर्मचारियों ने भाग लिया था। कार्यशालाओं के आयोजन का उद्देश्य राजभाषा नीतियों का सफल कार्यान्वयन सुनिश्चित करना है तथा कार्यशालाओं में सम्मिलित अधिकारियों एवं कर्मचारियों को सरकारी काम-काज हिन्दी में करने

में आने वाली समस्याओं का समाधान करने के साथ-साथ उन्हें सरकारी काम-काज हिन्दी में करने के लिए प्रेषित किया जाता है, ताकि राजभाषा विभाग, गृह मंत्रालय, भारत सरकार द्वारा समय-समय पर जारी नीतियों के अनुपालन सुनिश्चित हो सके।

- घ. इस रिपोर्टाधीन वर्ष के दौरान केन्द्रीय प्रदूषण नियंत्रण बोर्ड में विभागीय राजभाषा कार्यान्वयन समिति की 04 बैठकें आयोजित की गई हैं। इन बैठकों में प्रायः राजभाषा हिन्दी के कार्यान्वयन में आने वाली समस्याओं तथा उससे संबंधित, मद्दों पर चर्चा करने के साथ-साथ इन समस्याओं का समाधान किया जाता है।
- ङ. इसके अलावा, इस रिपोर्टाधीन वर्ष के दौरान नगर राजभाषा कार्यान्वयन समिति (उत्तरी दिल्ली) द्वारा विभिन्न बैठकों एवं राजभाषा सम्मेलनों का आयोजन किया जाता है, जिसमें मुख्य अधिकारी सहित प्रभारी, हिन्दी प्रभाग सम्मिलित होते हैं। इन बैठकों और सम्मेलनों में सदस्य कार्यालयों में राजभाषा नीति के कार्यान्वयन में आने वाली समस्याओं का समाधान किया जाता है।
- च. केन्द्रीय बोर्ड में प्रतिवर्ष हिन्दी दिवस का आयोजन किया जाता है। गत वर्षों की भांति इस वर्ष भी बोर्ड में 14 सितंबर, 2017 को श्री एस.पी. सिंह परिहार (भा.प्र.से.), अध्यक्ष, केन्द्रीय प्रदूषण नियंत्रण बोर्ड की अध्यक्षता में हिंदी दिवस समारोह का आयोजन किया गया।



हिन्दी दिवस समारोह के दौरान स्वागत संबोधन देती हिन्दी अनुवादक श्रीमती चारु जयसवाल



हिन्दी दिवस समारोह के दौरान मंच की शोभा बढ़ाते अध्यक्ष महोदय, सदस्य सचिव महोदय, प्रशासनिक अधिकारी (रा.भा.) एवं आमंत्रित अतिथि गण



हिन्दी दिवस के दौरान कविता पाठ करती कवयित्री सुश्री गौरी मिश्रा



हिन्दी दिवस के दौरान कविता पाठ करते कवि श्री विनोद कुमार



हिन्दी दिवस के दौरान कविता पाठ करते श्री विनीत कुमार सांस्कृतिक कार्यक्रम प्रस्तुत करती श्रीमती आदिति शर्मा



हिन्दी दिवस समारोह का आनंद लेते अधिकारी एवं कर्मचारी

हिन्दी दिवस पर आयोजित विभिन्न प्रतियोगिताओं में केन्द्रीय बोर्ड के अधिकारियों एवं कर्मचारियों ने सक्रिय रूप से भाग लिया। इस अवसर पर हिन्दी टिप्पण आलेखन, वैज्ञानिक एवं तकनीकी लेख, हिन्दी टंकण, हिन्दी संभाषण प्रतियोगिताएं आयोजित की गईं, जिनमें अधिकारियों एवं कर्मचारियों को प्रथम, द्वितीय एवं तृतीय पुरस्कारों से पुरस्कृत किया गया। हिन्दी दिवस कार्यक्रम की शोभा तब और अधिक बढ़ गई जब हिंदी के सुप्रसिद्ध श्रृंगार रस की कवयित्री सुश्री गौरी मिश्रा ने अपनी श्रृंगार रस की कविताओं से एवं हास्य कवि श्री विनोद कुमार एवं श्री विनीत कुमार ने अपनी अपनी हास्य से परिपूर्ण कविताओं से उपस्थित अधिकारियों/कर्मचारियों को आनंदित किया।

छ. बोर्ड में प्रतिवर्ष प्रोत्साहन पुरस्कार योजना (टिप्पण/आलेखन) लागू की जाती है। रिपोर्टाधीन अवधि में भी प्रोत्साहन पुरस्कार योजना (टिप्पण/आलेखन) लागू की गई, इस प्रतियोगिता में 10 प्रतिभागियों को पुरस्कारों से सम्मानित किया गया। हिन्दी टंकण/आशुलिपि और डिक्टेसन आदि तथा जल, वायु और शोर प्रदूषण से संबंधित विषयों पर मूल रूप से पुस्तक लेखन की योजनाएं भी लागू की गईं।

- ज. राजभाषा नीति के लक्ष्यों की प्राप्ति हेतु केन्द्रीय बोर्ड से बिहार, झारखंड, हरियाणा, हिमाचल प्रदेश, मध्य प्रदेश, छत्तीसगढ़, राजस्थान और उत्तर, प्रदेश, उत्तरांचल एवं अंडमान निकोबार द्वीप समूह तथा दिल्ली के साथ-साथ गुजरात, महाराष्ट्र तथा पंजाब राज्यों की सरकारों तथा संघ शासित क्षेत्र चंडीगढ़ के साथ पत्राचार हिन्दी में किया गया है।
- झ. राजभाषा हिन्दी की प्रगति में केन्द्रीय बोर्ड के अधिकारियों एवं कर्मचारियों की मोहरें एवं नामपट्टिकाएं द्विभाषी रूप में बनवाई गई हैं। इसके अतिरिक्त, हिन्दी शिक्षण योजना के अंतर्गत कार्यालय में कार्यरत अधिकारियों/कर्मचारियों को हिन्दी, हिन्दी टंकण और हिन्दी आशुलिपि में प्रशिक्षण का शत-प्रतिशत लक्ष्य प्राप्त किया गया है।
- ट. राजभाषा हिन्दी को बढ़ावा देने के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड में बोर्ड में इस वर्ष राजभाषा गौरव पुरस्कार योजना एवं राजभाषा कीर्ति पुरस्कार योजना लागू की गई है। इस योजना के अंतर्गत जल, वायु और शोर प्रदूषण से संबंधित विषयों पर मूल रूप से लेख आमंत्रित किए गए हैं।

क्षेत्रीय निदेशालयों एवं परियोजना कार्यालय आगरा में हिन्दी संबंधी गतिविधियां

केन्द्रीय बोर्ड के मुख्यालय की भांति सभी छः क्षेत्रीय निदेशालयों व परियोजना कार्यालय आगरा में भी वर्ष 2017-18 के दौरान राजभाषा अधिनियमों का अनुपालन सुनिश्चित किया गया। इस क्रम में सभी क्षेत्रीय निदेशालयों में क्षेत्रीय निदेशक की अध्यक्षता में विभागीय राजभाषा कार्यान्वयन समिति की नियमित बैठकें आयोजित की गईं और कर्मचारियों एवं अधिकारियों को अपना सरकारी काम-काज हिन्दी में करते समय आने वाली कठिनाई व झिझक को दूर करने के लिए 04 कार्यशालाएं आयोजित कराई गईं। सितंबर माह में हिन्दी दिवस के दौरान विभिन्न प्रतियोगिताएं जैसे हिन्दी टंकण प्रतियोगिता, टिप्पण-आलेखन प्रतियोगिता, लिखित प्रतियोगिता एवं श्रुतलेख का आयोजन किया गया, जिसमें सभी अधिकारियों एवं कर्मचारियों ने सक्रिय रूप से भाग लिया। इस दौरान विजेताओं को पुरस्कार प्रदान कर सम्मानित किया गया।

CHAPTER X

ENVIRONMENTAL STANDARDS INCLUDING SCHEDULE FOR THEIR ENFORCEMENT

10.1 DEVELOPMENT OF ENVIRONMENTAL STANDARDS

The Ministry of Environment, Forest & Climate Change (MoEF&CC) formulates and notifies standards for emission for discharge of environmental pollutants viz. Air pollutants, water pollutants and noise limits, from industries, operations or processes with an aim to protect and improve the quality of the environment and abate environmental pollution. The standards are framed in consultation with all concerned stakeholders for the benefit of environment. The process is based on the best practices and techno-economic viability. The notification of standards also involves formulation of load based standards i.e., emission/discharge limits of pollutants per unit of product obtained/ processes performed to encourage resource utilization efficiency and conservation aspects.

The draft standards for any industrial process/ operation are recommended by Central Pollution Control Board (CPCB) in the form of 'Draft Notification'. The 'Draft Notification' is subjected to stakeholder consultation including general public. The comments are compiled and technically examined by CPCB and modifications if any, are carried out in the Draft Notification. The modified Draft Notification is placed before the 'Expert Committee (EC)' of MoEF&CC for approval. Besides the MoEF&CC and CPCB officials, the EC of MoEF&CC comprises of representatives from industry associations, subject experts and concerned ministries of the industrial sectors. The EC recommended Draft Notification is placed for approval of Hon'ble MEF&CC. after carrying out due legal vetting of the proposal, the notification is published in Gazette of India.

Status of environmental standards development during 2017-18 is summarized below:

10.1.1 Compliance & Testing Procedure for Measurement of Lead Contents in Household and Decorative Paints

MoEF & CC has notified vide G.S.R. 1030 (E), dated November 1, 2016 Regulation on Lead Contents in House hold & Decorative Paints. The limit for lead has been fixed 90 ppm. CPCB has developed the compliance and testing procedure in association with Central Power Research Institute (CPRI) and placed at CPCB website on October 31,2017. Letter was issued to all SPCB /PCCs for implementation the standard w.r.t November 01,2017 by CPCB.

10.1.2 Environmental Standard of Manmade Fibre Industry

The standards got approved in the Expert Committee meeting at MoEF&CC. The draft standard was notified by MoEF& CC vide GSR 35(E) on January 17,2018 and placed 60 days on website for comments. Load based H₂S emission standard was introduced for VSF and VFY industry and VOC in Acrylic fibre industry. The percentage recovery of sodium sulphate (60%) was introduced in wastewater discharge standard.

10.1.3 Environmental Standards of Pharmaceutical sector

The proposed standard of Pharma industry was placed in CPCB website for comments. The draft environmental standard was forwarded to MoEF& CC for notification. In this standard several new parameter was introduced in wastewater discharge standards like

TOC (Total organic carbon), API (Active pharmaceutical ingredient) and VOC in emission standard. Fugitive emission standard of VOCs were also introduced in the new standard.

10.1.4 Development of Standards for Anti-microbial residue in effluent in pharmaceutical sector

CPCB has conducted study on standard on antimicrobial residue of pharma sector as per the National action plan on AMR. CPCB has conducted a meeting on AMR with all the stakeholders on September 25, 2017 to review the outcomes of AMR in industrial effluent. An expert team has been constituted with officials of MoEF&CC, Department of Biotechnology, ICMR, CSE, BDMA, IDMA and DSM Sinochem pharma. CPCB has prepared the draft standard and same was forwarded to MoEF&CC for notification.

10.1.5 Development of Environmental Standards for SO₂ and NO_x for five Industrial Sectors

Hon'ble Supreme Court of India vide its order dated 02.05.2015 directed MOEF&CC and CPCB to fix SO₂ & NO_x standards for the various categories of industries.

Emission standards for gaseous pollutants (SO₂ and NO_x) have been developed for 05 industrial sectors, i.e. Lime Kiln, Ceramic Industries, Glass industries, Foundry and Reheating furnaces.

Ministry of Environment & Forests & Climate Change has notified the SO₂ and NO_x Emission standards for the 05 industrial sectors vide Gazette Notification No. G.S.R. 263 (E) dated March 22nd, 2018, which is given below.

SI. No.	Type of Industrial Sector	Standards	
		SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)
107	Ceramic	400	600
108	Foundry Industries (Furnaces based on Fuel)	300	400
109	Glass	500 for natural gas firing 1500 for other fuels	1000
110	Lime Kiln	400	500
111	Reheating furnace	300	1000"

10.1.7 Standards for Pulp and Paper Industry, Fermentation Industry, Coffee Industry, Tannery are under the process of draft notification.

10.1.8 Standards for Diesel Locomotives, Automobile Service Stations and Bus Depots, Iron and Steel Industry are under finalization stage.

10.1.9 Standards for Treated Effluent of Sewage Treatment Plants

Sewage Treatment plants are used to treat sewage generated from residential, institutional, commercial and industrial establishments which includes household waste liquid from toilets, baths, showers, kitchens, sinks and so forth that is disposed of via sewers. In India, different treatment technologies like ASP, UASB, Oxidation pond and advanced technologies like SBR, MBR are adopted for the treatment of sewage.

Central Pollution Control Board (CPCB) carried out study on status of Municipal wastewater generation and treatment capacity in Metropolitan cities, Class I cities and Class II towns of India and published a document (CUPS/61/2005-06). CPCB reported during 2010-2011 that out of 38254 MLD of sewage generated by class I cities and class II towns, only 11787 MLD has been treated and thereby leaving huge gap between sewage

generation and sewage treatment. CPCB, reassessed sewage generation and treatment capacity for Urban Population of India for the year 2015. The sewage generation estimated to be 62000 MLD approximately and sewage treatment capacity developed so far is only 23277 MLD from 816 STPs.

There are no specific standards for discharge of treated sewage into streams. So far, General Standards for Discharge of Environmental Pollutants into inland surface, public Sewers, land for irrigation, marine coastal areas under Schedule-VI of The Environment (Protection) Rules, 1986 have been used for design of STPs and assessment of performance of STPs. General Standards does not account for coliform standards.

State Pollution Control Boards and Pollution Control Committee are using General Standards for Discharge of Environmental Pollutants for granting consent to Sewage Treatment Plants and there are no specific standards for effluent of sewage treatment plants.

In urban areas, water is tapped from rivers, streams, wells and lakes for domestic and industrial uses. Almost 80% of the water supplied for domestic use, comes back as wastewater which finds its way to river/streams and contribute 70% of the pollution load to streams of India.

In view of above, Standards formalization of treated effluent of Sewage Treatment Plant are framed with respect to physio-chemical and bacteriological parameters and same was notified by MoEF &CC vide notification dated 13/10/2017.

10.1.10 Revisiting of Standards for Stand Alone Tannery Industrial Sector

A series of meeting of Expert Committee are convened at MoEF& CC and based on the world-wide scenario, experience of pollution control boards , technological options available and discussion with stake-holders, following revised standards are proposed for discharge from the tanneries :

Modified Draft

(After incorporating EC decisions/Suggestions)

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the ... , 2018

G.S.R.---- In exercise of the powers conferred by Sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. (1) These rules may be called the Environment (Protection)--- Amendment Rules, 2018
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Environment (Protection) Rules, 1986, in Schedule-I,
 - a) the serial number 16 and the entries relating thereto shall be omitted, and
 - b) for serial number 57 and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

STANDARDS FOR DISCHARGE OF EFFLUENT FROM TANNERY INDUSTRY

S. No.	Industry	Parameter	Standards (applicable for all modes of disposal*)
1	2	3	4
57	Tanneries	Treated Effluent	Max. permissible values (in mg/l, except for pH)
		pH	6 to 9
		Biochemical Oxygen Demand (BOD ₃ at 27°C)	20
		Chemical Oxygen Demand (COD)	250
		Total Suspended Solids (TSS)	50
		Total Dissolved Solids (TDS)	2100**
		Sulphides (as S)	2
		Ammonical-Nitrogen (as N)	50
		Total Chromium (as Cr)	2
		Hexavalent Chromium (as Cr ⁺⁶)	0.1
		Oils and Grease	10
Notes:			
<ol style="list-style-type: none"> *In case of direct disposal into rivers and lakes, the Central Pollution Control Board (CPCB) or State Pollution Control Boards / Pollution Control Committees (SPCBs / PCCs) may specify more stringent standards depending upon the quality of the recipient system. **Standards for TDS shall not be applicable in case of marine disposal through proper marine outfall. Chrome tanning units shall ensure installation of ' Chrome Recovery Plant' for treatment of spent chrome liquor so as to recover chromium sulphate. The tannery shall ensure salt recovery through soak liquor segregation. The treated effluent shall be allowed to be discharged in the ambient environment only after exhausting options for reuse in industrial process / irrigation in order to minimise freshwater usage. Standards are equally applicable to all types of stand-alone tanneries irrespective of their scale of production. The standalone units shall meet prescribed discharge norms; however, SPCB / PCC shall mandate recycle / reuse of the treated water in water scarce / environmentally sensitive / critical areas. TDS limit with respect to treated effluent shall be 2100 milligramme per litre; however, in case where TDS in intake water is above 1100 milligramme per litre, a maximum contribution up to 1000 milligramme per litre shall be permitted provided the maximum limit of 3100 milligramme per litre is not exceeded in the treated effluent. In case of discharge of treated effluent on land for irrigation, the impact on soil and groundwater quality shall be monitored twice a year (pre- and post-monsoon) by the tannery unit. Management, handling and disposal of Sludge and other wastes shall be undertaken as per the provisions made in the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. 			

