

ANNUAL REPORT 2015-16



State Pollution Control Board, Odisha
Bhubaneswar



ANNUAL REPORT

2015-16



STATE POLLUTION CONTROL BOARD, ODISHA
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HIGHLIGHTS OF ACTIVITIES OF THE STATE POLLUTION CONTROL BOARD, ODISHA

The State Pollution Control Board (SPCB), Odisha constituted under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 was entrusted with the responsibility of implementing various Environmental Acts. The Acts are mainly the Water (Prevention and Control of Pollution) Act, 1974, the Water (Prevention and Control of Pollution) Cess Act, 1977, the Air (Prevention and Control of Pollution) Act, 1981 and subsequently the Environment (Protection) Act, 1986. The Environment (Protection) Act brought out several Rules addressing specific environmental problems like Hazardous waste management, Bio-medical waste management, Municipal waste management, Environmental Impact Assessment etc. The SPCB also executes and ensures proper implementation of the Environmental Policy of the Union and the State Government. The activities of the SPCB broadly cover the following aspects.

- To plan comprehensive programs for prevention, control or abatement of pollution and to enforce the environmental laws.
- To advise the State Government on any matter concerning prevention and control of water and air pollution.
- To carry out Environmental Monitoring and Research.
- To create public awareness.

The achievements and activities of the Board during April, 2015 to March, 2016 are as follows.

Industrial Pollution Abatement & Control through Consent Administration

Improvement in compliance to pollution control norms, guidelines and regulations has been witnessed consistently through vigorous surveillance, regular inspections and monitoring, stipulations of a series of guidelines and directives.

- (i) The Board has constituted different technical committees for considering consent applications of various projects for their establishment.
- (ii) The Board has implemented the on-line consent management system (from receipt of application to consent order) for all industries, mines, health care establishments and ULBs. This year, the Board has also implemented on-line authorization management for hazardous waste, municipal solid waste and health care establishments.
- (iii) The Board has implemented GPRS based real time data transmission system with Y-Cable for online stack, ambient air quality and waste water monitoring network round the clock for highly polluting large scale industries. This programmer will keep the regulator and industries alert. So far online monitoring and data transmission system has been installed in 99 industries.
- (iv) The Fly Ash Resource Centre (FARC) set up in the State Pollution Control Board. FARC is promoting safe management and utilization of fly ash in the State by preparing Guidelines on utilization of fly ash in various sectors, coordinating among the Users and Thermal Power Plants. In addition, FARC is also organizing Workshops and Interaction meet among the stakeholders for enhancing fly ash utilization. During the financial year 2015-16, the utilization of fly ash was 59.43 %.
- (v) The Board has undertaken initiative to facilitate bulk utilization of other industrial solid wastes like dolochar, phospho-gypsum, blast furnace slag, anode butt, ferro-manganese Sludge in different sector like brick making, road construction, cement manufacturing, power generation etc.
- (vi) The Board has undertaken a pilot programme in implementing an Environmental Performance Rating System. Under this programme the environmental performance of major industries and

mines will be evaluated within a framework of a rating methodology. The rating outputs are eventually proposed to be available in public domain as part of environmental information disclosure program.

- (vii) The Board has brought Health care establishments having 100 beds and above under the Consent administration as per the provisions of Water (Prevention & Control of Pollution) Act, 1974 in order to dispose highly contaminated waste water in an environmentally sound manner from operation theatres, toilets, canteens, laundry etc. Forest & Env. Department, Government of Odisha has brought Notification vide No.12674 dtd. 24.07.2015 in this regard.
- (viii) To study the cause of high ambient temperature and design remedial measures the Board has instituted Heat Island study for Angul-Talcher area through IIT, Delhi. Similarly the study for Ib Valley-Jharsuguda area has been instituted by DFID in association with SPCB. The study is being conducted by TERI, Delhi.
- (ix) In order to augment the capacity of the Board in the area of coastal environmental monitoring the World Bank assisted Integrated Coastal Zone Management Project is being implemented. Office of the Pilot Executing Agency (PEA) of the Board has been operating in Central Laboratory Building of SPC Board in coherence with the Central Laboratory. The coastal water over a stretch of about 80 km from Paradeep to Dhamra is being monitored and PEA has collected 1497 numbers of samples during the reporting period for analysis of about 36 parameters.

The construction of CMCE (Center for Management of Coastal Eco-System) building at Paradeep has almost been accomplished and 3rd stage Construction of Sea Worthy Vessel at Visakhapatnam is under progress.

The Board has granted consent with stipulations of appropriate pollution control measures to 893 nos. of industries, hotels, mineral stack yards, mineral processing units, railway sidings, stone crushers, brick kilns and DG Sets (as stand by) for different facilities etc. for their Establishment.

2856 nos. of industries, mines, hotels, mineral stack yards, mineral processing units, railway sidings, stone crushers, brick kilns, DG Sets (as stand by) and mineral based industries etc. have been granted Consent to Operate.

The Board has issued 314 nos. of show cause notices, 324 refusals and 197 nos. of directions and closure directions to defaulting units.

Directions have been issued to all Urban Local Bodies U/S 33-A of the Water (Prevention and Control of Pollution) Act, 1974 to seek consent and for action plan for construction of sewage treatment plant.

14 nos. of public hearings have been conducted for major industrial / mining / development projects which require environmental clearance from Govt. of India.

3378 nos. of industrial wastewater samples, samples from 1365 nos. of stack emissions, 2556 nos. of ambient air samples and 75 nos. of solid waste/ hazardous waste/soil samples from different industrial premises have been collected and analysed.

Under the provisions of the Water (Prevention and Control of Pollution) Cess Act, 1977 the Board has assessed an amount of ₹ 6,78,15,149/- from various industries and urban local bodies of the state towards cess and an amount of ₹ 6,84,49,493.46 has been collected during the financial year 2015-16. Ministry of Environment and Forest (MoEF), Govt. of India has been remitted with ₹ 6,91,00,000/- and ₹ 4,41,68,000/- reimbursed to the Board by MoEF during the reporting period.

Regulation of Hazardous Waste Management

237 nos. of hazardous waste generating units have been granted authorization under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 for collection, storage, treatment and disposal of hazardous wastes.

Implementation of the Batteries (Management & Handling) Rules, 2001

36 nos. of Firms have filed annual returns with the Board for the smooth management and handling of batteries (lead - acid) under the provisions of the Batteries (Management & Handling) Rules, 2001.

Management of Bio-Medical Waste

The Board has granted authorization to 556 nos. of Health care establishments (HCE) under the provisions of the Bio-Medical Waste (Management & Handling) Rules, 1998 with conditions for proper management, handling, treatment and disposal of biomedical wastes. Show cause notices to 86 nos. units and refusal of authorization to 09 nos. of HCEs have been issued for inadequate management of biomedical wastes.

Management of Plastics

The Board is consistently vigilant on plastic carry bag manufacturing units for their compliance with the statutory provisions of the Plastic Waste (Management and Handling) (Amendments), Rules, 2011. So far 08 nos. of plastic carry bag manufacturing units have valid authorization.

Management of E-Waste

There are 07 nos. of collection centers of electronic waste and 01 nos. of dismantler cum- collection centers having valid authorization in Odisha.

Management of Municipal Solid Waste

The Board has constituted a committee for considering the applications of the Urban Local Bodies (ULBs) for obtaining authorization for Municipal Solid Waste processing and disposal (including land fill) under the Municipal Solid Waste (Management & Handling) Rules, 2000. The Board has granted authorizations to 32 nos. of ULBs. 11 nos. of show cause notices has been issued to the ULBs for the noncompliance with the provisions of the above Rules.

Legal Activities

The Board has filed /counter filed 194 nos. of cases and 52 nos. of cases have been disposed during the reporting period.

Right to Information

Under the Right to Information Act, 2005, the Board has provided information to 387 nos. of applications.

Disposal of Public Complaints

The Board addressed 399 nos. of Public Complaints on various environmental issues during the reporting period.

Planning and Monitoring

For prevention and control of pollution, the Board has undertaken following activities.

- The final study report, "Preparation of Regional Environment Management Plan (REMP) for Joda - Barbil area" has been completed.
- The Board had engaged M/s National Environmental Engineering and Research Institute (NEERI), Nagpur for the "Preparation of Regional Environmental Management Plan Based on Carrying Capacity Study for Sambalpur - Jharsuguda Region". The study report submitted by NEERI is under finalization.
- The Board is regularly monitoring the river water quality at 79 stations on 09 major river systems of the State i.e. Mahanadi, Brahmani, Baitarani, Rushikulya, Subernarekha, Nagavali, Budhabalanga, Kolab and Vansadhara. Water quality are assessed in respect of 32 nos. of water quality parameters. Besides these, water quality of Taladanda Canal at six locations, of religious ponds such as Bindusagar (Bhubaneswar at its four bathing ghats) and Narendra, Markanda, Parbati Sagar, Indradyumna, Swetaganga of Puri town, of lakes such as Chilika (two locations) &

Anshupa (four locations) and coastal water quality at Puri, Gopalpur and Paradeep on the Bay of Bengal has also been monitored.

- Bio-monitoring at 29 stations of 08 major rivers i.e. Mahanadi, Brahmani, Rushikulya, Subernarekha, Budhabalanga, Kolab, Vansadhara and Nagabali has been monitored to assess the biological health of these river systems.
- Water quality of Devi and Rushikulya river mouth has been monitored in connection with protection of Olive Ridley sea turtles.
- To assess the impacts of mass bathing during Kartika Purnima on the water quality of Mahanadi and Kathajodi rivers, water quality monitoring at eight major bathing ghats of these rivers in Cuttack city are conducted.
- Surface water quality of five stations on Atharabanki creek and ground water quality at three stations in the peripherals of Phosphatic Fertiliser Units and water samples from seven test wells as well as samples from five wastewater discharging points of the fertilizer producing units at Paradeep have been monitored on regular intervals to assess fluoride contamination in the area.
- Water quality of Ganda Nallah and Kharasrota river has also been monitored at seven stations on regular intervals to assess the impacts of waste water discharge from the Industrial Units in Kalinganagar area to the Nallah.
- Water quality of Damasala nallah at five stations in Sukinda chromite area has been monitored on regular intervals to assess the hexavalent chromium content in river water.
- Surface water quality in and around M/s Vedant Aluminium Limited, Jharsuguda has been monitored to assess the fluoride contamination in the area.
- Wastewater quality at eleven stations distributed over Cuttack, Bhubaneswar, Puri, Talcher, Dhenkanal and Rourkela has been monitored on regular basis.
- Monitoring of ground water quality at fifteen stations of three towns i.e., Cuttack, Bhubaneswar and Puri has also been conducted in respect of 32 water quality parameters.
- 4880 nos. of water samples under NWMP, NRCP, SWMP and other projects have been analyzed during this period.
- Ambient air quality at 33 stations of 14 important towns and industrial areas of Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Konark, Paradeep, Puri, Rayagada, Rourkela and Sambalpur have been monitored by the Board under National Ambient Air Quality Monitoring Programme (NAMP)/ State Ambient Air Quality Monitoring Programme (SAMP). Ambient air quality in 11 towns at 25 Stations has been assessed in respect of 04 parameters namely PM_{10} , $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Oxides (NO_x). Whereas at 08 stations in Bhubaneswar, Puri and Konark, ambient air quality has been assessed in respect of 08 parameters like PM_{10} , $PM_{2.5}$, SO_2 , NO_x , NH_3 , O_3 , Pb and Ni. In total, 7769 nos. of samples have been collected and analyzed during the reporting period.
- Study on noise levels during celebrations of Dasher & Deepawali has been conducted in Industrial, Commercial, Residential and Silence Zones in 13 cities/towns such as Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela and Sambalpur. Performance evaluation of 185 numbers of sound limiters of different band parties has been conducted in respect of noise [limited to 65 dB(A)].
- To assess the Impact of bursting of fire crackers during Deepawali, the ambient air quality with respect to parameters like SO_2 , NO_x , PM_{10} & $PM_{2.5}$ have been monitored in pre and on the day of Deepawali at 33 locations in 14 towns/ cities i.e Angul, Balasore, Berhampur, Bhubaneswar,

Cuttack, Jharsuguda, Kalinganagar Keonjhar, Konark, Paradeep, Puri, Rayagada, Rourkela and Sambalpur.

- Impact of idol immersion on the water quality has been studied in rivers and ponds by Regional Offices of the Board. No significant impact due to immersion activities on the water bodies was observed.

Board's Publications

The Board has published a book “Ambient Air Quality Status & Trends in Odisha (2006-2014)” and two volumes of Newsletter Paribesh Samachar i.e. (January –March, 2015; April-June, 2015) during the reporting period.

Awareness Programmes

- For creation of awareness amongst the common public, the Board regularly publishes advertisements relating to environmental issues in different periodicals / newspapers / souvenirs.
- The Board observed the World Environment Day on 5th June to create awareness on environmental protection among public through meetings, mass campaign, paintings, debates, vehicular monitoring.
- 32nd Foundation Day of the Board was observed on 14th September, 2015 at Bharatiya Vidya Bhawan, Bhubaneswar with distinguished guests, followed by Prof. M. K. Rout Memorial Lecture on *Green Radio* by Prof. R. V. Raja Kumar, Director, Indian Institute of Technology, Bhubaneswar.
- The Board has instituted pollution control excellence / appreciation awards to encourage the Large & Medium Scale Industries, Mines and Health Care Establishments for adoption of pollution control measures..
- The International Coastal Clean-up Day has been observed by the Board on the Sea Beaches of Puri, Balasore, Paradeep & Gopalpur on 19th September, 2015 for creation of mass awareness on the protection & management of environment involving District Administration, different NGOs, volunteers etc.
- During Deepawali festival mobile vehicles with staffs were moving for awareness on effect of crackers on noise pollution.
- During Holi festival, public awareness made to use natural colour in order to make it safe.

Human Resource Development

- For imparting training to various stakeholders on pollution control and environment protection 14 nos. of programmes have been conducted by the Centre for Excellence on Training on Pollution Control and Environment Protection
- The Board has imparted Training on Ambient Air Quality & its measurement to 142 students (medical & nursing students) of All India Institute of Medical Science, Bhubaneswar in its Central Laboratory.
- 141 numbers of Police personnel from various districts of Odisha were imparted training on vehicular pollution and its control during the reporting period.

CHAPTER – I

INTRODUCTION

1.1 CONSTITUTION OF THE BOARD

The Odisha State Prevention and Control of Pollution Board was constituted in pursuance of sub-section (1) of section 4 of the Water (Prevention and Control of Pollution) (Amendment) Act, 1974, vide Notification No. 1481-VII-HI-11/83 (Vol. II)-S.T.E., dt. 15.7.1983 in the erstwhile Department of Science, Technology & Environment, Government of Odisha. The Board was re-designated as State Pollution Control Board, Odisha vide Govt. Notification No. Env.-E (F)/8/89/1882 F&E, dt.16.07.1999.

1.2 FUNCTIONS AND RESPONSIBILITIES OF THE BOARD

The constitution and functions of the Board are clearly spelt out in the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. The Board is entrusted with the responsibility of implementation of Environmental Laws, particularly the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Water (Prevention & Control of Pollution) Cess Act, 1977 and the Environment (Protection) Act, 1986 and a number of Rules and Notifications issued thereunder as amended from time to time.

Responsibilities of the Board, however, can broadly be classified into the following four main categories:

1. To plan a comprehensive programme for prevention, control or abatement of pollution and enforce the environmental laws
2. To advise the State Government on any matter concerning prevention and control of water and air pollution
3. To conduct Environmental Monitoring and Research
4. To create public awareness

In addition, the Board is also expected to execute and ensure proper implementation of the Environmental Policies of the Union and the State Government.

1.3 ENVIRONMENTAL LAWS

The major Acts and Rules / Notifications issued thereunder, with which the Board is entrusted for implementation and execution, are as follows.

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Water (Prevention and Control of Pollution) Cess Act, 1977
3. The Air (Prevention and Control of Pollution) Act, 1981
4. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008
7. The Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically Engineered Organisms or Cells Rules, 1989
8. The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
9. The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996
10. The Biomedical Waste (Management and Handling) Rules, 1998 amended as the Biomedical Waste Management Rules, 2016 on March 28, 2016.

11. The Municipal Solid Waste (Management and Handling) Rules, 2000
12. The Noise Pollution (Regulation and Control) Rules, 2000
13. The Ozone Depleting Substance (Regulation and Control) Rules, 2000
14. The Batteries (Management and Handling) Rules, 2001
15. The Environment Audit Notification, 1993
16. The Fly-ash Utilization Notification, 1999
17. The Environment Impact Assessment Notification, 2006
18. The Plastic Waste (Management and Handling)(Amendment)Rules, 2011 amended as the Plastic Waste Management Rules 2016 on March 18,2016
19. The E-Waste (Management and Handling) Rules, 2011 amended as the e-waste (Management) Rules, 2016 on March 23,2016 .
20. The Construction & Demolition Waste Rules, 2016 on March 29,2016.

1.4 LOCATIONS AND MAILING ADDRESSES OF BOARD'S OFFICES

Headquarters of the State Pollution Control Board, Odisha is located at Paribesh Bhawan, A/118, Nilakantha Nagar, Bhubaneswar in Khurda District. The Board has established its state-of-art Central Laboratory at B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar.

The jurisdictions, various functions, role & responsibilities and powers of Regional Officers of all the 12 Regional Offices have been defined vide Office Order No. 16908, dtd.19.09.2013. The details of mailing addresses, Telephone/Fax Nos., E-mail/website and jurisdiction of the Head Office, the Central Laboratory and Regional Offices are given in Table-1. The twelve Regional Offices of State Pollution Control Board are illustrated in Odisha Map in Fig. 1.

Table – 1: Address, Telephone / Fax, e-mail / Website and Jurisdiction of State Pollution Control Board, Odisha

Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
HEAD OFFICE			
1.	State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-8, Bhubaneswar-751 012	(0674) 2561909, 2562847 Fax- (0674) 2562827, 2560955 E-Mail: paribesh1@ospcboard.org Website : www.ospcboard.org	Whole of the Odisha State
2.	Central Laboratory, State Pollution Control Board, Odisha ,B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar	E-Mail : centrallab@ospcboard.org Website : www.ospcboard.org	Whole of the Odisha State
REGIONAL OFFICES			
1.	Regional Office, Angul S-3/3, Industrial Estate, Hakimpada, Angul- 759 143	Tel - (06764) 236389 Fax - (06764) 237189 E-mail: rospcb.angul@ospcboard.org	Angul Dhenkanal



Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
2.	Regional Office, Balasore, 160, Sahadev Khunta, Balasore – 01	Tel/Fax-(06782) 265110 Email:rospcb.balasore@ospcboard.org	1) Balasore 2) Bhadrak 3) Mayurbhanj
3.	Regional Office, Berhampur, Brahma Nagar (3 rd Lane), Berhampur – 01, Ganjam	Tel- (0680) 2281075 Fax- (0680) 2280139 Email:rospcb.berhampur@ospcboard.org	1) Ganjam 2) Gajapati 3) Phulbani 4) Nayagarh
4.	Regional Office, Bhubaneswar (Address as Head Office)	Tel (0674) 2561909 Ext. 308 FAX (0674) 2562822 , 2560955, E-mail : paribesh1@ospcboard.org Website: www.ospcboard.org	1) Puri 2) Khordha
5.	Regional Office, Cuttack, Plot No. 586, Surya Vihar, Link Road, Cuttack – 753 012	Tel/Fax-(0671) 2335478 E-Mail : rospcb.cuttack@ospcboard.org	1) Cuttack
6.	Regional Office, Keonjhar At - Baniapat, College Road, Keonjhar-758 001	Tel / Fax - (06766) 259077 E-Mail: rospcb.keonjhar@ospcboard.org	1) Keonjhar
7.	Regional Office, Rayagada 287/A, Kasturi Nagar, Rayagada – 765 001	Tel-(06856) 223073 Fax-(06856) 224281 E-Mail: rospcb.rayagada@ospcboard.org	1) Rayagada 2) Koraput 3) Nawarangpur 4) Malkangiri 5) Kalahandi
8.	Regional Office, Rourkela Town Engineering Office Premises, Sector – 5, Rourkela – 769 002	Tel - (0661) 2646736 Fax – (0661) 2648999 E-Mail: rospcb.rourkela@ospcboard.org	1) Sundergarh except Himgiri block of Sundergarh district (Basundhara mining areas) 2) Deogarh
9.	Regional Office, Sambalpur, Plot No.1070 Hospital Road, Modipara Sambalpur- 768 002	Tel- (0663) 2541910 Fax – (0663) 2541978 E-Mail: rospcb.sambalpur@ospcboard.org	1) Sambalpur 2) Bargarh 3) Boudh 4) Bolangir 5) Nuapada 6) Sonepur
10.	Regional Office, Jharsuguda, Plot No. 370/5971, At – Babubagicha (Cox Colony) St. marry Hospital Road, PO- Industrial Estate, Dist.-Jharsuguda- 768203	Tel- (06645) 273284 Fax – (06645) 2732294 E-Mail: rospcb.jharsuguda@ospcboard.org	1) Jharsuguda 2) Himgiri block of Sundergarh district
11.	Regional Office, Kalinga Nagar, Common Facility Centre, Jajpur Closter Development, Kalinga Nagar, Dist - Jajpur	Mob-9438883955 E-mail: rospcb.kalinganagar@ospcboard.org	1) Jajpur
12.	Regional Office, Paradeep, Plot No -1005, 1st Floor, Udayabata, Paradeepgarh, Paradeep, Dist - Jagatsinghpur – 754141	Mob-9438883963 E-Mail: rospcb.paradeep@ospcboard.org	1) Jagatsinghpur 2) Kendrapara

Fig. 1 Odisha Map Showing 12 Regional Offices of State Pollution Control Board



CHAPTER – II**CONSTITUTION OF THE STATE BOARD**

- 2.1** As per the provisions stipulated under sub-section 2 of section 4 of the Water (Prevention and Control of Pollution) Act, 1974 and under sub-section 2 of section 5 of the Air (Prevention and Control of Pollution) Act, 1981, the State Board shall consist of the following members, namely:
- i. A Chairman (either whole-time or part-time as the State Government may think fit), being a person having special knowledge or practical experience in respect of matters relating to environment protection or a person having knowledge and experience in administrating institutions dealing with the matters aforesaid, to be nominated by the State Government;
 - ii. Such number of officials, not exceeding five, to be nominated by the State Government to represent that Government;
 - iii. Such number of persons, not exceeding five, to be nominated by the State Government from amongst the members of the local authorities functioning within the State;
 - iv. Such number of officials, not exceeding three, to be nominated by the State Government to represent the interest of agriculture, fishery or industry or trade or any other interest which, in the opinion of the State Government, ought to be represented;
 - v. Two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;
 - vi. A full time Member Secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the State Government
- 2.2** In exercise of the powers conferred under Sub-Section (1) of Section 4 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 5 of the Air (Prevention & Control of Pollution) Act, 1981, Government in the Forest & Environment Department, Odisha reconstituted the Board vide Notification No. 19568-Env-II-22/2015-F&E dated 6th November, 2015 for a period of three years with the following members.
- A. Chairman**
- Chairman, State Pollution Control Board, Odisha.**
- i) Sri Upendra Nath Behera, IAS (From 17.12.2014 to 30.11.2015)
 - ii) Sri R.Balakrishnan, IAS (30.11.2015 contd.)
- B. Official Members**
1. Secretary to Government, H& UD Department, Government of Odisha or his nominee, not below the rank of Joint Secretary
 2. Secretary to Government, Industries Department, Government of Odisha or his nominee, not below the rank of Joint Secretary
 3. Secretary to Government, Steel and Mines Department, Government of Odisha or his nominee, not below the rank of Joint Secretary
 4. Director (Environment), Forest & Environment Department, Government of Odisha or his nominee
 5. Director, Factories & Boilers, Government of Odisha or his nominee

C. Members Representating Local Authorities

1. Chairman / Executive Officer, Paradeep Municipality
2. Chairman / Executive Officer, Jharsuguda Municipality
3. Chairman / Executive Officer, Talcher Municipality
4. Chairman / Executive Officer, Barbil Municipality

D. Non-Official Members

1. Prof. Damodar Acharya, Former Vice Chancellor, BPUT & Former Chairman, AICTE
2. Dr. Subhasish Tripathy, Prof. of School of Earth, Ocean & Climate Sciences, IIT Bhubaneswar
3. Dr. Satyaban Jena, Professor of Chemistry, Utkal University, Vani Vihar, Bhubaneswar

E. Members Representating Companies & Corporations

1. Managing Director, Odisha Mining Corporation Ltd, Bhubaneswar
2. Managing Director, Industrial Infrastructure Development Corporation (IDCO), Bhubaneswar

F. Member Secretary

Member Secretary, State Pollution Control Board, Odisha.

Sri Rajiv Kumar, I.F.S

CHAPTER – III

CONSTITUTION OF COMMITTEES

3.1 CONSENT COMMITTEE

3.1.1 Constitution of Consent Committees

The Board has re-constituted consent committee vide office order No. 12547 dt. 20.07.2015 in pursuance to partial modification of order no.7817 dt. 16.05.2014 with the members enlisted in Table-3.1 for establishment of various projects mentioned below:

- Projects having investment of ₹ 1000 crore or more.
- Mining project with lease hold area of 1000 Ha. or more.
- 17 categories of highly polluting industries having investment of ₹ 50 crores or more (including expansion proposal with an investment of ₹ 50 crores or more)
- Other than 17 categories of highly polluting industries having investment of ₹ 50 crores or less than ₹ 1000 crores (including expansion proposal).
- Proposal for establishment of screening plant, crusher, within the lease hold area of Coal, Bauxite, Manganese, Limestone, Dolomite & Chromite Mines having investment of less than ₹ 50 crores.
- Expansion proposal of Sponge iron plant (other than sponge) having investment of less than ₹ 50 crores.

Members of the Committee are given in Table 3.1.

Table - 3.1- Members of the Consent Committees

1.	Member Secretary, SPC Board, Odisha, Bhubaneswar	Chairman
2.	One of the sectoral expert each of different Technical Committee constituted by the Board (such as Mining, Iron & Steel, Power, Chemical & Allied, Petroleum refinery, Aluminum Smelter and Port Projects) in case of large industrial projects whose investment is ₹ 1000 crores or more or mining project with lease hold area 1000 ha. or more. (Annexure-I)	Member
3.	External Expert Members to be nominated by the Chairman, SPC Board in specific cases, if required.	Member
4.	Sr. Env.Engineer/Sr. Env.Scientist, dealing the subject of Hazardous Waste, SPC Board, Odisha, Bhubaneswar	Member
5.	Sr. Env.Engineer /Sr. Env.Scientist, dealing with consent to operate of Industry /Mines, SPC Board, Odisha, Bhubaneswar	Member
6.	Sr. Env.Engineer / Sr.Env.Scientist, dealing the subject of Environmental monitoring, SPC Board, Bhubaneswar	Member

7.	Secretary, Industries Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
8.	Secretary, Steel & Mines Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
9.	Secretary, Water Resources Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
10..	Director -cum-Special Secretary to Govt. Forest & Env.Deptt. Govt. of Odisha or his representative	Member
11.	Director, Factories & Boilers, Odisha, Bhubaneswar or his representative not below the rank of Deputy Director	Member
12.	Chief Conservator of Forest (Nodal), Odisha or his nominee not below the rank of D.F.O. in the office of PCCF, Odisha, Bhubaneswar	Member
13.	Concerned District Collectors or their nominees	Member
14.	Sr. Env. Engineer / Sr. Env. Scientist, dealing the subject of consent to establish, SPC Board, Odisha, Bhubaneswar	Convener

3.1.2 Consent Committee Meetings

Twelve Consent Committee meetings were held for consideration of 94 numbers of proposals for establishment during the financial year 2015-16. The details are given in Table - 3.2.

Table – 3.2 Details of Consent Committee Meeting

Sl. No.	Date of Consent Committee meeting	No. of cases disposed
1.	22/4/2015	10
2.	26/5/2015	05
3.	29/6/2015	09
4.	25/7/2015	03
5.	28/8/2015	09
6.	22/9/2015	07
7.	14/10/2015	08
8.	13/11/2015	04
9.	23/12/2015	14
10.	18/1/2016	06
11.	18/2/2016	07
12.	31/3/2016	12
Total		94

3.1.3 Constitution of Internal Consent Committee

In pursuance of office order No.7781 dt. 16.05.2014, an internal consent committee has been reconstituted with the members reflected in Table 3.3 to evaluate the applications for grant of consent to establish (NOC) for the following projects.

- 17 categories of highly polluting industries having investment of less than ₹ 50 crores (including expansion proposal with an investment of less than ₹ 50 crores)
- Other than 17 categories of polluting industries having investment of ₹ 50 crores to less than ₹1000 crores (including expansion proposal)
- Proposal for establishment of screening plant, crusher, within the lease hold area of coal, bauxite, manganese, lime stone, dolomite and chromite mines having investment of less than ₹ 50 crores.
- Expansion proposal of Sponge Iron Plant (other than sponge) having investment of less than ₹50 crores.

Table – 3.3 Members of the Internal Consent Committee

1.	Sr. Env. Engineer / Sr. Env. Scientist, dealing the subject of consent to establish, SPC Board, Odisha, Bhubaneswar	Chairman
2.	Env. Engineer / Env. Scientist dealing the subject of Hazardous waste	Member
3.	Env. Engineer / Env. Scientist dealing the subject of environmental monitoring	Member
4.	Env. Engineer / Env. Scientist dealing with consent to establish	Member
5.	Env. Engineer / Env. Scientist dealing with consent to operate of industries / mines	Member
6.	Branch Officer(s) concerned (SEE/SES), SPC Board, Odisha, Bhubaneswar	Convenor

Meetings of the above Committee held during the financial year 2015-16 and the numbers of proposals considered are given in Table 3.4.

Table - 3.4 Details of Internal Consent Committee Meetings

Sl. No.	Date of Internal Consent Committee meeting	No. of cases disposed
1.	22/06/2015	05
2.	19/8/2015	01
Total		06

3.1.4 Constitution of Technical Committee

In pursuance of the decision taken in the 111th Board meeting (Special) held on 30.05.2015 and in supersession of Order No. 10711 dt. 03.05.2007, the following Technical Committees were re-constituted (Table 3.5) for environmental appraisal of large industrial projects with an investment of 1000 crores or more and of mechanized mines whose leasehold area is 1000 Ha or more.