S. No.	Industry	Parameter	Standards (applicable for all modes of disposal*)
1	2	3	4
		11 The units shall follow the guidelines prescribed by CPCB and SPCB / PCC on “Best Available Technologies for Environmentally Sound Management of the Process and Treatment of Wastes”.	
		Maximum specific water consumption for processing hides/ skins: (monthly average values)	
		Raw-to-Wet blue/white	18 m ³ per tonne of raw hides /skins processed
		Post-tanning process	17 m ³ per tonne of raw hides /skins processed
		Total consumption	35 m ³ per tonne of raw hides /skins processed
		Maximum wastewater discharge= 85% of maximum water consumption. Factors to re-calculate Finished leather into Wet blue/white and Hide: Shoe upper leather: 15 tonnes of Raw hides /skins = 7.84 tonnes of Wet blue = 2.94 tonnes of finished leather Upholstery leather: 15 tonnes of Raw hides/skins = 5.08 tonnes of Wet blue = 1.48 tonnes of finished leather	

F. NO. Q-15017/30/2004-CPW]
(Dr. A. Senthil Vel)
Adviser

Note:- The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i), vide number S.O. 844 (E), dated the 19th November, 1986 and subsequently amended vide the following notifications, namely:-

S.O. 433 (E), dated the 18th April 1987; G.S.R. 176(E), dated the 2nd April, 1996; G.S.R. 97 (E), dated the 18th February, 2009; G.S.R. 149 (E), dated the 4th March, 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 739 (E), dated the 9th September, 2010; G.S.R. 809(E), dated, the 4th October, 2010, G.S.R. 215 (E), dated the 15th March, 2011; G.S.R. 221(E), dated the 18th March, 2011; G.S.R. 354 (E), dated the 2nd May, 2011; G.S.R. 424 (E), dated the 1st June, 2011; G.S.R. 446 (E), dated the 13th June, 2011; G.S.R. 152 (E), dated the 16th March, 2012; G.S.R. 266(E), dated the 30th March, 2012; and G.S.R. 277 (E), dated the 31st March, 2012; and G.S.R. 820(E), dated the 9th November, 2012; G.S.R. 176 (E), dated the 18th March, 2013; G.S.R. 535(E), dated the 7th August, 2013; G.S.R. 771(E), dated the 11th December, 2013; G.S.R. 2(E), dated the 2nd January, 2014; G.S.R. 229 (E), dated the 28th March, 2014; G.S.R. 232(E), dated the 31st March, 2014; G.S.R. 325(E), dated the 07th May, 2014, G.S.R. 612, (E), dated the 25th August 2014; G.S.R. 789(E), dated the 11th November 2014; S.O. 3305(E), dated the 7th December, 2015; S.O.4(E), dated the 1st January 2016; G.S.R. 35(E), dated the 14th January 2016; G.S.R. 281 (E), dated the 7th March, 2016; G.S.R. 496(E), dated 09th May, 2016 and lastly amended vide notification G.S.R.497(E), dated 10th May, 2016.

10.1.11 Comprehensive Industry Document Series (COINDS) on Slaughter Houses

CPCB has prepared revised COINDS on Slaughter House industrial sector. This document on “Characterization, Waste Management Practices and best Available Pollution Control Technologies in Slaughter Houses” has been prepared in consultation with CLRI Chennai which is an expert organization of the field and uploaded on the website of CPCB for information and comments of all concerned.

10.1.12 Compendium of Indian Standards on Slaughter Houses”

The document has been prepared in consultation with MoEF&CC and uploaded on the website of CPCB. This is as per orders by Honorable Supreme Court of India so as to ensure compliance by Slaughter Houses.

10.1.13 Ecomark Criteria for Coir and Coir Products

The Government of India launched the Ecomark scheme in 1991 for identification of environment-friendly products, in order to increase consumer awareness about the environment. The objectives of the scheme are to encourage citizens to purchase products which have less harmful environmental impacts and ultimately, to improve the quality of environment and to encourage the sustainable management of resources. The label known as 'Ecomark' is awarded to consumer goods which meet the specified environmental criteria and the quality requirements of Indian standards.

Indian coir industry is an important cottage industry contributing significantly to the economy of the major coconut growing States and Union Territories, such as, Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Orissa, etc. The basic raw material for the manufacturing of coir and coir products is the natural coir fibre which is the by-product of coconut extraction. Coir products by virtue of its eco-friendly and biodegradable qualities are excellent in applications towards maintaining the ecological balance and preserving nature.

Keeping in view the current market dynamics, the Ecomark criteria for Coir & Coir Products were developed & finalized by Ecomark Technical Committee after considering the public comments for further consideration of the Ecomark Steering Committee.

CHAPTER XI

PROSECUTIONS LAUNCHED, CONVICTION SECURED AND DIRECTIONS GIVEN FOR CLOSURE OF POLLUTING INDUSTRIES

11.1 ASSESSMENT OF COMPREHENSIVE ENVIRONMENTAL POLLUTION INDEX (CEPI) IN 100 POLLUTED INDUSTRIAL AREAS (PIAS)

CPCB has evolved the Comprehensive Environmental Pollution Index (CEPI) in the year 2009. CEPI is a rational number to characterise the quality of the environment at a given location following the algorithm of source, pathway and receptor. CEPI relates to evaluation of environmental quality in the given area which is based on air, surface water and ground water pollution as well as on industries and health statistics, etc. According to this index, if score exceeds 70 in the scale of 0-100, then the industrial cluster is termed as 'Critical'.

On the basis of CEPI assessment carried out by CPCB in 2009, out of identified 88 prominent industrial clusters, 43 industrial clusters in 17 States having CEPI scores of 70 & above were categorised as Critically Polluted Areas (CPAs). Subsequently, the environmental quality was assessed by conducting third party monitoring in the identified 43 Critical Polluted Areas during 2011 and 2013 also, based on which the CEPI scores were evaluated, again.

Meanwhile, the CEPI concept was revised, in concurrence with MoEF&CC, in the year 2016 which was formulated by eliminating the subjective factors but retaining the factors which are being able to be monitored, in order to ensure greater transparency and objectivity in evaluating the environmental quality scenario in the industrial clusters.

In continuation of the CEPI evaluation, CPCB in concurrence with MoEF&CC decided to carry out the monitoring in around 100 industrial areas for CEPI evaluation based on the revised CEPI-2016. As a result, the project on 'Monitoring, Sampling and Analysis for Ambient Air Quality, Surface Water Quality and Ground Water Quality in around 100 Polluted Industrial Areas (PIAs)' was undertaken, by engaging the services of third party laboratories for carrying out environmental quality monitoring, with the financial assistance sanctioned by MoEF&CC from Water Cess Fund.

CPCB carried out technical & financial tendering process (via e-portal) and engaged the services of four laboratories, in Dec-2017, for carrying out environmental quality monitoring in the respective five zones (East, West, North, South & Central) across the country. CPCB co-ordinated with all the four laboratories & SPCBs/PCCs and as a result all the monitoring agencies could complete the monitoring of ambient air, surface water and ground water quality in all the identified 100 PIAs located in 21 states across the country, during December, 2017 to March, 2018. The laboratories collected the environmental samples to analyse 12 ambient air quality parameters and 54 each surface and ground water quality parameters from which the criteria pollutants will be decided. The monitoring agencies submitted the monitoring reports for 51 PIAs.

All the concerned SPCBs/PCCs and Regional Directorates of CPCB, were involved in the monitoring exercise and extended co-operation & coordination with the monitoring agencies for deciding approximately 670 nos. of sampling locations as well as for collection of 2000 nos. of environmental samples in the identified 100 PIAs.

The Zone-wise details of PIAs which were identified and monitored for CEPI evaluation during 2017-18, are as follow:

Sl. No.	Zone	Nos. of PIAs
1.	East Zone	20
2.	West Zone	19
3.	North Zone	26
4.	South Zone	20
5.	Central Zone	15
Total PIAs		100

Based upon the environmental quality monitoring reports being submitted by the laboratories and the information about industries & health statistics being submitted by the SPCBs, the CEPI scores will be evaluated & finalised in concurrence with MoEF&CC/SPCBs/PCCs.

11.2 CASES FILES BY CPCB FOR THE NON-COMPLIANCE OF DIRECTIONS ISSUED BY CPCB UNDER SECTION 5 OF ENVIRONMENT (PROTECTION) ACT, 1986.

Sl. No.	COURT NAME	CASE DETAILS
01.	NGT, (P.B.), DELHI	O.A. No. 215/2016 Central Pollution Control Board Vs. Chief Executive Officer. Matter is related to Notice Issued to Municipal Corporations and Nagar Palika Parishads situated on the bank of River Ganga. Case is pending.
02.	NGT, (P.B.), DELHI	O.A. No. 247/2017 Central Pollution Control Board Vs. State of Andaman & Nicobar & Ors. Related to implementation of Plastic Waste Management Rules, 2016. Case is disposed of with the directions to every state government and SPCBs.
03.	NGT, (P.B.), DELHI	O.A. No. 409/2017 Central Pollution Control Board Vs. General Manager/Chief Engineer of Thermal Power Plants & Ors. Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed
04.	NGT, (P.B.), DELHI	O.A. No. 603/2017 Central Pollution Control Board Vs. M/s Bajaj Automobiles Ltd. & Ors. Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed
05.	NGT, (P.B.), DELHI	O.A. No. 604/2017 Central Pollution Control Board Vs. M/s Shree Ajudhia Sugar Mills Ltd. & Ors. Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed
06.	NGT, (P.B.), DELHI	O.A. No. 605/2017 Central Pollution Control Board Vs. Thermal Power Plants & Ors. Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed

Sl. No.	COURT NAME	CASE DETAILS
07.	NGT, (P.B.), DELHI	O.A. No. 606/2017 Central Pollution Control Board Vs.M/s Bajaj Kagaj Udyog & Ors.Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed
08.	NGT, (P.B.), DELHI	O.A. No. 607/2017 Central Pollution Control Board Vs.M/s Naari Pharma Private Limited & Ors.Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off this matter with the permission to CPCB to impose Environmental Compensation if, fixed
09.	NGT, (P.B.), DELHI	O.A. No. 649 /2017 Central Pollution Control Board Vs.M/s Sterling Agro Industries Ltd. & Ors.Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off.
10.	NGT, (P.B.), DELHI	O.A. No. 658 /2017 Central Pollution Control Board Vs.M/s Ashok Leyland Ltd. & Ors.Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off.
11.	NGT, (P.B.), DELHI	O.A. No. 659 /2017 Central Pollution Control Board Vs.M/s MLA Industries Ltd. & Ors.Matter is related to non-compliance of Direction issued by CPCB under Section 5 of Environment (Protection) Act, 1986. Tribunal disposed off.

11.3 PROSECUTION ACTION TAKEN BY CPCB

1. ORIGINAL APPLICATION NO.256 of 2017

CASE TITLE: Central Pollution Control Board Vs Shree Halasiddhanath SSK Ltd. & 19 Ors.

This Original Application has been filed by the Central Pollution Control Board against 08 defaulting units before National Green Tribunal, Southern Zone at Chennai.

The Cause of action in this matter has been taken against the Respondent Units for non-installation of Online Continuous Emission Monitoring System (OCEMS).

The matter is listed for hearing on 12.10.2018.

2. CRIMINAL COMPLAINT NO.115 OF 2013

CASE TITLE: Central Pollution Control Board Vs M/s Jeevan Diesel & Ors.

This Complaint has been filed by the CPCB against M/s Jeevan Diesel before District Court of Puducherry for the violation of procedure and requirement of noise standards for DG Generator Sets which are beyond the prescribed limits of noise pollution.

The matter is listed for hearing on 09.11.2018.

CHAPTER XII

FINANCE AND ACCOUNT

KAMG & ASSOCIATES

Chartered Accountants

C4/19, Safdarjung Development Area
New Delhi: 110016
E-mail: ca@kamg.in

INDEPENDENT AUDITORS REPORT TO THE MEMBERS OF CENTRAL POLLUTION CONTROL BOARD-DELHI

1. We have audited the accompanying Financial Statements of **CENTRAL POLLUTION CONTROL BOARD, (Ministry of Environment Forests & Climate Change, Govt. of India), (the Board)** which comprise of the Balance Sheet as at **31st March 2018**, the Income & Expenditure Account and the Statement of Receipts & Payments of the Board for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

2. Management of the Board is responsible for the preparation of these Financial Statements in accordance with the accounting principles accepted in India and in accordance with 'Form of Financial Statement for the Central Autonomous Bodies' as per the directions of Ministry of Environment and Forest, Govt. of India vide their letter no. - G25012/1/2010CPW dated 10.02.10.as circulated by Controller General of Accounts, Ministry of Finance.
3. This responsibility also includes maintenance of adequate accounting records in accordance with the provisions of the Act for safeguarding the assets of the Company and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies; making judgments and estimates that are reasonable and prudent; and design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statements that give a true and fair view of the financial position, financial performance and Receipts & Payments and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

4. Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.



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Chartered Accountants

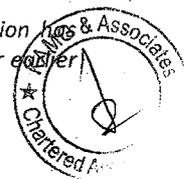
5. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Board's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

6. **Basis for Qualified Opinion**

Attention is drawn to following:

- i) *Note No. 3A of Schedule 25 as regards Grants for capital assets received as grant in aid has been taken in Income & Expenditure account which is not in accordance with the generally accepted accounting principles. Fixed assets purchased out of grants received for that purpose has been recognized at cost and depreciation is provided on that. This is not in line with the directive of the Ministry which requires such assets to be recognized at nominal value.*
- ii) *Note No. 5 in Schedule 25 as regards Depreciation is charged on Assets on straight line method as per rates prescribed by Income Tax Act 1961. Depreciation has been charged on full year basis irrespective of date of purchase/ sale of Assets. Further depreciation has been calculated on gross asset instead of individual assets. This has resulted in depreciation being overcharged the effect of which is not ascertainable at this stage. This is not in accordance with Accounting Standard 10 (AS-10). This was also mentioned in the report for earlier year.*
- iii) *Note 4 of Schedule 26 as regards advances/ recoverable aggregating to Rs. 937,708,408 and payables/ liabilities aggregating to Rs. 13,501,737 (including balances related to sponsored / earmarked project) are subject to reconciliation / confirmation. Many of these balances are very old and may have material impact on the Balance Sheet, Statement of Income and Expenditure and Receipt and Payment Account on adjustment. This was also mentioned in the report for earlier year.*
- iv) *Note 5 (d) of Schedule 26 as regards liability on account of Leave Travel Concession neither been ascertained nor provided for. This was also mentioned in the report for earlier year.*



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Chartered Accountants

- v) Note 6 in Schedule 26 as regards capital work in progress include Rs. 2,010,655 being advance given to suppliers (Head Office) since long and have not been adjusted/transferred to fixed asset Account. In absence of details, we are unable to comment on adjustability/realisability of the same. This was also mentioned in the report for earlier year.
- vi) Note 8.3 in Schedule 26 as regards Rs. 10,091,327 has not been accounted for reason stated therein regarding the project "National Water Quality Monitoring Network". This is not in line with the accounting policy of the Board which follows accrual method of accounting, Had this been accounted for, the expenditure for the year, the fund balance and the current liabilities would have been higher to that extent.
- vii) Note 10 in Schedule 26 as regards credits aggregating to Rs. 2,275,834 appearing in the bank account of Head office at New Delhi have not been accounted for and are appearing in the bank reconciliation statement as direct credit by bank. Pending reconciliation the effect cannot be ascertained.
- viii) The consequential impact of the matter specified above on the financial statement could not be ascertained at this stage.

7. Qualified Opinion

In our opinion and to the best of our information and according to the explanations given to us except for the effect of the matter described in basis of qualified opinion paragraph, the Balance sheet, Income & Expenditure Account and Statement of Receipts & Payments read together with the Accounting policies and notes to Accounts thereon, give the information so required and give a true and fair view in conformity with the accounting principles generally accepted in India:

- i. In the case of Balance Sheet of the state of Affairs of the Board as at 31st March 2018.
- ii. In the case of Income & Expenditure Account of the excess of Income over Expenditure for the year ended on that date,
- iii. In the case of Statement of Receipts & Payments of the Receipts & Payments for the year ended on that date.





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8. Emphasis of matters

We draw attention to the following matters:

- i) Note 5 (a) in Schedule 26 as regards Central Pollution Control Board has created Contributory Provident Fund (CPCB) under guidelines called The Central Board for the Prevention & Control of Water Pollution Employee's contributory Provident Fund since 1977-78 and the employee contribution is deducted from the salary of the employee and transferred to CPF Fund. The accounts of CPF Fund are audited up to 31st March, 2007 only. The shortfall in PF liability to be borne by Board, if any, has not been ascertained. This was also mentioned in the report for earlier year.
- ii) Note 6 in Schedule 26 as regards the fixed asset register has not been properly maintained at Head office and its Regional Directorate, with respect to depreciation charged, location and identification number. Further Fixed Asset register has not been reconciled with financial records. Physical verification of fixed assets conducted, has not been reconciled with fixed assets register/ financial records. This was also mentioned in the report for earlier year.
- iii) There is no internal audit system in the Board. The internal control system need to be significantly strengthened to make it commensurate with the size and nature of activities of the Board, particularly with respect to monitoring / adjustment of advances given for various expenses including advances for earmarked/ sponsored projects and obtaining utilization certificate etc., the payables/ refundable and bank reconciliation. This was also mentioned in the report for earlier year.

Our opinion is not qualified in respect of the above matter.