Table – 3.5 Members of the Technical Committee

Sl. No.	Technical Committee constituted for	Sectoral Experts
1.	Mining Projects whose leasehold area is 1000 Ha or more. (vide Office Order No. 10729, dt. 03.05.07)	1) Prof. S. Jayantu, Dept. of. Mining Engineering, NIT Rourkela 2) Sri B. N. Mishra, Ex-Director (T) MCL, CMD, EDL, Bhubaneswar
2.	Iron and Steel Projects (vide Office Order No. 27958, dt. 16.11.06 & No. 10735 dt. 03.05.2007)	1) Dr. Somanath Mishra, Ex- Principal, REC, Rourkela, 2) Dr. R. C. Gupta, Professor and Head, /Department of Metallurgical Engineering , Institute of Technology, Banaras Hindu University
3.	Power Projects (vide Office Order No. 10761, dt. 03.05.07)	1) Sri B. C. Jena, Ex-CMD, Grid Corp. of Odisha Ltd, Bhubaneswar 2) Mr. G. S. Panda, Ex. Head TTPS, Sailashree Vihar, Bhubaneswar
4.	Chemical and Allied industries (vide Office Order No. 10850, dt. 05.05.07)	1) Prof. G. K. Roy, Dept. of Chemical Engineering, NIT, Rourkela 2) Sri R. K. Dash, former Executive Director, PPL & OCFL VIM 484 (near post office) Sailashree Vihar, Bhubaneswar
5.	Petroleum Refineries (vide Office Order No. 10761, dt. 03.05. 07)	1) Dr. M. O. Garg, Director, Institute of Petroleum, Dehradun 2) Prof. P. Rath, HOD, Department of Chemical Engineering, NIT, Rourkela
6.	Aluminium Smelter (vide Office Order No. 14791, dt. 22.06.07)	1) Dr. R. K. Paramguru, Scientist – G, Head, Hydro & Electrometallurgy Dept., Institute of Minerals & Materials Technology (formerly known as Regional Research Laboratory) Bhubaneswar, Odisha 2) Sri R. N. Jena, Ex-General Manager, NALCO Smelter Plant, Angul
7	Port Projects (vide office order No. 16387,dt. 05.07.2008)	1) Dr. R. Sundarvadelu, Professor and Head, Department of Ocean Engineering, Indian Institute of Technology, Chennai – 600 036 Or Dr. Sannasi Raj, Associate Professor, Department of Ocean Engineering, Indian Institute of Technology, Chennai – 600 036 2) Sri Dibakar Mohapatra, (Retd. Chief Engineer Paradeep Port Trust), Plot No. 7A, Brahmeswar bag, Tankapani Road, Bhubaneswar

3.2 MUNICIPAL SOLID WASTE AUTHORISATION COMMITTEE

3.2.1 Constitution of the Authorisation Committee

In compliance with the provisions of the Municipal Solid Waste (Management & Handling) Rules, 2000, the Board has constituted a committee vide office order No. 8037 dt. 23.05.2009 for consideration of authorization applications for the Municipal Solid Waste (MSW) processes and disposal including landfill. Members of the Committee are as follows (Table 3.6).

Table - 3.6 Members of the Municipal Solid Waste Authorisation Committee

1.	Member Secretary, State Pollution Control Board, Odisha	Convenor
2.	Director, Airport Authority or his nominee	Member
3.	Director, Town Planning or his nominee	Member
4.	Director, State Ground Water Board or his nominee	Member
5.	Director, Municipal Administration or his nominee	Member
6.	Director, Central Ground Water Board or his nominee	Member

3.3 PURCHASE COMMITTEE FOR SCIENTIFIC STORE

3.3.1 Constitution of the Purchase Committee

In pursuance of Section 9 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 11 of the Air (Prevention & Control of Pollution) Act, 1981, two purchase committees have been constituted vide order Nos. 508 dt.10.04.2015 and 504 dt. 10.04.2015 for the purchase of chemicals, glass wares, filter papers and procurement, operation and maintenance of scientific equipments / instruments. List of members of the Purchase Committee for more than ₹ 50,000.00 is reflected in Table - 3.7 and members of the other Purchase Committee for the purchases exceeding ₹ 1000.00 but less than ₹ 50,000.00, is given in Table 3.8.

Technical Committee has been constituted vide order Nos. 1329 dt.25.08.2015 for the specification of various equipments & instruments and to study the nature of requirement of different chemicals, glass wares, plastic wares, filtration products etc. required by the laboratory in Table - 3.9.

Table - 3.7 - Members of the Purchase Committee for More than ₹ 50,000.00

1.	Member Secretary, State Pollution Control Board, Odisha	Chairman
2.	Dr. C.R. Panda, Scientist, Environment Management and Inorganic Chemicals Dept., Institute of Materials and Minerals Technology (IMMT), Bhubaneswar	Member
3.	Senior Scientist, Forest & Environment Dept., Govt. of Odisha, Bhubaneswar as representative of Director, Environment - cum - Spl. Secretary, Forests & Env. Dept., Govt. of Odisha, Bhubaneswar	Member
4.	Financial Adviser -cum- Addl. Secretary to Govt., Forest & Environment Dept., Govt. of Odisha, Bhubaneswar	Member
5.	Director or his representative, Directorate of Export Promotion & Marketing, Ashok Nagar, Bhubaneswar	Member
6.	Senior Environmental Scientist (L), -I State Pollution Control Board, Odisha, Bhubaneswar	Member
7.	Administrative Officer, State Pollution Control Board, Odisha, Bhubaneswar	Member
8.	Env. Scientist (Purchase), LEM Cell, State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor

Table - 3.8- Members of the Purchase Committee for more than ₹ 1000.00 but less than ₹ 50,000.00

1.	Member Secretary State Pollution Control Board, Odisha	Chairman
2.	Senior Environmental Scientist -I(L), State Pollution Control Board, Odisha	Member
3.	Administrative Officer State Pollution Control Board, Odisha, Bhubaneswar	Member
4.	Env. Scientist (Purchase), LEM Cell, State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor

Table - 3.9- Members of the Technical Committee

1.	Senior Environmental Scientist (L-I), State Pollution Control Board, Odisha	Chairman
2.	Dr. S.G. Kumar, Senior Scientist, Regional Plant Resource Centre, Bhubaneswar	Member
3.	Administrative Officer, State Pollution Control Board, Odisha, Bhubaneswar	Member
4.	Env. Scientist, LEM Cell(In charge of Chemical and Biological Laboratory), State Pollution Control Board, Odisha, Bhubaneswar	Member
5.	Deputy Env. Scientist, LEM Cell(In charge of Air, Soil and Hazardous Laboratory), State Pollution Control Board, Odisha, Bhubaneswar	Member
6.	Env. Scientist, LEM Cell(Purchase), State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor

3.4 LIBRARY PURCHASE COMMITTEE

In pursuance of Section 9 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 11 of the Air (Prevention & Control of Pollution) Act, 1981 an Internal Purchase Committee has been constituted vide office order No. 11994 dt. 23.07.2014 for examining and recommending purchase of Books, Journals, Reports, Non-book materials, furniture and other requisites for the Library. Members of the committee are given in Table - 3.10.

Table - 3.10 Members of the Library Purchase Committee

1.	Member Secretary, State Pollution Control Board, Odisha	Chairman
2.	Senior Environmental Engineer- L-I (N), State Pollution Control Board, Odisha	Member
3.	Senior Environmental Engineer- L-I (C), State Pollution Control Board, Odisha	Member
4.	Senior Environmental Scientist – L-I (P), State Pollution Control Board, Odisha	Member
5.	Administrative Officer, State Pollution Control Board, Odisha	Member
6.	Sr. Law Officer, State Pollution Control Board, Odisha	Member
7.	Environmental Scientist, In-Charge of Library	Member Convener

CHAPTER – IV**BOARD MEETINGS****4.1 MEETINGS**

The Board meetings of the State Pollution Control Board, Odisha occurred thrice during the year 2015-16 as detailed in Table-4.1.

Table - 4.1 Board Meetings

Sl. No.	Board meeting Number	Date
1.	111 th	30.05.2015
2.	112 th	28.11.2015
3.	113 th	11.03.2016

4.2 IMPORTANT DECISIONS OF BOARD MEETINGS ARE AS FOLLOWS:

- Approval and ratification of revised categorization of industrial and mining projects based on investment and pollution potential and the revised time limit for disposal of consent application.
- Exemption of Green category of Industries from Consent Administration of the Board.
- Approval of change of inspection and sampling frequency for different categories of Industries & Mines.
- Approval of auto renewal of consent to operate for Red (2-5 years) and Orange (10 years) category of industries on receipt of required consent fees and self-certification/3rd party certification on compliance of consent conditions.
- Decision to develop and implement a common application form catering to various environment related Acts with required amendments in Odisha Air & Water Rules, 1983 by the Govt..
- Development and implementation of Electronic Management System for all environment /pollution related approval.
- It was decided to provide internship /training for short period on environmental related subjects to the students of different educational institutes without hampering normal work of the Board.
- The Board approved policy decision on inclusion of minor mineral mines with lease area less than 5 hectare under consent administration of the Board as per orders of the Hon'ble NGT, EJB, Kolkata dtd.01.02.2016 in O.A. No. 116/2015/EZ filed by Sri Niranjana Jena vrs. State of Odisha & others.

CHAPTER – V
ACTIVITIES
5.1 CONSENT TO ESTABLISH (CTE)
5.1.1 State Level Single Window Clearance of Projects

List of applications processed through State Level Single Window Clearance Authority (SLSWCA) during the financial year 2015-16 are reflected in Table 5.1.

Table - 5.1 Processed Single Window Applications

Sl. No	Name of the Industry	Product
1)	M/s. Ardent Steel Ltd, Keonjhar	1.2 MTPA Steel Complex
2)	M/s. Orissa Formulations Pvt Ltd, BBSR	Manufacturing of Intravenous Fluid
3)	M/s. Himadri Chemical & Ind Ltd, Sambalpur	Coal Tar
4)	M/s. Ramco Cements Ltd, Choudwar, Cuttack	Cement Grinding Unit 0.9 MTPA
5)	M/s. Beekay Steel Industries Ltd, Kalinga nagar Industrial Area	TMT Project
6)	M/s. G.M Iron & Steel Co. Ltd, Dhakota & Vir Jadunath pur, Mayurbhanj	0.28 MTPA Integrated Steel Plant
7)	M/s. Prakrutik Enterprises Pvt Ltd, Talcher, Angul.	2 MTPA Coal Washery
8)	M/s. Raipur Iron & Steel Co. Pvt Ltd, Jharsuguda	Integrated Steel Plant
9)	M/s. Bhusan Power & Steel Ltd, Sambalpur.	Expansion of Integrated Steel Plant
10)	M/s. Utkal Alumina International Ltd, Doraguda, Rayagada	1.5 MTPA Aluminium Refinery
11)	M/s. Neo Resource Industries Pvt Ltd, Ganjam	Mineral Sand Project
12)	M/s. Bharat Petroleum Corporation Ltd, Sambalpur	Petroleum

5.1.2 District Level Single Window Clearance of Projects

There is no application received under district level single window clearance by regional offices during the financial year 2015-16.

5.1.3 Projects related to Manufacturing and Service Sectors

Board received 1063 nos. of applications from different manufacturing and service sectors for consent to establish during 2015-16 and 692 nos. of pending proposals were carried forward from the year 2014-15.

Consent to establish was granted to 893 units. The detailed status of 1787 nos. of Consent to Establish applications processed during 2015-16 is given in Table-5.2 and 5.3.

Table - 5.2 Status of Consent to Establish (CTE)

Sl. No.	Status	Head office (H.O.)	Regional Office(R.O)	Total
1.	No. of complete applications received during 2015-16	63	1032	1095
2.	Applications carried forward from 2014-15	299*	393	692
	Total applications	362	1425	1787
	i) Consent to establish granted	78	815	893
	ii) Consent to establish refused	03	136	139
	iii) *Applications closed due to non-compliance	210	00	210
	iv) Applications under evaluation	00	474	474
	v) Incomplete application and asked the proponent to comply	71	00	71

Table - 5.3 Details of Consent to Establish Status by Regional Offices

Regional Office	No. of complete applications received 2015-16	No. of cases carried forward from year 2014-15	Total no. of complete applications received	No. of units granted	No. of units refused	No. of cases disposed (5+6)	Under evaluation (4-7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Angul	64	111	175	44	00	44	131
Balasore	70	31	101	66	00	66	35
Berhampur	254	23	277	195	27	222	55
Bhubaneswar	146	100	246	107	41	148	98
Cuttack	112	30	142	100	24	124	18
Keonjhar	25	16	41	25	00	25	16
Rayagada	104	00	104	104	00	104	00
Rourkela	94	36	130	43	43	86	44
Sambalpur	50	11	61	24	00	24	37
Kalinga Nagar	62	16	78	57	00	57	21
Paradeep	32	18	50	33	00	33	17
Jharsuguda	19	01	20	17	01	18	02
Total	1032	393	1425	815	136	951	474

5.1.4 Mines

The detailed status of 11 nos. of applications processed for consent to establish mining operations during 2015-16 is given in Table-5.4.

Table - 5.4 Status of Consent to Establish Mines

Sl. No.	Status	Number of Mines
1.	No. of complete applications received during 2015-16	09
2.	Applications carried forward from 2014-15	02
3.	Total number of complete applications	11
	Consent to Establish granted	08
	Consent Refused	00
	Incomplete applications and asked to apply	03

5.1.5 Status of Consent to Establish of Brick Manufacturing Units (Brick kilns & Fly Ash Bricks)

Details of consent to establish of brick manufacturing units during 2015-16 are given in Table-5.5.

Table - 5.5 Status of Consent to Establish Brick Manufacturing Units (Brick Kilns)

Sl. No.	Status	Number of Cases
1.	No. of complete applications received during 2015-16	39
2.	Applications carried forward from 2014-15	18
3.	Total number of complete applications	57
4.	Consent to Establish granted	24
5.	Consent Refused	13
6.	Nos. of incomplete applications and asked to apply	20

5.1.6 Status of Consent to Establish of Stone Crushers, Iron Ore Crushers and Mineral Beneficiation Units

Consent to establish status of stone crushers, iron ore crushers and mineral beneficiation units and mineral stack yard during 2015-16 is given in Table-5.6.

Table - 5.6 Status of Consent to Establish Stone Crushers, Iron Ore Crushers and Mineral Beneficiation Units

Sl. No.	Status	Number of Cases
1.	Nos. of complete applications received during 2015-16	157
2.	Applications carried forward from 2014-15	85
3.	Total Number of complete applications	242
4.	Consent to Establish granted	88
5.	Consent Refused	20
6.	Nos. of incomplete applications and asked to apply	134

5.2 CONSENT TO OPERATE (CTO)
5.2.1 Status of Consent to Operate of Industries

Board has received 4037 nos. of applications from industries, mines, stone crushers, iron ore crushers, brick kilns, hotels, ceramic and refractories, telecom services, urban local bodies / townships etc. and disposed 3141 nos. of applications for consent to operate during the year 2015-16. The details are given in Table-5.7.

Table - 5.7 Status of Consent to Operate

Name of the office	No. of complete Applications received 2015-16	No. of cases carried forward from 2014-15	Total no. of complete applications	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul R.O.	267	129	396	349	00	349	47	23
Balasore R.O.	341	62	403	344	00	344	69	16
Berhampur R.O.	346	102	448	255	03	258	190	27
Bhubaneswar R.O	365	191	556	211	152	363	203	03
Cuttack R.O.	241	36	277	158	24	182	95	49
Keonjhar R.O.	98	61	159	141	01	142	17	00
Rayagada R.O.	289	00	289	286	03	289	00	27
Rourkela R.O.	311	40	351	275	40	315	36	44
Sambalpur R.O.	452	28	480	261	41	302	130	48
Kalinga Nagar R.O.	128	16	144	123	00	123	21	16
Jharsuguda R.O.	59	11	70	50	00	50	20	20
Paradeep R.O.	71	22	93	68	03	71	22	10
Head office	341	30	371	335	18	353	05	31
Total	3309	728	4037	2856	285	3141	855	314

Category wise consent to operate status during 2015-16 is given in Table-5.8 (a), (b) (c) and (d).

Table - 5.8 Categorywise Consent to Operate Status
(a) Manufacturing Sector, Service Sector and Mines

Name of the office	No. of complete Applications received 2015-16	No. of cases carried forward from 2014-15	Total no. of complete applications (2+3)	No. of units granted CTO	No. of units refused	No. of cases disposed (5+6)	Under evaluation (4-7)	No. of Show Cause Notices Issued
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Angul R.O.	01	02	03	00	00	00	03	00
Balasore R.O.	04	00	04	03	00	03	01	00
Berhampur R.O.	02	00	02	01	01	02	00	00
Bhubaneswar R.O	00	00	00	00	00	00	00	00
Cuttack R.O.	00	00	00	00	00	00	00	00
Keonjhar R.O.	03	00	03	03	00	03	00	00
Rayagada R.O.	01	00	01	01	00	01	00	00
Rourkela R.O.	00	00	00	00	00	00	00	00
Sambalpur R.O.	01	08	09	09	00	09	00	00
Kalinga Nagar	10	00	10	07	00	07	03	00
Jharsuguda	02	00	02	02	00	02	00	00
Paradeep	00	00	00	00	00	00	00	00
Head office	123*	29	152	130	17	147	05	18
Total	147	39	186	156	18	174	12	18

N.B.: *-Includes Standalone Beneficiation Unit / Coal Washery

(b) Stone Crusher, Iron Ore Crusher and Other Mineral Beneficiation Units

Name of the office	No. of complete Applications received 2015-16	No. of cases carried forward from 2014-15	Total no. of complete applications	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul R.O.	168	23	191	175	00	175	16	00
Balasore R.O.	74	30	104	71	00	71	33	03
Berhampur R.O.	68	07	75	50	00	50	25	02
Bhubaneswar R.O	148	05	153	73	77	150	03	00
Cuttack R.O.	03	01	04	04	00	04	00	01
Keonjhar R.O.	36	48	84	73	01	74	10	00
Rayagada R.O.	66	00	66	63	03	66	00	04
Rourkela R.O.	28	02	30	24	02	26	04	00
Sambalpur R.O.	114	00	114	54	16	70	43	13
Kalinga Nagar	34	05	39	39	00	39	00	01
Jharsuguda	07	06	13	04	00	04	09	00
Paradeep	00	00	00	00	00	00	00	00
Total	746	127	873	630	99	729	174	24

(c) Brick Manufacturing Units (Brick Kilns)

Name of the office	No. of complete Applications received 2015-16	No. of cases carried forward from 2014-15	Total no. of complete applications	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul R.O.	01	00	01	00	00	00	01	03
Balasore R.O.	42	00	42	42	00	42	00	02
Berhampur R.O.	12	02	14	01	00	01	13	08
Bhubaneswar R.O	03	10	13	03	10	13	00	00
Cuttack R.O.	09	02	11	05	00	05	06	13
Keonjhar R.O.	00	00	00	00	00	00	00	00
Rayagada R.O.	00	00	00	00	00	00	00	00
Rourkela R.O.	08	04	12	10	00	10	02	15
Sambalpur R.O.	05	01	06	03	00	03	03	02
Kalinga Nagar	00	00	00	00	00	00	00	00
Jharsuguda	05	00	05	01	00	01	04	00
Paradeep	06	01	07	07	00	07	00	09
Total	91	20	111	72	10	82	29	52

5.2.2 Status of Consent to Operate for Wastewater Treatment Facility by the Urban Local Bodies/ Townships under Water (Prevention & Control of Pollution) Act, 1974

The Urban Local Bodies (ULBs) and the industrial townships are required to be regulated under consent administration for disposal of sewage effluent as per provisions under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974.

During the year 2015-16, the Board issued Directions to All Municipal authorities as per the CPCB direction dtd. 21.04.2015 to seek Consent within 60 days and to prepare a time bound action plan for setting up sewerage system covering proper collection, treatment & disposal of sewage generated in the local / urban area. The Board intimated all ULBs to improve sanitary conditions of open drain carrying sewage/sullage on as per the CPCB guidelines. The CPCB, Delhi has formulated new standards for treated sewage effluent which has been intimated to all ULBs and concerned departments.

The Hon'ble High Court initiated legal action against ULBs which is continuing.

5.2.3 Status of Installation of GPRS based Real Time Data Acquisition System (RT-DAS) from the Online Monitoring Stations of the Industries in Odisha

The Board has implemented online monitoring system as a tool for self-regulation for the industries and at the same time, maintain transparency with the regulators i.e, SPCBs and CPCB. The CPCB advised all the SPCBs to install central server and software for acquisition of real time data. The system has been introduced in India with an objective to receive online monitoring data from all the States and to maintain a central data base by CPCB for the whole country.

The State Pollution Control Board, Odisha has developed a GPRS based Real Time Data Acquisition System (RT-DAS) using 'Y' cable to receive tamper proof data directly from online Stack, AAQ & Effluent monitoring systems installed by the industries. This concept of GPRS based RT-DAS system is found to be unique among all State Pollution Control Boards of the country. The central RT-DAS server has been installed in the Computer Cell of State Pollution Control Board, Odisha at its Head Office, Bhubaneswar. Presently this RT-DAS server is receiving data from 99 nos. of industries and 6 mines operating in the State, details of which is given in Table -5.9.

Table - 5.9 Status of Real Time Data Acquisition from the Online Continuous Monitoring Stations of Industries in Odisha

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
1.	Aarti Steels Ltd (Bidanasi)	Athagarh,Cuttack,Odisha-753014	6	4	0
2.	ACC Limited (Baragarh)	Baragarh,Baragarh,Odisha-768038	4	3	0
3.	Action Ispat and Power (P) Ltd (Jharsuguda)	Jharsuguda,Jharsuguda,Odisha-768202	4	4	0
4.	AdhunikMetaliks Ltd. (Chadrihariharpur)	Chadrihariharpur,Sundergarh, Odisha-770039	9	4	0

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
5.	Agrasen Sponge Private Limited (Chungimati)	Chungimati,Sundergarh,Odisha-770034	2	0	0
6.	Aryan Ispat and Power Pvt Ltd (Lapanga)	Lapanga,Sambalpur,Odisha-768212	2	3	0
7.	B.R. Sponge and Power Ltd. (Bonai)	Bonai,Sundergarh,Odisha-770040	1	0	0
8.	Bhagawati Steels Pvt. Ltd. (Jharsuguda)	Jharsuguda,Jharsuguda,Odisha-768202	1	0	0
9.	Bhaskar Steel and Ferro Alloy Limited (Bonaigarh)	Bonaigarh,Sundergarh,Odisha-770040	1	0	0
10.	Bhushan Energy Limited (Dhenkanal)	Angul, Angul, Odisha-759121	3	0	0
11.	Bhushan Power and Steel Limited (Rengali)	Rengali, Sambalpur, Odisha-768232	26	0	4
12.	Bhushan Steel Limited (Meramundali)	Meramundali,Dhenkanal,Odisha-759121	21	7	7
13.	BILT Graphics Paper Products Ltd (Jaypore)	Jaypore,Koraput,Odisha-764002	1	2	0
14.	Birla Tyres (Chhanpur)	Chhanpur,Balasore,Odisha-756056	3	1	0
15.	Brand Steel and Power Pvt. Ltd. (Keonjhar)	Keonjhar,Keonjhar,Odisha-758031	1	0	0
16.	BRG Iron and Steel Co. Pvt. Ltd. (Dhenkanal)	Dhenkanal,Dhenkanal,Odisha-759122	3	4	0
17.	Cosboard Industries Limited (Jagatpur)	Jagatpur,Cuttack,Odisha-754021	1	0	1
18.	Emmami Paper Mills Limited (Balasore)	Balasore,Balasore,Odisha-756020	3	3	1
19.	Essar Power (Odisha) Ltd. (Paradeep) Essar Steel India Limited (Paradeep)	Paradeep,Jagatsinghpur,Odisha-754141	1	2	1
20.	Essar Steel India Limited (Paradeep) FACOR Power Limited (Randia)	Paradeep,Jagatsinghpur,Odisha-754141	1	3	0
21.	FACOR Power Limited (Randia)	Randia,Bhadrak,Odisha-756135	1	2	0
22.	GMR Kamalanga Energy Ltd (Kamalanga)	Kamalanga,Dhenkanal,Odisha-759121	3	4	1
23.	Goa Carbon Limited (Paradeep)	Paradeep,Jagatsinghpur,Odisha-754142	1	2	0

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
24.	Govindam Projects Pvt Ltd (Kuarmunda)	Kuarmunda,Sundergarh,Odisha-770039	1	0	0
25.	Grewal Associates Pvt. Ltd. (Barbil)	Barbil,Keonjhar,Odisha-758035	2	0	0
26.	Hindalco Industries Limited (Lapanga)	Lapanga,Sambalpur,Odisha-768212	8	4	1
27.	HINDALCO Ltd., FRP Plant (Hirakud)	Hirakud,Sambalpur,Odisha-768016	3	0	1
28.	HINDALCO Ltd.,Captive Power Plant (Hirakud)	Hirakud,Sambalpur,Odisha-768016	5	3	1
29.	HINDALCO Ltd.,Smelter Plant (Hirakud)	Hirakud,Sambalpur,Odisha-768016	6	1	5
30.	Indian Farmers Fertilizer Coperative Ltd (Paradeep)	Paradeep,Jagatsinghpur,Odisha-754142	5	3	1
31.	Indian Metal and Ferro Alloys Ltd (120 MW Power Plant) (Choudwar)	Choudwar,Cuttack,Odisha-754025	2	0	0
32.	Indian Metal and Ferro Alloys Ltd (Charge Chrome Plant) (Choudwar)	Choudwar,Cuttack,Odisha-754025	3	0	0
33.	Indian Metal and Ferro Alloys Ltd (Choudwar)	Choudwar,Cuttack,Odisha-754025	6	4	0
34.	Indian Oil Corparation Limited (Paradeep)	Paradeep,Jagatsinghpur,Odisha-754142	17	7	0
35.	Jai BalajiJyoti Steels Limited (Tainser)	Tainser,Sundergarh,Odisha-770037	2	0	0
36.	Jai Hanuman Udyog Ltd. (Kolabira)	Kolabira,Jharsuguda,Odisha-768213	1	0	0
37.	Jay Jagannath Steel and Power Limited (Sambalpur)	Sambalpur,Sambalpur,Odisha-767026	2	0	0
38.	Jayshree Chemicals Ltd (Ganjam)	Ganjam,Ganjam,Odisha-761025	0	0	1
39.	Jindal India Thermal Power Ltd (Talcher)	Talcher,Angul,Odisha-759130	2	4	0

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
40.	Jindal Stainless Ltd (Jajpur)	Jajpur,Jajpur,Odisha-755026	7	4	2
41.	Jindal Steel and Power Limited (Anugul)	Anugul,Angul,Odisha-759130	21	4	3
42.	Jindal Steel and Power Ltd (Barbil)	Barbil,Keonjhar,Odisha-758035	2	2	0
43.	JK Paper LTD (Jayakapur)	Jayakapur,Rayagada,Odisha-765017	2	3	0
44.	Kamal Jeet Singh Ahluwalia (Keonjhar)	Keonjhar,Keonjhar,Odisha-758035	2	0	0
45.	Kapilas Cement Manufacturing Works (A unit of OCL India Ltd) (Tangi)	Tangi,Cuttack,Odisha-754082	1	3	0
46.	Karakola Sponge Iron Ltd. (Barbil)	Barbil,Keonjhar,Odisha-770048	2	0	0
47.	MaithanIspat Limited (Jakhapura)	Jakhapura,Jajpur,Odisha-755026	2	0	0
48.	Mahakali Ispat Pvt. Ltd (Bonaigarh)	Bonaigrah,Sundargrah,Odisha-770038	1	0	0
49.	Mayur Electro Ceramics Pvt. Ltd. (Baripada)	Baripada,Mayurbhanj,Odisha-757001	2	0	0
50.	MGM Minerals Limited (Steel Division) (Nimidha)	Nimidha,Dhenkanal,Odisha-759020	1	0	0
51.	Mideast Integrated Steels Ltd. (Jajpur)	Jajpur,Jajpur,Odisha-755066	3	4	0
52.	MSP Metalics Limited (Jharsuguda)	Jharsuguda,Jharsuguda,Odisha-768202	8	1	0
53.	MSP Sponge Iron Limited (Keonjhar)	Keonjhar,Keonjhar,Odisha-758013	3	0	0
54.	Narbheram Power & Steel Pvt. Ltd. (Dhenkanal)	Dhenkanal,Dhenkanal,Odisha-759025	1	0	0

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
55.	N. K. Bhojani Pvt. Ltd. (Keonjhar)	Keonjhar,Keonjhar,Odisha-758035	1	0	0
56.	NALCO Ltd.,Captive Power Plant (Angul)	Angul,Angul,Odisha-759145	9	4	1
57.	NALCO Ltd.,Refinery (Damanjodi)	Damanjodi,Koraput,Odisha-763008	3	4	1
58.	NALCO Ltd.,Smelter Plant (Angul)	Angul,Angul,Odisha-759145	11	4	1
59.	Nava Bharat Ventures Ltd (Dhenkanal)	Dhenkanal,Dhenkanal,Odisha-759121	3	3	1
60.	Neelachallspat Nigam Limited (Duburi)	Duburi,Jajpur,Odisha-755026	3	3	2
61.	NTPC Limited (TSTPS) (Deepshikha)	Deepshikha,Angul,Odisha-759147	6	3	1
62.	NTPC Limited (TTPS) (Talcher Thermal)	Talcher Thermal,Angul,Odisha-759101	6	4	1
63.	NTPC-SAIL Power Company Private Limited (Rourkela)	Rourkela,Sundergarh,Odisha-769011	2	4	0
64.	OCL India Ltd,Cement Unit (Rajgangpur)	Rajgangpur,Sundergarh,Odisha-770017	9	4	1
65.	OCL Iron and Steel Limited (Rajgangpur)	Rajgangpur,Sundergarh,Odisha-770017	3	0	0
66.	Odisha Power Generation Corporation LTD (Banaharpali)	Banaharpali,Jharsuguda,Odisha-768235	2	4	0
67.	Paradeep Phosphate LTD (Paradeep)	Paradeep,Jagatsinghpur,Odisha-754145	3	4	3
68.	Patnaik Minerals Pvt. Ltd. (Keonjhar)	Keonjhar,Keonjhar,Odisha-758038	2	0	0
69.	Patnaik Steels and Alloys Ltd. (Keonjhar)	Keonjhar,Keonjhar,Odisha-752001	1	0	0
70.	Pawanjay Sponge Iron Limited (Bijabahal)	Bijabahal,Sundergarh,Odisha-770039	1	0	0