For **KAMG & Associates**
Chartered Accountants
Firm Registration no. 311027E

Anjan Sircar
Anjan Sircar
Partner
Membership no. 050052
Place: New Delhi
Date:



CENTRAL POLLUTION CONTROL BOARD, DELHI-110032

BALANCE SHEET AS AT 31ST MARCH 2018

CORPUS/CAPITAL FUND AND LIABILITIES		SCHD.	CURRENT YEAR (AMOUNT IN Rs.)	PREVIOUS YEAR (AMOUNT IN Rs.)
CORPUS/CAPITAL FUND	1		15,307,426	8,863,034
RESERVE AND SURPLUS	2		-	-
EARMARKED/ ENDOWMENT FUND	3		2,176,584,710	1,168,977,774
SECURED LOANS AND BORROWINGS	4		-	-
UNSECURED LOANS AND BORROWINGS	5		-	-
DEFERRED CREDIT LIABILITIES	6		-	-
CURRENT LIABILITIES AND PROVISIONS	7		626,814,872	632,464,469
TOTAL			2,818,707,008	1,810,305,277
ASSETS				
FIXED ASSETS	8		73,491,496	96,265,475
INVESTMENTS FROM EARMARKED/ENDOWMENT FUNDS	9		-	-
INVESTMENTS-OTHERS	10		-	-
CURRENT ASSETS, LOANS, ADVANCES ETC	11		2,745,215,512	1,714,039,802
MISCELLANEOUS EXPENDITURE			-	-
(to the extent not written off or adjusted)			-	-
TOTAL			2,818,707,008	1,810,305,277
For Central Pollution Control Board				
Schedules 1 to 26 forming part of accounts are annexed				
As per our report of even date				
For KAMIG & Associates				
Chartered Accountants				
Firm Reg. No. 311027E				
				
Anjan Sircar Partner M.NO. 050052 Place: New Delhi Date: 06/12/2018				
(S. P. Singh Parihar, IAS) Chairman			(Prashant Gargava) Member Secretary	
(Mohan Kapur) Accounts Officer			(Virendra Bansal) Assistant Accounts Officer	

CENTRAL POLLUTION CONTROL BOARD

INCOME AND EXPENDITURE ACCOUNT

FOR THE YEAR ENDED 31ST MARCH 2018

INCOME	SCHD.	CURRENT YEAR (AMOUNT IN RS.)	PREVIOUS YEAR (AMOUNT IN RS.)
INCOME FROM SALES/ SERVICES	12		
GRANTS/SUBSIDIES	13	1,188,046,164	906,860,000
FEES/ SUBSCRIPTIONS	14		
INCOME FROM INVESTMENTS	15		
(Income on investments from earmarked/endowment funds transferred to Funds)			
INCOME FROM ROYALTY, PUBLICATIONS ETC.	16	54,410	134,000
INTEREST EARNED	17	11,132,175	5,757,521
OTHER INCOME	18	2,042,698	3,037,013
INCREASE/ DECREASE IN STOCK OF Consumables, Stores/ Spares	19	1,108,359	247,030
TOTAL(A)		1,202,383,806	916,035,564
EXPENDITURE			
ESTABLISHMENT EXPENSES	20	711,031,928	602,448,673
OTHER ADMINISTRATIVE EXPENSES ETC	21	158,679,599	127,164,424
EXPENDITURE ON GRANTS, SUBSIDIES ETC	22		
INTEREST	23	20,191	24,000
MONITORING EXPENSES	24	285,897,826	56,574,006
DEPRECIATION	8	40,242,241	80,653,942
TOTAL(B)		1,195,871,785	866,865,045
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		6,512,021	49,170,519
TRANSFERRED TO SPECIAL RESERVE			
TRANSFERRED TO /FROM GENERAL RESERVE			
PRIOR PERIOD EXPS.		67,629	12,460,640
BALANCE BEING SURPLUS/ DEFICIT CARRIED TO CORPUS / CAPITAL FUND		6,444,392	36,709,879

Schedules 1 to 26 forming part of accounts are annexed
As per our report of even date

For KAMG & Associates
Chartered Accountants
Firm Reg. No. 311027E

Anjan Srinjar
(Anjan Srinjar)
M.NO. 050052
Partner

Place: Delhi
Date: 06/12/2018

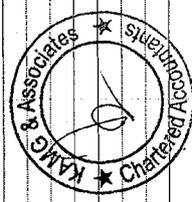
For Central Pollution Control Board

S. P. Singh Parihar
(S. P. Singh Parihar, IAS)
Chairman

Prashant Gargava
(Prashant Gargava)
Member Secretary

Mohan Kapur
(Mohan Kapur)
Accounts Officer

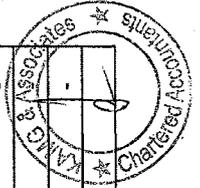
V. Bansal
(Virendra Bansal)
Assistant Accounts Officer



CENTRAL POLLUTION CONTROL BOARD , DELHI-110032

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2018

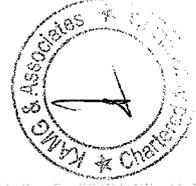
	CURRENT YEAR (AMOUNT IN Rs.)	PREVIOUS YEAR (AMOUNT IN Rs.)
SCHEDULE 1 - CORPUS / CAPITAL FUND		
BALANCE AS AT BEGINNING OF THE YEAR	8,863,034	-27,846,846
Less:- DUE TO RECTIFICATION OF FIXED ASSETS	-	1
LESS : REFUND OF CAPITAL	-	-
Add:- OPENING BALANCE OF INCOME AND EXPENDITURE	-	-
Add/LESS:- EXCESS OF INCOME OVER EXPENDITURE/ EXCESS OF EXPENDITURE OVER INCOME	6,444,392	36,709,879
BALANCE AS AT YEAR END	15,307,426	8,863,034
SCHEDULE 2 - RESERVE & SURPLUS		
1. CAPITAL RESERVE		
AS PER LAST ACCOUNT	-	-
ADDITION DURING THE YEAR	-	-
Less:- DEDUCTION DURING THE YEAR	-	-
2. REVALUATION RESERVE		
AS PER LAST ACCOUNT	-	-
ADDITION DURING THE YEAR	-	-
Less:- DEDUCTION DURING THE YEAR	-	-
3. SPECIAL RESERVE		
AS PER LAST ACCOUNT	-	-
ADDITION DURING THE YEAR	-	-
Less:- DEDUCTION DURING THE YEAR	-	-
4. GENERAL RESERVE		
AS PER LAST ACCOUNT	-	-
ADDITION DURING THE YEAR	-	-
Less:- DEDUCTION DURING THE YEAR	-	-



CENTRAL POLLUTION CONTROL BOARD, DELHI-110032

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018

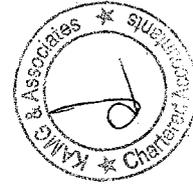
SCHEDULE 3 - EARMARKED / ENDOWMENT FUNDS	FUND WISE BREAKUP					TOTAL	
	SPONSORED PROJECTS	FUND XX	FUND YY	FUND ZZ	CUURENT YEAR (AMOUNT IN Rs.)	PREVIOUS YEAR (AMOUNT IN Rs.)	
a) <u>OPENING BALANCE OF THE FUND</u> Add : Prior Period adjustment	1,168,977,774	-	-	-	1,168,977,774	583,429,126	
b) <u>ADDITION TO THE FUNDS</u> I. DONATION / GRANTS (NET OF REFUND)	548,538,664	-	-	-	548,538,664	245,613,997	
II. INCOME FROM INVESTMENTS MADE ON ACCOUNT OF FUNDS	69,947,117	-	-	-	69,947,117	13,356,622	
III. OTHER ADDITIONS (Bank guarantee, EPC, NGT 25, NGT 75)	844,814,250	-	-	-	844,814,250	471,040,651	
TOTAL (A+B)	2,632,277,805	-	-	-	2,632,277,805	1,313,440,396	
c) <u>UTILISATION / EXPENDITURE TOWARDS OBJECTIVES OF FUND</u> I. CAPITAL EXPENDITURE	-	-	-	-	-	-	
- FIXED ASSETS (Including Prior Period Adjustment)	4,837,617	-	-	-	4,837,617	647,979	
- OTHERS	-	-	-	-	-	-	
TOTAL	4,837,617	-	-	-	4,837,617	647,979	
II. REVENUE EXPENDITURE	-	-	-	-	-	-	
- SALARIES, WAGES AND ALLOWANCES ETC.	376,461	-	-	-	376,461	2,194,833	
- RENT	-	-	-	-	-	-	
- OTHER ADMINISTRATIVE EXPENSES	449,882,728	-	-	-	449,882,728	116,179,857	
TOTAL	450,259,189	-	-	-	450,259,189	119,022,669	
TOTA (C)	455,096,806	-	-	-	455,096,806	119,022,669	
D.) Refund to MoEF	596,289	-	-	-	596,289	25,439,953	
NET BALANCE AS AT THE YEAR END (A+B-C-D)	2,176,584,710	-	-	-	2,176,584,710	1,168,977,774	





CENTRAL POLLUTION CONTROL BOARD, DELHI-110032		SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018	
		(AMOUNT IN Rs.)	
SCHEDULE 4 - SECURED LOANS AND BORROWINGS	CURRENT YEAR	PREVIOUS YEAR	PREVIOUS YEAR
1. CENTRAL GOVERNMENT	-		-
2. STATE GOVERNMENT (Specify)	-		-
3. FINANCIAL INSTITUTION			
a) Term Loans	-		-
b) Interest accrued and due	-		-
4. BANKS:			
a) Term Loans			
- Interest accrued and due	-		-
b) Other Loans (specify)			
- Interest accrued and due	-		-
5. OTHER INSTITUTION AND AGENCIES			
6. DEBENTURES AND BONDS			
7. OTHERS (Specify)			
Total			

Note: Amounts due within one year

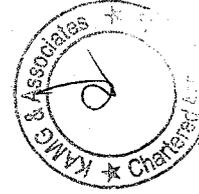


CENTRAL POLLUTION CONTROL BOARD , DELHI-110032			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
(AMOUNT IN Rs.)			
SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS	CURRENT YEAR	PREVIOUS YEAR	PREVIOUS YEAR
A. CURRENT LIABILITIES			
1. Acceptances	-	-	-
2. Sundry Creditors:			
a) For goods	23,993,484	21,730,238	21,730,238
b) Others	2,888,227	-	13,476,553
3. Advances Received			
4. Interest accrued but not due on:			
a) Secured Loans/borrowings	-	-	-
b) Unsecured Loans/borrowings	-	-	-
5. Statutory Liabilities:			
a) Overdue	-	-	-
b) Others	-	-	-
6. Other current Liabilities (Sponsored Projects)	30,427,902	-	14,651,346
TOTAL (A)	57,309,613	21,730,238	49,858,137
B. PROVISIONS			
1. For Taxation	-	-	-
2. Gratuity	329,069,206	-	333,738,044
3. Superannuation/Pension	-	-	-
4. Accumulated Leave Encashment	240,436,053	-	248,868,288
5. Trade Warranties/Claims	-	-	-
6. Others (Specify)	-	-	-
TOTAL (B)	569,505,259	582,606,332	582,606,332
TOTAL (A+B)	626,814,872	604,336,570	632,464,469

CENTRAL POLLUTION CONTROL BOARD, DELHI-110032
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018

SCHEDULE 6 - FIXED ASSETS DESCRIPTION	Cost/valuation as at beginning of the Year (original cost)	GROSS BLOCK		Deductions/A adjustments during the year	Cost/valuation at the year end (original cost)	As at the beginning of the Year	AMORTISATION/DEPRECIATION		At the end of the year	NET BLOCK	
		Addition during the year	Deductions during the year				Prior Period Dep.	During the Year		On Deductions during the Year	As at the current Year-end
FIXED ASSETS:											
LAND:											
a) Freehold											
b) Leasehold	12,505,904	-	-	-	12,505,904	1,430,108	95,630	-	1,525,638	10,980,266	11,075,796
BUILDINGS:											
a) On Freehold Land											
b) On Leasehold Land	118,778,416	-	-	-	118,778,416	90,150,292	9,361,957	-	99,512,249	19,266,167	28,628,124
c) Ownership Flats/Premises											
d) Superstructures on Land not belonging to the entity											
PLANT, MACHINERY & EQUIPMENT	452,361,099	5,931,855	-	409,704	458,292,954	414,399,639	20,978,668	-	435,378,307	22,914,647	37,961,460
VEHICLES	17,315,759	5,476,267	409,704	409,704	22,382,322	9,531,002	3,356,008	409,704	12,477,306	9,905,016	7,784,757
FURNITURE, FIXTURES,	20,965,279	1,362,843	-	-	22,328,122	14,078,525	2,038,938	-	16,117,463	6,210,659	6,886,754
OFFICE EQUIPMENT											
COMPUTER/PERIPHERALS	31,191,671	4,543,478	101,667	101,667	35,633,462	29,622,958	4,228,831	88,837	32,762,952	1,870,510	1,568,713
ELECTRIC INSTALLATIONS											
LIBRARY BOOKS	1,398,060	166,669	-	-	1,564,729	1,295,399	182,309	-	1,477,708	87,021	102,661
TUBEWELLS & W.SUPPLY											
OTHER FIXED ASSETS											
TOTAL OF CURRENT YEAR	654,616,188	17,481,112	511,391	511,391	671,485,909	560,507,923	40,242,241	498,541	600,251,623	71,234,266	84,008,265
CAPITAL WORK-IN PROGRESS	2,257,210	-	-	-	2,257,210	-	-	-	-	2,257,210	2,257,210
TOTAL	656,773,398	17,481,112	511,391	511,391	673,743,119	560,507,923	40,242,241	498,541	600,251,623	73,491,496	96,265,475
	656,773,397.64	17,481,112.00	511,391.00	511,391.00	673,743,118.64	560,507,923.00	40,242,241.00	498,541.00	600,251,623.00	73,491,495.64	96,265,474.64





CENTRAL POLLUTION CONTROL BOARD

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018

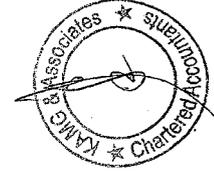
SCHEDULE 9 - INVESTMENTS FROM EARMARKED/ ENDOWMENT FUNDS

	(AMOUNT IN Rs.)	
	CURRENT YEAR	PREVIOUS YEAR
1. IN GOVERNMENT SECURITIES	-	-
2. OTHER APPROVED SECURITIES	-	-
3. SHARES	-	-
4. DEBENTURES AND BONDS	-	-
5. SUBSIDIARIES AND JOINT VENTURES	-	-
6. OTHERS (TO BE SPECIFIED)	-	-
Total	-	-

SCHEDULE-10 INVESTMENTS OTHERS

	(AMOUNT IN Rs.)	
	CURRENT YEAR	PREVIOUS YEAR
1. IN GOVERNMENT SECURITIES	-	-
2. OTHER APPROVED SECURITIES	-	-
3. SHARES	-	-
4. DEBENTURES AND BONDS	-	-
5. SUBSIDIARIES AND JOINT VENTURES	-	-
6. OTHERS (TO BE SPECIFIED)	-	-
Total	-	-

CENTRAL POLLUTION CONTROL BOARD
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018



SCHEDULE 11- CURRENT ASSETS, LOANS, AND ADVANCES	(AMOUNT IN Rs.)	
	CURRENT YEAR	PREVIOUS YEAR
A) CURRENT ASSETS		
1. INVENTORIES		
a) Stores, Spares and Consumables	11,182,983	10,120,824
b) Loose Tools	-	-
c) Stock-in-trade	-	-
Finished Goods (Consumables, Stores/ Spares)		
Work-in-progress		
Raw materials		
2. SUNDRY DEBTORS		
a) Debts outstanding for a period exceeding six months	-	-
b) Others	-	-
3. Cash balances in hand (Stamps in Hand)	109,118	62,918
4. Bank Balances		
a) With scheduled banks		
- On current Accounts	150,200,248.00	255,623,873
- On Deposits Accounts (including margine money)		
(Sponsored Projects)	37,543,688.00	32,514,752
- On saving Accounts (Sponsored Projects-Including Flexi Fixed Deposit amount)	1,602,332,519.00	793,278,738
b) with non-scheduled Banks		
- On current Accounts	-	-
- On Deposits Accounts (including margine money)	-	-
- On saving Accounts	-	-
5. Post office saving Accounts		
TOTAL (A)	1,801,368,556	1,091,601,105



CENTRAL POLLUTION CONTROL BOARD
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018

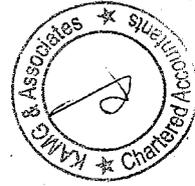
	(AMOUNT IN Rs.)	
	CURRENT YEAR	PREVIOUS YEAR
SCHEDULE 11- CURRENT ASSETS, LOANS, AND ADVANCES		
B) LOANS, ADVANCES AND OTHER ASSETS		
1. LOANS & ADVANCES		
a) Staff	2,055,181	2,826,316
b) other entities engaged in activities similar to that entity	25,671,169	259,602,480
c) Other (Sponsored Projects Advances)	550,012,299	116,480,166
2. Advances and other amounts recoverable in cash or kind		613,554,445
a) On capital account	-	-
b) Prepayments	2,016,791	1,884,444
c) Others	361,766,474	239,288,915
3. Income Accrued		4,976,551
a) on investments from earmarked/endowment funds	-	-
b) On investments (Sponsored Projects)	2,325,042	2,356,376
c) On loans and advances	-	-
d) Others	-	2,356,376
4. CLAIMS RECEIVABLE		
TOTAL (B)	943,846,956	620,887,372
TOTAL (A+B)	2,745,215,512	1,712,488,477



CENTRAL POLLUTION CONTROL BOARD			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
	(AMOUNT IN Rs.)		
	CURRENT YEAR	PREVIOUS YEAR	
SCHEDULE 12- INCOME FROM SALES/SERVICE			
1. INCOME FROM SALES			
a) Sale of Finished goods	-	-	
b) Sale of Raw material	-	-	
c) Sale of Scrap			
2. INCOME FROM SERVICES			
a) Labour and processing charges	-	-	
b) Professional/ consultancy service	-	-	
c) Agency commission and Brokerage	-	-	
d) Maintenance Services (Equipment / property)	-	-	
e) Others (specify)	-	-	
TOTAL	-	-	
SCHEDULE 13- GRANTS/ SUBSIDIES			
1. Central Government	1,188,046,164	906,860,000	
2. Fund Transfer to ZO'S	-	-	
3. State Government	-	-	
4. Government agencies	-	-	
5. Institutions/ welfare Bodies	-	-	
6. International Organisations	-	-	
7. Others (specify)	-	-	
TOTAL	1,188,046,164	906,860,000	



CENTRAL POLLUTION CONTROL BOARD					
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018					
			(AMOUNT IN Rs.)		
			CURRENT YEAR	PREVIOUS YEAR	
SCHEDULE 14- FEES/ SUBSCRIPTIONS					
1. Entrance fees			-	-	-
2. Annual Fees/ Subscriptions			-	-	-
3. Seminar/ program Fees			-	-	-
4. Consultancy Fees			-	-	-
5. Others			-	-	-
SCHEDULE 15- INCOME FROM INVESTMENTS					
			(AMOUNT IN Rs.)		
			CURRENT YEAR	PREVIOUS YEAR	
1. INTEREST					
A) ON GOVT. SECURITIES			-	-	-
B) OTHER BONDS/ DEBENTURES			-	-	-
2. DIVIDENDS					
A) ON SHARES			-	-	-
B) ON MUTUAL FUND SECURITIES			-	-	-
3. RENTS					
4. OTHERS (SPECIFY)					
TRANSFERRED TO EARMARKED/ ENDOWMENT FUNDS					
SCHEDULE 16 - INCOME FROM ROYALTY, PUBLICATIONS etc.					
			(AMOUNT IN Rs.)		
			CURRENT YEAR	PREVIOUS YEAR	
1. INCOME FROM ROYALTY					
2. INCOME FROM PUBLICATIONS			54,410	134,000	
3. OTHERS (specify)					
TOTAL			54,410	134,000	



CENTRAL POLLUTION CONTROL BOARD			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
	(AMOUNT IN Rs.)		PREVIOUS YEAR
	CURRENT YEAR	PREVIOUS YEAR	
SCHEDULE 17 - INTEREST EARNED			
1. ON TERM DEPOSITS			
a) with scheduled Banks	10,924,875		2,892,998
b) with non scheduled Banks	-		-
c) with institution	-		-
d) others	-		-
2. ON SAVING ACCOUNTS			
a) with scheduled Banks	-		-
b) with non scheduled Banks	-		-
c) with institution	-		-
d) others	-		-
3. ON LOANS			
a) Employee/ staff - HBA	207,300		230,730
b) Others	-		-
4. INTEREST ON DEBTORS AND OTHERS RECEIVABLES			
TOTAL	11,132,175		5,757,521
SCHEDULE 18- OTHER INCOME			
1. PROFIT ON SALE/ DISPOSAL OF ASSETS			
a) Owned assets	-		-
b) Assets acquired out of grants, or received free of cost	-		-
2. EXPORT INCENTIVES REALIZED			
-	-		-
3. FEES FOR MISCELLANEOUS SERVICES			
-	-		-
4. MISCELLANEOUS INCOME			
-	2,042,698		3,037,013
TOTAL	2,042,698		3,037,013



CENTRAL POLLUTION CONTROL BOARD			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
SCHEDULE 19- INCREASE/DECREASE IN STOCK OF FINISHED GOODS & WORK-IN-PROGRESS	(AMOUNT IN Rs.)	CURRENT YEAR	PREVIOUS YEAR
A. CLOSING STOCK			
- Finished Goods (Consumables, Stores/ Spares)		11,292,101	10,183,742
- Work in progress		-	-
B. Less:- OPENING STOCK			
- Finished Goods (Consumables, Stores/ Spares)		10,183,742	9,936,712
- Work in progress		-	-
NET INCREASE/ DECREASE (A-B)		1,108,359	247,030
SCHEDULE 20- ESTABLISHMENT EXPENSES	(AMOUNT IN Rs.)	CURRENT YEAR	PREVIOUS YEAR
1. SALARIES & WAGES		590,052,807	392,300,380
2. ALLOWANCES AND BONUS		21,491,156	18,062,999
3. CONTRIBUTION TO PROVIDENT FUND		51,296,515	16,501,037
4. CONTRIBUTION TO OTHER FUND - GIS		117,522	125,136
5. STAFF WELFARE EXPENSES		4,194,956	3,433,069
6. EXPENSES ON EMPLOYEE RETIREMENT & TERMINAL BENEFIT		43,853,302	172,000,452
7. OTHERS- WELFARE FUND		25,670	25,600
TOTAL		711,031,928	602,448,673



CENTRAL POLLUTION CONTROL BOARD			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
	(AMOUNT IN Rs.)		PREVIOUS YEAR
	CURRENT YEAR	*	
SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES			
ADVERTISMENT AND PUBLICITY	5,574,454		1,181,362
AUDITORS REMUNERATION	224,200	*	
CARTAGE AND CARIAGE INWARD	-		-
DISTRIBUTION EXPENSES	-		-
ELECTRICITY AND POWER	21,506,103		20,839,720
EXCISE DUTY	-		-
EXPENSES ON FEES	308,141		13,626
EXPENSES ON SEMINAR/WORKSHOP	13,232,596		8,302,011
FREIGHT AND FORWARDING EXPENSES	-		-
HOSPITALITY EXPENSES	3,531		56,109
INSURANCE	1,457,578		1,258,921
IRRECOVERABLE BALANCES WRITTEN OFF	-		-
LABOUR AND PROCESSING EXPENSES	-		-
OTHERS (specify)	8,248,164		5,379,242
PACKING CHARGES	-		-
POSTAGE, TELEPHONE AND COMMUNICATIONS	6,472,316		3,582,883
PRINTING AND STATIONARY	5,199,926		3,322,485
PROFESSIONAL CHARGES	3,931,616		6,307,649
PROVISION FOR BAD AND DOUBTFUL DEBTS	-		-
PURCHASES (Consumables, Stores/ Spares)	14,368,706		13,124,919
RENT, RATES AND TAXES	7,375,705		7,605,426
REPAIR AND MAINTENANCE	40,544,672		32,469,284
SUBSCRIPTION EXPENSES	-		-
TRAVELLING AND CONVEYANCE EXPENSES	20,233,226		16,080,044
VEHICLE RUNNING AND MAINTENANCE	8,060,705		5,889,866
WATER CHARGES	1,937,960		1,750,877
TOTAL	158,679,599		127,164,424

*Include Rs 112100/- for FY 2016-17 paid to previous auditor.



CENTRAL POLLUTION CONTROL BOARD			
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2018			
		(AMOUNT IN Rs.)	
		CURRENT YEAR	PREVIOUS YEAR
SCHEDULE 22- EXPENDITURE ON GRANTS, SUBSIDIES			
GRANTS GIVEN TO INSTITUTIONS/ ORGANISATION		-	
SUBSIDIES GIVEN TO INSTITUTIONS/ ORGANISATION		-	
TOTAL		-	
SCHEDULE 23- INTEREST			
ON FIXED LOANS			
ON OTHER LOANS (including bank charges)		20,191	24,000
OTHERS (specify)		-	-
TOTAL		20,191	24,000
SCHEDULE 24- MONITORING EXPENSES			
AIR QUALITY MONITORING EXPENSES		261,699,931	51,595,308
WATER QUALITY MONITORING EXPENSES		2,760	-
ENVIRONMENT PROTECTION AND MONITORING EXP.		24,195,135	4,978,698
TOTAL		285,897,826	56,574,006



CENTRAL POLLUTION CONTROL BOARD

**CENTRAL POLLUTION CONTROL BOARD, DELHI
RECEIPTS & PAYMENT ACCOUNT FOR THE YEAR ENDED 31.03.2018**

RECEIPTS	CURRENT YEAR	PREVIOUS YEAR	PAYMENTS	CURRENT YEAR	PREVIOUS YEAR	(AMOUNT IN Rs.)
I. Opening Balance			I. Expenses			
a) Cash in hand	-	-	a) Establishment Expenses (corresponding to schedule 20)	679,133,461	434,504,495	
b) Bank Balances	-	-	b) Administrative Expenses (corresponding to schedule 21 and 24)	435,807,407	179,396,875	
ii) In current accounts	255,623,873	159,101,500	c) Prior Period Exps	6,500	11,833,944	
ij) In deposit accounts	32,514,752	51,502,691	ii. Payments made against funds for various projects	450,259,189	118,979,595	
iii) Savings accounts	793,278,738	49,760,503	Project Exps	-	-	
iii) Grants Received	-	-	iii. Investments and deposits made	-	-	
a) From Government of India - Mains	1,188,046,164	906,860,000	a) Out of Earmarked/Endowment funds	-	-	
b) From State Government	-	-	b) Out of Own Funds (Investments-Others)	-	-	
c) From Government of India - Projects	548,538,664	421,555,287	IV. Expenditure on Fixed Assets & Capital Work in progress	-	-	
d) Others	844,814,250	295,099,361	a) Purchase of Fixed Assets-Own fund	15,273,046	12,672,828	
III. Income on Investments from			b) Purchase of Fixed Assets- Earmarked/Endowment funds	4,837,617	-	
a) Earmarked/Endow. Funds	69,947,117	13,356,622	V. Refund of surplus money/Loans	-	-	
b) Own Funds	-	-	a) To the Government of India	566,289	25,439,953	
IV. Interest Received			b) To the State Government	-	-	
a) On Bank deposits	10,924,875	2,892,998	c) To other providers of funds	-	-	
b) Loans. Advances etc.	137,880	2,823,703	d) To the Government of India - Mains	-	-	
V. Other Income (Specify)			VI. Finance Charges (Interest & Bank charges Sch 23)	20,191	24,000	
a) Income from Royalty, Publications Etc.	54,410	134,000	VII. Other Payments (Specify)	-	-	
b) Other Income	2,037,998	3,037,013	a) Advances and other payments (Net) - Mains	351,933,257	497,291,968	
c) Misc Income	-	-	b) Advances and other payments (Net) - Projects	192,362,319	14,712	
VI. Amount Borrowed			VIII. Closing Balances			
VII. Any other receipts			a) Cash in hand	-	-	
a) Other - Mains	174,527,010	455,452,255	b) Bank Balances			
c) Sale of Fixed Assets	-	-	i) In current accounts	150,200,248	255,623,873	
d) Advances and other payments (Net)-Mains	-	-	ii) In deposit accounts	37,543,688	32,514,752	
			iii) In Savings account	1,602,332,619	793,278,738	
Grand Total	3,920,445,731	2,361,575,733	Grand Total	3,920,445,731	2,361,575,733	

For Central Pollution Control Board
 (Prashant Gargava)
 Member Secretary

(S. P. Singh Parihar, IAS)
 Chairman



(Anjan Sircar)
 M.NO. 050052
 Partner
 Place: Delhi
 Date: 06/17/2018



CENTRAL POLLUTION CONTROL BOARD : DELHI - 110032													Schedule 'C'	
DEPOSITS RECEIVED FOR WORKS FROM OUTSIDE BODIES (OTHER SPONSORED PROJECTS) (2017-18)													(Amount in Rs.)	
SLN O.	NAME OF THE PROJECT	RECEIVED DURING THE YEAR				PAYMENT DURING THE YEAR				CLOSING BALANCE				
		Grant Received (4)	Grants Others (5)	Interest (6)	Other Receipts (7)	Adjustments (8)	Total (9=4+5+6+7+8)	Expenditure (10)	Project Advance (11)	Advances and other payment (Ret) (12)	Refund to MoEF (13)	Total (14=10+11+12+13)	Total (14+3+9-14)	
		(3)												
1	AAQOM LIP (Agra) Project	49,046									1,515.00			47,530.50
2	DOD Project	539,784									60			539,784
3	DTIS Project (Bangluru)	59,638		2,279							2,279			61,917
4	CALEA - Phase II Project	4,557,443		312,812							312,812			4,870,255
5	CPCB Clean Technology Project	33,899,221		7,292,137		2,050,000				31,334	31,334			43,692,834
6	Bank Guarantee Project	21,626,223		987,524							238,669.00			22,613,792
7	HWMD Dump Site Project										180,000			180,000
8	HWMD Waste of UCLL Project													38,331
9	VTT Finland Project	36,948		1,383							1,383			38,331
10	ENVIS-MOEF Project	166,058		837							1,470,996			1,637,891
11	IARI (MPRNL) Project	88,934		11,401							1,631,545.00			1,722,840
12	ICAGIS (CESS) Project	42,267		5,892							5,000			47,267
13	NSDI (DST) Project	444,799		13,799							3,546,139			4,004,737
14	Development of Monitoring Van-Orissa Board Project	95,180		1,750,836							582,792.00			95,180
15	Paryavaran Darshan Project	26,088,792												26,088,792
16	Strengthening of AAQOM Project	2,726,997												2,726,997
17	LINEP (MALE) Project	7,994,742		324,582							649.00			8,319,973
18	UHI ED Project													
19	Workshop on BMD Project													
20	Bakarang Mala Palna Project	16,687		1,278										17,965
21	Budhanisala Ludhiana NRC Project	30,881		42,369							15,695,312.00			15,768,569
22	Critically Polluted Areas - Cass Project	230,994		8,945										239,939
23	NAQMP Cass Project													
24	NAMS Cass Project	5,528		215										5,743
25	Baseline Survey of Industries Project	2,877,885		117,128							117,128			3,095,013
26	Upgradation of Tub Project	16,769,990		411,755							3,513,307.00			19,695,052
27	CPCB-WQM WB Inpart rest of rail	38,842,795		2,237,050							82,874			39,102,719
28	CPCB-HWMD Waste of UCLL Pithampur	991,660		4,629							82,874			1,079,163
29	CPCB-Hydrology Project	4,832,515		384,430							1,171,465.00			5,388,410
30	CPCB-NGT 25	168,779,933		16,995,386		304,482,641				1,271,700	1,521,915			487,579,675
31	CPCB-NGT 75	7,742,661		585,420		12,112,500					12,687,920			20,528,001
32	Upgradation of Air Lab Project	18,000,000		679,668							4,014.00			18,683,672
33	CPCB-PMs	55,700,000		1,967,863							20,635.00			57,693,498
34	CPCB-SMIT	13,000,000		562,694							11,179,660.00			14,542,354
35	CPCB-CFSU PROJ	103,127,458		4,131,742										107,259,200
36	CPCB-EPC	296,040,682		26,131,373		5,26,219,109					15,419,034.00			699,092,164
37	CCBP Proj			383,872							1,115,545.00			1,499,417
38	AWQMA in North East	2,850,000		2,841							2,841			5,692,841
39	AAQOM CESS 2017	296,914,526		1,103,545							208,842,682.00			505,860,653
40	AWQOM 2017 Cess	190,000,000		3,056,528							193,060,619.00			386,113,127
	Total	825,793,491		69,947,117		844,814,290				2,921,519	455,056,806		148,943,085	974,738,801





CENTRAL POLLUTION CONTROL BOARD



CENTRAL POLLUTION CONTROL BOARD : DELHI - 110032							
Closing Balance of capital fund - Other Sponsored Projects: (2017-18)							
SLIN O.	NAME OF THE PROJECT	Balance at Bank (3)	Interest Accrued on Investments (4)	Advances (5)	Total (6=3+4+5)	Less: Sundry Creditors (7)	(Amount in Rs.) Closing Balance of capital fund (8=6-7)
1	AAQM UP (Agra) Project	-	-	6,000	6,000	-	6,000
2	DOD Project	47,530.50	-	198,294.00	245,824.50	480,000.00	(234,175.50)
3	DTS Project (Bangluru)	539,784	-	-	539,784	-	539,784
4	CAEA - Phase II Project	61,857	-	-	61,857	-	61,857
5	CPCB Clean Technology Project	4,970,255	-	-	4,970,255	-	4,970,255
6	Bank Guarantee Project	43,692,358	2,325,042	58,473	46,075,873	10,000,000	36,075,873
7	HWM/D Dump Site Project	77,195,088	-	180,000	77,375,088	-	77,375,088
8	HWM/D Waste of UCIL Project	-	-	6,782	6,782	-	6,782
9	VTT Finland Project	38,331	-	-	38,331	-	38,331
10	ENVIS-MOEF Project	889,750	-	81,202	970,952	-	970,952
11	IARI (MPRNL) Project	1,308,790	-	5,000	1,313,790	-	1,313,790
12	ICAQIS (CESS) Project	-	-	14,017,509	14,017,509	-	14,017,509
13	MSDI (DST) Project	986,202	-	-	986,202	-	986,202
14	Development of Monitoring Van-Orissa Board Project	95,180	-	2,020,680	2,115,860	-	2,115,860
15	Panyavaran Darashan Project	29,809,628	-	142,500,000	172,309,628	-	172,309,628
16	Strengthening of NAQM Project	-	-	43,552,310	43,552,310	-	43,552,310
17	UNEP (MALE) Project	2,726,348	-	22,876	2,749,324	-	2,749,324
18	UNI DO Project	8,319,324	-	-	8,319,324	-	8,319,324
19	Workshop on BMW Project	17,965	-	415,263	433,228	-	433,228
20	Bakariganj Naja Paina Project	80,250	-	16,800,000	16,880,250	-	16,880,250
21	Budhanala Ludhiyana NRCPC Project	239,939	-	-	239,939	600,000	(360,061)
22	Critically Polluted Areas - Cess Project	-	-	88,000,000	88,000,000	-	88,000,000
23	NAQMPC Cess Project	5,743	-	91,605	97,348	1,571,707	(1,474,359)
24	MMWS Cess Project	3,094,213	-	184,519	3,278,732	-	3,278,732
25	Baseline Survey of Industries Project	13,652,758	-	-	13,652,758	-	13,652,758
26	Upgradation of Lab Project	51,688,681	-	46,714,780	98,403,461	90,522	60,277,016
27	CPCB-WQM WB Input cost of staff	-	-	82,874	82,874	-	82,874
28	CPCB-HWMD Waste of UCIL Pitthampur	11,045,480	-	-	11,045,480	-	11,045,480
29	CPCB-Hydrology Project	488,132,130	-	2,874,677	491,006,807	-	491,006,807
30	CPCB-NGT 75	19,940,581	-	1,521,915	21,462,496	1,286,700	20,175,796
31	CPCB-NGT 75	18,625,654	-	-	18,625,654	-	18,625,654
32	Upgradation of Air Lab Project	45,218,866	-	14,028,312	59,247,178	1,600,000	57,647,178
33	CPCB-PIAs	1,382,944	-	-	1,382,944	-	1,382,944
34	CPCB-SMTI	107,254,200	-	-	107,254,200	-	107,254,200
35	CPCB-CPSU PROJ	693,092,464	139,879,666	-	832,972,130	-	832,972,130
36	CPCB-ERC	10,969,577	-	9,573,750	20,543,327	-	20,543,327
37	CCBP Proj	2,657,841	-	-	2,657,841	-	2,657,841
38	AWQM in North East	2,078,687	-	27,095,802	29,174,389	-	29,174,389
39	AQMM CESS 2017	17,909	-	-	17,909	-	17,909
40	NWQMN 2017 Cess	-	-	-	-	-	-
	Total	1,659,876,208	2,325,042	550,012,389	2,192,213,639	15,628,929	2,176,584,710

SCHEDULES FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31st March 2018

SCHEDULE 25- SIGNIFICANT ACCOUNTING POLICIES

1. ACCOUNTING CONVENTION

The Financial Statements comprising of Balance Sheet, Income & Expenditure Account & Receipts and Payments Account are prepared on the basis of historical cost convention and on a going concern on accrual basis unless stated otherwise. The Financial statements have been prepared as per 'Form of Financial Statement for the Central Autonomous Bodies' as per the directions of Ministry of Environment and Forest, Govt. of India vide their letter no. - G25012/1/2010CPW dated 10.02.10.as circulated by Controller General of Accounts, Ministry of Finance. The Financial Statement includes Financial Statement of Head Office Delhi and its six Regional Directorates located at Bengaluru, Bhopal, Kolkata, Lucknow, Shillong, and Vadodara and sponsored/ earmarked projects.