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
71.	Penguin Trading and Agencies Ltd (Barbil)	jharsuguda,jharsuguda,Odisha-758035	2	0	0
72.	Prabhu Sponge(p) Limited (Rajgangpur)	Rajgangpur,Sundergarh,Odisha-770017	2	0	0
73.	Rourkela Steel Plant (Rourkela)	Rourkela,Sundergarh,Odisha-769011	24	4	5
74.	Reliable Sponge Pvt. Ltd. (Sundergarh)	Sundergarh,Sundergarh,Odisha-770031	2	0	0
75.	Rungta Mines Limited (Koira)	Koira,Sundergarh,Odisha-770048	5	4	0
76.	Sakthi Sugars Limited (Haripur)	Haripur,Dhenkanal,Odisha-759025	1	0	3
77.	Samaleswari Ferro Metals Ltd (Bishalkhinda)	Bishalkhinda,Sambalpur,Odisha-768200	1	0	0
78.	Scan Steels Limited (Unit-2) (Budhakata)	Budhakata,Sundergarh,Odisha-770018	3	0	0
79.	Scan Steels Limited (Unit-I) (Rajgangpur)	Rajgangpur,Sundergarh,Odisha-751001	1	0	0
80.	SesaSterlite Ltd (IPP) (Jharsuguda)	Jharsuguda,Jharsuguda,Odisha-768202	4	4	1
81.	SesaSterlite Ltd (Lanjigarh)	Lanjigarh,Kalahandi,Odisha-766027	3	1	0
82.	SesaSterlite Ltd (Smelter and CPP) (Bhurkamunda)	Bhurkamunda,Jharsuguda,Odisha-768201	15	4	2
83.	Shiv Mettalicks (P) Ltd (Rourkela)	Rourkela,Sundergarh,Odisha-770038	1	0	0
84.	Shree Hari Sponge Pvt. Ltd. (Bonaigarh)	Bonaigarh,Sundergarh,Odisha-770038	1	0	0
85.	ShriJagannath Steels and Power Ltd. (Barbil)	Barbil,Keonjhar,Odisha-758042	1	0	0
86.	ShyamMetalics and Energy Ltd (Lapanga)	Lapanga,Sambalpur,Odisha-768212	8	1	1

Sl. No	Name	Address	No. of online monitoring stations connected to RT-DAS Server of the SPC Board, Odisha till 31-03-2016		
			Stack	AAQ	Effluent
87.	SMC Power Generation Limited (Hirma)	Hirma, Jharsuguda, Odisha-768202	2	2	0
88.	SumritMetaliks Pvt. Ltd. (Barbil)	Barbil, Keonjhar, Odisha-758035	1	0	0
89.	Surendra Mining Industries (P) Ltd. (Bonai)	Bonai, Sundergarh, Odisha-770038	2	0	0
90.	Tata Sponge Iron Ltd (Joda)	Joda, Keonjhar, Odisha-758034	3	3	0
91.	Times Steel and Power Pvt. Ltd. (Rourkela) TRL Krosaki Refractories Ltd (Belpahar)	Rourkela, Sundergarh, Odisha-770031	1	0	0
92.	TRL Krosaki Refractories Ltd (Belpahar)	Belpahar, Jharsuguda, Odisha-768218	0	1	0
93.	UltraTech Cement Ltd. (Arda)	Arda, Jharsuguda, Odisha-768220	2	3	0
94.	UtkalMetallics Limited (Rourkela)	Rourkela, Sundergarh, Odisha-769001	1	0	0
95.	Visa Steel Limited (Kalinganagar)	Kalinganagar, Jajpur, Odisha-755026	5	4	0
96.	VISA SunCoke Limited (Kalinganagar)	Kalinganagar, Jajpur, Odisha-755026	2	0	0
97.	Vishal Metallics Pvt Ltd (Bonai)	Bonai, Sundergarh, Odisha-770038	1	0	0
98.	Viraj Steel and Energy Ltd. (Lapanga)	Lapanga, Sambalpur, Odisha-768005	2	0	0
99.	Yazdani Steel and Power Limited (Kalinga Nagar)	Kalinga Nagar, Jajpur, Odisha-755026	1	0	0
Total			498	140	54
MINES					
100.	Balasore Alloys Limited (Kaliapani)		0	0	1
101.	BC Mohanty and Sons Pvt Ltd (Duburi)	Duburi, Jajpur, Odisha-755047	0	0	2
102.	IMFA Mines, Sukinda (Sukinda)	Sukinda, Jajpur, Odisha-755047	0	0	2
103.	Kalarangiatta Chromite Mines (Sukinda)	Sukinda, Jajpur, Odisha-755047	0	0	2
104.	Misrilal Mines Private Limited (Jajpur)	Jajpur, Jajpur, Odisha-755047	0	0	2
105.	Ostapal Chromite Mine (Sukinda)	Sukinda, Jajpur, Odisha-755047	0	0	2

5.3 CLOSURE DIRECTIONS

As a part of the Board's regulatory role, all units brought under consent administration, if found defaulting the prescribed standards, are allowed reasonable time to comply with the standards. On persistent non-compliance, the defaulting units are served with Show Cause Notices (Table 5.7) followed by personal hearing and are generally prescribed time bound action plan for compliance. Consistent non-compliances lead to issue of closure directions. Table-5.10 shows the status of closure directions, issued by the Board.

Table - 5.10 Status of Closure Directions Issued During 2015-16.

No. of directions issued	No of industries under closure
561	388

5.4 PUBLIC HEARING

The State Pollution Control Board has been entrusted with the responsibility of conducting public hearing for the projects requiring environmental clearance from the Ministry of Environment and Forests with the assistance from the District Administration as per EIA Notification No. S.O.-1533 (E), dt. 14.09.2006.

Details of public hearings conducted during the period 2015-16 are given in Table-5.11 and 5.12.

Table - 5.11 Status of Public Hearings

1.	Number of projects received by the Board for public hearing during the financial year 2015-16.	17
2.	Number of projects carried forward from previous financial year 2014-15	11
	Total Number of projects received for public hearing	28
3	Number of projects for which public hearing have been conducted	14
4	Number of cases for which public hearing date fixed	03
5	Number of cases pending before the Hon'ble Supreme court	01
6	Number of cases withdrawn	01
7	Number of cases where in Collectors were requested to fix up date	09

Table - 5.12 Details of Projects for which Public Hearings Conducted

Sl No.	Name & Address Of the project	Purpose of Public hearing	Date of Public Hearing	Category
1	Mandapal Sand mine of M/s MCL, at Nizgarh zami and Gopinathpur, Talcher Area, Dist-Angul.	Production of 0.25 m ³ /A over an area of 17.895 Ha.	02/4/2015	B
2	Gandharagola Stone Mines, M/s Medley Minerals India Ltd, At-Gandharagola, Titlagarh, Dist-Bolangir.	Enhancement of production capacity upto 5010 m ³ per year over an area of 29.744 Ha.	18/4/2015	B

Sl No.	Name & Address Of the project	Purpose of Public hearing	Date of Public Hearing	Category
3	Hingula Washery M/s Mahanadi Coal fields Ltd. Hingula Area (Balram OCP), Dist-Angul.	10 MTPY coal washery within lease hold area of Balaram OCP	28/4/2015	A
4	Paradip Port Trust (Offshore Breakwater) Paradip , Dist-Jagatsinghpur	Construction of offshore breakwater	29/4/2015	A
5	Balaram OCP M/s Mahanadi coal fields Ltd , Dist-Angul	Expansion of coal production from 8MTPA (normative (to 20 MTPA (peak) over an area of 2507.42 ha.	12/5/2015	A
6	Sarumuhana –Chunaghati Limestone and Dolomite mines M/s B.D. Patnaik Minerals Pvt Ltd, At-Sarumuhana –Chunaghati, Rajgangpur , Dist-Sundergarh.	Production of lime stone 0.25 MTPA with opencast semi mechanized mining method. M.L. Area-44.742 Ha.	24/6/2015	B
7	Gandhargola Decorative Stone Mines M/s Medley Minerals India Ltd. At-Gandharagola village, Titlagarh, Dist-Bolangir.	Enhancement of production capacity from 630 m ³ to 1800 m ³ over an area of 9.919 Ha.	3/7/2015	B
8	Parsurampur Decorative Stone mine M/s New Laxmi Granites At-Parasurampur, Parlakhemundi,Dist-Gajapati	Enhancement of production from 2,250M ³ /A to 30,000m ³ /A over an area of 49.922 Ha.	3/7/2015	B
9	M/s OCL Iron and Steel Ltd At-Lamloi,Po-Garvana,Rajgangpur, Sundargarh	Expansion cum modification of Integrated steel plant capacity from 0.075MTPA to 0.5 MTPA and 84 MW CPP.	12/8/2015	A
10	Kamarda Chromite mines M/s B.C Mohanty Sons,Kamarda ,Sukinda, Dist-Jajpur	Handling of existing OB ,Modification or modernization of existing COB plant for enhancement of chrome concentrate from 36000 TPA to 66000 TPA.,M.L.-107.24 Ha.	16/9/2015	A

11	Korapani Irrigation Project Govt of Odisha, Dept of Water Resources At-Barghat, Bonei Subdivision, Dist-Sundargarh.	Irrigation Project of 3500 ha CCA	8/10/2015.	A
12	Ib Valley Coal Washery(Lakhanpur- Belpahar-Lilari OCP), At- Charla, Lakhanpur. Dist-Jharsuguda,	10 MTPA Coal washery	15/2/2016	A
13	Bhusan Power & Steel Ltd, Lapanga, Thelkoloi, Rengali, Dist-Sambalpur.	Expansion of plant capacity from 3.0 MTPA to 5.5 MTPA along with enhancement of CPP from 560 MW to 710 MW.	17/2/2015	A
14	Boudh Distillery Pvt Ltd Titerikata Village Ramvikata, Tahasil- Herbhanga, Dist-Boudh	Establish of 2x60 KLD Distillery and 2x2.5 MW Co generation power plant	11/3/2016	B

5.5 STATUS OF WATER CESS

Status of Water Cess Assessment, Collection, Remittance and Reimbursement for the Year 2015-16 is given in Table-5.13.

Table - 5.13 Status of Water Cess

Sl.No	Water Cess Assessment	Amount in Rupees (₹)
1	Total Assessment Of Industry & ULBs	6,78,15,149/-
2	Total Collection from Industry & ULBs	6,84,49,493.46/-
3	Remittance to MoEF	6,91,00,000/-
4	Reimbursement to the Board	4,41,68,000/-

ENFORCEMENT UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

5.6.1 Implementation of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008

5.6.1.1 Authorisation

As per the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, the Board ensures proper management of hazardous waste through authorisation administration. The Authorization status of hazardous waste generating industries during 2015-16 is given in Table 5.14.

Table 5.14 Authorization Status of Hazardous Waste

Sl. No.	Authorization status	Number
3.	Total nos. of complete applications received	245
(i)	Nos. of unit granted authorisation	238
(ii)	Nos. of units issued Show Cause Notices	6
(iii)	Nos. of units refused	1
(iv)	Total disposal of application	245

5.6.1.2 Utilization and Disposal of Hazardous Waste

The SPCB, Odisha has taken special initiatives to enhance the utilization of the major hazardous waste generated from Aluminium Smelter plants and Steel Plants. Further, the Board has enforced the provision of Rule-11 of the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 to streamline the utilization of major hazardous waste like L. D. Sludge, Vanadium sludge, Aluminium Dross, Spent Pot Lining, Used Anode Butt etc. and to prevent reprocessing without compliance to this rule. The Board has taken lot of initiation to conduct joint trial run of the hazardous waste reprocessing units in collaboration with CPCB, New Delhi and its Zonal Office, Kolkata. This is intended to recover more resources from the hazardous wastes. Details of the action taken during 2015-16 are as follows;

(A) Utilisation of Hazardous Wastes

i. LD Sludge:

LD Sludge is the waste which is generated from Gas Cleaning Plant of Steel Melting Shop (SMS) during steel making process. This is the Flue Gas Cleaning Residue which is treated as Hazardous Waste under stream 35.1 of schedule-I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. Also high pH (12.59) of the sludge indicates its corrosive nature and may be categorised under class C2 of Schedule-II of the said rule.

CPCB, New Delhi has granted conditional approval to M/s Suraj Products Ltd., At- Barpali, PO- Kesramal, Dist- Sundargarh to utilize such waste @ 68,500 T/A for manufacturing of cold briquettes to be used in blast furnace for production of pig iron after conducting joint inspection and monitoring with SPCB, Odisha. Subsequently this industry has been issued with authorisation by the Board for utilization of L.D. Sludge.

ii. Aluminium Dross :

Aluminium dross is a fluoride containing hazardous wastes generated from the cast house of Aluminium smelter industries. As per the provision of Rule-11 of Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008, utilization of Aluminium dross requires permission of Central Pollution Control Board. In this regard earlier during Dec-2015 a trial run of 2 industries i.e. M/s Hindalco Industries Ltd., Hirakud Complex, Hirakud, Dist - Sambalpur, Odisha with capacity 3960 T/A and M/s Gaurav Aluminium, At/Po - Hirma, Dist - Jharsuguda, Odisha of capacity 12,000 T/A have been conducted in presence of officials of CPCB, New Delhi and Officials of this Board to verify the process details of utilization, pollution control measures and emission/discharge. As per the recommendation in the trial run report, CPCB, New Delhi has prescribed details of Standard operating Procedure (SoP) and checklist for minimal requisite facility to be adopted by this type of industries who propose to utilize such waste.

iii. Used Anode Butt :

Used anode butt is considered as fluoride containing hazardous waste (Schedule-I/ Stream-11.6) that is generated from Aluminium Smelter industries. Such hazardous waste can be utilized to produce Electrode carbon paste.

During 2015-16 CPCB, New Delhi has granted conditional permission to 04 nos of used anode butts reprocessing units i.e. M/s Aditya Aluminium (Unit of M/s Hindalco Industries Ltd.), At/Po- Lapanga, Sambalpur (Capacity- 20,546 T/A), M/s Metakani Resources, Sambalpur (capacity - 47040 T/A), M/s Metacast International, Sambalpur (capacity - 10,080 T/A) and M/s Omm Cee Business, Rourkela (capacity - 3300 T/A) which are operating in the state of Odisha. Pursuant to CPCB permission these units have been granted authorisation by this Board for reprocessing of used anode butt.

iv. Spent Pot Lining :

Spent Pot Lining (SPL) is a hazardous waste generated from the pot room of Aluminium Smelters and is getting accumulated in the premises of Smelters due to unavailability of proper utilization / disposal options. In the recent past, two re-processing units i.e. M/s Subhra Chemicals, Jagatpur, Cuttack and M/s Green Energy Resources, Sambalpur have been allowed by CPCB, New Delhi and SPCB, Odisha for trial run for

detoxification and utilization of carbon portion of SPL. However, the disposal of refractory portion of SPL and mixed of refractory & carbon have been a challenge and yet to be explored.

A meeting was taken by SPCB, Odisha on 'Environmental issues associated with Aluminium Smelters' were discussed in presence of representatives of CPCB, New Delhi, SPCB, Odisha, aluminium smelter industries, re-processing units and TSDF on 29-10-2015 and it was decided to conduct a trial run at CHWTSDF, Jajpur for SPL samples collected from all the 4 Aluminium Smelters operating in the state of Odisha. Subsequently all the Aluminium Smelters have been instructed to segregate and store carbon and refractory portions of SPL under covered shed and to supply samples of SPL (carbon, refractory, carbon and refractory) to CHWTSDF, Jajpur for trial run purpose to develop a protocol.

v. Vanadium Sludge:

Vanadium containing sludge is generated from the Alumina Refineries which finds a place in Schedule- II under Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008 and re-processing of vanadium sludge requires prior permission of CPCB, New Delhi under Rule-11. Accordingly, the refineries have been directed to dispose their Vanadium sludge to re-processing industries having approval from CPCB under rule-11 and authorization from SPCB, Odisha.

(B) Registration of Schedule-IV Hazardous Waste

During the financial year 2015-16, the following industries have granted authorization for recycling/ re-processing of different hazardous waste under Schedule- 4 under Hazardous Waste (Management Handling & Transboundary Movement) Rules, 2008.

Sl. No.	Name of the Re-processor Unit	Authorised Quantity	Validity of Authorisation
1.	Raj Lubricants, At/Po- Januganj, Dist- Balasore-756019, Odisha	Used Oil 1500 KL/A	31/03/2019
2.	Susim Enterprises At- 154/F & G, New Industrial Estate, Jagatpur, Dist- Cuttack, Odisha	Used Oil 1200 KL/A	31/03/2019
3.	Ratna Industries, At/ Po- Jamunanki, Kuarmunda, Dist- Sundargarh, Odisha - 770039	Used Oil 750 KL/A	31/03/2016
4.	N. S. Chemicals, Plot No.E/72, Chhend Colony, Rourkela, Sundargarh	Used Oil 936 KL/A	31/03/2020
5.	East Coast Biotech Project, At - Paniora (Near Sungranite Exports Ltd.), PO-Palaspur, Dist- Khurda, Odisha	Zinc Skimming / Zinc Ash / Zinc Dross 3000 T/A	31/03/2019
6.	Dhan Shree Smelters, At- Plot No. 154/C & D, New Industrial Estate, Jagatpur, Dist- Cuttack, Odisha	Lead acid battery plates and other lead scraps 1800 T/A	31/03/2019
7.	Shriya Engineers & Chemicals, Plot No.-39, IDC Kalunga, Po-Kalunga, Dist- Sundargarh, Odisha -769031	Waste Oil 7350 KL/A	31/03/2020

C) Common Facility for Disposal of Hazardous Wastes

A Common Hazardous Waste Treatment, Storage And Disposal Facility (CHWTSDF) has been established during financial year 2010-11 at Kanchichuan, Jajpur Odisha operated by M/s Ramky Enviro Engineers Ltd. with consented capacity of 25,000 T/A for secured landfill, 12,000 T/A of waste treatment and stabilisation and 3,000 T/A of incinerable hazardous waste storage. By far, 131 nos. of Industries / Mines have taken membership agreement with Common Hazardous Waste Treatment Storage Disposal Facility (CHWTSDF) developed at- Kanchichuan, Po-Mangalpur, Via- Sukinda, Jajpur operated by M/s Ramkey Enviro Engineers Limited, Hyderabad. The status of disposal of hazardous waste at CHWTSDF in as follows;

- Hazardous waste received from various Industries/Mines by CHWTSDF - 13,671.23 T
 - i. Landfill after treatment - 10,617.81 T
 - ii. Direct Landfill - 3,053.42 T

5.6.2. Implementation of Manufacture, storage and Import of Hazardous Chemical Rules, 1989 and amendments thereof

The Board has not received any application for import of Hazardous Chemicals to the State during 2015-16.

5.6.3. Implementation of Public Liability Insurance Act, 1991

As per provisions of the Public Liability Insurance Act, 1991, the industries handling hazardous substances above the regulatory quantity are required to take insurance policy for providing immediate relief to the victims in case of chemical accidents. 22 nos. of industries have taken insurance policies under PLI Act, 1991.

5.6.4. Implementation of Batteries (M & H) Rule, 2001

The Board has received 07 nos. of half yearly returns from April' 2015 to Sep' 2015 and 95 nos. of half yearly returns from Oct' 2015 to March' 2016 from battery units. These returns have been received from Manufacture, Re-conditioner, Assembler, Dealer, Bulk Consumer, Auctioneer, Importer & Recycler.

5.6.5 Implementation of the Biomedical Waste (Management and Handling) Rules, 1998

Biomedical wastes generated in different Health Care Establishments (HCEs) need to be disposed of safely without any adverse impacts on human health and environment. It is the prime responsibility of every occupier of the HCE generating Biomedical Wastes (BMWs) to ensure requisite management and disposal of wastes as per the Biomedical Waste (Management & Handling) Rules, 1998.

Ministry of Environment, Forest and Climate Change, Govt. of India in supersession of Biomedical Waste (Management and Handling) Rules, 1998 has notified Biomedical Waste Management Rules, 2016 under Environment (Protection) Act, 1986 on 28th March, 2016. The important features of the new Rule is given below:

- Every occupier generating biomedical waste is required to obtain authorization from the State Pollution Control Board and ensure proper management of the Biomedical Waste.
- New Rules have introduced 4 categories of Biomedical Waste i.e. Yellow, Red, White & Blue.
- Format of Accident Reporting in Form-I, Authorization application in Form-II, Authorization order in Form-III & Annual Report in Form-IV have been revised.

- Validity period for authorization for bedded health care facility and operator of a common facility is synchronized with the validity of consents and one time for non-bedded occupiers.

5.6.5.1 Inventorisation of Health Care Establishments

The Board has brought 1987 nos. of HCEs under the authorization administration under the Biomedical Waste (Management & Handling) Rules 1998 and the districtwise distribution of such HCEs with respect to bed strength is given Table- 5.15.

Table – 5.15 Districtwise Distribution of Health Care Establishment under Authorization Administration

DISTRICTWISE DISTRIBUTION OF HEALTH CARE ESTABLISHMENTS IN ODISHA							
SL. No.	District	With 500 beds & above	With 200 beds but <500 beds	With 50 beds but < 200 bed	< 50 beds	Other * Category	Total
1	Angul	----	1	8	47	3	59
2	Balangir	----	----	2	40	12	54
3	Balasore	0	1	2	55	34	92
4	Bargarh	----	----	2	38	6	46
5	Bhadrak	----	1	3	27	2	33
6	Boudh	----	----	1	4	0	05
7	Cuttack	1	2	21	248	89	361
8	Deogarh	----	----	2	4	1	07
9	Dhenkanal	----	----	3	41	0	44
10	Gajapati	----	----	3	16	0	19
11	Ganjam	1	0	6	145	41	193
12	Jagatsinghpur	----	----	2	32	4	38
13	Jajpur	----	1	0	33	4	38
14	Jharsuguda	----	----	5	34	11	50
15	Kalahandi	----	1	3	26	3	33
16	Kandhamal	----	----	2	13	2	17
17	Kendrapara	----	----	1	23	1	25
18	Keonjhar	----	----	7	43	16	66
19	Khurda	5	6	24	145	79	259
20	Koraput	----	----	4	22	27	53
21	Malkangiri	----	----	1	10	18	29
22	Mayurbhanj	----	1	5	29	8	43
23	Nawarangpur	----	----	2	6	15	23
24	Nayagarh	----	1	3	43	11	58
25	Nuapada	----	----	4	7	0	11
26	Puri	----	1	2	62	16	81
27	Rayagada	----	1	3	22	18	44
28	Sambalpur	1	1	3	58	15	78
29	Sonepur	----	----	1	9	02	12
30	Sundargarh	1	0	10	68	37	116
	Total	09	18	135	1350	475	1987

NB : *Pathological Laboratories, diagnostic centre etc

5.6.5.2 Management of Biomedical Waste

As per the provisions of the Biomedical Waste (Management and Handling) Rules, 1998 all the HCEs are required to properly treat and dispose different types of biomedical waste generated from the units. Most of Health Care Units in Odisha have taken up inhouse biomedical waste segregation, treatment and disposal method as specified in the rule. Three important Govt. Medical Colleges and Hospitals namely, S.C.B Medical College and Hospital (SCB MCH), Cuttack, M.K.C.G Medical College and Hospital (MKCG MCH), Berhampur and V.S.S Medical College and Hospital (VSS MCH), Burla, Sambalpur have developed their own infrastructures for the treatment of Biomedical Wastes such as incineration, shredder, microwave etc. which are being operated by engaging private agencies. The agencies are: M/s. Medi-Aid Marketing Services - engaged by SCB MCH, M/s. Life Line Pharma - engaged by MKCG MCH and M/s. Biotech Solution- engaged by VSS MCH. These three facilities are being shared by other near by small government HCEs.

The Common Biomedical Waste Treatment Disposal Facility (CBWTDF) by M/s Saniclean Pvt. Ltd., at Tangiapada, Khurda is taking care of segregated biomedical waste of hospitals in Cuttack city, Bhubaneswar city, Jagatpur, Choudwar & Khurda town. In addition, M/s. Medi-Aid Marketing Services is operating the biomedical waste management facility of Rourkela Govt. Hospital campus, Rourkela on Public Private Partnership mode. All the above private agencies have been authorized by the Board for the purpose. Out of 1987 HCEs, 500 units are utilizing the services of aforesaid common facilities.

5.6.5.3 Status of Authorisation Application of Health Care Establishments

The authorisation application status of the HCEs during 2015-16 is presented in Table-5.17

Table - 5.17 Authorisation Status of HCEs During 2015-16

Sl. No.	Status of HCEs	
1	No. of complete Applications received during 2015-16	565
2	No. of cases carried over from year 2014-15	217
3	Total no. of complete applications received	782
4	Nos. of HCEs granted authorisation	556
5	Nos. of HCEs refused authorisation	09
6	Nos. Under Evaluation / Incomplete application	217
7	Nos. of HCEs issued letters for violation	105
8	Nos. of HCEs issued show cause notices	86
9	Nos. of HCEs inspection conducted	856

5.6.6. Implementation of the Municipal Solid Waste (Management & Handling) Rules, 2000

5.6.6.1 Authorisation

As per the Rules, the Urban Local Bodies (ULBs) are required to take action for proper management of municipal solid wastes, seek authorization for setting up and operation of waste processing and disposal facilities from the Board and submit the annual report in Form II every year to the State Pollution Control Board, Odisha. The Board has been pursuing this matter with all urban local bodies since the enactment of the Rules. For the effective implementation of the provisions of the Municipal Solid Wastes (Management and Handling) Rules, 2000 awareness drive was conducted by the Board at all Regional Offices on 16th December, 2014.

During 2015-16, 11 nos. of ULBs have applied for authorization and the Board has granted authorization to 32 Nos. of ULBs under the Municipal Solid Waste (Mangaement & Handling) Rules, 2000. The Board has served 11 nos. of show cause notices

Details of authorization granted to various ULBs is given in Table-5.18.

Table - 5.18 List of Municipalities/ NACs Granted Authorization During 2015-16.

Sl. No.	Name of the ULBs granted authorization	Location and Area Used for setting up waste processing & disposal facility.
1.	Choudwar Municipality, Po: Choudwar, Dist: Cuttack	Mouza: Sultanpur, Khata no. 379, plot no. 80/1098 an area of Ac. 6/66
2.	Bhuban NAC, Bhuban, Dist: Dhenkanal	Mouza: Muktapasi, Unit-2, Khata no. 85, plot no. 12, 15, 16, 17, 18, 19 & 20 area - Ac. 2.757
3.	Nimapara NAC, At/Po: Nimapara, Dist: Puri	Mouza: Patapur, Plot no. 4769, Khata no. 595 and area-Ac. 2.72
4.	Jagatsinghpur Municipality	Plot no. 758, Khata no. 870, mouza-Kantaballavpur of area Ac. 3.60
5.	Talcher Municipality, Dist: Angul	Plot no. 118 (Part), holding no. 1255, Village: Nizigarh Town, Area Ac. 10.0
6.	Balugaon NAC, Dist: Khurda	Plot no. 331, Khata no. 144, mouza-Akhuapokhra and area-Ac. 3.0
7.	Jeypore Municipality, Po: Jeypore, Dist: Koraput	Khata no. 103, plot no. 294, 350, Mouza-Mokaput an area of Ac. 5.0
8.	Rajgangpur Municipality	Plot no. 387/1 & 671, Khata no. 169, Mouza-Bhagat Tola and area Ac. 15.0
9.	Angul Municipality	Plot no. 618 / 2919 & 655 / 2920, Khata no. 324 (AJA), Mouza-Kusasingha an area 5.0 Ac.
10.	Digapahandi NAC, Digapahandi, Dist: Ganjam	Plot no. 160, 161, 163, 165, 166, Khata no. 66, mouza-Ratanei Chingudi Dei and area -Ac. 4.586
11.	Koraput Municipality	Village-Chindini, Khata no. 204 & 205, Plot no. 111 & 59 an area of Ac. 10.0
12.	NAC, Patnagarh, Po: Patnagarh, Dist: Bolangir	Plot no. 620, Khata no. 679, mouza-Rampali, Ward no. 8 and area Ac. 5.28
13.	Athamallik NAC, Po: Athamallik, Dist: Angul	Plot no. 155, Khata no. 72, mouza-Tangianisha, Area-Ac 5.0
14.	Pattamundai Municipality, Pattamundai, Dist: Kendrapara Pin: 754 215	Plot no. 1923, Khata no. 875, mouza-Matia, Area-Ac. 2.0
15.	Barapali NAC, Po: Barapali, Dist: Bargarh	Plot no. 2786, Khata no. 1428, mouza-Barapali, an area 4.24 Ac.
16.	Barbil Municipality	Khata no. 40, Plot no. 815 / 1231, mouza-Matkambeda, an area of Ac.5.240
17.	Cuttack Municipal Corporation	Chakradharpur, Plot no. 1009, Khata no. 604, Area-27.65 Ac., Tehsil-Baranga, Cuttack
18.	Rambha NAC, Dist: Ganjam	Plot no. 2690, 2691, 2695, 2696, 2699, 2700, 2701, 2702 and 2703, Khata no. 1224, mouza-Rambha, Area-Ac. 4.495

19.	Pipli NAC, Dist: Puri	Plot no. 308 & 339, Khata no. 366, at Jayapur Sasan, area of 2.3 Ac.
20.	NAC, Khandapara	Karadabani, Khata no. 2096, Plot no. 811 an area of Ac. 4.42 Dec.
21.	NAC, Umerkote, Po: Umerkote, Dist: Nawarangpur	Plot no. 302 / 305, Khata no. 50, Area-5.0, mouza-Daragaguda
22.	Jatni Municipality, Khurda	Khata no. 334, Plot no. 413, mouza-Sandhapur, an area of Ac. 10.0
23.	Vyasanagar Municipality	Plot no. 53, Khata no. 776 (AJA), mouza-Chandama an area of 2.07 Ac.
24.	NAC, Junagarh, Dist: Kalahandi	Khata no. 334, Plot no. 413, mouza-Sandhapur, an area of Ac. 10.0
25.	Bargarh Municipality, Po/Dist: Bargarh	Khata no. 453, Plot no. 1981, Village-Barahaguda an area of Ac. 18.0
26.	Brajaraj Nagar Municipality, At/Po: Lamtibahal, Dist: Jharsuguda	mouza-Brajaraj Nagar town, Unit no.-1, Khata no. 618, Plot no. 3866 and area-Ac. 10.0
27.	Nayagarh NAC	At: Bhalukhola, Khata no. 1260, Plot no. 179 an area of Ac. 4.0
28.	Bhawanipatna Municipality	At: Mouza-Bhangabari, Khata no. 137, Plot no. 647, 648, Area-5.05 Ac.
29.	Baripada Municipality, Mayurbhanj	Raghunathpur mouza, plot no. 1822, khata no. 263, Area-27.210 Dec., Indapahi, mouza, plot no. 518 to 521 & 536, khata no. 125, Area-14.82 Dec.
30.	Deogarh Municipality, Deogarh	Mouza-Deogarh Town, Unit-9, Rajamunda, Khata no. 159, Plot no. 106 an area covering Ac. 5.00.
31.	Sunabeda Municipality	Mouza-Janiguda, Khata no. 53, Plot no. 324/395 over an area of Ac. 4.20
32.	Subarnapur Municipality, At/Po/Dist: Subarnapur	Plot no. 866, Holding No. 04, mouza-Subarnapur over an area of Ac. 3.00.