2. USE OF ESTIMATES

The preparation of the Financial Statements in conformity with generally accepted accounting principles requires the management to make estimates and assumptions that affect the reporting balances of assets and liabilities and disclosures relating to contingent liabilities as at the date of the financial statements and reporting amounts of income and expenditure during the year. Contingencies are recorded when it is probable that a liability will be incurred, and the amount can be reasonably estimated. Actual results could differ from such estimates. Any difference between the actual result and the estimates are recognised in the period in which the results are known/ materialize.



3. REVENUE RECOGNITION

A. Income

- 3.1 Grants-in - Aid which are general and irrevocable in nature are accounted for on realization basis and credited to income and expenditure account
- 3.2 Grants for capital assets are recognized in the statement of income and expenditure and utilised for the purpose for which it was received.
- 3.3 Interest is recognized on accrual basis.
- 3.4 Miscellaneous Receipts and other Incomes are recognized on receipts basis.
- 3.5 Grants/ Amount received for sponsored projects/ scheme are treated as earmarked/ endowment fund and credited to the fund account which is utilized as per the terms of the grants/ for the purpose for which it was received. Interest earned on these grants is credited to the respective grant account.

B. Expenditure

- 3.6 Monitoring expenses are recognized after the claim/ utilization etc are verified and processed at appropriate level.
- 3.7 Other expenses are accounted for on accrual basis.
- 3.8 The expenditure for sponsored projects/ scheme are shown as utilization under the endowment/ earmarked fund.

4. FIXED ASSETS

- 4.1 Fixed Assets acquired out of grants received for that purpose are stated at cost of acquisition inclusive of freight inward, duties, taxes, incidental and other direct expenses related to acquisition.
- 4.2 Fixed Assets involving installation/ commissioning are capitalized at 80% of the cost at the time of supply and balance at the time of successful commissioning.
- 4.3 Fixed Assets received by way of non-monetary grants, (other than towards the Corpus Fund), i.e., gifted assets are taken in the financial books at nominal value. The incidental expenses on such assets such as clearing & forwarding charges, duties & taxes and other incidental expenses are capitalized.



4.4 Fixed assets procured against special purpose grant/ receipt are not capitalized. These are taken to the respective fund account as per terms of the grant and shown as utilization.

4.5 The Assets Registers have been maintained as per General Financial Rules (GFR) in respect of Laboratory Equipments, Instruments, Computers, Office Equipments and Furniture and Fixture. The register is in the process of being updated.

5. DEPRECIATION

5.1. Depreciation during the year is provided on straight-line method as per rates given below limited to the extent of 95% value of assets.

Category of Assets	Rates (in %)
Free Hold Land	0
Building	10
Plant , Machinery & Equipment	15
Vehicles	15
Furniture & Fixtures	10
Computers	40
Library Books	15

Lease hold land is amortized over the lease period.

5.2 In respect of additions to / deduction from the fixed assets during the year, depreciation is considered on full-year basis.

6. FOREIGN CURRENCY TRANSACTION

Transaction denominated in foreign currency is accounted for at the exchange rate prevailing at the date of transaction.

7. INVENTORY

Stores and Spares including Chemicals, Glassware, Consumables & other Inventories have been valued at cost on FIFO basis and is being followed consistently. The cost includes cost of purchase including value added tax and other taxes wherever applicable.



8. **RETIREMENT BENEFITS**

For staff members employed prior to 2004, contribution is made to **contributory Provident Fund (CPF)** scheme and for staff members employed after 2004 , contribution is made to **New Pension Fund (NPF)** scheme. The contribution of **CPF/ NPS** is charged to Income & Expenditure Account. In both the scheme, the employees also contribute an equal amount.

The Board also provides retirement benefit in the form of Gratuity to eligible employees. Liability towards Gratuity payable on death/retirement is accrued at the year-end on the basis of actuarial certificate. The liability is valued at Projected Unit Credit Method.

Provision for accumulated Leave Encashment benefit to employees is accrued and computed on the basis of actuarial valuation as at year end using projected unit credit method.

9. **EARMARKED FUNDS – SPONSORED PROJECTS**

9.1. The Funds Received & utilized for Sponsored Projects have been identified as Earmarked Funds. The funds are utilized towards the objectives of the specific Projects. Income on account of bank interest is added to the Sponsored Projects and not treated as income of the Board.

10. **Prior period, extra-ordinary items and event occurring after the balance sheet date**

These are disclosed.

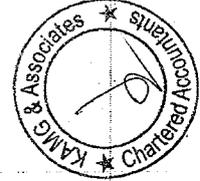
11. **Contingent assets and contingent liabilities**

Contingent liabilities are disclosed. Contingent assets are not recognized.



SCHEDULE 26 - CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS

S NO	PARTICULARS	CURRENT YEAR (Amount in Rs.)	PREVIOUS YEAR (Amount in Rs.)
1.	<u>CONTINGENT LIABILITIES</u>		
1.1	Claims against the Entity not acknowledged as debts	NIL	NIL
1.2	In respect of - Bank Guarantees given by/on behalf of Entity - Letter of Credit opened by Bank on behalf of the Entity - Bills Discounted with Banks	NIL 16,76,335 NIL	NIL 16,27,988 NIL
1.3	Disputed Demands in respect of - Income Tax - Sales Tax - Municipal Tax	NIL NIL NIL	NIL NIL NIL
1.4	In respect of claims from parties for non-execution of orders, but contested by the entity	NIL	NIL
1.5	In respect of Court cases And Arbitration	NIL	NIL
1.6	CPCB employees recruited before 1.1.2004 are covered under Contributory Provident Fund (CPF) scheme. However the employees' union of CPCB is demanding coverage under Pension (Old) scheme and a court case is under progress in this regard. Contingent liability that		



may arise in the event of court's verdict goes in favour of employees' union demand, has neither been shown and nor been ascertained. The Management believes that the outcome of the above will not have any material adverse effect on the financial position of the Board.

2. CAPITAL COMMITMENTS

Estimated value of contracts remaining to be executed on capital accounts and not provided for (net of advances)

- (a) CESS Project - Upgradation and strengthening of lab. 1,13,36,523
- (b) Head office & Regional Directorates 26,64,133

54,68,303
198,713

3. LEASE OBLIGATIONS

The Board has entered into operating lease arrangements with parties for office/ residence etc. The lease are cancellable on mutual agreements. Lease rent paid has been charged to the statement of income and expenditure to the extent it relates to general fund

Rs 73,75,705

Rs. 76,05,426

Future obligations for rentals under finance lease arrangements for plant and machinery

Nil

Nil



4. Advances/ Liabilities

A. CURRENT ASSETS, LOANS AND ADVANCES

4.1 The following advances/ recoverable are subject to confirmation/ reconciliation and some of the advances are being carried forward since long:

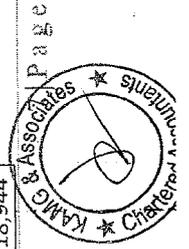
Particulars	Current Year (Rs. in lacs)	Previous Year (Rs. in lacs)
Staff Advances	13,17,481	19,36,848
Outside Projects Advances	90,50,371	94,55,371
State Pollution Control Board's Advances	10,62,21,931	56,21,931
Publications Advances	4,58,747	88,407
Purchase & other Advances	38,60,723	30,21,533
Other Advances – UC Required	25,39,93,218	22,90,23,552
Misc Advances	5,88,854	7,56,549
Total (A)	37,54,91,325	24,99,04,191
Advances made by Regional Directorates (B)	1,22,04,694	1,25,24,514
Project Advances (C)	55,00,12,389	35,11,25,739
Grand Total (A+B+C)	93,77,08,408	61,35,54,444

These are in the process of being reconciled and the necessary adjustment will be passed on completion of the reconciliation in subsequent year.

4.2 In the opinion of the Management, the current assets, loans and advances have a value on realisation in the ordinary course, equal to at least the aggregate amount shown in the Balance Sheet.

B. The Following credit balances are subject to confirmations and includes old credit balance being brought forward:

Particulars	Current Year (Rs. in lacs)	Previous Year (Rs. in lacs)
Deposits (Work)	91,46,126	91,46,126
Earnest Money Deposit	11,57,815	16,18,944



Retention Money	73,560	73,560
Security Deposit	7,12,877	4,80,763
Others	24,11,353	24,94,459
Grand Total	1,35,01,731	1,38,13,852

Necessary adjustment for write back / refund, if any, will be passed after the due reconciliation is carried out.

5. RETIREMENT BENEFITS

a) For staff members employed prior to 2004, contribution is made to contributory Provident Fund (CPF) scheme and for staff members employed after 2004, contribution is made to New Pension Fund (NPF) scheme. The contribution of CPF/NPS is charged to Income & Expenditure Account. In both the scheme, the employees also contribute an equal amount. The Board has created Contributory Provident Fund (CPCB) under guidelines called The Central Board for the Prevention & Control of Water Pollution Employee's contributory Provident Fund since 1977-78 and the employee contribution is deducted from the salary of the employee and transferred to CPF Fund. The accounts of CPF Fund are audited up to 31st March, 2007 only. The shortfall in PF liability to be borne by Board, if any, will be ascertained after completion of CPF audit.

b) The Board also provides retirement benefit in the form of Gratuity to eligible employees. Liability towards Gratuity payable on death/retirement is accrued at the year-end on the basis of actuarial certificate. The liability is valued at Projected Unit Credit Method. During the year the liability has been valued by a qualified actuary and an amount of Rs 3,10,18,962 (2017 Rs 10,99,27,968) has been accounted for as provision for gratuity and charged to income and expenditure account.

c) Provision for accumulated Leave Encashment benefit to employees is accrued and computed on the basis of actuarial valuation as at year end. During the year, based on the certificate issued by a qualified actuary, an amount of Rs 1,28,34,340 (2017 Rs 6,20,72,784) has been accounted for as provision for leave encashment and charged income and expenditure account. The liability is valued using Project Unit Credit Method.

d) The liability for leave travel concession for staff has neither been ascertained nor accounted for as the estimate cannot be made in absence of sufficient details.

6 Physical Verification of Assets

6.1 The Physical Verification of assets of the board was carried out in the phased manner as per a program of verification. Accordingly certain assets have been verified during the year. There are certain obsolete/ unused items which will be adjusted once the reconciliation process is complete. However, in view of the management, such adjustment will not have any material impact on the financial position.



- 6.2 Capital work in progress includes Rs. 2,010,655 being advance given to suppliers (Delhi Zone) in earlier years which is being carried forward. Necessary adjustment entries will be passed once the supporting details including details of installation etc. are approved at the appropriate level.
7. Certain advances have been given to the state pollution control boards for implementing various projects/ activities. These expenditures are recognised once the utilisation certificate is submitted and approved. Utilisation certificate is pending from certain state pollution boards for which necessary follow up is being made.
8. **Earmarked Funds- Sponsored Projects**
- 8.1 During the year 40 Nos. of projects were carried out by Central Pollution Control Board as per details given in schedule 'C' (attached).
- 8.2 During the year, out of the total expenditure of Rs. 455,096,806 incurred in sponsored project, Rs. 48,37,617 has been incurred on procurement of fixed assets.
- 8.3 Under project National Water Quality Monitoring Network, a sum of Rs. 20,247,142 has been approved but due to insufficiency of funds in that project, only Rs 10,155,815 has been paid and accounted for. Balance of 10,091,327 has been paid subsequently and accounted for in the year of payment. This has resulted in the expenditure for the year and current liabilities being under stated and the fund balance being overstated to that extent.
- 8.4 There are unspent balances in some Sponsored/ Earmarked Projects. These will be adjusted according to the instructions from Sponsors/ Donors once the same are received.
9. **Taxation**
- In view of no taxable income under the Income tax Act, 1961, no provision for income tax is considered necessary.
10. Credits aggregating to Rs. 2,275,834 appearing in the bank account of Head office at New Delhi have not been accounted for and are appearing in the bank reconciliation statement as direct credit by bank. These are in the process being reconciled and necessary adjustment entry will be passed once the reconciliation is complete.
11. The figures in the Balance Sheet and Income and Expenditure Account have been disclosed in rupees. Corresponding figures for the previous year have been regrouped/rearranged wherever necessary.



	CURRENT YEAR (Rs.)	PREVIOUS YEAR (Rs.)
12. FOREIGN CURRENCY TRANSACTIONS		
12.1 Value of Imports Calculated on C.I.F Basis:		
--Purchase of finished Goods	NIL	NIL
--Raw Materials & Components (Including in transit)	NIL	NIL
--Capital Goods, Stores, Spares and Consumables	15,20,977	38,48,749
12.2 Expenditure in foreign currency:		
a) Travel	NIL	NIL
b) Remittances interest payment to Financial Institution/Banks in foreign Currency	NIL	NIL
c) Other expenditure:		
--Commission on Sales	NIL	NIL
--Legal and Professional Expenses	NIL	NIL
--Miscellaneous Expenses	NIL	NIL
12.3 Earnings:		
Value of Exports on FOB basis	NIL	NIL
12.4 Remuneration to Auditors:		
--As Auditors	1,12,100	1,12,100*
--Taxation matters	NIL	NIL
--For Management services	NIL	NIL
--For certification	NIL	NIL
--Others	NIL	NIL

* This was accounted in 2017-18 and pertain to predecessor auditor.

13. During the year stamps worth Rs. 109,118 (2017- Rs. 62,918) have been reclassified to cash and bank balances. Previously this was included and disclosed as Inventories – Store, Spares and consumables.



14. Amount for the year ended and as at 31st March, 2017 were audited M/s. Prakash Jain & Co., Chartered Accountants. Amounts and other disclosures for the preceding year are included as an integral part of the current year financial statements and are to be read in relation to the financial statements and other disclosures relating to the current year.

15. Schedules 1 to 26 are annexed to and form an integral parts of the Balance Sheet as at 31st March 2018 and the Income and Expenditure Account for the year ended on that date.

For KAMG & Associates
Chartered Accountants
Firm Registration no. 311027E

Anjan Sircar
Anjan Sircar
Partner
Membership no. 050052



For Central Pollution Control Board

S.P. Singh Parihar
(S.P. Singh Parihar, IAS)
Chairman

Prashant Gargava
(Prashant Gargava)
Members Secretary

Mohan Kapur
(Mohan Kapur)
Accounts Officer

Virendra Bansal
(Virendra Bansal)
Assistant Accounts Officer

CHAPTER XIII

ANNUAL ACTION PLAN FOR THE YEAR 2018-19

Central Pollution Control Board (CPCB) constituted under the Water (Prevention and Control of Pollution) Acts, 1974 is a 100% Grant-in-aid of the Ministry of Environment, Forest & Climate Change (MoEF & CC), Govt. of India. CPCB serves as a technical wing of MoEF & CC and Co-ordination with the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) for implementation of plans and programmes relating to abatement of pollution. Project and programmes are executed through in-house efforts and with the assistance of Research institutions like IITs, CSIR Labs, Engineering College, Universities and R & D Institutions. The functions of CPCB are mentioned below.

Reforms Measures and Policy Initiatives:

Central Pollution Control Board (CPCB) is focusing on strengthening of Ambient Air Quality Monitoring Network for assessment of air quality at national, regional and local level. NAMP stations operated through State pollution control Boards need further strengthening to monitor all notified parameters for ambient air, besides emphasis is being given for establishment of Continuous Ambient Air Quality Monitoring Stations (CAAQM) in all major cities.