5.6.7. Implementation of Plastics Waste (Management and Handling) (Amendment) Rules, 2011

For the implementation of the provisions of the Plastic Waste (Management and Handling) (Amendment) Rules, 2011, so far 08 nos. plastic carry bag manufacturing units has registered with the Board.

Table-5.18 List of Authorised Plastic Waste Collection Centers in Odisha

Sl. No.	Name & Address of Plastic Carry Bag Manufacturing Industries
01.	M/s.Taratarini Packaging Plot No.2/B. Bhagabanpur Industrial Estate, Patrapada, Bhubaneswar-751019.
02.	M/s. Taratarini Packaging, At-2C, Bhagabanpupr Industrial Estate, Patrapada, Bhubaneswar-751019.
03.	M/s. Sriram Poly Udyog. Plot No.B/3, New Industrial Estate, Jagatpur, Phase -III, Cuttack.
04.	M/s. Utkal Plastic Industriews, B-21/22, Khapupria, Dist : Cuttack -10
05.	M/s. Jit Multilayers Pvt. Limited, 65 New Industrial Estate, Jagatpupr, Cutatck.

Sl. No.	Name & Address of Plastic Carry Bag Manufacturing Industries
06.	M/s. Mahavir Packaging, At- New Industrial Estate, Jagatpur, Phase – I, Cuttack.
07.	M/s. SIRI Polypack, Kerada, Rayagada – 765 002
08.	M/s. Tayal Plastic Industries, B-22, Industrial Estate, Khapuria, Cuttack – 10.

5.6.8 Implementation of E-Waste (Management and Handling) (Amendment) Rules, 2011

For the implementation of the provisions of the E-Waste (Management and Handling) (Amendment) Rules, 2011, so far the Board has granted authorization to 07 nos. collection centers for collection of electronic waste and 01 nos. collection centers cum dismantling unit in the State (Table- 5.19).

Table-5.19 List of E-Waste Collection Centers Authorised in Odisha.

Sl. No.	Name of Collection Centers
1.	M/s Greenex India Resources Pvt. Ltd., Bhubaneswar, Dist : Khordha
2.	M/s. S.N.Infosys, Gandhi Nagar, Main Road, Near Paramjyoti Cinema, Dist: Berhampur
3.	M/s. Cosmic Net, Sri Kapil Das Proprietor, B-25, Saheed Nagar, Bhubaneswar, Dist: Khordha.
4.	M/s. J.S Pigments Pvt. Ltd., NH-6, At/PO: Bareipalli, Dist; Sambalpur
5.	M/s. Konark E-Waste Products, At : Plot No. 826, Bidanasi, Dist: Cuttack.
6.	M/s Pollution Control & Management System, Plot No. N-5/305, I.R.C Village, Nayapalli, Bhubaneswar, Dist : Khordha
7.	M/s. Attero Recycling Pvt. Ltd., Nakhara, Baliana, Dist : Khordha.
Name of Collection Centers-cum- Dismantling Unit	
1.	M/s. Sani Clean Pvt. Limited, Tangiapada, Dist: Khordha

The details of addresses of the collection centres are given in the Board's website: www.ospcboard.org. The Bank, Educational Institutes, Electronic items producers, Telecommunication service providers have been requested to channelize E-Waste through authorized collection center or registered dismantlers/recycles.

5.6.9. Construction and Demolition Waste Management Rules, 2016

Ministry of Environment, Forest and Climate Change, Govt. of India has notified **Construction and Demolition Waste Management Rules, 2016 on 29th March, 2016**. This Rule shall be applicable to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organisation or authority who generates construction and demolition waste such as building materials, debris, rubble.

5.7 MONITORING NETWORK FOR WATER AND AIR QUALITY

5.7.1 National Water Quality Monitoring Programme (NWMP)

5.7.1.1. The Board is monitoring the water quality of nine major river systems viz. Mahanadi, Brahmani, Baitarani, Rushikulya, Nagavali, Subarnarekha, Budhabalanga, Kolab and Vansadhara at 64

stations under the CPCB assisted National Water Quality Monitoring Programme (NWMP); one station on Brahmani river and one station on Baitarani river under National river Conservation Programme (NRCP). Besides these, the Board is also monitoring the water quality at five stations of Mahanadi river system, five stations of Brahmani river system, two stations of Baitarani river system and at one station of Budhabalanga river from its own resources under the State Water Quality Monitoring Programme (SWMP).

Board is also monitoring the water quality of other surface water bodies such as Taladanda Canal, Religious ponds in Puri and Bhubaneswar, Chilka and Ansupa lake and coastal water at Puri, Gopalpur and Paradeep under NWMP. Details of monitoring stations are presented in Table-5.20.

The following water quality parameters are determined on monthly basis at all locations.

- (a) *Physical parameters:* Temperature, pH, Alkalinity, Total Suspended Solids (TSS)
- (b) *Indicators of Organic pollution:* Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Free Ammonia – Nitrogen, Ammonical (Ammonium + ammonia)– Nitrogen, Total Kjeldahl Nitrogen (TKN)
- (c) *Bacteriological parameters:* Total Coliform (TC) and Fecal Coliform (FC)
- (d) *Mineral constituents:* Electrical Conductivity (EC), Total Dissolved Solids (TDS), Boron (B), Sodium(Na), Pottassium (K), Sodium Absorption Ratio (SAR), Total Hardness (TH), Chloride (Cl), Sulphate (SO₄), Fluoride (F).
- (e) *Nutrients:* Nitrate (Nitrate + Nitrite) – Nitrogen (Nitrate as NO₃⁻), Phosphate – Phosphorous (PO₄³⁻-P)
- (f) *Metals* Chromium (Cr) (total and hexavalent), Iron (Fe), Nickel (Ni), Copper (Cu), Zinc (Zn), Cadmium (Cd), Mercury (Hg), Lead (Pb)
- (g) *Biological Indices:* Saprobic Index (SI) and Diversity Index (DI) (Monitored only in January, April and October)

Table-5.20 Surface Water Quality Monitoring Stations conducted by the Board under NWMP, NRCP and SWMP

Sl. No.	Source of monitoring	Total No. of Stations		NWMP Sampling Locations	SWMP Sampling Locations
		NWMP	SWMP	Monthly	
(A) River system					
1.	Mahanadi	27	5	Ib : Sundargarh, Jharsuguda Brajarajnagar U/s, D/s Bheden : Bheden R. before Jharsuguda Hirakud reservoir Power Channel D/s Mahanadi : Sambalpur U/s, D/s, Sambalpur FD/s at Huma Sonapur U/s, D/s, Tikarpada, Narasinghpur, Mundali, Cuttack U/s, D/s, Paradeep U/s, D/s Tel : Monmunda Kathajodi: Cuttack D/s Serua : Sankhatrasa Kuakhai: Bhubaneswar FU/s, U/s Daya : Bhubaneswar D/s, FD/s Birupa: Choudwar D/s (27 stations)	Mahanadi : Sambalpur FD/s at Shankarmath, Cuttack FD/s Power channel U/s Kathajodi: Cuttack U/s, Cuttack FD/s at Mattagajpur (5 stations)

Sl. No.	Source of monitoring	Total No. of Stations		NWMP Sampling Locations	SWMP Sampling Locations
		NWMP	SWMP	Monthly	
(A) River system					
2.	Brahmani	21	5	Sankh : Sankh U/s Koel : Koel U/s Brahmani : Panposh U/s, D/s, Rourkela D/s, Rourkela FD/s at Biritola, Bonaigarh, Rengali, Samal, Talcher FU/s, U/s, D/s FD/s, Dhenkanal D/s, Bhuban, Kabatabandha, Dharmasala U/s, D/s, Pottamundai Kharasrota : Khanditara, Aul (21 stations)	Brahmani : Rourkela FD/s at Attaghat, Dhenkanal U/s Nadira : Nadira D/s at Dasnalli Kisindajhor : Kisinda jhor Kharasrota : Binjharpur (5 stations)
3.	Baitarani	7	2	Kusei : Deogan Baitarani : Joda, Anandpur, Jajpur, Chandbali U/s and D/s Dhamra : Dhamra (7 stations)	Salandi : Bhadrak U/s and D/s (2 stations)
4.	Rushikulya	2	-	Madhopur, Potagarh (2 stations)	-
5.	Nagavali	3	-	Penta U/s, Jaykaypur D/s, Rayagada D/s (3 stations)	-
6.	Subarnarekha	1	-	Rajghat (1 station)	-
7.	Budhabalanga	2	1	Baripada D/s, Balasore D/s (2 stations)	Balasore U/s (1 station)
8.	Kolab	1	-	Kerandi river at Sunabeda (1 station)	-
9.	Vamsadhara	2	-	Muniguda, Gunupur (2 stations)	-
	Sub Total	66	13		
(B)	Canal	3	3	Jobra, Nuabazar, Atharabanki (3 stations)	Ranihat, Chatrabazar, Biribati (3 stations)
(C)	Ponds	6	-	Bhubaneswar : Bindusagar (4 bathing ghats on each side of the pond) Puri : Narendra pokhari, Markanda Pokhari, Indradyumna tank, Swetaganga, Parvati sagar (6 stations)	-
(D)	Lakes	2	4	Chilka lake at Satapada Anshupa lake at Kadalibari (2 stations)	Chilka lake at Rambha Anshupa lake at Sarandagarh, Subarnapur, Bishnupur (4 stations)
(E)	Sea	3	-	Puri, Gopalpur and Paradeep (3 stations)	-
	Sub Total	14	7		
	Total	80	20		

(A) RIVER SYSTEM

The annual average and range values of the criteria parameters such as pH, DO, BOD and TC, obtained during the year 2015 for the river water quality monitoring stations listed under Table-5.20 are given in Table-5.21. Water quality in respect of other parameters is given in Table- 5.22. Spatial variation of BOD, DO and TC are presented in Fig.5.1-5.7.

From the point of view of assessment of the river water quality on the basis of its use to which the river is put by the community, the water quality should conform to either Class-B (outdoor bathing) or Class-C (drinking water source with conventional treatment followed by the disinfection). Water quality data given in Table-5.21 indicate that out of the four critical parameters such as pH, DO, BOD and TC, parameters like pH and DO at all the stations remained within the criteria limits, whereas BOD and/or TC have exceeded the criteria limits at several places. Non-compliance has been observed at 55 stations for TC alone and 14 stations for both BOD & TC. The probable cause of downgrading the water quality from its desired use, are of organic origin. A major contribution towards this is from the discharge of untreated domestic water from the townships to the nearby water bodies.

Water quality with respect to other parameters at all the monitoring stations except at Paradeep D/s, Potagarh, Chandbali and Dhamra remains within the criteria limit for Class - C water quality as laid down under IS: 2296-1982 (Tolerance limits for inland surface water bodies). Water quality at Paradeep D/s, Potagarh, Chandbali and Dhamra are greatly influenced by the tidal effect as these stations are very close to the river muhans, adjacent to sea.

Table-5.21 - Annual Average and Range values of Four Criteria Parameters (January-December, 2015)

(A) Mahanadi River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Ib river												
1.	Sundargarh	12	7.8 (7.2-8.3)	7.6 (5.8-9.4)	0.7 (0.2-1.9)	1725 (490-5400)	0	1 (8)	C	C		
2.	Jharsuguda	12	7.8 (7.0-8.2)	7.5 (6.2-9.6)	0.8 (0.2-1.4)	4433 (700-16000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
3.	Brajarajnagar U/s	12	7.9 (7.2-8.3)	8.0 (6.3-9.4)	0.7 (0.3-1.7)	7416 (790-16000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
4.	Brajarajnagar D/s	12	7.9 (7.3-8.4)	7.6 (6.4-8.9)	1.0 (0.4-1.9)	8862 (940-16000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Bheden river												
5.	Jharsuguda	12	7.9 (7.0-8.4)	7.8 (6.3-9.8)	1.0 (0.4-0.7)	2781 (490-9400)	0	1 (8)	C	C		
Hirakud reservoir												
6.	Hirakud reservoir	12	7.9 (7.1-8.3)	7.6 (6.4-8.9)	0.8 (0.2-1.9)	2943 (630-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Power Channel												
7.	Power Channel U/s	12	7.9 (7.5-8.4)	7.0 (5.3-8.6)	0.8 (0.3-1.4)	1383 (130-5400)	0	1 (8)	C	C		
8.	Power Channel D/s	12	7.8 (7.4-8.4)	6.9 (5.9-8.4)	1.3 (0.4-2.3)	2648 (790-9200)	0	2 (17)	C	C		
Mahanadi river												
9	Sambalpur U/s	12	7.9 (7.1-8.4)	7.6 (6.5-9.3)	0.9 (0.3-1.9)	12692 (2200-35000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
10	Sambalpur D/s	12	7.9 (7.5-8.3)	6.9 (5.6-8.7)	2.6 (1.8-4.1)	46742 (7900-160000)	2 (17)	12 (100)	C	Doesn't conform to Class C	BOD, TC	Waste water of Sambalpur town
11.	Sambalpur FD/s at Shankarmath	12	7.9 (7.3-8.2)	6.7 (4.9-8.4)	1.9 (1.2-3.3)	24200 (5400-92000)	1 (8)	12 (100)	C	Doesn't conform to Class C	BOD, TC	Waste water of Sambalpur town
12.	Sambalpur FFD/s at Huma	12	8.1 (7.6-8.4)	7.4 (5.9-9.8)	1.4 (0.8-2.5)	6792 (1300-13000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
13.	Sonepur U/s	12	8.0 (7.6-8.4)	7.6 (6.6-8.8)	0.8 (0.2-1.5)	2893 (330-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
14.	Sonepur D/s	12	8.1 (7.5-8.5)	7.3 (6.1-8.7)	1.1 (0.3-1.8)	5406 (490-16000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
15.	Tikarapada#	11	8.1 (7.8-8.5)	7.4 (6.4-8.6)	0.7 (0.2-1.4)	5973 (230-24000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
16.	Narasinghpur	12	8.2 (7.8-8.5)	7.7 (6.7-8.6)	0.8 (0.4-1.9)	5657 (490-16000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
17.	Mundali	12	8.1 (7.4-8.4)	7.8 (6.7-8.5)	0.9 (0.5-1.6)	7715 (490-24000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
18.	Cuttack U/s	12	8.0 (7.1-8.4)	7.8 (6.6-9.0)	1.0 (0.5-2.0)	1748 (130-5400)	0	1 (8)	C			

NB : # Data for the period January-November, 2015

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
19.	Cuttack D/s	12	8.2 (7.1-8.5)	7.2 (5.8-8.1)	2.2 (1.5-2.8)	51017 (3300-160000)	0	10 (83)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
20.	Cuttack FD/s	12	8.1 (7.5-8.5)	7.4 (6.6-8.4)	1.5 (1.0-2.0)	39549 (490-92000)	0	9 (75)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
21.	Paradeep U/s	12	7.9 (7.5-8.4)	7.6 (6.8-8.9)	1.1 (0.2-2.2)	4953 (460-16000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
22.	Paradeep D/s	12	7.9 (6.7-8.4)	7.2 (6.5-8.2)	1.9 (0.8-2.9)	6756 (230-24000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
Tel river												
23.	Monmunda	12	8.1 (7.8-8.4)	7.6 (6.4-8.9)	1.0 (0.6-2.7)	2517 (230-13000)	0	1 (8)	C	C		
Kathajodi river												
24.	Cuttack U/s	12	8.1 (7.2-8.4)	7.7 (6.5-8.5)	1.2 (0.5-1.8)	3627 (130-16000)	0	2 (17)	C	Doesn't conform to Class C	TC	Human activities
25.	Cuttack D/s	12	8.2 (7.4-8.4)	7.1 (6.0-7.9)	3.3 (2.1-4.7)	27108 (3300-54000)	10 (83)	11 (92)	C	Doesn't conform to Class C	BOD,TC	Waste water of Cuttack city
26.	Mattagajpur (Cuttack FD/s)	12	7.3 (5.4-8.0)	5.5 (1.3-14.2)	9.7 (5.4-17.0)	58583 (11000-160000)	12 (100)	12 (100)	C	Doesn't conform to Class C	DO**, BOD,TC	Waste water of Cuttack city

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Serua River												
27.	Sankhatrasa (Cuttack FD/s)	12	8.0 (7.2-8.4)	7.6 (6.8-8.8)	2.1 (1.3-3.7)	26599 (490-92000)	1 (8)	11 (92)	C	Doesn't conform to Class C	BOD, TC	Waste water of Cuttack city
Kuakhai river												
28	BhubaneswarFU/s	12	8.1 (7.6-8.4)	7.8 (6.2-9.2)	1.1 (0.5-1.9)	5552 (330-16000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
29.	Bhubaneswar U/s	12	8.1 (7.5-8.4)	7.5 (5.7-9.0)	1.3 (0.7-1.9)	26642 (5400-54000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
Daya river												
30.	Bhubaneswar D/s	12	7.6 (7.3-8.1)	5.0 (2.5-6.9)	4.3 (3.5-5.4)	74908 (4900-160000)	12 (100)	11 (92)	C	Doesn't conform to Class C	DO***, BOD, TC	Waste water of Bhubaneswar city
31.	BhubaneswarFD/s	12	7.7 (7.3-8.4)	5.4 (4.6-7.3)	3.4 (1.9-4.6)	61317 (5400-160000)	9 (75)	12 (100)	C	Doesn't conform to Class C	BOD, TC	Wastewater of Bhubaneswar city
Birupa River												
32.	Choudwar D/s	12	8.1 (7.6-8.3)	7.2 (5.3-9.1)	1.1 (0.4-2.4)	8692 (1300-24000)	0	7 (58)	C	Doesn't conform to Class C	TC	Wastewater of Choudwar town
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

NB: The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.(Ref : IS 2296-1982 foot note),

** Frequency of violation for DO is four times (25% of observation), *** Frequency of violation for DO is twotimes (17% of observation)

(B) Brahmani River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Sankh river												
1.	Sankh U/s	12	7.7 (6.0-8.3)	7.6 (6.0-9.4)	1.0 (0.3-2.5)	7651 (330-35000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
Koel River												
2.	Koel U/s	12	8.0 (7.3-8.4)	7.7 (6.2-9.6)	1.1 (0.5-2.1)	13917 (1300-54000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
Brahmani river												
3.	Panposh U/s	12	7.8 (7.1-8.2)	7.4 (6.7-8.0)	0.9 (0.4-1.5)	7400 (3300-17000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
4.	Panposh D/s	12	7.4 (6.8-8.1)	6.5 (5.3-7.8)	4.5 (2.6-5.3)	39750 (11000-92000)	11 (92)	12 (100)	C	Doesn't conform to Class C	BOD, TC	Waste water of Rourkela town and Steel Plant
5.	Rourkela D/s	12	7.6 (7.0-8.2)	6.8 (6.0-7.8)	3.5 (2.2-4.5)	18650 (7900-54000)	11 (92)	12 (100)	C	Doesn't conform to Class C	BOD, TC	-do-
6.	Rourkela FD/s (Attaghat)	12	7.9 (6.9-8.4)	7.2 (5.8-8.9)	2.6 (1.5-4.2)	4638 (170-17000)	1 (8)	2 (17)	C	Doesn't conform to Class C	BOD, TC	-do-
7.	Rourkela FD/s (Biritola)	12	7.8 (7.1-8.4)	7.2 (5.6-8.8)	2.0 (1.0-3.5)	6148 (790-13000)	1 (8)	5 (42)	C	Doesn't conform to Class C	BOD, TC	-do-
8.	Bonaigarh	12	7.7 (7.2-8.4)	7.8 (6.0-9.4)	1.2 (0.4-1.9)	5882 (310-22000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
9.	Rengali	12	7.8 (7.2-8.4)	7.5 (6.0-9.2)	0.9 (0.5-1.3)	3239 (130-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
10.	Samal	12	7.5 (6.9-8.4)	7.8 (6.7-9.3)	1.1 (0.4-1.7)	8115 (78-24000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
10.	Talcher FU/s	12	7.8 (7.1-8.2)	7.5 (6.8-8.5)	0.9 (0.4-1.4)	2958 (790-7900)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
10.	Talcher U/s	12	8.0 (7.5-8.4)	7.8 (6.6-9.7)	1.3 (0.7-2.7)	4266 (790-14000)	0	2 (17)	C			
13.	Talcher D/s	12	7.9 (7.3-8.4)	7.5 (6.6-9.6)	2.1 (0.8-3.4)	12900 (1300-35000)	1 (8)	9 (75)	C	Doesn't conform to Class C	BOD, TC	Waste water of Talcher township
14.	Talcher FD/s	12	8.1 (7.5-8.6)	7.6 (6.4-9.8)	1.4 (0.4-2.7)	9523 (790-54000)	0	6 (50)	C	Doesn't conform to Class C	TC	-do-
15.	Dhenkanal U/s #	11	7.8 (7.3-8.3)	7.9 (6.9-9.2)	0.8 (0.4-1.7)	62618 (5400-160000)	0	11 (100)	C	Doesn't conform to Class C	TC	Human activities
16.	Dhenkanal D/s	12	7.8 (7.2-8.4)	7.6 (6.2-9.0)	1.6 (0.8-2.9)	62850 (1300-160000)	0	8 (67)	C	Doesn't conform to Class C	TC	Waste water of Dhenkanal township
17.	Bhuban	12	8.0 (7.4-8.4)	7.9 (6.4-10.4)	1.1 (0.4-1.8)	5008 (490-16000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
18.	Kabatabandha	12	8.0 (7.2-8.4)	7.8 (6.7-9.7)	1.2 (0.5-2.6)	2073 (130-5400)	0	2 (17)	C	C		
19.	Dharmasala U/s	12	8.0 (7.4-8.4)	7.6 (6.1-9.3)	1.0 (0.4-1.8)	13425 (1300-35000)	0	12 (100)	B	Doesn't conform to Class B	TC	Human activities
20.	Dharmasala D/s	12	8.0 (7.4-8.4)	7.6 (6.0-9.9)	1.4 (0.6-2.9)	23585 (230-160000)	0	11 (92)	B	Doesn't conform to Class B	TC	Human activities

NB : # Data for the period January-December, 2015 excluding March, 2015

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
21.	Pottamundai	12	7.9 (7.5-8.4)	7.5 (6.1-9.9)	1.4 (0.7-2.5)	7691 (700-24000)	0	12 (100)	B	Class B Doesn't conform to Class B	TC	Human activities
Nandira river												
22.	Nandira river before confluence with river Brahmani	12	8.3 (7.9-8.6)	7.7 (6.1-11.5)	2.5 (1.0-4.5)	14967 (1300-79000)	1 (8)	9 (75)	C	Doesn't conform to Class C	BOD, TC	Human activities
Kisindajhor												
23.	Kisindajhor	12	8.1 (7.2-8.5)	8.6 (6.7-11.4)	2.6 (0.6-4.2)	4002 (330-9200)	4 (33)	3 (25)	C	Doesn't conform to Class C	BOD, TC	Human activities
Kharasuan River												
24.	Khanditara	12	8.1 (7.7-8.4)	7.3 (5.5-9.0)	1.0 (0.4-1.6)	4964 (1700-17000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
25.	Binjharapur	12	8.0 (7.3-8.4)	7.5 (6.4-9.5)	1.0 (0.4-1.8)	3533 (1100-11000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
26.	Aul	12	7.8 (7.4-8.2)	7.4 (5.7-8.8)	1.4 (0.4-2.1)	10174 (790-24000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Class 'B' water quality Criteria (IS-2296-1982)			6.5-8.5	5 and above	3 or less	500 or less			Outdoor bathing			
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref: IS 2296-1982 foot note)

(C) Baitarani River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Kusei River												
1.	Deogaon	12	8.2 (7.6-8.4)	7.6 (6.1-9.7)	0.9 (0.5-1.5)	15817 (2200-35000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Baitarani River												
2.	Joda	12	7.8 (7.2-8.2)	7.4 (6.0-9.1)	1.0 (0.4-2.7)	4713 (170-13000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
3.	Anandpur	12	7.9 (7.6-8.3)	7.4 (6.1-9.2)	1.0 (0.2-2.2)	7257 (790-16000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
4.	Jajpur	12	8.1 (7.6-8.4)	7.6 (6.2-8.8)	1.8 (0.5-2.9)	13783 (1100-54000)	0	10 (83)	C	Doesn't conform to Class C	TC	Human activities
5.	Chandbali U/s	12	7.8 (7.1-8.2)	6.6 (5.4-8.5)	1.5 (0.8-2.5)	49142 (4900-160000)	0	11 (92)	C	Doesn't conform to Class C	TC	Human activities
6.	Chandbali D/s	12	7.7 (6.5-8.3)	6.7 (5.3-8.7)	1.7 (0.9-2.4)	51853 (7900-160000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
Salandi River												
7.	Bhadrak U/s	12	8.0 (7.4-8.4)	7.1 (5.0-9.1)	0.9 (0.3-1.8)	34492 (1700-160000)	0	11 (92)	C	Doesn't conform to Class C	TC	Human activities
8.	Bhadrak D/s	12	8.0 (7.6-8.6)	7.1 (4.8-12.1)	1.8 (0.9-2.9)	38917 (16000-160000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
Dhamra River												
9.	Dhamra	12	7.9 (7.8-8.2)	6.0 (5.1-7.0)	1.9 (0.9-2.7)	10883 (1300-16000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

(D) Rushikulya River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Rushikulya river												
1.	Madhopur	12	8.2 (7.6-8.4)	7.7 (6.6-9.5)	1.5 (0.7-2.4)	7308 (490-17000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
2.	Potagarh	12	8.1 (7.8-8.4)	7.7 (6.8-9.5)	1.8 (0.8-2.8)	1112 (2-5400)	0	1 (8)	C			
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

(E) Nagavali River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Nagavali river												
1.	Penta U/s	12	7.9 (7.3-8.3)	7.3 (6.7-7.8)	1.0 (0.6-1.6)	6316 (490-22000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
2.	J.K. Pur D/S	12	7.8 (7.1-8.2)	7.3 (6.3-8.3)	2.5 (1.8-3.3)	18308 (2200-92000)	3 (25)	10 (83)	C	Doesn't conform to Class C	BOD,TC	Human activities
3.	Rayagada D/S	12	8.0 (7.6-8.4)	7.4 (6.8-7.9)	1.9 (0.5-2.8)	9200 (1300-35000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)

(F) Subarnarekha River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Subarnarekha river												
1.	Rajghat	12	8.1 (7.4-8.4)	7.6 (6.7-8.2)	1.2 (0.4-2.8)	3252 (230-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

(G) Budhabalanga River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Budhabalanga river												
1.	Baripada D/s	12	8.0 (7.3-8.3)	7.5 (6.4-8.2)	1.8 (0.9-2.7)	39417 (13000-160000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
2.	Balasore U/s	12	7.9 (7.2-8.4)	7.3 (6.8-8.0)	1.1 (0.5-1.9)	10792 (3500-54000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
3.	Balasore D/s	12	7.8 (7.4-8.3)	7.2 (6.2-7.8)	2.2 (0.8-3.4)	34642 (5400-92000)	2 (17)	9 (75)	C	Doesn't conform to Class C	BOD,TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref: IS 2296-1982 foot note)

(H) Kolab River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Kerandi River												
1.	Sunabeda	12	7.3 (6.5-8.2)	7.5 (6.8-7.8)	0.9 (0.4-1.7)	4162 (460-16000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

(I) Vansadhara River System

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				BOD	TC				
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)						
Vansadhara River												
1.	Muniguda	12	8.0 (7.5-8.5)	7.0 (6.2-8.1)	1.0 (0.2-2.3)	7693 (330-35000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
2.	Gunupur	12	7.9 (6.9-8.4)	7.3 (6.4-8.2)	1.1 (0.4-2.7)	8917 (1300-28000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			6.5-8.5	4 and above	3 or less	5000 or less			Drinking water source with conventional treatment followed by disinfection			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)

Table-5.22 Water quality with respect to Other Parameters during 2015 (January-December)

(A) Mahanadi River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Ib river																
1.	Sundargarh	27 (4-87)	58 (32-76)	6.1 (3.0-11.8)	0.079 (0.056-0.112)	0.003 (0.001-0.007)	1.26 (0.84-1.68)	709 (170-2400)	156 (114-202)	0.37 (0.26-0.56)	0.023 (0.003-0.063)	88 (65-118)	55 (32-66)	9.4 (5.9-14.7)	7.9 (2.9-16.3)	0.373 (0.260-0.721)
2.	Jharsuguda	22 (6-92)	56 (32-76)	7.5 (4.6-15.1)	0.065 (0.056-0.112)	0.003 (0-0.004)	1.12 (0.84-1.40)	1988 (330-7900)	163 (120-202)	0.42 (0.29-1.02)	0.023 (0.003-0.063)	94 (70-118)	55 (40-68)	10.6 (6.9-26.4)	12.5 (4.1-21.4)	0.364 (0.260-0.655)
3.	Brajrajnagar U/s	22 (4-102)	61 (36-76)	7.0 (3.4-18.2)	0.070 (.056-0.112)	0.004 (0.001-0.011)	1.19 (0.84-1.40)	4244 (460-16000)	166 (132-204)	0.38 (0.26-0.64)	0.045 (0.003-0.179)	95 (72-116)	60 (42-74)	9.7 (7.8-12.7)	9.5 (5.0-17.3)	0.364 (0.265-0.572)
4.	Brajrajnagar D/s	26 (6-110)	61 (36-78)	9.8 (5.3-21.9)	0.070 (0.056-0.112)	0.004 (0.001-0.007)	1.21 (0.84-1.40)	5376 (310-16000)	187 (138-275)	0.49 (0.23-1.34)	0.038 (0.003-0.112)	108 (78-162)	64 (40-96)	13.0 (5.9-37.2)	12.3 (6.2-20.4)	0.367 (0.257-0.648)
Bheden river																
5.	Jharsuguda	27 (5-60)	85 (40-148)	10.3 (4.6-15.4)	0.079 (0.056-0.112)	0.005 (0-0.014)	1.28 (1.12-1.68)	1546 (170-4900)	304 (132-653)	0.88 (0.27-1.96)	0.082 (0.009-0.273)	170 (70-358)	96 (48-192)	27.0 (6.9-75.3)	23.8 (5.8-61.6)	0.941 (0.260-3.300)
Hirakud Reservoir																
6.	Hirakud reservoir	15 (4-45)	78 (56-96)	9.3 (3.5-13.5)	0.131 (0.056-0.728)	0.006 (0-0.022)	1.26 (0.84-1.96)	1245 (230-5400)	208 (162-281)	0.42 (0.22-0.87)	0.047 (0.003-0.158)	118 (92-155)	82 (62-90)	11.4 (5.9-24.5)	13.2 (9.7-21.4)	0.429 (0.240-0.858)
Power Channel																
7.	Power Channel U/s	14 (3-36)	81 (54-100)	8.9 (5.3-15.8)	0.075 (0.056-0.112)	0.003 (0.001-0.007)	1.24 (1.12-1.40)	599 (45-3500)	216 (164-255)	0.41 (0.30-0.58)	0.028 (0.003-0.071)	118 (90-142)	78 (50-96)	10.8 (7.8-13.7)	13.3 (8.5-26.0)	0.409 (0.230-0.772)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(MPN/100ml)	(µS/cm)			(mg/l)				
8.	Power Channel D/s	19 (5-56)	82 (58-96)	13.6 (5.3-26.1)	0.061 (0.056-0.112)	0.003 (0.001-0.007)	1.14 (0.84-1.40)	1134 (130-3500)	232 (170-345)	0.41 (0.33-0.53)	0.036 (0.003-0.081)	124 (96-152)	83 (64-102)	11.3 (9.8-13.7)	16.2 (8.1-30.0)	0.403 (0.230-0.750)
Mahanadi river																
9.	Sambalpur U/s	17 (4-75)	77 (48-100)	9.0 (4.6-17.4)	0.084 (0.056-0.224)	0.004 (0-0.009)	1.24 (0.84-1.68)	5166 (79-17000)	208 (165-257)	0.42 (0.21-0.63)	0.029 (0.003-0.063)	117 (90-140)	78 (56-90)	11.5 (5.9-15.7)	7.9 (2.9-16.3)	0.384 (0.230-0.692)
10.	Sambalpur D/s	29 (12-78)	87 (62-124)	19.2 (8.6-27.5)	0.135 (0.056-0.504)	0.007 (0.001-0.025)	1.42 (0.84-2.52)	32358 (3300-160000)	244 (194-318)	0.54 (0.34-0.89)	0.042 (0.003-0.164)	141 (112-188)	87 (70-108)	14.9 (9.8-27.4)	7.9 (2.9-16.3)	0.401 (0.180-0.659)
11.	Sambalpur FD/s at Shankarmath	21 (6-70)	93 (60-120)	14.5 (6.1-21.7)	0.061 (0.056-0.112)	0.003 (0.001-0.004)	1.12 (0.84-1.40)	12850 (2300-54000)	245 (174-337)	0.54 (0.30-1.21)	0.066 (0.003-0.197)	139 (100-186)	90 (60-112)	14.3 (7.8-33.3)	13.6 (5.9-25.5)	0.466 (0.250-0.676)
12.	Sambalpur FFD/s at Huma	16 (2-62)	80 (54-96)	11.0 (4.6-18.8)	0.075 (0.056-0.168)	0.006 (0.001-0.016)	1.21 (0.84-1.40)	3223 (490-7900)	210 (165-271)	0.41 (0.32-0.57)	0.054 (0.003-0.221)	120 (96-150)	82 (62-96)	11.4 (8.8-15.6)	12.7 (6.1-24.8)	0.416 (0.230-0.638)
13.	Sonepur U/s	19 (3-58)	81 (48-100)	9.0 (3.0-15.3)	0.070 (0.056-0.168)	0.005 (0.001-0.016)	1.17 (0.84-1.40)	2108 (130-16000)	214 (160-276)	0.42 (0.30-0.51)	0.041 (0.003-0.122)	121 (90-150)	82 (60-100)	11.4 (8.9-14.7)	13.0 (8.2-22.8)	0.407 (0.250-0.760)
14.	Sonepur D/s	25 (1-61)	92 (60-104)	12.5 (7.6-19.2)	0.084 (0.056-0.168)	0.007 (0.001-0.017)	1.26 (0.84-1.68)	3135 (130-16000)	241 (182-282)	0.46 (0.32-0.61)	0.052 (0.003-0.119)	135 (108-152)	90 (64-98)	12.6 (9.8-17.6)	13.3 (7.7-26.0)	0.425 (0.189-0.752)
15.	Tikarapada #	28 (4-84)	82 (60-96)	8.7 (3.8-15.9)	0.056 (0.056-0.056)	0.005 (0.002-0.017)	1.22 (0.84-1.40)	3422 (78-13000)	210 (169-260)	0.38 (0.29-0.48)	0.027 (0.003-0.048)	118 (96-140)	80 (64-100)	10.1 (7.8-11.7)	11.4 (6.7-17.7)	0.395 (0.291-0.680)
16.	Narasinghpur	17 (3-56)	81 (60-108)	9.2 (3.4-17.3)	0.070 (0.056-0.112)	0.006 (0.002-0.014)	1.19 (0.84-1.68)	3223 (330-11000)	211 (184-280)	0.41 (0.28-0.80)	0.042 (0.016-0.112)	118 (102-152)	82 (62-94)	11.4 (7.8-21.5)	10.2 (4.7-18.2)	0.403 (0.280-0.622)

NB : # Data for the period January-November, 2015

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(MPN/100ml)	(µS/cm)				(mg/l)			
17.	Munduli	16 (4-45)	81 (48-108)	9.4 (4.6-13.8)	0.070 (0.056-0.168)	0.005 (0.002-0.007)	1.19 (0.84-1.40)	4561 (78-16000)	204 (146-285)	0.40 (0.31-0.62)	0.030 (0.003-0.074)	116 (82-155)	80 (54-96)	11.1 (8.8-17.6)	9.9 (5.6-21.1)	0.407 (0.270-0.790)
18.	Cuttack U/s	24 (4-81)	75 (48-96)	9.8 (6.1-15.2)	0.079 (0.056-0.112)	0.006 (0-0.014)	1.14 (0.84-1.40)	600 (20-1300)	199 (153-270)	0.40 (0.30-0.53)	0.034 (0.003-0.138)	112 (88-148)	75 (56-90)	10.5 (7.8-11.7)	10.2 (2.4-21.5)	0.387 (0.298-0.536)
19.	Cuttack D/s	32 (4-145)	82 (60-98)	16.1 (9.2-27.6)	0.075 (0.056-0.224)	0.007 (0-0.022)	1.17 (0.84-1.40)	36248 (780-160000)	219 (190-280)	0.37 (0.26-0.49)	0.043 (0.003-0.112)	125 (112-150)	86 (76-96)	10.4 (7.8-12.7)	13.6 (2.9-24.9)	0.378 (0.272-0.524)
20.	Cuttack FD/s	34 (4-157)	82 (58-102)	11.4 (5.5-18.3)	0.075 (0.056-0.168)	0.006 (0.001-0.016)	1.05 (0.84-1.12)	21502 (170-54000)	210 (165-262)	0.41 (0.33-0.53)	0.043 (0.003-0.138)	119 (95-140)	82 (70-94)	10.6 (8.8-13.7)	11.0 (3.6-21.9)	0.378 (0.302-0.510)
21.	Paradeep U/s	25 (3-61)	96 (68-116)	14.3 (6.7-24.4)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.07 (0.84-1.40)	2165 (230-5400)	3971 (192-10960)	15.82 (0.31-47.53)	0.380 (0.003-1.171)	2769 (110-8310)	459 (76-1020)	1382.5 (8.8-4696.8)	245.7 (11.2-808.4)	0.514 (0.320-0.910)
22.	Paradeep D/s	42 (8-109)	119 (68-216)	24.5 (8.3-35.2)	0.056 (0.056-0.056)	0.003 (0-0.007)	1.05 (0.84-1.40)	3231 (130-13000)	14312 (267-29160)	38.58 (0.53-65.04)	1.177 (0.042-2.274)	11196 (142-23960)	1692 (84-4300)	5905.4 (13.7-12714.0)	855.1 (14.2-1853.2)	0.652 (0.462-0.900)
Tel River																
23.	Monmunda	27 (5-89)	78 (44-96)	10.6 (5.1-27.6)	0.079 (0.056-0.168)	0.005 (0.002-0.011)	1.19 (0.84-1.40)	1226 (78-7900)	186 (124-211)	0.33 (0.22-0.45)	0.045 (0.003-0.147)	106 (70-121)	76 (40-96)	8.9 (5.9-11.7)	7.7 (2.0-14.8)	0.388 (0.260-0.582)
Khajodi River																
24.	Cuttack U/s	25 (4-68)	72 (58-84)	9.9 (6.1-15.8)	0.079 (0.056-0.168)	0.006 (0.001-0.014)	1.12 (0.84-1.40)	1460 (45-5400)	185 (144-218)	0.37 (0.25-0.49)	0.031 (0.010-0.077)	106 (82-128)	70 (56-90)	9.9 (6.9-11.7)	10.6 (5.0-17.0)	0.384 (0.266-0.604)
25.	Cuttack D/s	22 (3-66)	89 (68-132)	21.1 (16.6-24.4)	0.079 (0.056-0.112)	0.007 (0.002-0.014)	1.33 (1.12-1.68)	14873 (780-35000)	241 (193-309)	0.47 (0.31-0.65)	0.058 (0.022-0.133)	140 (115-181)	94 (68-128)	13.4 (8.8-20.6)	15.9 (9.7-25.5)	0.407 (0.262-0.543)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
26.	Mattagajpur (Cuttack FD/s)	27 (7-62)	141 (116-200)	55.7 (24.8-127.1)	0.079 (0.056-0.112)	0.089 (0-0.326)	9.10 (2.52-25.76)	28725 (4900-92000)	510 (352-652)	1.70 (1.13-2.31)	0.087 (0.010-0.170)	301 (210-444)	146 (100-232)	55.0 (37.2-70.5)	41.5 (7.6-125.6)	0.416 (0.300-0.555)
Serua River																
27.	Sankhatrasa (Cuttack FD/s)	26 (5-76)	79 (60-92)	14.4 (9.6-20.7)	0.138 (0.035-0.504)	0.010 (0-0.028)	1.38 (1.12-1.68)	14227 (130-54000)	225 (192-281)	0.53 (0.25-0.89)	0.030 (0.003-0.126)	127 (108-148)	80 (66-96)	14.4 (7.8-23.5)	13.2 (4.5-26.4)	0.389 (0.252-0.585)
Kuakhai River																
28.	Bhubaneswar FU/s	20 (2-71)	79 (62-96)	8.9 (3.7-15.4)	0.061 (0.056-0.112)	0.004 (0.001-0.009)	1.00 (0.56-1.12)	2663 (130-9200)	202 (161-240)	0.42 (0.30-0.52)	0.022 (0.003-0.061)	113 (90-138)	77 (58-92)	11.0 (7.8-12.7)	7.6 (3.9-11.1)	0.378 (0.168-0.626)
29.	Bhubaneswar U/s	24 (5-74)	78 (52-96)	11.5 (3.7-19.2)	0.070 (0.056-0.112)	0.005 (0.001-0.014)	1.21 (0.84-1.68)	13383 (1300-22000)	212 (183-260)	0.51 (0.34-0.70)	0.043 (0.012-0.112)	120 (105-142)	78 (60-96)	13.1 (8.8-17.6)	8.8 (4.1-12.9)	0.322 (0.204-0.492)
Daya River																
30.	Bhubaneswar D/s	36 (8-100)	88 (68-138)	27.0 (19.9-37.4)	4.466 (0.168-12.540)	0.145 (0.004-0.633)	8.31 (1.68-19.60)	64083 (1100-160000)	324 (222-473)	1.39 (0.64-2.90)	0.050 (0.022-0.126)	187 (132-278)	91 (80-122)	36.7 (17.6-64.6)	19.7 (7.5-29.2)	0.305 (0.212-0.454)
31.	Bhubaneswar FD/s	34 (8-72)	85 (74-104)	23.5 (16.8-31.5)	4.055 (0.112-11.870)	0.116 (0.003-0.415)	7.98 (1.68-19.60)	46358 (2200-160000)	298 (225-393)	1.20 (0.55-2.62)	0.045 (0.012-0.137)	165 (126-215)	83 (74-96)	31.0 (15.7-54.8)	12.9 (6.7-21.2)	0.323 (0.205-0.474)
Birupa River																
32.	Choudwar D/s	18 (4-98)	84 (58-108)	9.3 (1.9-19.2)	0.084 (0.056-0.168)	0.005 (0.002-0.011)	1.28 (0.84-1.68)	4978 (330-16000)	225 (172-385)	0.56 (0.33-2.02)	0.031 (0.006-0.067)	128 (100-218)	84 (72-96)	15.5 (7.8-60.7)	11.0 (4.7-21.8)	0.404 (0.212-0.742)
	* Class 'C'	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	* Class 'E'							2250	26	2.0	2100	-	600	1000	-	

NB: Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Contd.

Sl. No	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
(mg/l)		(mg/l)										
Ib River												
1.	Sundargarh	1.998 (0.505-5.257)	0.090 (0.006-0.230)	0.015 (<0.002-0.036)	0.048 (0.001-0.099)	2.087 (0.140-6.150)	0.011 (0.006-0.017)	0.004 (0.002-0.009)	0.011 (0.004-0.020)	0.0024 (0.0007-0.0071)	0.00019 (<0.00006-0.00051)	0.010 (0.002-0.020)
2.	Jharsuguda	3.432 (1.337-7.723)	0.106 (0.006-0.222)	0.0154 (<0.002-0.033)	0.047 (0.013-0.099)	1.914 (0.170-5.890)	0.013 (0.003-0.024)	0.005 (0.002-0.010)	0.014 (0.001-0.023)	0.0021 (0.0004-0.0060)	0.00033 (0.00006-0.00089)	0.011 (0.002-0.028)
3.	Brajraj nagar U/s	2.196 (0.456-6.348)	0.110 (0.012-0.231)	0.013 (<0.002-0.035)	0.038 (0.008-0.071)	1.338 (0.030-5.630)	0.017 (0.007-0.044)	0.004 (0.001-0.008)	0.012 (0.006-0.022)	0.0019 (0.0006-0.0047)	0.00028 (<0.00006-0.00083)	0.014 (0.006-0.024)
4.	Brajraj nagar D/s	4.978 (0.558-14.365)	0.199 (0.022-1.271)	0.016 (<0.002-0.035)	0.049 (0.015-0.113)	1.249 (0.117-5.580)	0.014 (0.005-0.028)	0.005 (0.001-0.011)	0.011 (0.001-0.024)	0.0029 (0.0007-0.0081)	0.00042 (0.00019-0.00100)	0.015 (0.002-0.026)
Bheden River												
5.	Jharsuguda	3.643 (0.476-13.839)	0.148 (0.029-0.576)	0.011 (<0.002-0.033)	0.039 (0.008-0.074)	2.383 (<0.005-7.000)	0.013 (0.005-0.042)	0.015 (0.001-0.056)	0.010 (0.002-0.031)	0.0020 (0.0007-0.0036)	0.00026 (<0.00006-0.00089)	0.011 (0.004-0.018)
Hirakud Reservoir												
6.	Hirakud reservoir	3.736 (0.509-6.803)	0.078 (0.014-0.191)	0.008 (<0.002-0.028)	0.030 (0.003-0.097)	0.862 (0.003-3.180)	0.012 (0.004-0.022)	0.008 (0.003-0.014)	0.016 (0.004-0.022)	0.0025 (0.0006-0.0066)	0.00017 (<0.00006-0.00044)	0.007 (0.003-0.016)
Power channel												
7.	Power channel U/s	3.186 (0.319-9.747)	0.182 (0.018-1.430)	0.012 (<0.002-0.031)	0.031 (0.008-0.076)	1.429 (0.230-5.460)	0.009 (0.001-0.017)	0.007 (0.002-0.012)	0.016 (0.004-0.020)	0.0028 (0.0007-0.0071)	0.00013 (<0.00006-0.00032)	0.008 (0.001-0.015)
8.	Power Channel D/s	6.396 (0.700-14.734)	0.099 (0.023-0.216)	0.014 (<0.002-0.033)	0.048 (0.015-0.114)	1.516 (0.090-5.150)	0.014 (0.001-0.024)	0.008 (0.001-0.013)	0.023 (0.003-0.038)	0.0034 (0.0007-0.0085)	0.00022 (<0.00006-0.00095)	0.014 (0.008-0.023)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)								
Mahanadi River												
9.	Sambalpur U/s	3.807 (0.639-11.359)	0.065 (0.012-0.150)	0.015 (<0.002-0.031)	0.039 (0.013-0.087)	1.558 (0.143-5.530)	0.015 (0.007-0.042)	0.006 (0.002-0.014)	0.013 (0.003-0.020)	0.0028 (0.0008-0.0076)	0.00013 (<0.00006-0.00070)	0.013 (0.005-0.024)
10.	Sambalpur D/s	7.698 (1.302-16.554)	0.232 (0.027-1.050)	0.016 (<0.002-0.036)	0.051 (0.014-0.114)	1.320 (0.060-5.810)	0.017 (0.007-0.027)	0.007 (0.002-0.018)	0.026 (0.005-0.056)	0.0035 (0.0011-0.0085)	0.00027 (<0.00006-0.00076)	0.015 (0.004-0.042)
11.	Sambalpur FD/s at Shankarmath	7.613 (1.844-12.329)	0.211 (0.022-0.950)	0.011 (<0.002-0.036)	0.041 (0.003-0.133)	1.485 (0.060-5.180)	0.010 (0.003-0.047)	0.005 (0.001-0.016)	0.011 (0.004-0.020)	0.0024 (0.0009-0.0047)	0.00024 (<0.00006-0.00070)	0.011 (0.003-0.023)
12.	Sambalpur FD/s at Huma	4.835 (1.565-8.928)	0.108 (0.016-0.373)	0.015 (<0.002-0.047)	0.036 (0.008-0.104)	1.903 (0.060-7.260)	0.010 (0.005-0.022)	0.005 (0.001-0.013)	0.016 (0.004-0.039)	0.0024 (0.0009-0.0060)	0.00025 (0.00013-0.00076)	0.010 (0.004-0.022)
13.	Sonepur U/s	5.124 (0.292-13.799)	0.108 (0.033-0.337)	0.007 (<0.002-0.023)	0.027 (0.007-0.076)	1.674 (0.090-6.630)	0.009 (<0.001-0.018)	0.005 (<0.001-0.011)	0.007 (<0.001-0.013)	0.0028 (0.0007-0.0066)	0.00020 (<0.00006-0.00089)	0.011 (<0.001-0.022)
14.	Sonepur D/s	8.858 (2.015-31.328)	0.146 (0.015-0.451)	0.011 (<0.002-0.033)	0.038 (0.010-0.094)	1.778 (0.070-6.090)	0.020 (0.007-0.060)	0.008 (0.004-0.018)	0.011 (0.004-0.018)	0.0036 (0.0008-0.0081)	0.00023 (<0.00006-0.00070)	0.014 (0.007-0.023)
15.	Tikarapada #	3.430 (0.602-9.637)	0.154 (0.035-0.612)	0.012 (<0.002-0.036)	0.032 (0.008-0.076)	2.932 (0.240-7.220)	0.008 (0.004-0.010)	0.003 (0.001-0.007)	0.009 (0.001-0.019)	0.0027 (0.0006-0.0053)	0.00012 (<0.00006-0.00038)	0.010 (0.006-0.017)
16.	Narasinghpur	4.482 (0.363-15.336)	0.105 (0.017-0.280)	0.010 (<0.002-0.030)	0.038 (0.005-0.141)	1.825 (0.070-7.580)	0.015 (0.007-0.036)	0.005 (0.001-0.009)	0.007 (0.003-0.010)	0.0026 (0.0004-0.0054)	0.00011 (<0.00006-0.00044)	0.008 (0.004-0.014)
17.	Munduli	4.280 (0.500-15.296)	0.179 (0.045-0.413)	0.011 (<0.002-0.025)	0.043 (0.013-0.165)	1.803 (0.030-7.210)	0.011 (0.004-0.041)	0.004 (0.001-0.010)	0.008 (0.001-0.020)	0.0024 (0.0007-0.0054)	0.00011 (<0.00006-0.00044)	0.008 (0.002-0.012)
18.	Cuttack U/s	3.192 (0.155-6.851)	0.093 (0.015-0.223)	0.010 (<0.002-0.033)	0.029 (0.013-0.055)	2.309 (0.050-7.220)	0.007 (0.002-0.012)	0.003 (0.001-0.008)	0.005 (0.001-0.009)	0.0032 (0.0007-0.0067)	0.00011 (<0.00006-0.00038)	0.009 (0.004-0.014)

NB : # Data for the period January-November, 2015

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)								
19.	Cuttack D/s	8.603 (2.817-23.343)	0.079 (0.031-0.266)	0.011 (<0.002-0.031)	0.041 (0.015-0.076)	2.496 (<0.005-7.450)	0.012 (0.007-0.017)	0.005 (0.002-0.013)	0.006 (0.001-0.013)	0.0039 (0.0011-0.0076)	0.00022 (<0.00006-0.00070)	0.012 (0.007-0.017)
20.	Cuttack FD/s	5.829 (1.678-12.086)	0.208 (0.033-1.248)	0.010 (<0.002-0.035)	0.036 (0.013-0.076)	2.365 (0.040-6.710)	0.012 (0.007-0.020)	0.004 (0.001-0.009)	0.006 (0.002-0.014)	0.0028 (0.0007-0.0059)	0.00015 (<0.00006-0.00032)	0.009 (0.004-0.015)
21.	Paradeep U/s	3.339 (0.881-9.747)	0.071 (0.01-0.143)	0.012 (<0.002-0.028)	0.038 (0.013-0.087)	1.102 (0.120-3.850)	0.020 (0.008-0.051)	0.009 (0.004-0.013)	0.010 (0.001-0.019)	0.0018 (0.0005-0.0065)	0.00016 (<0.00006-0.00057)	0.013 (0.005-0.021)
22.	Paradeep D/s	8.145 (0.903-18.232)	0.222 (0.033-1.234)	0.010 (<0.002-0.040)	0.046 (0.005-0.131)	1.823 (0.390-6.040)	0.017 (0.007-0.028)	0.013 (0.006-0.021)	0.015 (0.008-0.023)	0.0027 (0.0011-0.0074)	0.00021 (0.00006-0.00038)	0.016 (0.011-0.027)
Tel River												
23.	Monmunda	3.939 (0.478-10.665)	0.079 (0.022-0.147)	0.010 (<0.002-0.033)	0.040 (0.005-0.109)	3.141 (0.020-6.760)	0.012 (0.005-0.026)	0.007 (0.002-0.014)	0.015 (0.006-0.060)	0.0029 (0.0003-0.0064)	0.00014 (<0.00006-0.00051)	0.009 (0.004-0.014)
Kathajodi River												
24.	Cuttack U/s	3.040 (0.186-6.492)	0.074 (0.019-0.229)	0.014 (<0.002-0.033)	0.047 (0.013-0.099)	1.914 (0.170-5.890)	0.013 (0.003-0.024)	0.005 (0.002-0.010)	0.014 (0.001-0.023)	0.0021 (0.0004-0.0060)	0.00033 (0.00006-0.00089)	0.011 (0.002-0.028)
25.	Cuttack D/s	10.010 (0.522-30.467)	0.190 (0.027-0.590)	0.012 (<0.002-0.036)	0.048 (0.021-0.094)	2.366 (<0.005-6.990)	0.017 (0.009-0.027)	0.006 (<0.001-0.015)	0.010 (0.001-0.017)	0.0032 (0.0001-0.0061)	0.00035 (0.00013-0.00089)	0.011 (0.007-0.016)
26.	Mattagajpur (Cuttack FD/s)	16.529 (1.186-36.552)	0.327 (0.038-1.305)	0.013 (<0.002-0.038)	0.060 (0.016-0.114)	2.384 (0.367-6.290)	0.020 (0.008-0.048)	0.011 (0.002-0.022)	0.013 (0.003-0.028)	0.0034 (0.0013-0.0072)	0.00053 (0.00013-0.00095)	0.013 (0.009-0.024)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)								
Kuakhai River												
28.	Bhubaneswar FU/s	5.632 (0.337-28.060)	0.128 (0.09-0.528)	0.004 (<0.002-0.016)	0.025 (0.005-0.094)	0.616 (0.010-2.260)	0.009 (0.001-0.017)	0.004 (0.001-0.009)	0.005 (0.001-0.015)	0.0026 (0.0006-0.0061)	0.00013 (<0.00006-0.00057)	0.010 (0.009-0.015)
29.	Bhubaneswar U/s	7.927 (1.054-20.510)	0.084 (0.019-0.232)	0.006 (<0.002-0.021)	0.030 (0.007-0.108)	1.727 (0.220-6.270)	0.011 (0.007-0.017)	0.005 (0.001-0.014)	0.008 (0.001-0.030)	0.0024 (0.0006-0.0069)	0.00015 (<0.00006-0.00064)	0.009 (0.004-0.013)
Daya River												
30.	Bhubaneswar D/s	12.754 (2.821-28.397)	0.127 (0.017-0.287)	0.013 (<0.002-0.038)	0.046 (0.016-0.131)	2.173 (0.480-7.140)	0.014 (0.009-0.024)	0.004 (<0.001-0.016)	0.007 (0.001-0.016)	0.0037 (0.0009-0.0086)	0.00041 (0.00019-0.00089)	0.013 (0.007-0.028)
31.	Bhubaneswar FD/s	8.279 (1.156-28.082)	0.134 (0.025-0.431)	0.008 (<0.002-0.030)	0.035 (0.011-0.094)	1.600 (0.330-3.320)	0.012 (0.006-0.024)	0.006 (0.001-0.014)	0.006 (0.001-0.016)	0.0033 (0.0008-0.0077)	0.00019 (0.00006-0.00051)	0.009 (0.004-0.015)
Birupa River												
32.	Choudwar D/s	4.531 (0.934-12.916)	0.136 (0.027-0.864)	0.006 (<0.002-0.026)	0.028 (0.008-0.057)	1.345 (0.100-6.340)	0.009 (0.003-0.024)	0.004 (0.001-0.011)	0.010 (0.002-0.016)	0.0033 (0.0005-0.0138)	0.00021 (<0.00006-0.00044)	0.014 (0.005-0.025)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982), ## Data for the period April-December, 2015 except Tikarpada wherein Data for the period April-November

(B) Brahmani River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents								
		Annual Average values (Range of values)															
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F	
		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(MPN/100ml)	(µS/cm)								
Sankh river																	
1.	Sankha U/s	24 (4-134)	54 (28-76)	8.1 (3.8-15.8)	0.065 (0.056-0.112)	0.003 (0-0.006)	1.12 (0.84-1.40)	3420 (110-13000)	157 (117-210)	0.43 (0.30-0.63)	0.026 (0.003-0.060)	90 (65-122)	53 (32-72)	10.6 (6.9-15.7)	10.7 (3.4-18.9)	0.386 (0.280-0.548)	
Koel river																	
2.	Koel U/s	24 (3-146)	81 (36-116)	8.8 (3.9-13.1)	0.061 (0.056-0.112)	0.004 (0.001-0.007)	1.21 (0.84-1.40)	6215 (330-24000)	199 (152-250)	0.38 (0.27-0.60)	0.030 (0.003-0.064)	116 (84-148)	80 (40-108)	10.5 (7.8-16.6)	9.8 (3.1-19.8)	0.373 (0.280-0.612)	
Brahmani river																	
3.	Panposh U/s	18 (2-80)	55 (24-72)	7.6 (3.8-11.8)	0.065 (0.056-0.112)	0.003 (0-0.006)	1.19 (0.84-1.40)	3375 (1100-11000)	154 (118-216)	0.31 (0.21-0.49)	0.038 (0.003-0.103)	86 (67-118)	55 (42-68)	7.9 (5.9-12.7)	9.8 (3.1-19.8)	0.343 (0.242-0.533)	
4.	Panposh D/s	47 (14-160)	70 (52-92)	29.8 (19.6-43.3)	4.788 (0.784-14.224)	0.096 (0-0.427)	8.89 (3.08-23.52)	22867 (4600-54000)	317 (223-412)	0.92 (0.43-1.17)	0.056 (0.003-0.125)	86 (67-118)	97 (84-116)	25.6 (11.7-36.2)	40.5 (23.6-57.1)	1.187 (0.440-2.100)	
5.	Rourkela D/s	39 (12-120)	68 (48-88)	24.8 (15.8-43.8)	2.240 (0.168-12.992)	0.049 (0-0.292)	4.76 (1.40-21.84)	9992 (3300-22000)	256 (153-368)	0.61 (0.34-0.79)	0.059 (0.003-0.228)	145 (86-202)	85 (56-108)	16.5 (8.8-21.5)	28.1 (13.2-45.0)	0.725 (0.420-1.110)	
6.	Biritola	29 (10-110)	68 (42-140)	17.4 (11.1-25.6)	0.201 (0.056-0.896)	0.010 (0-0.031)	1.52 (1.12-1.96)	1952 (78-7900)	235.4 (153.0-369.4)	0.50 (0.30-0.64)	0.040 (0.003-0.154)	135 (88-240)	80 (56-140)	17.0 (5.9-45.0)	21.9 (11.1-39.2)	0.526 (0.400-0.866)	
7.	Attaghat	27 (6-120)	65 (44-92)	14.9 (7.7-37.4)	0.287 (0.056-1.880)	0.015 (0-0.122)	1.56 (1.12-2.24)	2553 (330-4900)	208 (146-285)	0.59 (0.24-1.27)	0.034 (0.003-0.058)	119 (82-158)	74 (52-96)	13.1 (7.8-16.6)	19.3 (8.3-38.8)	0.489 (0.370-0.730)	
8.	Bonaigarh	33 (4-130)	65 (40-80)	9.3 (5.1-17.8)	0.191 (0.056-1.344)	0.008 (0.001-0.054)	1.28 (0.84-2.52)	2858 (130-13000)	214 (134-281)	0.60 (0.41-0.94)	0.042 (0.003-0.125)	122 (80-156)	71 (48-92)	16.1 (9.8-27.4)	16.3 (10.0-33.6)	0.420 (0.220-0.797)	