The manual water quality monitoring network is being expanded further, realizing the need for establishment of a network of real time water quality monitoring stations on river Ganga to ensure that water quality is monitored continuously to see the impacts due to the various initiatives taken

Efforts are being made for strengthening of the compliance mechanism, so that no untreated industrial effluent is discharged into the environment. Installation of online effluent and emission monitoring systems in 17 category of polluting industry and data connectivity with SPCB/CPCB is a step towards self-monitoring and transparency.

Efforts are being made for improving the performance of existing sewage treatment plants (STPs) and adopting non-conventional technologies that are in synergy with the conventional methods for improving the water quality in particular that of river Ganga and its tributaries.

Initiatives are being taken for water conservation in Industries through process modification and adoption of state of art technology. Zero liquid discharge concepts shall be applied wherever possible to conserve the water and protect the environment.

Challenges of Municipal Solid Waste Management and domestic sewage treatment would be given utmost attention.

13.1 Targets and Achievements (2017-18)

13.1.1 Assessment and Monitoring of Pollution

- Operation and maintenance of 691 manual Ambient Air Quality Monitoring Stations (AAQMS)
- Operation and maintenance of 14 continuous ambient air quality monitoring stations(CAAQMS)
- CPCB has developed a network of real time data from CAAQM stations being operated by CPCB, SPCBs and PCCs. This data is provided to all stake holders and being published in public domain for taking corrective measures in time. In the beginning of the year 2017, CPCB network has data connected from 54 stations in 33 cities

spread, which has been expanded to total 114 stations located in 62 cities during 2017-18

- In view of anticipated air pollution problem in NCR during winter season, 40 CPCB teams were deployed during September 2017 to various parts of Delhi for providing ground feedback on air polluting sources and implementation status of graded action plan. Traffic congestion, dumping of construction & solid waste, waste burning, road dust resuspension were identified as prominent air polluting sources.
- Clean Air for Delhi Campaign was organized jointly by MoEF&CC and Government of Delhi wherein the teams comprising of senior officers of MoEF&CC, DPCC, CPCB, MCD and Delhi Police made extensive field visits to identify the major air polluting activities and create public awareness in Delhi.
- Operation of 3000 Water Quality Monitoring Stations (WQMS) at various aquatic resources.
- A Water Quality Management Plan on River Hindon has been prepared based on assessment of water quality of the river and its tributaries. Quantification of municipal and industrial wastewater load reaching from the urban centres were also incorporated
- 70 National Ambient Noise Monitoring Network (NANMN) stations have been installed spreading over 10 cities and data is being disseminated.

13.1.2 Industrial Pollution Control

- During the year 2017-18, standards for 8 industrial sectors i.e. Sewage Treatment Plant, Fertilizer Industry, SO₂ and NO_x standards for- Industrial Boilers Ceramic, Foundry, Glass, Lime Kiln and Reheating Furnaces were notified. Standards for Airport Noise are under stage of final notification. Further, draft notification for Paint, Man-made fibre and Brick Kiln have been released
- CPCB, Delhi, has undertaken a project on 'Monitoring, sampling and analysis for ambient air quality, surface water quality and ground water quality in around 100 Polluted Industrial Areas (PIAs)' during 2017-18 in order to assess the present environmental quality status by engaging third party monitoring agencies. The monitored data will be applied for evaluation of Comprehensive Environmental Pollution Index (CEPI) as per the 'Revised CEPI Concept-2016'. All the monitoring agencies have already completed the monitoring of ambient air, surface water and ground water quality in all the identified 100 PIAs located across the country during December, 2017 to March, 2018 and report preparation is under progress
- Out of 3444 targeted industries under 17 categories, 2668 industries have installed the On line continuous effluent / emission monitoring system (OCEMS) and connected with server and 757 industries have been issued closure directions due to non-installation of OCEMS
- CPCB started a scheme of inspection of 17 categories of highly polluting industries based on computer generated SMS alerts due to violation of effluent and emission standards recorded in OCEMS. On monthly basis these SMS alerts are assessed sector wise and high SMS alerts generating industries are selected for further inspection to verify the compliance status. Further those industries which did not submit data in last 48 hours (off line mode) and whose data variation does not exceed more than $\pm 5\%$ are also selected for further inspection to verify the compliance status
- A joint declaration of intent (JDI) has been signed between CPCB, GIZ GMBH and the German federal environment agency, UBA on 30th January, 2018 for the development of BREF/COIND document for the textile industry sector covering the best available techniques adapted to the Indian context.
- CPCB has prepared revised COINDS on Slaughter Houses. The document on "Characterization, Waste Management Practices and best Available Pollution Control Technologies in Slaughter Houses" been prepared and also uploaded in CPCB website

- Compendium of Indian Standards on Slaughter Houses” has been finalized by MoEFCC in consultation with CPCB to ensure compliance by the Slaughter Houses in the country

13.1.3 Control of pollution in Ganga

- All the 1109 Grossly Polluting Industries (GPIs) in the Ganga Basin PIs have been inspected and action has been taken against non-complying unit. Out of 538 non-complying units, 358 units have been issued Closure Direction under Section 5 of Environment (Protection) Act, 1986.
- Adequacy assessment of all the Distillery and Sugar units have been carried out. Draft Charter for Sugar and Distillery have been prepared.
- During 2017-18 the connectivity of OCEMS has been increased from 403 to 753 GPIs. OCEMS guidelines and protocol has also been prepared.

13.1.4 Waste Management

- Prepared 13 Standard Operating Procedures (SOP) for utilization of hazardous wastes (generated from various industrial process) as resource or energy recovery after conducting trial studies. The SOPs outline utilization process details, operational parameters, pollution control measures, environmental standards, checklist of minimal requisite facilities etc.
- As mandated in the E-Waste (Management) Rules, 2016 mandate CPCB prepared guidelines on implementation of E-Waste Rules, which included specific guidelines for extended producer responsibility, collection centres, storage, transportation, environmentally sound dismantling and recycling, and refurbishment. Also, SoPs for evaluation of EPR Applications was finalized during this year
- Prepared technical guidelines to help stakeholders in implementing the Bio-medical Waste Management Rules, 2016
- Capacity Building Programme on Implementation of Waste Management Rules, 2016 was launched during 2017-18
- Development of Guidelines maintaining Buffer Zone restricting any residential commercial or any other construction activity from outer boundary of the waste processing and disposal facilities for different sizes of facilities handling more than five tons per day of solid waste
- Published Consolidated Guidelines, for Segregation, Collection, Treatment & disposal of plastic waste.

13.1.5 Training, Mass Awareness and Environment Data Bank:

- Implementation of Raj-Bhasha (Hindi) in CPCB and organizing Hindi Diwas, Workshop and Training Programmes for CPCB officials.
- Published technical and scientific reports and mass awareness.
- Conducted national training programmes on various environmental pollution and prevention areas. During the year 2017-18, twenty-two training programmes were scheduled & organized by Environmental Training Unit (ETU) through reputed training/R&D/Professional institutes in various priority areas related to environment

13.2 Proposed Activities for 2018-19

- Strengthening of ambient air and water quality monitoring network.
- Establishing real time water quality monitoring stations on river Ganga and other major rivers to assess the water quality on real time basis.
- Expansion of continuous ambient air quality monitoring network to cover million plus cities and state capitals.

- Strengthening of the compliance mechanism, so that no untreated industrial effluent is discharged into the environment
- Improving the performance of existing sewage treatment plants (STPs) and adopting non-conventional technologies which is in synergy with the conventional methods for improving the water quality of river Ganga and its tributaries.
- Emphasis on Waste Management.
- Operation and maintenance of Laboratory and its management.

13.3 Budget Allocation for 2018-19

Project Head-wise Budget Allocation for 2018-19:

The allocation made against each Project Head is summarized as under:

Budget Heads	Title of the Budget Head	Allocation (₹ in Lakh)		
		Head Office	Regional Directorate	Total
I	Pollution Assessment (Survey and Monitoring)	305.4	89	394.4
II	Scientific, Technical Activities and R&D Activities	943.5	458.5	1402
III	Industrial Pollution Control(standards, enforcements and technologies):			
	a) Standard Development,	105.1	-	105.1
	b) Enforcement	5568.5	1737	7305.5
	c) Technology	8	-	8
IV	Training and Awareness:			
	a) Training Programmes	125	17.5	142.5
	b) PR, Mass Awareness Programmes & Hindi,	96	7.5	103.5
	c) Library	21	5.5	26.5
V	Information (Database) Management	222	29	251
VI	Waste Management and Urban Pollution Control	239.5	22	261.5
	Total	7634	2366	10000

CHAPTER XIV

OTHER IMPORTANT ACTIVITIES DEALT BY CENTRAL POLLUTION CONTROL BOARD

14.1 MUNICIPAL SOLID WASTE MANAGEMENT

Central Pollution Control Board (CPCB) as mandated under the Solid Waste Management Rules, 2016 coordinates with the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) regarding implementation of the Solid Wastes Management Rules. CPCB also followed up SPCBs/PCCs for timely submission of Annual Reports on implementation of the MSW Rules. The Consolidated Annual Review Report (CARR) for the year 2016-17 was submitted to the MoEF&CC. In compliance to orders of Hon'ble NGT, CPCB prepared Guidelines on Buffer Zone around waste processing and disposal facilities above 5 TPD capacity for implementation of SWM Rules, prepared National Action Plan on Solid Waste Management for assisting to State/UTs for preparing the State Action Plan/Policy/Strategy & prepared Report "Selection Criteria for Waste Processing Technologies". During the year 2017-18, various public complaints were received from various states mostly related to site selection, burning of garbage and operation of MSW management facilities, which were disposed through the concerned SPCBs/PCCs. During this period, CPCB also provided information to applicants under RTI Act, 2005 with regard to MSW data and guidelines.

For implementation of Solid Wastes Management Rules (earlier SWM Rules, 2000), CPCB has taken the following actions;

- a) CPCB issued Directions on 18.4.17 to Delhi Pollution Control Committee (DPCC) u/s 18(1) (b) of the Water /Air Act to direct authorities of Delhi for implementation of SWM Rules, 2016. The DPCC vide letter dated 26.05.2017 responded action taken report- i.e. Issued Directions under Section 5 of Environment (Protection) Act, 1986 to all ULBs, i.e. Urban Local Bodies.
- b) CPCB issued Directions on 11.09.2017 u/s 5 of the Environment (Protection) Act, 1986 to the Secretary-in-charge, State UD Departments of all States/UTs for constitution of State Level Advisory Body (SLAB) and convening its six monthly meeting.
- c) CPCB issued Directions issued on 22.09.2017 under Section 5 of Environment (Protection) Act, 1986 to East Delhi Municipal Corporation (EDMC), South Delhi Municipal Corporation (SDMC), North Delhi Municipal Corporation, New Delhi Municipal Corporation, Delhi Cantonment Board (DCB) and under section 18(1)(b) to the DPCC for implementing SWM Rules, 2016 including ensure structural stability of landfill sites.
- d) CPCB issued Directions on 05.10.2017 under Section 5 of the Environment (Protection) Act, 1986 to the Commissioners of Municipal Authorities of 53 Metro-cities and 18 State Capitals for implementation of Solid Waste Management Rules, 2016.

DEMONSTRATION PROJECTS ON MSW MANAGEMENT

During the year 2004-05 and 2005-06, CPCB sponsored Model facility schemes through SPCBs/PCCs for implementation of the MSW Rules in 10 towns/cities viz. Chandigarh, North Dum Dum & New barrackpore (West Bengal), Udumalpet (Tamil Nadu), Kohima (Nagaland), Mandi (Himachal Pradesh), Suryapet (Andhra Pradesh), Itanagar (Arunachal

Pradesh), South & West Sikkim Districts (Sikkim), Jalna (Maharashtra) and Agartala (Tripura). The main objective of Model facility projects was to demonstrate the implementation of various technologies specified under the MSW rules. Implementation of these projects was delayed due to many reasons. On constant persuasion and interactions, some of these projects have been completed.

In addition, for implementation of the Solid waste Management Rules, 2016, CPCB organized various workshops with different stakeholders

- i. CPCB organized an interactive meeting on March 2nd, 2017 with ULBs on implementation of Solid waste Management Rules, 2016.
- ii. On the eve of “World Environment Day” 5th June, 2017, CPCB conducted an Interactive Meet with SPCBs, ULBs, NGOs & Technology Providers on capacity building for implementation of Waste Management Rules, 2016.
- iii. Further under the ‘Swachh Bharat Mission’, CPCB in collaboration with National Productivity Council under the guidance of MoEF& CC and MoHUA, Govt. of India, initiated a project for conducting Nationwide Capacity Building Programme on implementation of Waste Management Rules, notified by the MoEF&CC in the year 2016 in 68 cities.

Some of the States are effectively implementing the Solid waste Management Rules, 2016 which are as given below:

1) MUZAFFARPUR MODEL:

This initiative is a result of a memorandum of understanding (MoU) signed between the Nagar Nigam and the New Delhi-based research and advocacy think-tank, Centre for Science and Environment (CSE) to transform Muzaffarpur into a clean, smart city. As per the MoU, CSE will help in developing a framework for better solid waste management in the city and in monitoring the programme. The execution of this project is being done by the Nagar Nigam.

The Municipality has constituted ‘City Sanitation Task Force’ with prominent members from municipal areas to implement source segregate garbage into wet, dry and domestic hazardous waste in the designated bins – green, blue and red.

Swachhitha Sawasthya Samridhi

Nagar Nigam Plans to achieve 100 percent source segregation in and around, 49 wards of the city by July 2017. Also the same time, with the help of CSE and WoW team, the Nagar Nigam shall try to establish market linkage to make the project economically viable and sustainable.

ITC-WoW and CSE’s solid waste management team shall help in the same. It shall study the value chain of compost and how it as product can be used in creating a business model.

Current status:

For source segregation of waste, dustbin have been distributed to household in 09 wards and targeted to complete by October, 2018. Daily sweeping of street/ market place are being done every alternate day. Door to door collection of waste is in progress 49 wards by municipal staffs and transported by hand carts/ tricycle/ compactors. 190 storage containers placed at strategic places and required 300 more; NIT is being prepared for procurement. City Sanitation Task Force (CSTF) has been constituted in 2016 with the members renowned persons from Municipal areas. Awareness programme for various sections of society are being organized through Nukkad Natak, distribution of pamphlets,

community sweeping, etc. for collection and segregation of waste. Under Day-NULM scheme, Are Level Federation and City Level Federation have been formed in which, fish and meat sellers are stakeholders and an association is being formed. GPS has been installed in all MSW transportation vehicles to monitor the daily movement and 05 biometric attendances have been installed for 32 Wards to monitor the sanitary workers, weighbridge is being planned to install for assessment of daily waste collection. At present, the collected waste is being dumped in Rautania landfill site. Municipal Corporation is planning to collect, segregate and proper disposal of plastic wastes through Kabadi. The Municipality is trying to collect and transportation of C&D waste separately through Municipal vehicles. It is also planned for separate collection wastes from slaughter house, horticulture, E-waste, domestic hazardous, etc. Decentralized composting being adopted in 09 Wards. These entire activities to be completed by February, 2019.

2) INDORE MODEL:

Indore city is a tier 2 city and commercial capital city of Madhya Pradesh with a population of around 27.5 lacs (current estimated).

Total Area	275 sq km
Population 2011	22.00 Lac
Population 2017	27.50 lac
Population density	8302 P/sqkm
No of Households	5.80 Lac
No of wards	85
No of zones 19	19
MSW quantity (2001)	617MT/day
MSW quantity (2011)	750MT/day
MSW quantity (2017)	900MT/day

Analysis of the Solid Waste Management problems:

The collection efficiency was 70% and daily not lifted due to poor primary collection, lack of synchronization in collection storage and transportation, inadequate sanitary staff, storage facility was 60% of generation, traditional disposal method – collection and dumping, BMW and industrial wastes were also dumped.

Current status

Door to door collection

Collections of segregated garbage from households using two separate bins.

- Door to Door collection of waste is being done in all 85 wards of city
- 400 small tippers have been used for Door to Door Collection
- 400 Cycle Rickshaw and 350 Wheel Barrow are also used for narrow lanes

Segregation of waste

The vehicles are covered and divided into two parts for segregation of the waste for dry and wet separately. This makes the city container-bin free and more hygienic and clean. The segregated waste collected is transported to the trenching ground for processing.

Compost unit

When the segregated waste is transported to the trenching ground, the segregated waste goes for processing. The biodegradable waste is composted in aerobic conditions.

Recycling of Non- Biodegradable Waste

The non-biodegradable waste is also segregated. The recyclable low-density polyethylene (plastic bags) gets cleaned and sent for recycling at existing plastic briquetting (gatta) unit, where the plastic briquettes are sold to an irrigation pipe manufacturer. Other smaller-volume recyclables such as paper / carton, glass, metals, HDPE, PPP, and PET are cleaned, sorted, bundled and traded to wholesalers at a cost-plus margin. Recycled plastic is also used for road construction.

Dustbin Free Indore

Since Indore Municipal Corporation started working on door to door garbage collection, waste collection dynamics changed all together. Secondary bins and containers have been removed after proper establishment of the system. All 1800 container bins have been removed from the city making it a one of a kind bin-free city.