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
9.	Rengali	15 (2-39)	52 (40-80)	8.2 (3.7-19.8)	0.079 (0.056-0.168)	0.003 (0.001-0.007)	1.10 (0.84-1.68)	1498 (20-9200)	151 (123-215)	0.36 (0.20-0.70)	0.044 (0.006-0.093)	86 (70-122)	53 (35-76)	9.0 (5.9-19.6)	10.0 (3.5-18.9)	0.333 (0.200-0.530)
10.	Samal	22 (3-80)	55 (44-80)	10.2 (3.1-19.8)	0.079 (0.056-0.112)	0.002 (0-0.014)	1.24 (0.84-1.40)	3617 (20-13000)	172 (137-243)	0.53 (0.33-0.92)	0.046 (0.003-0.089)	98 (80-135)	56 (44-82)	13.5 (7.8-23.5)	9.8 (3.1-19.8)	0.344 (0.205-0.580)
11.	Talcher FU/s	29 (4-85)	46 (32-60)	5.7 (2.0-9.5)	0.065 (0.056-0.168)	0.003 (0-0.004)	1.14 (0.84-1.40)	1416 (130-4600)	145 (125-188)	0.39 (0.28-0.65)	0.024 (0.003-0.058)	82 (70-108)	49 (40-60)	9.6 (6.9-15.7)	10.5 (3.7-17.2)	0.357 (0.270-0.540)
12.	Talcher U/s	25 (3-87)	51 (32-68)	9.8 (5.2-21.7)	0.163 (0.056-0.952)	0.007 (0.002-0.029)	1.19 (0.84-2.24)	2133 (330-9400)	147 (117-176)	0.32 (0.20-0.43)	0.047 (0.003-0.282)	84 (68-102)	53 (36-72)	8.1 (5.9-11.7)	9.6 (3.7-18.0)	0.380 (0.248-0.580)
13.	Talcher D/s	30 (12-90)	61 (44-76)	7.6 (3.8-11.8)	0.303 (0.056-2.632)	0.009 (0.001-0.053)	1.49 (0.84-4.20)	6365 (490-24000)	154 (118-216)	0.39 (0.27-0.53)	0.075 (0.016-0.215)	104 (86-135)	66 (48-86)	10.1 (7.8-13.7)	14.9 (6.5-25.5)	0.443 (0.290-0.600)
14.	Talcher FD/s	25 (4-82)	63 (52-92)	10.8 (3.7-23.6)	0.075 (0.056-0.112)	0.006 (0.001-0.011)	1.28 (1.12-1.68)	4148 (330-24000)	190 (146-243)	0.46 (0.27-0.68)	0.059 (0.003-0.164)	107 (85-138)	68 (56-104)	12.1 (7.8-16.6)	13.7 (6.1-29.6)	0.467 (0.320-0.850)
15.	Dhenkanal U/s#	24 (7-65)	55 (40-68)	7.4 (3.9-15.0)	0.066 (0.056-0.112)	0.003 (0-0.005)	1.17 (0.84-1.40)	43234 (1700-160000)	154 (129-180)	0.37 (0.26-0.78)	0.037 (0.006-0.071)	89 (74-102)	56 (48-66)	9.0 (6.8-13.7)	10.2 (4.1-18.9)	0.376 (0.270-0.520)
16.	Dhenkanal D/s	29 (6-75)	73 (54-108)	11.4 (7.6-21.0)	0.093 (0.056-0.224)	0.005 (0.001-0.021)	1.14 (0.84-1.68)	34497 (490-92000)	198 (137-259)	0.45 (0.27-0.68)	0.045 (0.006-0.083)	114 (82-150)	73 (56-110)	12.1 (5.9-18.6)	12.6 (4.2-24.6)	0.368 (0.288-0.461)
17.	Bhuban	31 (6-85)	59 (38-80)	9.2 (5.2-12.9)	0.058 (0.026-0.112)	0.004 (0.001-0.009)	1.14 (0.56-1.68)	3044 (78-16000)	167 (129-207)	0.41 (0.31-0.67)	0.069 (0.019-0.148)	95 (72-115)	60 (44-76)	10.3 (7.8-15.7)	10.8 (5.30-24.1)	0.385 (0.212-0.610)
18.	Kabatabandha	30 (3-88)	57 (36-70)	10.1 (5.2-18.5)	0.065 (0.056-0.112)	0.004 (0.001-0.007)	1.19 (0.84-1.40)	1069 (20-2400)	165 (124-218)	0.40 (0.31-0.58)	0.062 (0.006-0.204)	94 (72-118)	60 (40-80)	10.4 (7.8-15.7)	9.9 (5.6-18.0)	0.398 (0.202-0.600)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents								
		Annual Average values (Range of values)															
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F	
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)							
19.	Dharmasala U/s	27 (3-102)	73 (44-92)	7.7 (5.3-11.7)	0.079 (0.056-0.224)	0.005 (0.002-0.009)	1.21 (0.84-1.68)	6391 (790-17000)	208 (129-329)	0.54 (0.31-1.03)	0.025 (0.006-0.083)	116 (75-188)	71 (44-86)	14.7 (7.8-30.3)	10.6 (4.4-42.5)	0.362 (0.203-0.525)	
20.	Dharmasala D/s	30 (5-118)	73 (44-96)	10.6 (6.0-17.6)	0.084 (0.056-0.168)	0.005 (0.001-0.014)	1.19 (0.84-1.68)	13556 (78-92000)	193 (128-262)	0.41 (0.22-0.59)	0.051 (0.010-0.122)	111 (78-142)	71 (52-84)	11.2 (5.9-16.6)	10.3 (4.8-18.9)	0.374 (0.252-0.541)	
21.	Pottamundai	15 (3-56)	798 (48-104)	11.6 (9.2-15.2)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.12 (0.84-1.40)	4634 (230-16000)	229 (148-324)	0.67 (0.39-1.54)	0.059 (0.003-0.239)	132 (86-180)	80 (48-92)	18.3 (10.8-42.1)	9.8 (3.1-19.8)	0.390 (0.230-0.664)	
Nandira River																	
22.	Nandira river before confluence with river Brahmani	38 (10-92)	128 (72-180)	19.0 (11.1-37.4)	0.126 (0.056-0.336)	0.013 (0.004-0.028)	1.54 (1.12-2.52)	7994 (330-49000)	438 (289-505)	0.96 (0.58-1.73)	0.205 (0.096-0.370)	250 (165-278)	168 (146-190)	29.0 (21.5-45.0)	54.4 (22.4-89.1)	1.898 (0.310-2.780)	
Kisinda Jhor																	
23.	Kisindajhor	33 (4-115)	117 (72-148)	20.8 (7.8-47.3)	0.187 (0.056-0.504)	0.013 (0.004-0.028)	1.63 (1.12-2.24)	1662 (130-4900)	491 (316-616)	1.53 (0.74-2.90)	0.150 (0.010-0.440)	286 (180-385)	159 (104-208)	51.8 (27.4-100.8)	55.3 (16.8-94.5)	1.766 (0.310-3.600)	
Kharasrota River																	
24..	Khanditara	22 (3-87)	60 (37-76)	8.8 (3.8-16.0)	0.065 (0.056-0.112)	0.005 (0.002-0.011)	1.26 (1.12-1.40)	2207 (78-7900)	165 (102-210)	0.38 (0.24-0.55)	0.034 (0.003-0.093)	94 (58-120)	61 (36-80)	9.9 (6.9-14.7)	9.1 (4.7-15.5)	0.362 (0.238-0.618)	
25.	Binjharapur	25 (6-111)	64 (46-80)	7.9 (3.8-14.4)	0.093 (0.056-0.168)	0.007 (0.001-0.014)	1.21 (0.84-1.40)	1960 (330-9200)	173 (143-214)	0.38 (0.28-0.49)	0.046 (0.003-0.197)	97 (80-122)	65 (56-76)	9.7 (7.8-11.7)	8.3 (4.8-11.4)	0.389 (0.216-0.802)	
26..	Aul	25 (5-98)	64 (44-78)	11.3 (4.6-17.6)	0.070 (0.056-0.112)	0.003 (0.001-0.007)	1.17 (0.84-1.40)	4828 (230-11000)	209 (133-529)	0.79 (0.29-3.68)	0.039 (0.003-0.122)	122 (78-330)	65 (52-94)	22.3 (7.8-119.4)	9.8 (3.1-19.8)	0.410 (0.230-0.612)	
*Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5	
*Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-	

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality * Tolerance limit for Inland Surface water bodies (IS-2296-1982)# Data for the period January December, 2015 excluding March, 2015

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
(mg/l)		(mg/l)										
Sankha River												
1.	Sankha U/s	3.645 (1.041-8.720)	0.128 (0.018-0.488)	0.012 (<0.002-0.031)	0.033 (0.012-0.077)	1.891 (0.100-7.190)	0.011 (0.003-0.020)	0.003 (0.001-0.008)	0.007 (0.001-0.016)	0.0019 (0.0004-0.0049)	0.00020 (<0.00006-0.00070)	0.009 (0.003-0.013)
Koel River												
2.	Koel U/s	5.189 (0.270-18.680)	0.150 (0.006-0.590)	0.009 (<0.002-0.025)	0.033 (0.007-0.072)	2.401 (0.030-7.740)	0.014 (0.003-0.038)	0.011 (0.001-0.028)	0.015 (0.003-0.050)	0.0034 (0.0005-0.0089)	0.00028 (<0.00006-0.00095)	0.014 (0.004-0.026)
Brahmani river												
3.	Panposh U/s	4.750 (0.771-18.640)	0.071 (0.004-0.335)	0.009 (<0.002-0.031)	0.026 (0.004-0.057)	1.902 (0.020-8.290)	0.006 (0.002-0.009)	0.004 (0.001-0.011)	0.008 (0.002-0.014)	0.0029 (0.0004-0.0079)	0.00014 (<0.00006-0.00044)	0.007 (0.003-0.014)
4.	Panposh D/s	8.774 (1.144-22.444)	0.136 (0.019-0.509)	0.012 (<0.002-0.033)	0.050 (0.011-0.094)	4.212 (0.133-7.800)	0.014 (0.003-0.030)	0.011 (0.002-0.037)	0.020 (0.005-0.032)	0.0032 (0.0010-0.0066)	0.00033 (<0.00006-0.00089)	0.013 (0.006-0.021)
5.	Rourkela D/s	11.369 (1.058-37.444)	0.111 (0.013-0.453)	0.012 (<0.002-0.033)	0.039 (0.015-0.113)	2.755 (0.060-6.330)	0.010 (0.001-0.027)	0.007 (0.001-0.017)	0.015 (0.003-0.023)	0.0029 (0.0008-0.0051)	0.00031 (0.00006-0.00089)	0.009 (0.002-0.013)
6.	Biritola	8.528 (1.023-38.754)	0.075 (0.011-0.192)	0.010 (<0.002-0.033)	0.027 (0.006-0.057)	1.607 (0.050-7.390)	0.010 (0.002-0.026)	0.004 (0.001-0.012)	0.012 (0.003-0.020)	0.0028 (0.0009-0.0055)	0.00022 (<0.00006-0.00083)	0.009 (0.005-0.013)
7.	Attaghat	4.867 (1.293-23.073)	0.081 (0.011-0.231)	0.009 (<0.002-0.035)	0.029 (0.006-0.087)	2.113 (0.080-6.820)	0.010 (0.002-0.020)	0.005 (0.001-0.012)	0.011 (0.002-0.019)	0.0023 (0.0006-0.0044)	0.00020 (<0.00006-0.00089)	0.008 (0.003-0.012)
8.	Bonaigarh	8.583 (0.252-42.854)	0.095 (0.027-0.410)	0.009 (<0.002-0.033)	0.023 (0.007-0.059)	2.490 (0.080-7.170)	0.008 (0.001-0.024)	0.004 (0.002-0.009)	0.012 (0.001-0.053)	0.0034 (0.0007-0.0105)	0.00020 (<0.00006-0.00089)	0.010 (0.002-0.025)
9.	Rengali	4.267 (1.509-9.929)	0.141 (0.024-0.600)	0.010 (<0.002-0.031)	0.027 (0.013-0.047)	1.415 (0.040-4.530)	0.015 (0.002-0.037)	0.004 (0.001-0.008)	0.016 (0.003-0.083)	0.0032 (0.0005-0.0086)	0.00019 (<0.00006-0.00057)	0.007 (0.003-0.010)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)								
10.	Samal	5.334 (0.846-25.351)	0.108 (0.038-0.414)	0.014 (<0.002-0.033)	0.038 (0.011-0.094)	1.940 (<0.005-7.290)	0.009 (0.001-0.021)	0.005 (0.001-0.008)	0.010 (0.001-0.022)	0.0034 (0.0007-0.0088)	0.00018 (<0.00006-0.00070)	0.008 (0.002-0.019)
11.	Talcher FU/s	2.161 (0.531-4.793)	0.200 (0.016-1.273)	0.015 (<0.002-0.031)	0.046 (0.013-0.091)	2.000 (0.100-6.250)	0.011 (0.001-0.034)	0.003 (<0.001-0.009)	0.007 (0.001-0.023)	0.0019 (0.0007-0.0046)	0.00026 (<0.00006-0.00089)	0.005 (<0.001-0.012)
12.	Talcher U/s	3.799 (0.965-8.220)	0.090 (0.009-0.227)	0.017 (<0.002-0.035)	0.049 (0.013-0.097)	2.010 (0.090-6.450)	0.010 (0.003-0.019)	0.004 (0.001-0.009)	0.010 (0.002-0.026)	0.0019 (0.0005-0.0048)	0.00029 (<0.00006-0.00089)	0.007 (0.002-0.025)
13.	Talcher D/s	8.801 (4.744-16.345)	0.096 (0.011-0.231)	0.019 (<0.002-0.045)	0.054 (0.022-0.113)	1.888 (0.040-6.830)	0.011 (0.003-0.023)	0.005 (0.001-0.016)	0.013 (0.002-0.030)	0.0025 (0.0011-0.0084)	0.00034 (<0.00006-0.00083)	0.009 (0.004-0.015)
14.	Talcher FD/s	3.674 (0.337-7.591)	0.082 (0.035-0.202)	0.016 (<0.002-0.035)	0.041 (0.015-0.086)	2.272 (0.050-7.310)	0.012 (0.003-0.023)	0.006 (0.001-0.011)	0.012 (0.002-0.029)	0.0022 (0.0011-0.0054)	0.00025 (<0.00006-0.00095)	0.007 (0.003-0.011)
15.	Dhenkanal U/s	3.174 (0.457-8.335)	0.073 (0.012-0.231)	0.008 (<0.002-0.033)	0.029 (<0.001-0.076)	2.141 (<0.005-6.430)	0.011 (0.003-0.018)	0.005 (<0.001-0.015)	0.007 (0.002-0.013)	0.0029 (0.0005-0.0076)	0.00030 (<0.00006-0.00095)	0.012 (0.003-0.028)
16.	Dhenkanal D/s	9.355 (1.736-18.928)	0.107 (0.033-0.214)	0.012 (<0.002-0.038)	0.047 (0.013-0.094)	1.801 (0.060-6.070)	0.013 (0.004-0.024)	0.010 (0.001-0.040)	0.011 (0.001-0.017)	0.0037 (0.0006-0.0083)	0.00030 (<0.00006-0.00070)	0.011 (0.003-0.022)
17.	Bhuban	5.115 (0.465-11.705)	0.193 (0.009-1.212)	0.018 (<0.002-0.035)	0.048 (0.013-0.086)	2.250 (0.260-5.890)	0.011 (0.002-0.023)	0.005 (0.001-0.017)	0.013 (0.001-0.032)	0.0015 (0.0007-0.0044)	0.00022 (<0.00006-0.00089)	0.006 (0.002-0.015)
18.	Kabatabandha	5.555 (0.593-16.262)	0.085 (0.005-0.220)	0.017 (<0.002-0.038)	0.054 (0.007-0.116)	2.388 (0.070-7.110)	0.011 (0.003-0.021)	0.004 (0.001-0.009)	0.011 (0.001-0.043)	0.0015 (0.0004-0.0036)	0.00023 (<0.00006-0.00089)	0.007 (0.002-0.029)
19.	Dharmasala U/s	5.450 (0.806-15.204)	0.152 (0.004-0.731)	0.011 (<0.002-0.04031)	0.038 (0.008-0.086)	2.061 (0.100-7.170)	0.013 (0.007-0.019)	0.002 (<0.001-0.007)	0.007 (0.001-0.014)	0.0032 (0.0006-0.0141)	0.00022 (<0.00006-0.00083)	0.009 (0.004-0.019)

NB: # Data for the period January-December, 2015 excluding March, 2015

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)								
20.	Dharmasala D/s	8.214 (2.148-16.972)	0.185 (0.027-0.743)	0.015 (<0.002-0.043)	0.046 (0.008-0.114)	1.485 (0.128-6.710)	0.015 (0.001-0.024)	0.004 (<0.001-0.008)	0.008 (0.001-0.015)	0.0034 (0.0006-0.0146)	0.00026 (<0.00006-0.00089)	0.010 (0.006-0.018)
21	Pottamundai	4.979 (0.106-15.105)	0.266 (0.045-1.096)	0.012 (<0.002-0.036)	0.039 (0.009-0.092)	1.483 (0.130-6.680)	0.017 (0.002-0.049)	0.003 (0.001-0.007)	0.010 (0.002-0.029)	0.0016 (0.0006-0.0048)	0.00021 (<0.00006-0.00089)	0.011 (0.004-0.035)
Nandira River												
22.	Nandira river before confluence with river Brahmani	6.712 (3.175-18.317)	0.062 (0.023-0.094)	0.011 (<0.002-0.046)	0.045 (0.007-0.128)	1.302 (0.030-4.330)	0.016 (0.011-0.022)	0.007 (0.001-0.016)	0.019 (0.005-0.032)	0.0045 (0.0011-0.0104)	0.00036 (<0.00006-0.00076)	0.014 (0.009-0.020)
Kisinda Jhor												
23.	Kisindajhor	6.552 (1.025-19.757)	0.050 (0.012-0.115)	0.012 (<0.002-0.048)	0.045 (0.007-0.077)	0.879 (0.120-2.350)	0.022 (0.008-0.047)	0.008 (0.002-0.018)	0.019 (0.003-0.032)	0.0049 (0.0007-0.0109)	0.00046 (0.00019-0.00089)	0.017 (0.009-0.023)
Kharasrota River												
24.	Khanditara	3.685 (0.164-9.929)	0.049 (0.001-0.121)	0.012 (<0.002-0.040)	0.034 (0.008-0.108)	1.936 (0.060-7.390)	0.015 (0.004-0.040)	0.007 (0.001-0.028)	0.014 (0.002-0.042)	0.0017 (0.0007-0.0041)	0.00020 (<0.00006-0.00070)	0.008 (0.001-0.017)
25.	Binjharpur	4.138 (0.102-13.716)	0.097 (0.003-0.542)	0.012 (<0.002-0.041)	0.037 (0.011-0.094)	1.755 (0.340-7.320)	0.014 (0.003-0.047)	0.004 (0.002-0.007)	0.019 (0.004-0.089)	0.0031 (0.0007-0.0158)	0.00025 (<0.00006-0.00089)	0.008 (0.002-0.019)
26.	Aul	3.012 (0.084-11.169)	0.160 (0.036-0.667)	0.015 (<0.002-0.036)	0.043 (0.008-0.087)	2.384 (0.230-7.310)	0.016 (0.006-0.028)	0.005 (0.003-0.009)	0.009 (0.002-0.019)	0.0030 (0.0007-0.0116)	0.00021 (<0.00006-0.00089)	0.010 (0.002-0.036)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
* Class 'E'		-	-	-	-	-	-	-	-	-	-	-

NB: Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality
 * Tolerance limit for Inland Surface water bodies (IS-2296-1982) , ## Data for the period April-December, 2015

(C) Baitarani River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkali- nity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)								
Kusei river																
1.	Deogan	32 (8-110)	93 (48-140)	7.7 (4.1-15.8)	0.065 (0.056-0.112)	0005 (0.002-0.011)	1.17 (0.84-1.68)	8588 (490-24000)	247 (148-320)	0.49 (0.25-0.98)	0.037 (0.003-0.130)	137 (84-178)	96 (52-128)	13.78 (6.84-27.40)	10.5 (3.4-20.2)	0.337 (0.219-0.530)
Baitarani river																
2.	Joda	38 (6-111)	44 (24-60)	8.4 (2.0-18.5)	0.070 (0.056-0.112)	0.002 (0.001-0.004)	1.21 (0.84-1.68)	1801 (78-4900)	136 (107-183)	0.35 (0.20-0.52)	0.012 (0.003-0.038)	78 (62-108)	46 (32-60)	8.72 (4.89-13.69)	9.8 (2.5-17.7)	0.304 (0.180-0.514)
3.	Anandpur	29 (4-80)	59 (40-70)	8.8 (2.0-17.8)	0.070 (0.056-0.112)	0.003 (0.002-0.005)	1.17 (0.84-1.40)	3748 (330-16000)	164 (138-184)	0.38 (0.26-0.52)	0.041 (0.003-0.098)	93 (78-104)	59 (44-72)	9.62 (7.80-13.69)	9.2 (3.5-21.4)	0.307 (0.180-0.509)
4.	Jajpur	23 (6-85)	62 (36-86)	14.5 (9.2-23.5)	0.089 (0.056-0.112)	0.007 (0.001-0.014)	1.35 (1.12-1.68)	8785 (330-35000)	173 (124-220)	0.40 (0.33-0.49)	0.031 (0.003-0.080)	99 (72-125)	65 (44-78)	10.60 (8.80-13.69)	9.6 (4.0-16.9)	0.368 (0.225-0.720)
5.	Chandbali U/s	150 (38-759)	88 (44-192)	23.7 (5.2-78.8)	0.103 (0.056-0.224)	0.004 (0.001-0.007)	1.38 (0.84-1.96)	16500 (1700-54000)	6385 (180-16900)	19.16 (0.68-48.68)	0.536 (0.010-1.958)	4729 (106-13010)	878 (48-2350)	2414.2 (8.0-7145.2)	388.3 (10.3-883.1)	0.391 (0.230-0.617)
6.	Chandbali D/s	167 (45-679)	91 (54-198)	25.4 (12.2-59.1)	0.149 (0.056-0.728)	0004 (0-0.011)	1.47 (0.84-2.24)	38075 (2200-160000)	6316 (207-17340)	18.07 (0.62-46.63)	0.620 (0.042-2.185)	4722 (118-13390)	926 (52-2400)	2369.5 (15.65-7047.4)	329 (12.0-907.9)	0.392 (0.248-0.566)
Salandi river																
7.	Bhadrak U/s	21 (8-80)	57 (40-104)	7.7 (5.7-9.8)	0.079 (0.056-0.224)	0.004 (0.002-0.009)	1.17 (0.84-1.68)	16919 (230-54000)	154 (125-223)	48.63 (1.05-75.33)	0.039 (0.003-0.084)	88 (70-129)	56 (38-96)	11.25 (7.83-21.53)	6.6 (3.2-12.4)	0.340 (0.150-0.600)
8.	Bhadrak D/s	31 (12-87)	60 (32-100)	19.9 (9.9-76.8)	0.112 (0.056-0.280)	0.005 (0.001-0.011)	1.42 (0.84-1.96)	32567 (4900-160000)	173 (144-236)	0.43 (0.28-0.73)	0.055 (0.006-0.161)	99 (84-136)	60 (46-80)	12.79 (8.80-17.61)	8.8 (4.1-14.9)	0.301 (0.140-0.532)
Dhamra river																
9.	Dhamra	117 (30-490)	106 (52-196)	29.2 (11.4-72.0)	0.089 (0.056-0.112)	0.007 (0.002-0.014)	1.31 (0.84-1.68)	8086 (330-16000)	21309 (234-343800)	0.48 (0.28-0.83)	1.461 (0.016-3.918)	17122 (130-28390)	2680 (60-5000)	9295.3 (29.4-15677.5)	911.3 (17.9-1530.0)	0.512 (0.250-0.740)
	*Class 'C'	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	* Class 'E'	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality
 * Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
(mg/l)		(mg/l)										
Kusei river												
1.	Deogan	4.764 (1.523-10.066)	0.120 (0.015-0.803)	0.013 (<0.002-0.033)	0.043 (0.011-0.077)	2.452 (0.160-7.650)	0.010 (0.002-0.021)	0.004 (0.001-0.013)	0.012 (0.002-0.038)	0.0030 (0.0006-0.0074)	0.00013 (<0.00006-0.00051)	0.009 (0.003-0.019)
Baitarani river												
2.	Joda	3.678 (0.362-10.252)	0.121 (0.011-0.427)	0.015 (<0.002-0.036)	0.043 (0.008-0.081)	3.081 (0.280-8.620)	0.014 (0.004-0.031)	0.006 (0.002-0.010)	0.016 (0.003-0.048)	0.0027 (0.0006-0.0078)	0.00016 (<0.00006-0.00070)	0.008 (0.004-0.014)
3.	Anandpur	5.328 (1.092-8.820)	0.178 (0.027-0.916)	0.013 (<0.002-0.030)	0.047 (0.013-0.113)	1.949 (0.050-8.080)	0.013 (0.004-0.022)	0.007 (0.001-0.014)	0.014 (0.002-0.023)	0.0028 (0.0003-0.0064)	0.00024 (<0.00006-0.00100)	0.009 (0.003-0.014)
4.	Jajpur	5.607 (0.186-17.129)	0.072 (0.008-0.231)	0.013 (<0.002-0.035)	0.049 (0.007-0.131)	2.728 (0.160-7.06)	0.011 (0.002-0.020)	0.005 (0.002-0.013)	0.013 (0.001-0.024)	0.0029 (0.0010-0.0051)	0.00039 (0.00013-0.00095)	0.007 (0.002-0.015)
5.	Chandbali U/s	3.444 (0.580-7.859)	0.144 (0.023-0.734)	0.019 (<0.002-0.037)	0.054 (0.013-0.094)	5.373 (1.340-9.100)	0.026 (0.005-0.082)	0.010 (0.002-0.028)	0.033 (0.003-0.195)	0.0034 (0.0007-0.0116)	0.00025 (<0.00006-0.00083)	0.015 (0.002-0.040)
6.	Chandbali D/s	5.640 (0.753-12.011)	0.187 (0.017-0.922)	0.021 (<0.002-0.040)	0.054 (0.015-0.097)	4.102 (0.209-9.840)	0.026 (0.006-0.088)	0.010 (0.002-0.028)	0.033 (0.003-0.201)	0.0044 (0.0008-0.0154)	0.00024 (0.00006-0.00076)	0.016 (0.004-0.029)
Salandi river												
7.	Bhadrak U/s	3.564 (0.678-6.878)	0.113 (0.012-0.781)	0.010 (<0.002-0.031)	0.038 (0.011-0.087)	1.192 (0.180-6.550)	0.013 (0.006-0.061)	0.005 (0.001-0.013)	0.009 (0.001-0.022)	0.0018 (0.0008-0.0035)	0.00023 (<0.00006-0.00089)	0.007 (0.001-0.020)
8.	Bhadrak D/s	7.404 (2.582-15.297)	0.155 (0.018-1.078)	0.014 (<0.002-0.038)	0.049 (0.015-0.126)	1.186 (0.020-6.020)	0.016 (0.005-0.049)	0.006 (0.001-0.015)	0.020 (0.008-0.058)	0.0024 (0.0009-0.0043)	0.00038 (0.00013-0.00095)	0.008 (0.002-0.022)
Dhamara river												
9.	Dhamra	8.210 (0.793-31.487)	0.048 (0.029-0.075)	0.014 (<0.002-0.043)	0.043 (0.011-0.094)	4.096 (0.390-7.470)	0.030 (0.009-0.085)	0.013 (0.001-0.030)	0.036 (0.007-0.214)	0.0061 (0.0007-0.0293)	0.00030 (<0.00006-0.00095)	0.014 (0.004-0.046)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

NB: Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982), ## Data for the period April-December, 2015

(D) Rushikulya River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Rushikulya river																
1.	Madhopur	35 (8-88)	116 (80-152)	10.8 (5.7-14.8)	0.061 (0.056-0.112)	0.006 (0.001-0.014)	1.14 (0.84-1.40)	4412 (130-16000)	315 (196-490)	0.85 (0.41-2.47)	0.059 (0.010-0.204)	180 (115-280)	114 (76-150)	25.84 (9.78-76.32)	12.1 (4.2-24.3)	0.483 (0.217-0.900)
2.	Potagarh	47 (10-128)	129 (96-172)	22.1 (10.4-34.5)	0.075 (0.056-0.280)	0.005 (0.002-0.018)	1.19 (0.84-1.40)	581 (<2-2400)	22660 (275-46240)	47.2 (0.46-104.47)	1.845 (0.010-4.339)	18054 (157-32960)	2660 (110-6000)	10033.7 (13.7-19080.8)	768.6 (21.8-1660.4)	0.634 (0.320-0.990)
	Class 'C'	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	Class 'E'	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients				Heavy metals						
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
		(mg/l)				(mg/l)						
Rushikulya river												
1.	Madhopur	5.006 (0.204-13.423)	0.104 (0.007-0.370)	0.013 (<0.002-0.033)	0.042 (0.015-0.087)	2.292 (0.070-6.810)	0.011 (0.004-0.017)	0.005 (0.001-0.013)	0.009 (0.001-0.025)	0.0034 (0.0004-0.0080)	0.00032 (0.00006-0.00089)	0.011 (0.005-0.017)
2.	Potagarh	6.329 (0.391-26.128)	0.105 (0.032-0.344)	0.009 (<0.002-0.023)	0.042 (0.011-0.094)	2.654 (0.110-7.140)	0.027 (0.007-0.070)	0.014 (0.002-0.046)	0.021 (0.006-0.085)	0.0089 (0.0004-0.0436)	0.00028 (<0.00006-0.00070)	0.018 (0.006-0.052)
	*Class 'C'	50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
	*Class 'E'	-	-	-	-	-	-	-	-	-	-	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982) ## Data for the period Apri-December, 2015

(E) Nagavali River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Nagavali river																
1.	Penta	39 (10-107)	77 (48-100)	9.4 (3.8-17.7)	0.061 (0.056-0.112)	0.003 (0.001-0.011)	1.12 (0.84-1.40)	2368 (130-7900)	187 (142-210)	0.34 (0.21-0.50)	0.034 (0.006-0.109)	106 (80-120)	76 (54-98)	8.72 (5.87-11.74)	7.0 (3.3-12.9)	0.307 (0.164-0.490)
2.	Jaykaypur D/s	55 (19-116)	90 (64-142)	18.2 (11.9-27.6)	0.056 (0.056-0.056)	0.002 (0.001-0.004)	1.14 (0.84-1.40)	9025 (700-54000)	244 (177-338)	0.51 (0.33-0.77)	0.049 (0.010-0.197)	140 (98-202)	92 (70-136)	13.7 (8.80-20.55)	15.7 (8.2-26.4)	0.294 (0.170-0.414)
3.	Rayagada D/s	52 (15-116)	95 (68-116)	15.3 (5.9-28.6)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.05 (0.84-1.40)	3524 (490-14000)	263 (220-308)	0.60 (0.36-0.99)	0.039 (0.003-0.102)	149 (122-172)	100 (72-124)	16.80 (9.78-24.50)	18.8 (8.6-27.4)	0.299 (0.175-0.420)
	Class 'C'	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	Class 'E'	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients				Heavy metals						
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)				(mg/l)						
Nagavali river												
1.	Penta	5.062 (0.771-15.093)	0.086 (0.037-0.310)	0.012 (<0.002-0.033)	0.037 (0.008-0.077)	2.780 (0.460-6.500)	0.013 (0.007-0.026)	0.005 (0.002-0.011)	0.006 (0.003-0.012)	0.0018 (0.0004-0.0035)	0.00010 (<0.00006-0.00076)	0.008 (0.003-0.012)
2.	Jaykaypur D/s	8.905 (0.793-36.040)	0.113 (0.037-0.553)	0.015 (<0.002-0.033)	0.130 (0.011-0.958)	3.793 (1.170-7.210)	0.018 (0.009-0.030)	0.007 (0.002-0.012)	0.011 (0.002-0.024)	0.0028 (0.0010-0.0061)	0.00030 (<0.00006-0.00089)	0.012 (0.006-0.022)
3.	Rayagada D/s	5.058 (1.621-17.018)	0.074 (0.015-0.159)	0.018 (<0.002-0.036)	0.058 (0.023-0.150)	4.598 (0.790-7.630)	0.019 (0.007-0.030)	0.006 (0.002-0.010)	0.009 (0.003-0.019)	0.0022 (0.0009-0.0054)	0.00020 (<0.00006-0.00064)	0.008 (0.006-0.014)
	*Class 'C'	50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
	*Class 'E'	-	-	-	-	-	-	-	-	-	-	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982), ## Data for the period April-December, 2015

(F) Subarnarekha River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Subarnarekha river																
1.	Rajghat	19 (4-56)	84 (58-112)	9.1 (5.1-17.5)	0.056 (0.056-0.056)	0.005 (0.001-0.007)	1.17 (0.84-1.40)	1282 (78-3500)	271 (172-402)	0.85 (0.39-2.04)	0.068 (0.003-0.274)	154 (96-255)	91 (64-124)	24.9 (9.8-65.6)	16.7 (3.8-27.6)	0.519 (0.290-0.700)
Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients				Heavy metals							
		Annual Average values (Range of values)											
		Nitrate as NO ₃ ⁻		PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}
		(mg/l)		(mg/l)									
Subarnarekha river													
1.	Rajghat	3.313 (0.496-10.062)		0.116 (0.027-0.435)	0.012 (<0.002-0.033)	0.049 (0.018-0.143)	1.351 (0.0280-6.220)	0.009 (0.003-0.015)	0.005 (0.002-0.008)	0.011 (0.003-0.018)	0.0024 (0.0005-0.0047)	0.00015 (<0.00006-0.00076)	0.007 (0.005-0.011)
*Class 'C'		50		-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-		-	-	-	-	-	-	-	-	-	-

NB: Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS-2296-1982) , ## Data for the period April-December, 2015

(G) Budhabalanga River System



Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)		(mg/l)					
Budhabalanga river																
1.	Baripada D/s	19 (5-30)	88 (60-112)	12.9 (6.7-21.8)	0.065 (0.056-0.112)	0.004 (0.001-0.009)	1.17 (0.84-1.40)	22233 (7900-92000)	242 (166-341)	0.51 (0.32-0.73)	0.044 (0.003-0.133)	138 (94-196)	92 (60-118)	14.83 (8.80-22.50)	16.4 (5.2-48.8)	0.314 (0.160-0.500)
2.	Balasure U/s	29 (6-62)	81 (40-104)	8.9 (5.1-15.8)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.12 (0.84-1.40)	5925 (1300-35000)	224 (118-278)	0.54 (0.27-1.08)	0.033 (0.006-0.074)	125 (70-152)	80 (40-104)	14.35 (6.84-24.46)	14.5 (7.8-24.6)	0.331 (0.130-0.470)
3.	Balasure D/s	48 (26-92)	103 (44-84)	16.1 (10.2-23.1)	0.065 (0.056-0.168)	0.002 (0.001-0.007)	1.14 (0.84-1.40)	19308 (3300-54000)	1764 (190-8750)	7.19 (0.49-36.66)	0.146 (0.019-1.008)	1215 (122-6610)	235 (52-840)	593.9 (11.74-3571.5)	78.4 (11.4-359.4)	0.324 (0.190-0.500)
*Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
*Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality * Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Sl. No.	Sampling Location	Nutrients				Heavy metals							
		Annual Average values (Range of values)											
		Nitrate as NO ₃ ⁻		PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
		(mg/l)											
Budhabalanga river													
1.	Baripada D/s	6.1919 (1.089-20.415)		0.154 (0.034-0.531)	0.014 (0.002-0.038)	0.042 (0.011-0.114)	1.671 (0.260-5.330)	0.011 (0.002-0.019)	0.008 (0.002-0.029)	0.016 (0.008-0.025)	0.0026 (0.0007-0.0053)	0.00021 (<0.00006-0.00083)	0.011 (0.002-0.043)
2.	Balasure U/s	2.682 (0.368-7.002)		0.145 (0.006-0.460)	0.014 (<0.002-0.033)	0.040 (0.008-0.094)	2.998 (0.076-7.530)	0.014 (0.004-0.029)	0.005 (0.003-0.006)	0.013 (0.003-0.018)	0.0022 (0.0006-0.0059)	0.00005 (<0.00006-0.00019)	0.006 (0.002-0.017)
3.	Balasure D/s	5.622 (1.563-10.714)		0.168 (0.039-0.625)	0.018 (<0.002-0.046)	0.074 (0.015-0.173)	3.520 (0.092-7.210)	0.016 (0.003-0.035)	0.005 (0.002-0.009)	0.019 (0.007-0.026)	0.0028 (0.0007-0.0071)	0.00007 (<0.00006-0.00025)	0.009 (0.004-0.028)
*Class 'C'		50		-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-		-	-	-	-	-	-	-	-	-	-

N B : Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality
* Tolerance limit for Inland Surface water bodies (IS 2296 1982), ## Data for the period April December, 2015

(H) Kolab River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Kerandi river																
1.	Sunabeda	29 (6-60)	26 (16-34)	9.1 (5.3-15.8)	0.065 (0.056-0.168)	0.001 (0-0.004)	1.14 (0.84-1.40)	2717 (130-16000)	92 (78-100)	0.33 (0.23-0.48)	0.011 (0.003-0.025)	53 (44-62)	30 (18-38)	7.6 (5.9-10.8)	6.7 (3.0-18.8)	0.254 (0.120-0.392)
	*Class 'C'	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	*Class 'E'	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients				Heavy metals							
		Annual Average values (Range of values)											
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni ^{##}	Cu ^{##}	Zn ^{##}	Cd ^{##}	Hg	Pb ^{##}	
		(mg/l)				(mg/l)							
Kerandi river													
1.	Sunabeda	2.821 (0.429-7.578)	0.148 (0.036-0.803)	0.015 (0.000-0.042)	0.043 (0.013-0.087)	3.033 (0.710-7.780)	0.012 (0.003-0.027)	0.006 (0.001-0.011)	0.010 (0.003-0.015)	0.0021 (0.0004-0.0050)	0.00015 (<0.00006-0.00070)	0.010 (0.002-0.018)	
	*Class 'C'	50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10	
	*Class 'E'	-	-	-	-	-	-	-	-	-	-	-	

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection , Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS 2296 1982) , ## Data for the period April December, 2015

(I) Vansadhara River System

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µS/cm)	(mg/l)						
Vansadhara river																
1.	Muniguda	35 (4-122)	75 (48-88)	11.1 (3.8-36.6)	0.061 (0.056-0.112)	0.004 (0.001-0.009)	1.10 (0.84-1.68)	3163 (130-17000)	185 (162-212)	0.38 (0.30-0.52)	0.030 (0.006-0.071)	105 (88-118)	70 (52-78)	10.03 (7.82-13.7)	7.2 (3.5-14.3)	0.446 (0.18-1.100)
2.	Gunupur	41 (6-87)	78 (32-124)	11.4 (5.4-21.7)	0.061 (0.056-0.112)	0.004 (0.0-0.009)	1.12 (0.84-1.40)	4983 (330-17000)	199 (134-285)	0.36 (0.22-0.47)	0.047 (0.01-0.138)	113 (76-158)	76 (48-116)	9.62 (5.87-13.69)	10.5 (1.9-21.1)	0.301 (0.180-0.408)
Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients				Heavy metals						
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
		(mg/l)		(mg/l)								
Vansadhara river												
1.	Muniguda	4.148 (0.553-7.591)	0.128 (0.045-0.299)	0.016 (<0.002-0.040)	0.053 (0.008-0.131)	2.333 (0.030-6.880)	0.012 (0.004-0.023)	0.005 (0.001-0.008)	0.009 (0.002-0.017)	0.0021 (0.0004-0.0056)	0.00016 (<0.00006-0.00057)	0.009 (0.002-0.017)
2.	Gunupur	5.146 (0.850-9.854)	0.120 (0.019-0.344)	0.017 (<0.002-0.036)	0.059 (0.007-0.146)	3.477 (0.120-6.870)	0.015 (0.004-0.029)	0.008 (<0.001-0.018)	0.009 (0.001-0.016)	0.0029 (0.0004-0.0058)	0.00022 (<0.00006-0.00057)	0.013 (0.002-0.034)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

NB : Class 'C' : Drinking water source with conventional treatment followed by disinfection , Class 'E' : Irrigation water quality

* Tolerance limit for Inland Surface water bodies (IS 2296 1982) ## Data for the period April December, 2015

From the point of view of assessment of the river water quality on the basis of its use to which the river is put by the community, the water quality should conform to either Class-B (outdoor bathing) or Class-C (drinking water source with conventional treatment followed by the disinfection). Water quality data given in Table-5.21 indicate that out of the four critical parameters such as pH, DO, BOD and TC, parameters like pH and DO at most of the stations remained within the criteria limits, whereas BOD and/or TC have exceeded the criteria limits at several places. Non-compliance has been observed at 54 stations for TC alone and 16 stations for both BOD & TC (Table-5.24). The probable cause of downgrading the water quality from its desired use, are of organic origin. A major contribution towards this is from the discharge of untreated domestic water from the townships to the nearby water bodies.

Table-5.24 Water quality status of river monitoring stations during 2015

Sl. No.	River System	Total no. of Monitoring Stations	Conforming Stations	Non - conforming stations		
				Both BOD & TC	BOD alone	TC alone
1.	Mahanadi	32	6	7	-	19
2.	Brahmani	26	2	7	-	17
3.	Baitarani	9	-	-	-	9
4.	Rushikulya	2	1	-	-	1
5.	Nagavali	3	-	1		2
6.	Subarnarekha	1	-	-		1
7.	Budhabalanga	3	-	1		2
8.	Kolab	1	-	-		1
9.	Vamsadhara	2	-	-	-	2
Total		79	9	16	-	54

Water quality with respect to other parameters at all the monitoring stations except at Paradeep D/s, Potagarh, Chandbali and Dhamra remain within the criteria limit for Class - C water quality as laid down under IS : 2296-1982 (Tolerance limits for inland surface water bodies). Water quality at Paradeep D/s, Potagarh, Chandbali and Dhamra are greatly influenced by the tidal effect as these stations are very close to the river muhans.

(B) TALADANDA CANAL

Taladanda canal originates from Mahanadi river at Jobra of Cuttack, passes through the city and finally culminates at Paradeep. The canal was constructed for the purpose of navigation and/ or irrigation of a part of Mahanadi delta of Cuttack and Jagatsinghpur districts. Besides this, the canal is also a source of fresh water for industries and the port at Paradeep. The canal water is also used for bathing and other domestic activities all along its stretch.

Board monitors the water quality of Taldanda canal within Cuttack city at five locations viz. Jobra, Ranihat, Chhatrabazar, Nuabazar, Biribati and one station at Atharabanki of Paradeep. The water quality data at these five stations with respect to critical parameters such as pH, DO, BOD, TC, FC, EC, SAR and B during 2015 are given in Table-5.25 and compared with the tolerance limits for Bathing water quality prescribed under E (P) Rule, 1986 and Class B (Outdoor bathing) and Class E (Irrigation) Inland surface water quality prescribed by Bureau of Indian Standards (IS: 2296-1982). The water quality of Taladanda canal at these locations remain well within the tolerance limit prescribed for Class-E inland surface water bodies. However, so far the bathing water quality is concerned, total coliform organisms and fecal coliform organisms remain above the prescribed limit for Class- B at all the monitoring stations during the period of study in 2015, whereas DO and BOD values do not remain within the tolerance limit at all stations except at Jobra.

Water quality for other parameters given in Table-5.26 remain well within the tolerance limit for Class - C water quality.

Table-5.25 Water Quality of Taladanda Canal with respect to Criteria parameters during 2015 (January-December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameter s responsibl e for downgradi ng the water quality	Possible Reason
			Parameters					DO	BOD	TC	FC			
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)							
1.	Jobra*	6	8.0 (7.7-8.2)	6.9 (6.4-8.2)	1.2 (0.7-1.8)	50817 (7900-92000)	28717 (3300-54000)	0	0	6 (100)	6 (100)	Does not conform to Class B,C	TC,FC	Human activities
2.	Ranihat*	6	7.9 (7.5-8.3)	6.1 (1.9-8.3)	3.6 (1.1-12.9)	160000 (160000-160000)	148667 (92000-160000)	1 (17)	1 (17)	6 (100)	6 (100)	Does not conform to Class B & C	DO, BOD, TC,FC	Human activities and waste water of Cuttack town
3.	Chhatrabazar*	6	7.8 (7.3-8.2)	6.3 (2.6-8.3)	7.9 (1.8-34.6)	119667 (54000-160000)	84333 (24000-160000)	1 (17)	2 (34)	6 (100)	6 (100)			
4.	Nuabazar*	6	7.8 (7.3-8.2)	6.4 (4.4-8.2)	3.4 (1.2-11.2)	119667 (54000-160000)	81167 (35000-160000)	0 ^s 1 ^{ss} (17)	1 (17)	6 (100)	6 (100)	Does not conform to Class B & C	BOD, TC,FC	
5.	Biribati**	7	8.0 (7.8-8.3)	7.0 (5.9-8.6)	2.9 (1.1-6.0)	72271 (7900-160000)	52329 (3300-160000)	0	3 (43)	7 (100)	7 (100)			
6.	Atharabanki	12	7.7 (6.8-8.4)	6.6 (2.8-9.3)	2.3 (1.2-3.7)	98250 (11000-160000)	79492 (7900-160000)	1 ^s (8) 3 ^{ss} (25)	2 (17)	12 (100)	12 (100)	Does not conform to Class B & C	DO, BOD, TC,FC	Human activities
***Class 'C'			6.5-8.5	4 and above	3 or less	5000 or less	Drinking water source with conventional treatment followed by disinfection							
***Class 'B'			6.5-8.5	5 and above	3 or less	500 or less	Outdoor bathing							
Water quality criteria for bathing water			6.5-8.5	5 and above	3 or less	2500 (Maximum Permissible)	Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)							

NB :* Data for the period January,2015 and July-November, 2015 ** Data for the period January,2015 , March, 2015 and July-November, 2015 *** Tolerance limit for Inland Surface water bodies (IS-2296-1982) for Class C and Class B. The criteria of non-compliance with respect to TC has been calculated on the following basis:TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.(Ref : IS 2296-1982 foot note)

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values)				Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				EC	SAR	B			
			pH	EC (microSiemens/cm)	SAR	B (mg/l)						
1.	Jobra*	6	8.0 (7.7-8.2)	193 (175-219)	0.36 (0.31-0.45)	0.020 (<0.003-0.061)	0	0	0	Conform to Class E		
2.	Ranihat*	6	7.9 (7.5-8.3)	232 (147-409)	0.27 (1.18-0.50)	0.009 (<0.003-0.022)	0	0	0			
3.	Chhatrabazar*	6	7.8 (7.3-8.2)	243 (181-452)	0.52 (0.28-1.37)	0.019 (<0.003-0.071)	0	0	0			
4.	Nuabazar*	6	7.8 (7.3-8.2)	244 (194-432)	0.57 (0.31-1.58)	0.013 (<0.003-0.0365)	0	0	0			
5.	Biribati**	7	8.0 (7.8-8.3)	270 (166-511)	0.81 (0.31-1.92)	0.044 (<0.003-0.144)	0	0	0			
6.	Atharabanki	12	7.7 (6.8-8.4)	3245 (231-32480)	6.93 (0.36-70.32)	0.274 (0.006-1.945)	0	1 (8)	0			
*** Class 'E'			6.5-8.5	2250 or less	26 or less	2 or less				Irrigation, Industrial Cooling or controlled waste disposal		

N.B: * Data for the period January,2015 and July-November, 2015
 ** Data for the period January,2015 , March, 2015 and July-November, 2015
 *** Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Table-5.26 Water Quality of Taladanda Canal with respect to other parameters during 2015 (January-December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents				
		Annual average values (Range of values)										
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(mg/l)				
1.	Jobra*	44 (6-127)	75 (66-84)	7.5 (5.1-9.1)	0.075 (0.056-0.112)	0.003 (0-0.004)	1.40 (1.12-1.96)	110 (98-125)	78 (70-84)	10.44 (8.81-13.69)	11.9 (5.6-21.4)	0.415 (0.310-0.680)
2.	Ranihat*	46 (14-116)	82 (56-124)	15.1 (8.6-33.2)	1.185 (0.112-6.440)	0.048 (0.004-0.258)	2.80 (1.40-8.96)	132 (82-225)	90 (80-122)	14.85 (7.82-35.27)	17.2 (9.1-31.3)	0.411 (0.290-0.650)
3.	Chhatrabazar*	46 (10-117)	80 (64-132)	40.0 (11.4-156.6)	1.465 (0.112-7.896)	0.025 (0.002-0.099)	2.89 (1.40-9.24)	138 (105-245)	88 (72-132)	14.35 (7.82-37.18)	19.5 (12.1-29.4)	0.405 (0.302-0.620)
4.	Nuabazar*	43 (8-134)	82 (66-120)	16.6 (8.6-29.5)	1.409 (0.112-7.616)	0.022 (0.003-0.095)	2.75 (1.40-8.96)	136 (108-240)	86 (76-114)	15.98 (8.8-45.01)	14.8 (8.7-22.1)	0.407 (0.269-0.650)
5.	Biribati**	40 (8-118)	97 (64-164)	17.6 (7.6-38.1)	0.848 (0.056-5.264)	0.049 (0.002-0.263)	2.40 (1.12-8.40)	155 (96-305)	89 (64-132)	21.11 (7.82-56.75)	12.4 (7.2-22.9)	0.385 (0.320-0.700)
6.	Atharabanki	21 (5-34)	94 (60-124)	18.9 (9.3-41.4)	0.087 (0.056-0.168)	0.003 (0-0.007)	1.35 (1.12-1.68)	2431 (125-24880)	392 (72-3350)	1276.5 (11.7-13699.0)	133.8 (4.97-1237.5)	0.590 (0.430-0.834)
***Class 'C'		-	-	-	-	-	-	1500	-	600	400	1.5
***Class 'E'								2100	-	600	1000	-

N.B: * Data for the period January,2015 and July-November, 2015,** Data for the period January,2015 , March, 2015 and July-November, 2015
 *** Tolerance limit for Inland Surface water bodies (IS-2296-1982), Class 'C' : Drinking water source with conventional treatment followed by disinfection ,Class 'E' : Irrigation water quality

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni [#]	Cu [#]	Zn [#]	Cd [#]	Hg	Pb [#]
		(mg/l)		(mg/l)								
1.	Jobra*	2.066 (1.488-3.450)	0.065 (0.004-0.215)	0.008 (<0.002-0.023)	0.021 (0.011-0.045)	3.488 (0.080-7.550)	0.017 (0.005-0.027)	0.002 (0.001-0.005)	0.005 (0.002-0.011)	0.0013 (0.0004-0.0023)	0.00011 (<0.00006-0.00025)	0.008 (0.005-0.018)
2.	Ranihat*	7.482 (1.196-15.899)	0.259 (0.032-1.203)	0.011 (0.002-0.035)	0.041 (0.016-0.072)	2.110 (0.160-5.890)	0.025 (0.007-0.038)	0.006 (0.001-0.012)	0.011 (0.001-0.024)	0.0026 (0.0009-0.0048)	0.00037 (0.00013-0.00095)	0.012 (0.007-0.021)
3.	Chhatrabazar*	7.272 (2.498-15.509)	0.116 (0.048-0.303)	0.015 (0.005-0.028)	0.047 (0.022-0.068)	3.603 (0.220-7.420)	0.021 (0.006-0.029)	0.005 (0.002-0.010)	0.006 (0.002-0.011)	0.0020 (0.0011-0.0034)	0.00034 (<0.00006-0.00095)	0.011 (0.003-0.022)
4.	Nuabazar*	5.498 (1.887-12.125)	0.324 (0.061-1.248)	0.014 (<0.002-0.030)	0.040 (0.021-0.068)	3.987 (0.150-7.270)	0.018 (0.007-0.026)	0.005 (0.001-0.015)	0.004 (0.001-0.006)	0.0023 (0.0011-0.0038)	0.00030 (<0.00006-0.00083)	0.010 (0.006-0.017)
5.	Biribati**	2.877 (0.793-7.241)	0.265 (0.013-1.290)	0.012 (<0.002-0.035)	0.035 (0.011-0.077)	3.815 (0.800-6.980)	0.021 (0.005-0.036)	0.003 (0.001-0.009)	0.004 (0.002-0.005)	0.0020 (0.0009-0.0033)	0.00003 (<0.00006-0.00007)	0.009 (0.002-0.019)
6.	Atharabanki	5.339 (1.971-8.901)	0.087 (0.022-0.281)	0.016 (<0.002-0.046)	0.057 (0.011-0.228)	1.052 (0.020-2.660)	0.011 (0.004-0.031)	0.004 (0.001-0.008)	0.010 (0.001-0.024)	0.0021 (0.0003-0.0042)	0.00023 (<0.00006-0.00070)	0.009 (0.002-0.024)
***Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
***Class 'E'		-	-	-	-	-	-	-	-	-	-	-

NB: * Data for the period January,2015 and July-November, 2015,** Data for the period January,2015 , March, 2015 and July-November, 2015

*** Tolerance limit for Inland Surface water bodies (IS-2296-1982), # Data for the period July-November, 2015

Class 'C' : Drinking water source with conventional treatment followed by disinfection, Class 'E' : Irrigation water quality

(C) PONDS

Board monitors the water quality of Bindusagar pond, a religious pond in Bhubaneswar and five religious ponds such as Narendra, Indradyumna, Markanda, Swetaganga and Parvati sagar in Puri town. Water quality of these ponds with respect to criteria parameters such as pH, DO, BOD, TC and FC during 2015 are given in Table-5.27. As these ponds are mostly used for religious bathing purposes, water quality data are compared with the bathing water quality (Class-B). It is seen from the data that BOD, Total and Fecal Coliform values are much above the tolerance limits for the designated Class 'B' and indicate organic source of pollution of the pond. Frequent occurrence of very high DO content (above saturation level) of the pond water indicate the presence of high algal population. Water quality with respect to other parameters are given in Table-5.28 which remain within the tolerance limits for Class 'C'.

(D) LAKES

Water quality of Chilka and Anshupa lakes monitored by the Board during 2015 are given in Table-5.29 and 5.30.

As Chilka is a brackish water lake and the predominant activities at the monitoring stations such as Rambha and Satapada are contact water sports and commercial fishing, the water quality criteria parameters are compared with Class SW-II as described under MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000, From the data it is seen that BOD and fecal coliform organism occasionally remain above the prescribed limit.

To assess the water quality of Anshupa, a sweet water lake, criteria parameters were selected under Class-D Inland surface water bodies as the predominant activity in Anshupa lake is fish propagation. From the data it is seen that the criteria parameters such as free ammonia and electrical conductivity remain well within the tolerance limit for Class- D.

(E) SEA

Water quality of coastal water at Puri, Gopalpur and Paradeep monitored by the Board during 2015 are given in Table-5.31 and 5.32. From the data it is observed that the criteria parameters at Goplapur and Paradeep remain within the prescribed limit for harbour water (Class SW-IV). Further, fecal coliform organism in coastal water at Puri, Gopalpur and Paradeep remain above the prescribed limit for Bathing, Contact Water Sports and Commercial Fishing (SW-II).

Table-5.27 (a) Water Quality of Bindusagar Pond with respect to Criteria parameters during 2015 (January- December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value					Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters					criteria value							
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	FC (MPN/100 ml)	pH	DO	BOD	TC	FC			
Bindusagar Pond (Bhubaneswar)															
1.	Lingaraj Temple side	12	8.2 (7.4-9.9)	6.3 (1.3-11.9)	4.5 (2.4-9.3)	54158 (3900-160000)	28417 (2600-160000)	2 (17)	4 (33)	9 (75)	12 (100)	8 (67)	Does not conform to Class B	pH, DO,BOD, TC,FC	Human activities
2.	Ananta Vasudev	12	7.9 (7.1-9.1)	6.0 (1.5-9.6)	4.6 (1.9-9.9)	82767 (9200-160000)	52058 (700-160000)	1 (8)	4 (33)	9 (75)	12 (100)	10 (91)			
3.	Near Kedarnath Research Centre	12	8.0 (7.2-9.4)	5.7 (1.7-9.4)	4.3 (1.9-12.9)	69953 (230-160000)	52040 (78-160000)	1 (8)	3 (25)	9 (75)	11 (92)	8 (73)			
4.	Gyananagar	12	7.8 (6.4-8.3)	5.2 (1.3-7.6)	5.0 (1.5-12.5)	71658 (4900-160000)	47608 (2300-160000)	0	4 (33)	8 (73)	12 (100)	9 (82)	Does not conform to Class B	DO,BOD, TC,FC	Human activities
*Class 'B'			6.5-8.5	5 and above	3 or less	500 or less		Outdoor bathing							
Water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	5 and above	3 or less		2500 (Maximum Permissible)	Water use for organised outdoor bathing							

NB: * Tolerance limit for Inland Surface water bodies (IS-2296-1982), The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.(Ref : IS 2296-1982 foot note)

Table -5.27 (b) Water Quality of Religious Ponds in Puri with respect to Criteria parameters during 2015 (January- December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value					Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters												
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	pH	DO	BOD	TC	FC			
Ponds (Puri)															
1.	Narendra	12	8.9 (8.2-10.0)	8.4 (3.6-13.9)	7.0 (3.8-14.6)	6365 (230-35000)	3885 (78-24000)	9 (75)	3 (25)	12 (100)	10 (83)	5 (42)	Does not conform to Class B	pH, DO, BOD, TC,FC	Human activities
2.	Markanda	12	8.6 (7.5-9.7)	11.5 (4.0-20.7)	7.8 (4.1-19.5)	16335 (45-54000)	7930 (20-35000)	6 (50)	1 (8)	12 (100)	9 (75)	8 (67)			
3.	Indradyumna	12	8.2 (7.5-8.8)	9.7 (6.9-13.5)	6.1 (4.0-8.8)	7999 (490-22000)	3952 (130-13000)	2 (17)	0	12 (100)	11 (92)	6 (50)	Does not conform to Class B	pH, BOD, TC,FC	Human activities
4.	Swetaganga	12	8.5 (7.6-8.9)	13.0 (6.4-21.4)	8.4 (4.6-16.0)	33801 (220-160000)	25672 (78-160000)	8 (67)	0	12 (100)	11 (92)	7 (58)			
5.	Parvati sagar	12	7.9 (7.1-9.2)	14.3 (9.2-21.0)	13.9 (5.8-32.5)	30983 (2400-160000)	12398 (490-54000)	2 (17)	0	12 (100)	12 (100)	7 (58)			
*Class 'B'			6.5-8.5	5 and above	3 or less	500 or less		Outdoor bathing							
Water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	5 and above	3 or less		2500 (Maximum Permissible)	Water use for organised outdoor bathing							

NB : *Tolerance limit for Inland Surface water bodies (IS-2296-1982)
 The criteria of non-compliance with respect to TC has been calculated on the following basis:
 TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
 (Ref : IS 2296-1982 foot note)

Table-5.28 (a) Water quality of Bindusagar pond with respect to other parameters during 2015 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents							
		Annual average values (Range of values)													
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(µS/cm)			(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
Bindusagar Pond (Bhubaneswar)															
1.	Lingaraj Temple side	9 (3-25)	115 (88-136)	27.9 (12.0-54.1)	0.149 (0.056-0.560)	0.003 (0.002-0.004)	1.68 (1.40-2.24)	417 (364-464)	1.97 (1.72-2.27)	0.052 (0.021-0.098)	243 (212-284)	98 (74-120)	58.6 (48.9-68.5)	12.8 (3.6-40.6)	0.550 (0.272-0.680)
2.	Ananta Vasudev	13 (3-32)	111 (84-136)	26.6 (14.4-46.8)	0.154 (0.056-0.616)	0.003 (0-0.006)	1.68 (1.12-2.24)	430 (388-526)	2.14 (1.68-3.54)	0.050 (0.013-0.123)	249 (210-305)	93 (68-112)	64.1 (43.0-107.6)	13.1 (4.6-33.7)	0.542 (0.313-0.690)
3.	Near Kedarnath research Centre	12 (4-35)	112 (80-128)	25.3 (8.0-38.7)	0.135 (0.056-0.336)	0.003 (0.001-0.006)	1.59 (1.12-2.24)	429 (358-517)	2.11 (1.59-2.67)	0.052 (0.016-0.112)	248 (204-282)	97 (76-116)	61.9 (50.9-78.3)	13.5 (2.4-43.7)	0.545 (0.286-0.664)
4.	Gyananagar	24 (4-24)	110 (72-132)	25.6 (12.2-57.7)	0.154 (0.056-0.560)	0.004 (0-0.007)	1.66 (1.12-2.24)	423 (346-480)	2.15 (1.67-2.86)	0.053 (0.016-0.130)	247 (192-270)	94 (76-118)	62.5 (46.9-78.3)	14.1 (4.9-44.9)	0.540 (0.135-0.642)
	*Class 'C'	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