Smart City Components:

The total cost of the Smart City Proposal is INR 5099.60 crores comprising INR 4468.76 crore for the Area Based Development proposal and INR 388.0 crores for the Pan City proposal- Indore Intelligent City Management System (IICMS). Tied grant from GoI under SCM/IMC equity – 488 crores

GPS-based Vehicle Tracking and Monitoring System (VTMS) for SWM:

Indore “Achieve ZERO WASTE status for Indore” – Part of vision as expressed in the Smart City Proposal (SCP) for Indore Context Indore is known as the commercial capital of Madhya Pradesh. Its population is 1,964,086 (according to the 2011 census). The Swachh Sarvekshan Survey 2017 ranked Indore as the cleanest city in India. Indore Municipal Corporation (IMC) considers sanitation and Solid Waste Management as priority areas for the city. The city is aiming for 100% coverage of Solid Waste Management. Timely clearing of secondary collection bins and transportation has been a major issue in Solid Waste Management in Indore – around 750 open garbage dumps in the city were not cleared regularly until recently. The Intervention Project description. To ensure efficient Solid Waste Management a GPS based Vehicle Tracking and Monitoring System (VTMS) has been taken up as a significant step recently. The key features of the project are:

- Online real-time monitoring of garbage vehicle movement and effective enforcement through a web based Vehicle Tracking and Monitoring System (VTMS);
- Web based application for real-time route adherence of garbage vehicles using data feeds
- Installation of IP cameras at entry and exit of the landfill site;
- Integrated Weighbridge Vehicle Monitoring System (IWVMS) at the entry and exit points
- Integration of VTMS with the Central Command and Control Centre;
- Training to stakeholders for managing the complete VTMS eco-system

Key outputs/ outcomes

The project became operational since 1 March 2017; as on 16 May 2017, more than 90% garbage vehicles (more than 700 of 750 vehicles) had already been included in the system. The project has led to real-time monitoring of garbage vehicle movement ensuring tracing of collection route and improvement in solid waste handling and operational efficiency. Impacts The VTMS is expected to ensure regular clearance of garbage dumps and help the city to achieve ‘Zero Waste’ status. The system will contribute significantly to cleanliness and public health in the city. Support and mobilized resources Indore Smart

City Development Limited (ISCDL) has appointed a Master System Integrator (MSI) for Implementation of Command Control and Communication Centre. Implementation of GPS-based Vehicle Tracking and Monitoring System (VTMS) is one of the services provided by the MSI. The component for GPS-based VTMS has been tendered at a costs INR 1.8 crore.

INVOLVEMENT OF NGOS

In Indore, NGOs have actively participated in segregation and collection of wastes from door to door. The Indore Municipal Corporation, along with some NGOs, has come up with scientific ways to recycle plastic waste. Along with setting up a plastic collection centre, the IMC also installed a plastic cleansing machine known as a 'Phatka Machine.' Plastic being a petroleum product is mixed with coal tar, reducing the proportion of tar by 15%. The mixture is environmental friendly and it has also proved to be cost effective. Since the construction of PCC, nearly 45,000 kilos of plastic waste is recycled and reused per day." As of now, the policy is at the initial stage. The Municipality is planning to include waste management clause in building permission approvals. Earlier provision for STP plants was included in the building maps. IMC has long been advocating that bulk waste generators should bear the responsibility for the waste management and its disposal. The civic body has already been levying 'user charges' on hotels, big restaurants and marriage gardens. IMC is going to call a meeting to chalk out a strategy on how to implement the revised rules in the city. Not just residential colonies and buildings, under the new rules developers of special economic zone, industrial estate and industrial park have been asked to earmark at least five per cent of the total area or minimum five plots/sheds for recovery and recycling facility. "Under Swachh Bharat Mission (SBM), IMC has already done lots of groundwork like setting-up processing plants, bio-methanation units and waste-to-energy plants.



HIGHLIGHTS

- The rag pickers segregate and sell plastic that can be recycled
- Purified plastic is sent to Road Development Authority to construct roads
- The Plastic Collection Centre recycles almost half of city's plastic waste

3) UDUPI MODEL (KARNATAKA) – COMPLETE SEGREGATION – ZERO LANDFILL

1. Background:

In Udupi district of Karnataka, solid waste management was an issue of the district administration. The waste was either burn or dumped underground and into water bodies. This unhygienic practice caused mosquito breeding centre and health hazards. About 65

tonnes of solid waste is being generated from 35 wards of Udupi Municipality and there was no segregation. The entire waste was dumped in secured landfill.

2. Concept of “Garbage to Gold”:

The concept of “Garbage to Gold” was coined by Sh. Srinivasan, a Vellore based Expert. He decided to implement Solid Liquid Resource Management (SLRM) method to convert garbage into source of income and create employment opportunity. Deputy Commissioner of Udupi District has initiated a solid waste management drive to make the district garbage free by October, 2018. The program was co-ordinated by Karnataka SPCB and RD, CPCB-Bangaluru.

3. Participation and Training:

Members of Self-help groups and other youth and Women’s Organizations from Gram Panchayats were given training in different stages during July and August, 2017. Representatives from Voluntary organizations, religious Institutions, Hospitals, Teachers, Hotels and other stakeholders were participated in awareness program. Part of program was held in Jammu district, Pondicherry and Coimbatore for giving training in low cost bag making and tricycle making & low cost building construction respectively.

4. SWM Management by SLRM Method:

The program was implemented at Gram Panchayats level. A survey to understand the sanitation practices, methods of segregation at source, expenditure incurred by family for health, mosquito control, etc. were discussed. One SLRM centre designed for 250 families for providing specially designed tricycle, four workers and a supervisor. Each household is given a Green Bucket for organic waste collection, Red bucket for inorganic waste. The organic waste is further segregated to use for cattle feeding twice a day. There will be a Goshala or to nearby house. The remaining organic waste is composted. The calcium rich Egg Cells are churned to make powder for using fower pots and vegetable gardens. Waste Flowers collected from shops and marriage Halls are sold to Rangoli Powder manufacturer. Tender Coconut shells used in Nursery for sapling, Inorganic waste from Red Bucket further segregated- into- PET bottles, bottle cap, bottle wrappers, papers, cardboard, metals, glasses, etc. to sell to manufacturers. The money earned from selling valuable materials is utilized for running the SLRM centres. Presently, abandoned buildings are selected as SLRM centres.

5. Waste Collection frequency:

Waste is collected from every household and shops twice a day (7.0 am to 10 am) and evening 2.30 pm to 6.0 pm. A team of 3 workers and a supervisor along with a tricycle collects segregated waste from household and shops. The supervisor used to cross check about proper segregation of wastes.

There is no landfill provision in this model of solid waste management.

14.2 BIO-MEDICAL WASTE MANAGEMENT

Bio-medical Waste Management Rules, 2016:

The Govt. of India has notified the Biomedical Waste Management Rules, 2016 in suppression of earlier Biomedical Waste (Management & Handling) Rules, 1998 with an aim to improve the collection, segregation, processing, treatment and disposal in an environmentally sound management thereby, reducing the bio- medical waste generation and impact on the environment. The BMWM rules have been further amended in March, 2018 with the following salient features:

- Following duties of Occupiers/Operators prescribed under BMWM Rules, 2015 are

amended:

- o Healthcare Facilities shall phase out of chlorinated plastic bags (excluding blood bags) and gloves by 27th March, 2019.
- o Establish a bar-code system for bags or containers containing biomedical waste to be sent out of premises for the further treatment & disposal of biomedical waste by 27.03.2019
- o All Healthcare Facilities (any no. of bed) shall make available the annual report on its website by 15.03.2020
- The Prescribed Authority shall submit the Annual Report Information on Biomedical Waste Management as per the Format prescribed under Form IV A.
- Under Schedule I, Blue category of biomedical waste is required to be stored in Puncture proof, leak proof boxes or containers with blue colour marking.
- Under Schedule I (Part-2) chemical treatment using atleast 1-2% Sodium Hypochlorite having 30% residual chlorine for twenty minutes is prescribed.
- Standards for Liquid Waste :

Note: 1. Above limits are applicable to the occupiers of Health Care Facilities (bedded) which are either connected with sewerage network without terminal sewage treatment plant or not connected to public sewers. 2. For discharge into public sewers with terminal facilities, the general standards as notified under the Environment (Protection) Act, 1986 (29 of 1986) shall be applicable. 3 Health Care Facilities having less than ten beds shall have to install Sewage Treatment Plant by the 31st December, 2019. 4 Non-bedded occupiers shall dispose infectious liquid wastes only after treatment by disinfection as per Schedule – II (6) of the principal rules.”

Bio-medical Waste Management Scenario:

The annual report information on bio-medical waste management for the year 2016 has been received from all of the SPCBs/PCCs and DGAFMS. As per the annual report information for the year 2016, there are 1, 87,160 no. of Health Care Facilities (HCFs) having 18,99,269 beds capacity and bio-medical waste generation of about 517 Tonnes/day. A total 91,061 HCFs have been granted authorization under the BMW Rules. A total 199 no. of Common Biomedical Waste Treatment Facilities (CBWTFs) are operational (23 under construction) in the country for treatment and disposal of BMW besides 15,281 nos. of HCFs have their captive treatment facilities. These CBWTFs and captive treatment facilities are involved in treatment and disposal of 501 Tonnes/day (93%) out of 517 Tonnes/day of BMW generation. As reported, 12,034 nos. of HCFs/CBWTFs have violated the provisions of the BMW Rules; for which directions were issued to these HCEs/CBWTFs. The detailed bio-medical waste management scenario in the Country is given below:

➤ No. of healthcare facilities	: 1,87,160
➤ No. of beds	: 18,99,269
➤ No. of CBWTFs	: 199* + 23**
➤ No. of HCFs granted authorization	: 91,061
➤ No. of HCFs having Captive Treatment Facilities	: 15,281
➤ No. of Captive Incinerators Operated by HCFs	: 536
➤ Quantity of bio-medical waste generated in Tonnes/day	: 517
➤ Quantity of bio-medical waste treated in Tonnes/day	: 501
➤ No. of HCFs violated BMW Rules	: 12,034
➤ No. of Directions issued to defaulter HCFs	: 11,272

Note: (i) * - CBWTFs in operation

(ii) ** - CBWTFs under installation

Implementation of Biomedical Waste Management Rules, 2016 in Veterinary Hospitals

The Bio-medical Waste Management Rules, 2016 defines an Occupier which means a person having administrative control over the institution and the premises generating bio-medical waste which include hospital, nursing home, clinic, dispensary, *veterinary institution*, animal house, pathological laboratory, blood bank, healthcare facility and clinical establishment. Also, Rule 10 of the said rules stipulates that every occupier irrespective of the quantity of bio-medical waste generation required to obtain authorization for generation, collection, reception, storage, transportation, treatment, processing, disposal or any other form of handling of bio-medical waste, from the concerned prescribed authority i.e. State Pollution Control Board / Pollution Control Committee. It has been observed that the veterinary hospitals are disposing the bio-medical waste along with municipal solid waste in contravention of the provisions under the BMW Rules, 2016.

CPCB has issued letters to all State Pollution Control Boards/Pollution Control Committees requesting to ensure authorization of all healthcare facilities including veterinary hospitals and research institutes / laboratories for treatment and disposal of bio-medical waste in accordance with Bio-medical Waste Management Rules, 2016.

Guidelines for Management of Healthcare Waste by Healthcare Facilities as per Biomedical Waste Management Rules, 2016

The BMW Rules, 2016 mandates Central Pollution Control Board to publish the guidelines to facilitate implementation by stakeholders including SPCBS/PCCs. Hence, CPCB has prepared guidelines for “Management of Healthcare Waste by the Healthcare Facilities as per Biomedical Waste Management Rules, 2016”. These guidelines help in understanding various provisions of BMW Rules, 2016 including technical and managerial aspects in implementation. Apart from biomedical wastes, desirable practices for effective management of other healthcare wastes such as solid waste, E-Waste, used Batteries etc. are also provided in accordance to relevant Waste Management Rules. Guidelines also suggest management requirements within healthcare facilities including district hospitals, primary health centers and sub-centers. Following are the salient features of the said guidelines:

1. Biomedical Waste Management
 1. Steps involved in Biomedical Waste Management
 2. Biomedical Waste Segregation
 3. Colour Coding and type of container / bag to be used for segregation
 4. Biomedical Waste collection
 5. In House Transportation of biomedical Waste
 6. Central Waste Collection Room for Biomedical waste
 7. Record Keeping
 8. Updating of information in Website
2. Segregation, treatment and disposal of biomedical waste
 1. Segregation of colour coded categories of biomedical waste
 2. Treatment & disposal options
 3. Suggested method for design of concrete pit for waste sharps
 4. Effluent Treatment Plant
3. BMW management at outreach activities and by occasional generators
4. Management requirement
 1. Role of Healthcare Facility
 2. Responsibility of Healthcare Facility
 3. Reporting to SPCBs/PCCs
 4. Immunization & Training to workers

5. Monitoring & review
5. Management of general waste
6. Management of other waste like used batteries, radioactive waste, e-waste

Guidelines for Bar-code System for effective Management of Biomedical Waste as per Biomedical Waste Management Rules, 2016

Bio-medical Waste Management Rules, 2016 stipulate that it is the duty of every Health Care Facility (HCF) to establish a bar code system for bags or containers containing biomedical waste (BMW) to be sent out of the premises or place for any purpose, by 27.03.2019. Also, Rule 5 of the BMW Rules, 2016 stipulates that it is the duty of the every Operator of Common Bio-medical Waste Treatment Facility (CBWTF) to establish bar code system for handling of bio-medical waste. CPCB has prepared guidelines for Bar Code System for Management of Biomedical Waste as per BMW Rules, 2016 to facilitate and provide guidance to both the Occupier as well as Operator of CBWTF to establish bar code system and also to have uniformity in adoption of the bar code system throughout the country, thereby ensuring effective enforcement of the BMW Rules, 2016. The salient features of said guidelines are as follows:

7. Need for the Bar Code system
8. Stakeholders responsible for implementation of Bar Code System
9. Bar Code label
10. Implementation of Bar Code Waste Management system
11. Specification of Bar Code scanner or app based barcode scanner
12. Responsibility of Occupier and Operator of CBWTF
13. Data maintenance and output formats
14. Additional optional features

Capacity Building Programme for Biomedical Waste Management

Under the Capacity Building Programme conducted with National Productivity Council for Waste Management Rules, CPCB has prepared toolkit for implementation of the Biomedical Waste Management Rules, 2016.

14.3 STATUS OF HAZARDOUS WASTE MANAGEMENT

As per the information provided by SPCBs/PCCs, there are 56,350 numbers of hazardous waste generating industries in the country, which generates about 7.17 Million MT of hazardous waste during April, 2016-March. The details of the management of hazardous waste (i.e. quantity of hazardous waste disposed, recycled/utilized and stored), are as given below:

1.	Quantity of HW disposed	2.84 Million MT (38.30%)
	(i) Common SLF	1.68 Million MT
	(ii) Captive SLF	0.89 Million MT
	(iii) Common Incinerator	0.23 Million MT
	(iv) Captive Incinerator	0.05 Million MT
2.	Quantity of HW Recycled/ Utilized	3.68 Million MT (49.46%)
	(i) Recycling of commonly recyclable hazardous wastes (Schedule IV listed wastes under the HOWM Rules, 2016)	1.00 Million MT
	(ii) Co-processing in Cement Kilns	0.55 Million MT
	(iii) Captive utilization	1.66 Million MT
	(iv) Non-captive utilization (other than (ii) above) under Rule 9 of the HOWM Rules, 2016	0.47 Million MT

Quantity of hazardous waste stored at the occupier's premises are 0.90 Million MT at the end of financial year i.e. March, 2018.

- Gujarat (39.20%), Rajasthan (10.10%), Odisha (8.30%), Jharkhand (8.07%), Tamil Nadu (5.34%), Maharashtra (5.32%), Karnataka (4.70%), Andhra Pradesh (3.94%), Telangana (3.86%) and Uttar Pradesh (2.60%) are the top 10 hazardous wastes generating states, which together contribute about 91% of total hazardous waste generated in the country.
- There are 42 Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs) in 18 States/UT. Of which 18 are integrated TSDFs having both Secured Landfills and Incinerators; 10 have only common incinerators, and 14 have only Secured Landfills. State/UT wise availability of the same is given below in table:

Availability of Common Integrated Treatment, Storage & Disposal Facilities (TSDFs) with Common Incinerators & Secured Landfills

S. No.	Name of the State/ UT	Integrated TSDFs (with both SLF and Incinerator)	TSDFs with Only Common Incinerators	TSDFs with only Common Secured Landfills
1.	Andhra Pradesh	1	-	-
2.	Gujarat	4	2	3
3.	Haryana	1	-	-
4.	Himachal Pradesh	-	-	1
5.	Jharkhand	1*	-	-
6.	Karnataka	-	6	2
7.	Kerala	-	-	1
8.	Madhya Pradesh	1	-	-
9.	Maharashtra	3	-	1
10.	Odisha	-	-	1
11.	Punjab	-	-	1
12.	Rajasthan	-	1	2
13.	Tamilnadu	1	-	1
14.	Telangana	1	-	-
15.	UP	2	1	1
16.	Uttarakhand	1	-	-
17.	West Bengal	1	-	-
18.	Daman, Diu, Dadra & Nagar Haveli	1	-	-
	TOTAL	18	10	14

*Commissioning of common incinerator is under progress. Jharkhand PCB has issued consent to operate.

Workshop with SPCBs/PCCs for effective implementation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

CPCB organized workshop on 06th March, 2018 for the officials of SPCBs/PCCs to provide guidance on enforcement of guidelines on implementing liability for Environmental Damages due to handling & Disposal of Hazardous Waste and Penalty; Inventory of hazardous waste, and Other issues related to implementation of HOWM Rules, 2016.

Escrow Account: Of 17 states having common hazardous secured landfill facilities, escrow account has been created in 12 States (namely Andhra Pradesh, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, Punjab, Telangana, Uttar Pradesh, Rajasthan, Daman, Diu, Dadra & Nagar Haveli, Karnataka), upon persuasion with concerned SPCBs/PCC. Creation of the same in remaining 6 states are under progress. Escrow account is created for post closure monitoring of common hazardous waste secured landfill facilities as per the tripartite agreement depositing 5% of annual turnover of landfillable waste, in accordance with Office Memorandum of MoEF&CC dated 16th April, 2009.

Standard Operating Procedures for Utilization of Hazardous Waste under Rule 9 of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016:

Rule 9 of the hazardous waste management rules lays down provision for utilization of hazardous waste as supplementary resource or for energy recovery. Such utilization can be authorised by SPCBs/PCCs for the wastes, for which Standard Operating Procedures (SOPs) or guidelines are prepared by CPCB after conducting trial studies. CPCB has prepared 12 Standard Operating Procedures (SOPs) for utilization of 9 types of hazardous waste Spent Carbon (Carbon Residue), Spent Ion Exchange Resin, Tungsten Scrap (Tungsten Carbide Insert Tips), Spent Pot Lining, Spent Sulphuric Acid, Gasifier Slag containing Nickel & Spent Catalyst, Synthetic oil based mud/oil based drill cutting waste, Flue gas cleaning residue, Spent Phosphoric acid) as a resource, which otherwise would have been disposed in incinerator or secured landfill. The SOPs outline utilization process details, operational parameters, pollution control measures, environmental standards, checklist of minimal requisite facilities etc.

Disposal of hazardous waste lying in the premises of erstwhile M/s Union Carbide India Limited (UCIL):

As per the decisions taken in a review meeting by Secretary, Department of Chemicals and Fertilizers, Government of India, on 06/09/2017, a draft Request for proposal (RFP) was prepared and forwarded to Bhopal Gas Tragedy & Rehabilitation Department (BGTRR) to enable Government of Madhya Pradesh in inviting competitive bids for disposal of UCIL waste lying at erstwhile M/s UCIL premises, Bhopal.

14.4 PLASTIC WASTE MANAGEMENT

Pilot Study for disposal of Multilayer Plastic (MLP)

The rapid rate of urbanization and development has led to increase in consumption of plastic products vis-à-vis plastic waste generation. Approximately 8 million tons of plastic products are consumed every year, which results into nearly 25940 tons of plastic waste is generated per day in India. It is a fact that plastics waste constitutes a significant portion of the total Municipal Solid Waste (MSW) generated in India. Plastics are non-biodegradable and remains on earth for thousands of years. The burning of plastics waste under uncontrolled conditions lead to generation of different hazardous air pollutants (HAPs), depending upon the type of polymers and additives used. The visibility of huge quantity of plastic waste has been perceived as a serious problem and made plastics a target in the management of Solid Waste.

Multilayer Plastic (MLP) comprises a thin foil of Aluminum, which is sandwiched, or laminated in a matrix of paper and/or plastic layers. MLP have been gaining increased importance in packaging goods due to its properties such as barrier against moisture, high dimensional stability, high impact strength, resistance to strain, transference, low water resistance etc. In addition, it prevents the hygienic quotient and shelf-life of the products, especially in food and beverages segment. Big manufactures using MLP for packing their products due to its light weights, reduced shipping volume and less space

on a shelf. However, apart from playing an increasing role in packaging and consumer products, MLP also take up a growing percentage of MSW stream & pose environment challenges.

Considering the gravity of situation, MoEF&CC has formulated the PWM Rules, 2016, as amended 2018, under which it is clearly mentioned that manufacturing and use of MLP which is non-recyclable be used for energy recovery from waste i.e. conversion of waste materials into usable heat, electricity or fuel through variety of process including combustion, gasification, pyralization and land fill gas recovery. As per Rule 13(2) Every producer or Brand owner shall, for the purpose of registration make an application to -i) concerned SPCBs/PCCs; or ii) The central Pollution Control Board, if operating more than two states. Therefore, CPCB has evolved an online registration facility for Producers and Brand Owners to submit the Extended Producer Responsibility (EPR) obligations for collecting back the MLP or plastic wastes generated from their products.

Further, CPCB has initiated to communication with the MLP Producers/Brand-Owners and some NGOs like IPCA to develop the action plans to strengthen the collection, segregation and recycling of MLP waste. **WE CARE:** India's First Joint Initiative on EPR under PWM Rules 2016, as amended 2018, has been initiated by CPCB with the association with IPCA and EDMC to solve the problem of plastic waste and its disposal. Under this pilot project, a total of ~685 Tons of MLP was collected from 28th November 2017 to 27th January 2018 in eight cities in India and dispatched the entire collected material to East Delhi Waste Processing company Ltd. at their Waste to Energy Plant, Ghazipur, Delhi, Geocycle Ltd. and their cement kiln plant at Galgal, Himachal Pradesh and Deluxe Recycling Pvt. Ltd, Thane, Maharashtra.

1. **Initiatives taken for effective implementation of Plastic Wastes Management Rules 2016, as amended, 2018:**

- 2.1. Filed a petition in Hon'ble NGT vide OA 247/2017 in the matter of CPCB Vs Secretaries-in-charge Urban Development Departments (State/UTs) and Chairmen, SPCBs/PCCs for non-compliance of PWM Rules, 2016. Hon'ble NGT directed for compliance of PWM Rules, 2016, as amended, 2018 in time bound manner.
- 2.2. CPCB has evolved Consolidated Guidelines for the collection, segregation & disposal of plastic waste.
- 2.3. Convened interaction meet on 23.01.2018 with Urban Development Departments, State Pollution Control Boards/Pollution Control Committees for the proper and effective implementation of PWM Rules, 2016.
- 2.4. Evolved Standard Operating Procedure (SOP) for applying to CPCB for registration certificate of Compostable carrybags manufacturers & sellers conforming IS/ISO: 17088 as per Rule 4(h) of PWM Rules, 2016, as amended 2018. CPCB has being issuing registration certificates for manufacturers and sellers for marketing and selling of compostable carrybags/products in Indian market. The list of certified manufacturers/sellers is **annexed**.

2. **CPCB has formulated Consolidated Guidelines for collection, segregation & disposal of plastic waste:** Use of waste as raw material or as a source of energy or both to replace natural mineral resources (material recycling) and fossil fuels such as coal, petroleum and gas (energy recovery) in industrial processes, mainly in energy intensive industries (EII) such as cement, steel and power generation. The key features of the Guidelines are given below.

1. Utilization of Plastic Waste in Road Construction (As per IRC: SP:98-2013)
2. Co-processing of Plastic Waste in Cement Kilns
3. Conversion of plastic waste into liquid RDF (Oil) & energy recovery
4. Disposal of plastic waste through Plasma Pyrolysis Technology (PPT)

- 3.1 Plastic Waste Usage in Road Construction:** - The use of plastic waste in road construction shall follow the IRC: SP:98-2013 titled as “Guidelines for the use of waste plastic in hot bituminous mix (dry mixing) in wearing courses”. Presently, several roads have been constructed by using plastic waste with bitumen in many of the States/UTs, such as: Andhra Pradesh, Karnataka, Tamil Nadu, Himachal Pradesh, Nagaland, West Bengal & Pondicherry etc. **Approximately 50,000 Kms road has been constructed by using plastic waste.**
- 3.2 Co-processing of Plastic Waste:** - Co-processing is sustainable development concept that reduces demands on natural resources, reduces pollution and landfill space, thus contributing to reduce the environmental footprint. Co-processing of waste in cement plant is one of the most effective ways for waste management. Approximately 3.5 lakh tons/year of plastic waste used for Co-processing in Cement Kilns.
- 3.3 Utilization of Plastic Waste in Waste to Energy Plant:** - Non-recyclable plastic mixed with Municipal solid waste shall be used as a feedstock for the boiler in the WTE plant which generates electricity. The WTE Project has two parts – first, the **Refused Derived Fuel Plant** (including pre-processing section) and second, the Power Plant. Refused Derived Fuel Plant takes MSW as input and produces Refuse Derived Fuel (RDF) as output. **Approximately 6000MT/day plastic waste is being used for waste to energy and oil production.**

Annexure - I

DELEGATION OF POWERS BY CENTRAL POLLUTION CONTROL BOARD TO POLLUTION CONTROL COMMITTEES

S. No.	Union Territory	Pollution Control Committee	Gazette Notification No. for Power Delegation	Date of Notification
1.	Andaman & Nicobar Islands	The Pollution Control Committee Andaman & Nicobar Islands	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No. 33 Dated 16.01.1992 & Legal /156(4) 1990 dated 3.06.2004	16.01.1992
2.	Chandigarh	Chandigarh Pollution Control Committee	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No. 199(E) dated 15.03.1991 & S.O. 1131 (E) dated 23.10.2002	15.03.1991
3.	Daman Diu & Dadra Nagar Haveli	Pollution Control Committee Daman Diu & Dadra Nagar Haveli	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No. 862 (E) dated 26.11.1992; amended vide notification No. S.O. 384 (E) dated 19.2.1996 and S.O. 698(E) dated 03.07.1998 File No. B-12015/7/04/AS, dated 17.12.2004	26.11.1992
4.	Delhi	Delhi Pollution Control Committee	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No. 198 (E) dated 15.03.1991; amended vide Notification No. S.O. 640 (E) dated 14.06.2002	15.03.1991
5.	Lakshadweep	Lakshadweep Pollution Control Committee	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No 842 (E) dated 31.08.1988 & legal /156(4) 1990 dated 23.03.2006	31.08.1988
6.	Puducherry	Puducherry Pollution Control Committee	Gazette of India Extraordinary, Part-II, Section-3, Sub-section (ii) S. O. No. 787 (E) dated 10.03.1992; amended vide Notification No. F.No.Legal/158/(4)/90 dated 01.05.2011	10.03.1992

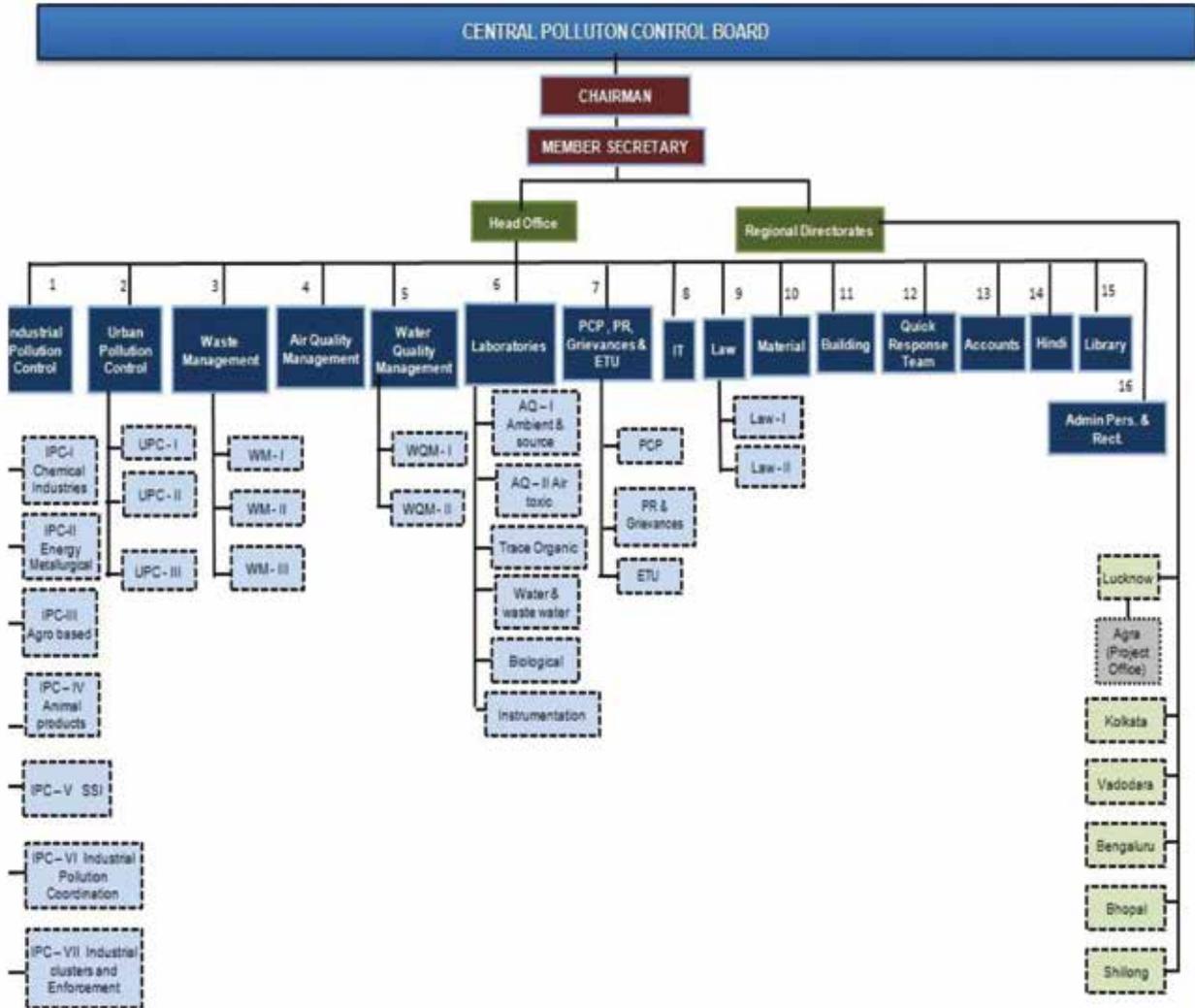
Annexure - II

LIST OF CPCB BOARD MEMBERS (AS ON 31.03.2018)

S.No.	Name & Address
1.	Shri S.P.S. Parihar, IAS, Chairman, CPCB
2.	Shri Aniruddha Kumar Joint Secretary (Thermal), Min. of Power
3.	Shri U.P. Singh Secretary, MoWR, RD&GR
4.	Shri Praveen Garg, Additional Secretary & FA, MoEF&CC
5.	Dr. Manorajan Hota, Advisor, MoEF&CC
6.	Shri Lakshman, Chairman, Karnataka SPCBs
7.	Dr. Kalyan Rudra, Chairman, West Bengal SPCB
8.	Shri Arvind Agarwal, Chairman, Gujarat SPCB
9.	Shri Vivek Narayan Shejwalkar Mayor, Gwalior Municipal Corporation
10.	Shri Ramakant Bhardwaj, National V.P., Laghu Udyog Bharti
11.	Shri Kanwal Singh Chauhan, Haryana
12.	Dr. Sukumar Devotta, Chennai
13.	Shri Sanjiv Singh, Chairman, IOCL
14.	Shri A. Sudhakar Member Secretary, CPCB

Annexure - III

ORGANIZATION STRUCTURE OF CENTRAL POLLUTION CONTROL BOARD



Annexure - IV

SANCTIONED STAFF STRENGTH IN CPCB AND NUMBER OF VACANCIES IN EACH CADRE AS ON 31.03.2018

S. No.	Name of the Post	Sanctioned Posts as on date	Filled	Vacant Post
			Regular/ Dep.	
1	Scientist 'F' (02)	02	02	-
2	Scientist 'E' (08)	44	40	04
3	Scientist 'D' (22)	35	35	-
4	Scientist 'C' (60)	48	48	00
5	Scientist 'B' (75)	38	28	10
6	Senior Law Officer	01	00	01
7	Finance & Account Officer	01	00	01
8	Sr. Administrative Officer	01	01	-
9	Administrative Officer	07	06	01
10	Law Officer	02	00	02
11	Assistant Law Officer	02	02	-
12	Hindi Officer	01	01	-
13	Accounts Officer	02	02	-
14	Assistant Accounts Officer	05	04	01
15	Assistant Technical Officer	01	00	01
16	Section Officer*	08	07	01
17	Private Secretary*	18	17	01
18	Senior Technical Supervisor	09	07	02
19	Draughting Supervisor	01	01	-
20	Senior Scientific Assistant	32	28	04
21	Senior Hindi Translator	01	-	01
22	Technical Supervisor*	06	05	01
23	Assistant*	21	16	05
24	Data Processing Assistant	04	04	-
25	Senior Draughtsman	01	01	-
26	Junior Engineer (E & M)	01	00	01
27	Junior Engineer (Civil)	01	00	01
28	Personal Assistant *	03	03	-
29	Accounts Assistant	08	06	02

S. No.	Name of the Post	Sanctioned Posts as on date	Filled	Vacant Post
			Regular/ Dep.	
30	Junior Hindi Translator	01	01	-
31	Publication Assistant	01	01	-
32	Junior Scientific Assistant	27	13	14
33	Senior Technician*	11	04	07
34	Junior Technician	07	05	02
35	Senior Laboratory Assistant	29	29	-
36	Junior Laboratory Assistant	31	19	12
37	Field Attendant	07	06	01
38	Upper Division Clerk	24	19	05
39	Lower Division Clerk	20	06	14
40	Senior Attendant	15	14	01
41	Driver Special Grade	01	01	-
42	Driver Grade-I*	06	06	-
43	Driver Grade-II*	02	02	-
44	Driver (Ordinary)*	13	08	05
45	Data Entry Operator Grade-I	02	02	-
46	Data Entry Operator Grade-II	06	04	02
47	Stenographer	03	00	03
48	Pump & Wheel Valve Operator	01	01	-
49	Attendant	22	21	01
	Total	533	426	107

Figures shown in the brackets at Sl.No. 1 to 5 are the number of scientific posts at the time of induction of the Flexible Complementing Scheme in CPCB (Interchangeable)

04 post of Technical Supervisor have been adjusted to the lower posts of Sr. Technician (Vide Sl. No. 22, & 33), two posts of PS adjusted to the post of PA (Sl. No. 17 & 28) & two post of Section Officer adjusted to the post of Assistant (Sl. No. 16 & 23) 01 post of Driver Grade-I and 04 posts of Driver Grade-II adjusted to Driver (Ordinary) (vide Sl. No. 42, 43, and 44) under GFR - 254



Central Pollution Control Board
Ministry of Environment, Forest & Climate Change
'Parivesh Bhawan', East Arjun Nagar,
Delhi - 110032