N.B: * Tolerance limit for Inland Surface water bodies (IS-2296-1982)
Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table- 5.28 (b) Water quality of ponds in Puri with respect to other parameters during 2015 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents							
		Annual average values (Range of values)													
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(μ S/cm)	(mg/l)						
Ponds (Puri)															
1.	Narendra	24 (14-62)	215 (160-264)	49.1 (20.0-149.1)	0.196 (0.112-0.448)	0.056 (0.016-0.112)	1.94 (1.40-2.52)	899 (686-1222)	3.88 (3.03-5.78)	0.106 (0.019-0.164)	528 (420-712)	201 (146-260)	147.3 (112.5-244.6)	38.7 (16.7-108.8)	0.372 (0.180-0.612)
2.	Markanda	23 (11-35)	207 (174-268)	48.7 (23.7-137.2)	0.369 (0.112-2.240)	0.069 (0.003-0.134)	2.03 (1.40-3.64)	723 (611-990)	2.83 (1.88-6.01)	0.211 (0.019-1.329)	423 (330-588)	195 (180-236)	93.2 (68.5-171.2)	38.3 (18.7-98.1)	0.263 (0.070-0.503)
3.	Indradyumna	17 (5-45)	150 (102-328)	42.3 (27.0-71.6)	0.182 (0.112-0.336)	0.026 (0.004-0.084)	1.84 (1.40-2.24)	670 (581-904)	4.28 (2.99-8.04)	0.097 (0.022-0.250)	390 (320-540)	129 (94-244)	132.7 (97.9-244.6)	29.6 (10.9-61.7)	0.638 (0.220-4.200)
4.	Swetaganga	23 (6-51)	260 (114-352)	45.9 (24.9-92.0)	0.243 (0.112-0.616)	0.035 (0.004-0.074)	2.03 (1.68-2.80)	1219 (633-1439)	6.56 (3.85-10.10)	0.182 (0.010-0.834)	750 (352-890)	232 (100-306)	238.7 (117.4-332.5)	52.1 (12.3-105.1)	0.279 (0.080-0.591)
5.	Parvati sagar	33 (18-53)	127 (84-212)	96.9 (33.8-166.4)	0.233 (0.112-0.560)	0.011 (0.001-0.025)	2.01 (1.40-2.80)	569 (389-874)	3.32 (1.40-6.41)	0.065 (0.035-0.131)	339 (220-502)	114 (66-196)	100.0 (58.7-195.7)	28.2 (10.4-57.6)	0.317 (0.160-0.552)
*Class 'C'		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

NB : * Tolerance limit for Inland Surface water bodies (IS-2296-1982). The criteria of non-compliance with respect to TC has been calculated on the following basis:
 TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
 (Ref : IS 2296-1982 foot note),

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni [#]	Cu [#]	Zn [#]	Cd [#]	Hg	Pb [#]
		(mg/l)		(mg/l)								
Ponds (Puri)												
1.	Narendra	8.795 (0.771- 24.264)	0.121 (0.025- 0.445)	0.009 (<0.002- 0.042)	0.036 (0.013- 0.092)	0.360 (0.040- 0.950)	0.021 (0.008- 0.060)	0.005 (0.001- 0.021)	0.022 (0.004- 0.046)	0.0054 (0.0006- 0.0263)	0.00029 (<0.00006 -0.00089)	0.010 (0.002- 0.024)
2.	Markanda	9.906 (1.829- 24.176)	0.113 (0.045- 0.257)	0.010 (<0.002- 0.043)	0.035 (0.015- 0.109)	0.375 (0.070- 1.100)	0.018 (0.009- 0.031)	0.006 (0.002- 0.013)	0.018 (0.004- 0.054)	0.0029 (0.0008- 0.0056)	0.00040 (<0.00006 -0.00089)	0.012 (0.004- 0.032)
3.	Indradyumna	8.749 (0.390- 23.870)	0.177 (0.023- 1.045)	0.011 (<0.002- 0.040)	0.043 (0.020- 0.121)	0.799 (0.040- 2.670)	0.018 (0.010- 0.025)	0.008 (0.003- 0.019)	0.020 (0.004- 0.047)	0.0018 (0.0009- 0.0054)	0.00037 (<0.00006 -0.00083)	0.010 (0.004- 0.014)
4.	Swetaganga	8.856 (0.407- 21.522)	0.219 (0.040- 1.699)	0.009 (<0.002- 0.033)	0.042 (0.013- 0.076)	0.706 (0.090- 2.390)	0.021 (0.008- 0.061)	0.008 (0.003- 0.015)	0.032 (0.004- 0.059)	0.0021 (0.0009- 0.0263)	0.00034 (<0.00006 -0.00102)	0.013 (0.006- 0.023)
5.	Parvati sagar	9.901 (1.017- 28.888)	0.178 (0.029- 1.241)	0.018 (<0.002- 0.038)	0.045 (0.015- 0.094)	0.458 (0.030- 0.880)	0.013 (0.008- 0.025)	0.006 (0.003- 0.017)	0.016 (0.003- 0.037)	0.0021 (0.0006- 0.0049)	0.00030 (<0.00006 -0.00095)	0.010 (0.004- 0.019)
*Class 'C'				0.05	-	50	-	1.5	15.0	0.01	-	0.10

N.B :* Tolerance limit for Inland Surface water bodies (IS-2296-1982),# Data for the period April-December, 2015
Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table-5.29 Water Quality of Lakes with respect to Criteria parameters during 2015 (January-December)

(a) Chilka Lake

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters					pH	DO	BOD	FC			
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)							
1.	Rambha	12	8.1 (7.7-8.4)	8.1 (5.1-13.7)	1.6 (0.7-2.2)	11.9 (2.2-42.0)	611 (20-5400)	0	0	0	5 (42)	Does not conform to Class-SW-II	FC	Human activities
2.	Satpada	12	8.0 (7.8-8.6)	7.5 (6.1-9.5)	1.8 (0.5-2.8)	22.0 (6.2-45.0)	313 (20-1400)	1 (8)	0	0	10 (83)		FC	
Water quality criteria for Class SW-II Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	4.0 or more	3.0 or less	30 or less	100 or less	For Bathing, Contact Water Sports and Commercial Fishing						

(b) Anshupa Lake

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)				Frequency of violation from designated criteria value				Existin g Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				pH	DO	Free ammo nia	EC			
			pH	DO (mg/l)	Free ammonia (mg/l)	EC (micro Siemens /cm)							
1.	Kadalibari	12	7.9 (7.3-9.4)	8.2 (5.1-10.9)	0.024 (0.001-0.094)	157 (118-193)	1		0	0	D	-	-
2.	Bishnupur	12	7.8 (7.2-8.8)	8.5 (5.6-11.2)	0.015 (0.001-0.032)	151 (96-198)	2		0	0	D	-	-
3.	Subarnapur	12	7.6 (6.7-8.3)	8.1 (5.3-10.0)	0.008 (0-0.016)	152 (113-207)			0	0	D	-	-
4.	Sarandagarh	12	7.6 (6.4-8.3)	9.6 (6.7-13.0)	0.008 (0-0.016)	157 (112-215)			0	0	D	-	-
*Class 'D'			6.5-8.5	4 and above	1.2 or less	1000 or less	Fish Culture and Wild life propagation						

N.B : * Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Table-5.30 Water Quality of Lakes with respect to other parameters during 2015 (January-December)

(a) Chilka Lake

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological Parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	TC	EC	SAR	TDS	B	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(MPN/ 100 ml)	(µS/cm)	(mg/l)						
1.	Rambha	40 (5-111)	142 (120-186)	26.8 (7.7-38.9)	0.107 (0.056-0.168)	0.012 (0.002-0.016)	1.31 (1.12-1.68)	1181 (78-9200)	24074 (11200-37430)	58.16 (22.27-81.36)	18580 (7860-29810)	1.664 (0.337-2.384)	2588 (1300-5600)	10009.8 (2994.7-16634.5)	1094.3 (565.9-1834.5)	0.647 (0.540-0.802)
2.	Satapada	48 (16-155)	126 (100-192)	31.4 (10.6-49.0)	0.084 (0.056-0.168)	0.005 (0.002-0.011)	1.28 (0.84-1.68)	677 (78-2400)	31592 (6539-62870)	66.51 (16.74-129.28)	25670 (4710-53790)	2.477 (0.671-4.130)	3497 (700-5450)	13834.9 (1566-30822.8)	1429.3 (417.9-2126.8)	0.753 (0.310-1.00)

Sl. No.	Sampling Location	Nutrients				Heavy metals						
		Annual average values (Range of values)										
		NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni [#]	Cu [#]	Zn [#]	Cd [#]	Hg	Pb [#]
(mg/l)		(mg/l)										
1.	Rambha	7.819 (0.558-33.508)	0.132 (0.006-0.363)	0.011 (<0.002-0.035)	0.036 (0.009-0.091)	0.577 (0.080-1.590)	0.014 (0.006-0.047)	0.015 (0.006-0.029)	0.021 (0.010-0.073)	0.0075 (0.0006-0.0405)	0.00022 (<0.00006-0.00083)	0.014 (0.001-0.039)
2.	Satapada	6.444 (0.487-24.054)	0.198 (0.019-1.051)	0.018 (0.002-0.033)	0.051 (0.021-0.091)	2.523 (0.410-8.260)	0.016 (0.008-0.044)	0.017 (0.006-0.042)	0.024 (0.009-0.082)	0.0078 (0.0006-0.0413)	0.00025 (<0.00006-0.00076)	0.016 (0.002-0.044)

N.B : # Data for the period April-December, 2015

(b) Anshupa Lake

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameters				Mineral constituents					
		Annual average values (Range of values)															
		TSS	Total alkalinity	BOD	COD	NH ₄ -N	TKN	TC	FC	TDS	B	SAR	TH	Cl	SO ₄	F	
		(mg/l)		(mg/l)				(MPN/ 100 ml)		(mg/l)		(mg/l)					
1.	Kadlibari	17 (8-45)	55 (40-68)	2.9 (0.7-5.2)	21.2 (5.4-38.3)	0.140 (0.056-0.224)	1.68 (1.40-1.96)	8773 (790-24000)	3710 (230-13000)	89 (68-110)	0.040 (0.003-0.096)	0.40 (0.27-0.56)	56 (36-80)	10.3 (6.9-15.7)	7.3 (1.5-12.7)	0.378 (0.189-0.628)	
2.	Bishnupur	20 (6-75)	51 (24-76)	2.5 (0.7-4.2)	19.0 (5.4-35.1)	0.149 (0.112-0.224)	1.61 (1.40-1.96)	9215 (490-17000)	4803 (130-16000)	86 (52-115)	0.029 (0.003-0.067)	0.42 (0.18-0.72)	51 (34-72)	10.7 (3.9-18.6)	6.9 (1.7-12.1)	0.381 (0.230-0.720)	
3.	Subarnapur	18 (7-38)	50 (36-70)	2.8 (2.1-3.5)	19.6 (13.8-25.5)	0.135 (0.056-0.168)	1.70 (1.40-1.96)	8828 (330-17000)	5391 (130-16000)	85 (64-112)	0.026 (0.003-0.058)	0.45 (0.32-0.55)	51 (32-74)	11.1 (7.8-13.7)	7.9 (1.5-18.7)	0.373 (0.212-0.620)	
4.	Sarandagarh	16 (7-28)	53 (36-76)	2.8 (1.2-6.2)	18.4 (5.4-40.1)	0.145 (0.056-0.280)	1.75 (1.12-2.52)	9057 (790-22000)	5320 (230-16000)	89 (64-122)	0.033 (0.003-0.090)	0.43 (0.26-0.67)	54 (36-80)	11.2 (5.9-15.7)	8.3 (1.2-17.4)	0.379 (0.220-0.570)	
* Class 'C'		-	-	-	-	-	-	5000	-	1500	-	-	-	600	400	1.5	
Sl. No.	Sampling Location	Nutrients				Heavy metals											
		Annual average values (Range of values)															
		NO ₃ ⁻	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni [#]	Cu [#]	Zn [#]	Cd [#]	Hg	Pb ^{**}					
		(mg/l)				(mg/l)											
1.	Kadlibari	9.152 (1.271-24.908)	0.056 (0.025-0.118)	0.014 (<0.002-0.041)	0.045 (0.015-0.094)	2.426 (0.160-8.540)	0.014 (0.004-0.025)	0.004 (0.002-0.008)	0.015 (0.003-0.025)	0.0031 (0.0007-0.0069)	0.00021 (<0.00006-0.00051)	0.007 (0.001-0.012)					
2.	Bishnupur	5.233 (0.726-11.027)	0.080 (0.033-0.126)	0.013 (<0.002-0.047)	0.049 (0.013-0.097)	1.655 (0.220-3.480)	0.016 (0.004-0.026)	0.005 (0.002-0.009)	0.015 (0.004-0.024)	0.0028 (0.0005-0.0054)	0.00022 (0.00013-0.00057)	0.007 (0.004-0.010)					
3.	Subarnapur	5.722 (2.086-11.669)	0.061 (0.027-0.130)	0.013 (<0.002-0.042)	0.053 (0.018-0.109)	2.835 (0.330-6.230)	0.014 (0.004-0.025)	0.005 (0.002-0.007)	0.016 (0.002-0.028)	0.0038 (0.0003-0.0090)	0.00021 (<0.00006-0.00080)	0.007 (0.003-0.009)					
4.	Sarandagarh	5.621 (1.785-11.178)	0.088 (0.019-0.192)	0.014 (<0.002-0.040)	0.046 (0.015-0.111)	2.370 (0.350-5.970)	0.016 (0.002-0.036)	0.005 (0.003-0.012)	0.014 (0.004-0.028)	0.0033 (0.0004-0.0069)	0.00020 (<0.00006-0.00070)	0.009 (0.002-0.029)					
* Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10					

N.B : # Data for the period April-December, 2015, * Tolerance limit for Inland Surface water bodies (IS-2296-1982)
 Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table-5.31 Coastal Water Quality with respect to Criteria parameters during 2015 (January-December)

Sl. No	Sampling Location	No. of Obs.	Annual averagevalue (Range of values)					Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters					BOD	FC	FC			
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)						
1.	Puri												
(a)	Swargadwara	12	8.2 (7.9-8.4)	6.6 (6.1-7.4)	1.2 (0.6-2.0)	6.0 (1.0-23.0)	101 (<2-490)	0	2 (17)	Does not confirm to Class-SW-II	FC	Human activities	
(b)	Bankimuhan	12	8.1 (7.9-8.4)	6.4 (5.8-6.8)	2.2 (1.2-4.4)	7.4 (0.8-26.0)	5797 (20-16000)	3 (25)	9 (75)	Does not confirm to Class-SW-II	FC	Human activities	
(c)	Baliapanda	12	8.2 (7.7-8.4)	6.7 (6.0-7.8)	1.4 (0.5-2.4)	5.8 (0.5-22.0)	41 (<2-130)	0	2 (17)	Does not confirm to Class-SW-II	FC	Human activities	
2.	Gopalpur	12	8.1 (7.6-8.5)	6.6 (5.9-7.4)	1.2 (0.4-2.2)	5.0 (1.0-22.0)	253 (<2-490)	0	5 (42)	Does not confirm to Class-SW-II	BOD	Human activities	
3.	Paradeep	12	8.0 (7.5-8.4)	6.5 (5.5-7.7)	1.1 (0.2-2.3)	11.0 (.01-50.0)	50 (<2-78)	0	0	Class-SW-II			
Water quality criteria for Class SW-II Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	4.0 or more	3.0 or less	30 or less	100 or less				For Bathing, Contact Water Sports and Commercial Fishing		

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values)					Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters					BOD	O&G	FC			
			pH	DO (mg/l)	BOD (mg/l)	O&G, mg/l	FC (MPN/100 ml)						
1.	Gopalpur	12	8.1 (7.6-8.5)	6.6 (5.9-7.4)	1.2 (0.4-2.2)	0.6 (0.2-1.1)	253 (<2-490)	0	0	0	SW-IV		
2.	Paradeep	12	8.0 (7.5-8.4)	6.5 (5.5-7.7)	1.1 (0.2-2.3)	0.4 (0.2-0.8)	50 (<2-78)	0	0	0	SW-IV		
Water quality criteria for Class SW-IV Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-9.0	3.0 or more	5.0 mg/l or less	10 or less	500 or less				For Harbour Waters		

Table-5.32 Coastal Water Quality with respect to other parameters during 2015 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH ₄ -N	Free NH ₃ -N	TKN	TC	EC	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)			(MPN/100 ml)	(µS/cm)		(mg/l)						
1.	Puri															
(a)	Swargadwara	37 (6-137)	117 (88-148)	27.4 (18.0-38.3)	0.056 (0.056-0.056)	0.005 (0.002-0.007)	1.03 (0.28-1.40)	166 (<2-490)	44646 (33240-61170)	75.15 (47.44-102.36)	2.695 (1.890-4.024)	37748 (27650-50680)	5175 (2300-6600)	21119 (15159-28866)	1749 (1203-2438)	0.813 (0.570-1.200)
(b)	Bankimuhan	39 (8-115)	122 (104-156)	34.1 (15.4-51.3)	0.705 (0.112-1.848)	0.053 (0.006-0.143)	2.22 (1.40-4.20)	6711 (45-16000)	44063 (33470-59060)	74.58 (47.26-103.93)	2.785 (2.234-3.658)	37220 (27600-51100)	5275 (2000-7200)	20943 (15167-29312)	1693 (983-2456)	0.786 (0.590-0.972)
(c)	Baliapanda	39 (6-129)	121 (92-152)	30.3 (22.0-51.8)	0.705 (0.112-1.848)	0.005 (0.002-0.007)	0.98 (0.28-1.40)	114 (<2-490)	43743 (32510-58070)	74.08 (46.07-102.96)	2.621 (1.784-3.828)	37021 (27100-49850)	5236 (2200-7200)	20592 (15145-28920)	1802 (1256-2494)	0.788 (0.460-1.000)
2.	Gopalpur	38 (4-154)	117 (92-136)	27.2 (17.1-48.0)	0.065 (0.056-0.168)	0.006 (0.001-0.016)	1.07 (0.56-1.40)	371 (<2-1300)	48012 (32400-68640)	82.56 (47.64-133.31)	3.230 (1.948-4.242)	40668 (27200-59950)	5239 (2800-6800)	22861 (15167-33269)	1773 (1337-2499)	0.795 (0.600-0.970)
3.	Paradeep	37 (5-148)	117 (92-136)	26.7 (16.6-38.8)	0.070 (0.056-0.224)	0.005 (0.001-0.011)	1.12 (0.56-1.40)	158 (<2-330)	46872 (31610-69400)	81.94 (47.67-123.31)	2.541 (0.026-3.370)	39412 (26800-59480)	4918 (2320-6100)	22144 (14678-34248)	1748 (1262-2313)	0.753 (0.580-0.920)

Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO ₃ ⁻	PO ₄ ³⁻ P	Cr(VI)	T. Cr	Fe	Ni [#]	Cu [#]	Zn [#]	Cd [#]	Hg	Pb [#]
		(mg/l)		(mg/l)								
1.	Puri											
(a)	Swargadwara	3.510 (0.912-9.110)	0.129 (0.023-0.710)	0.012 (<0.002-0.038)	0.037 (0.012-0.114)	1.379 (0.120-8.540)	0.017 (0.008-0.056)	0.011 (0.006-0.021)	0.038 (0.006-0.221)	0.0043 (0.0008-0.0118)	0.00008 (<0.00006-0.00057)	0.010 (0.006-0.014)
(b)	Bankimuhan	3.172 (0.146-9.110)	0.110 (0.030-0.630)	0.007 (<0.001-0.034)	0.038 (0.011-0.128)	0.989 (0.290-2.920)	0.018 (0.011-0.051)	0.011 (0.004-0.021)	0.040 (0.012-0.212)	0.0037 (0.0004-0.0115)	0.00013 (<0.00006-0.00057)	0.010 (0.005-0.017)
(c)	Baliapanda	4.723 (1.036-9.473)	0.162 (0.019-0.594)	0.010 (<0.001-0.036)	0.041 (0.012-0.131)	0.837 (0.140-2.570)	0.018 (0.007-0.057)	0.013 (0.005-0.024)	0.017 (0.005-0.030)	0.0044 (0.0007-0.0121)	0.00009 (<0.00006-0.00044)	0.010 (0.005-0.016)
2.	Gopalpur	6.511 (0.651-32.126)	0.131 (0.025-0.459)	0.009 (<0.002-0.045)	0.029 (0.008-0.094)	0.797 (0.030-4.550)	0.018 (0.010-0.048)	0.012 (0.005-0.029)	0.035 (0.011-0.196)	0.0036 (0.0006-0.0098)	0.00015 (<0.00006-0.00038)	0.009 (0.004-0.015)
3.	Paradeep	3.127 (0.146-8.081)	0.078 (0.033-0.239)	0.010 (<0.002-0.036)	0.034 (0.011-0.071)	1.345 (0.190-2.970)	0.016 (0.006-0.045)	0.008 (<0.001-0.021)	0.017 (0.008-0.035)	0.0038 (0.0009-0.0093)	0.00022 (<0.00006-0.00095)	0.009 (0.004-0.015)

NB : BDL = Below Detection Limit, # Data for the period April-December,2015

(F) BIOMONITORING OF WATER BODIES

Biomonitoring of water quality is useful for assessing the over-all biological health of the water bodies. This indicates any disruption in ecological balance of the water bodies caused by the changes in its physical and chemical environment. Thus, measurement of the level of the ecological degradation would indicate the extent of pollution. Benthos are regarded as the best indicator of pollution as they are sedentary, sessile, long-lived and easily collectable.

To assess the actual health of water bodies, Central Pollution Control Board (CPCB) has derived a Biological Water Quality Criteria (BWQC) for water quality evaluation. This system is based on the range of saprobic values and diversity of the benthic macroinvertebrate families with respect to water quality. The entire taxonomic groups, with their range of saprobic score from 1 to 10, in combination with the range of diversity score from 0 to 1 has been classified into five groups as stated in Table-5.33.

Table- 5.33 Biological Water Quality Class

Sl. No.	Taxonomic Group	Range of Saprobic score	Range of Diversity score	Water Quality Characteristic	Water Quality Class
1	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Diptera	7 and more	0.2-1.0	Clean	A
2	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Odonata, Diptera	6-7	0.5-1.0	Slight Pollution	B
3	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Odonata, Diptera, Crustacea, Mollusca, Polychaeta, Coleoptera, Hirudinea, Oligochaeta	3-6	0.3-0.9	Moderate Pollution	C
4	Mollusca, Hemiptera, Coleoptera, Diptera, Oligochaeta	2-5	0.4 & less	Heavy Pollution	D
5	Diptera, Oligochaeta No animals	0-2	0-0.2	Severe Pollution	E

Biomonitoring studies were carried out at 29 selected stations during 2015. Biological data generated from these stations were analysed for computing the saprobity indices (SI) and diversity indices (DI), which are presented in Table-5.34. From the result, it is evident that the biological water quality class at four stations conform to Class-B (slight pollution), at eight stations conform to the Class 'B-C' (slight to moderate pollution), at seventeen stations conform to Class C (moderate pollution) water quality.

Table-34 Biomonitoring of River Bodies (2015)

Station		Annual Average value (Range of values)		Existing Biological Water Quality Class
		Saprobity Index	Diversity Index	
(A) Mahanadi				
1.	Brajarajnar D/s	5.7-6.1)	0.65 (0.58-0.70)	B-C
2.	Sambalpur D/s	4.4 (3.4-5.8)	0.52 (0.46-0.64)	C
3.	Sambalpur FD/s at Shankarmath	6.2	0.75	B
4.	Cuttack U/s	5.1	0.69	C
5.	Cuttack D/s	5.4 (5.0-5.8)	0.56 (0.36-0.70)	C
6.	Kathajodi U/S	5.3 (5.3-5.4)	0.64 (0.53-0.75)	C
7.	Kathajodi D/S	5.4 (5.0-5.8)	0.48 (0.36-0.57)	C
8.	Kuakhai U/s	5.4 (5.2-5.6)	0.66 (0.64-0.68)	C
9.	Kuakhai D/s	5.4 (5.0-6.0)	0.65 (0.57-0.80)	C
10.	Kuakhai FD/s	5	0.5	C
11.	Birupa D/s	5.9 (5.8-6.0)	0.44 (0.33-0.55)	C
(B) Brahmani				
12.	Panposh U/s	6.1 (5.8-6.4)	0.58 (0.46-0.70)	B-C
13.	Panposh D/s	5.1 (4.8-5.6)	0.54 (0.36-0.75)	C
14.	Rourkela D/s	5.7 (5.6-5.8)	0.66 (0.58-0.80)	C
15.	Talcher U/s	6.2 (6.2-6.3)	0.64 (0.57-0.71)	B
16.	Talcher D/s	5.3 (4.7-5.7)	0.65 (0.51-0.73)	C
17.	Talcher FD/s	5.8 (5.75-5.8)	0.60 (0.60-0.60)	C
18.	Nandira D/s	6.1 (5.8-6.4)	0.58 (0.46-0.70)	B-C
(C) Rushikulya				
19.	Potagarh	6.26 (6.2-6.3)	0.52 (0.50-0.54)	B
(D) Nagavali				
20.	Penta U/s	6.1 (5.8-6.3)	0.63 (0.53-0.72)	B-C
21.	J. K. Pur D/s	5.05 (5.5-5.5)	0.52 (0.50-0.53)	C
22.	Rayagada D/s	5.5 (5.3-5.8)	0.67 (0.61-0.70)	C
(E) Subarnarekha				
23.	Rajghat	6.1 (5.9-6.4)	0.73 (0.60-0.90)	B-C

Station		Annual Average value (Range of values)		Existing Biological Water Quality Class
		Saprobity Index	Diversity Index	
(F) Budhabalnga				
24.	Baripada D/s	5.5 (5.4-5.8)	0.62 (0.50-0.79)	C
25.	Balasore U/s	5.9 (5.4-6.3)	0.77 (0.69-0.83)	B-C
26.	Balasore D/s	5.8 (5.6-6.0)	0.67 (0.53-0.80)	C
(G) Kerandi				
27.	Sunabeda	6.1 (5.8-6.4)	0.67 (0.63-0.71)	B-C
(H) Vansadhara				
28.	Muniguda	6.3 (6.2-6.5)	0.62 (0.52-0.83)	B
29.	Gunupur	6.2 (5.8-6.6)	0.55 (0.40-0.70)	B-C

(G) GROUND WATER QUALITY STATUS

Ground water quality monitoring under NWMP is being undertaken at 15 locations of Cuttack, Bhubaneswar and Puri cities in the State. The samples are collected during summer (April) & post monsoon (October) from tube-wells in residential and industrial areas and are analysed for following parameters.

- Physical parameters:* Temperature, pH, Alkalinity, Total Suspended Solids (TSS)
- Indicators of Organic pollution:* Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammonical (Ammonium + ammonia) – Nitrogen ($\text{NH}_4\text{-N}$), Total Kjeldahl Nitrogen (TKN)
- Bacteriological parameters:* Total Coliform (TC) and Fecal Coliform (FC)
- Mineral constituents:* Electrical Conductivity (EC), Total Dissolved Solids (TDS), Boron (B), Sodium (Na), Potassium (K), Sodium Absorption Ratio (SAR), Hardness (TH), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulphate (SO_4), Fluoride (F).
- Nutrients:* Nitrate (Nitrate + Nitrite) – Nitrogen (Nitrate as NO_3^-), Phosphate – Phosphorous ($\text{PO}_4^{3-}\text{-P}$)
- Metals:* Chromium (Cr) (total and hexavalent), Iron (Fe), Nickel (Ni), Copper (Cu), Zinc (Zn), Cadmium (Cd), Mercury (Hg), Lead (Pb)

Ground water quality status during the year 2015 at these locations alongwith the permissible limit for drinking water under IS : 10500-2012 are given in Table-5.35. pH of ground water at Khandagiri and Capital Hospital area in Bhubaneswar during October is found to be beyond the permissible range of 6.5-8.5. Whereas, pH value at Jharpada in Bhubaneswar during April is observed to be very close to the lower limit of permissible range. However, pH at all other places remain well within the permissible range.

Ground water in Puri area is mostly of moderately hard (Hardness 60-120 mg/l) to hard category (Hardness > 120 mg/l) whereas, in Bhubaneswar and Cuttack cities, the water quality varies from soft (Hardness < 75 mg/l) to hard category (> 120 mg/l). Iron concentration in ground water samples at most places exceeds the permissible limit for drinking water i.e. 0.3 mg/l.

Frequent occurrence of total coliform and fecal coliform bacteria above the permissible limit (should be absent in 100 ml sample) are observed in the ground water at most of the monitored locations.

Table-5.35 Ground water Quality Status (Tube well) of Cuttack, Bhubaneswar and Puri Cities (2015)

Location → Parameter (Permissible limit,max.- IS :10500 :2012) ↓	Month	Cuttack					Bhubaneswar						Puri			
		Jagatpur Industrial area	Madhupatna- Kalyan nagar area	Bidanasi - Tulsipur area	Badambadi area	Ranihat - Mangalabag area	Khandagiri area	CapitalHospital	Samantaraypur	Jharpada	Chandrasekhar pur	Secretariat - Governor House- area	Badadanda	Mausima Mandir	Sea beach site	Baliapanda
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
pH (6.5 to 8.5)	A	6.8	7.2	7.6	7.3	7.6	7.0	8.0	8.1	6.4	7.1	6.7	8.3	7.2	8.3	7.8
	O	7.1	7.6	7.7	7.8	7.8	6.2	6.3	8.0	7.0	6.6	6.8	7.6	8.1	8.2	8.0
Conductivity, µS/cm	A	674	386	165	663	213	134	322	225	238	158	136	947	912	1082	252
	O	908	290	139	405	300	721	388	412	269	246	499	1166	528	970	389
Biological Oxygen Demand, mg/l	A	0.3	0.3	0.6	2.1	0.5	0.8	0.2	0.7	0.8	0.8	0.2	0.6	0.8	0.3	0.1
	O	0.4	0.8	0.4	1.2	0.3	0.2	0.3	0.3	0.3	0.5	0.4	0.1	0.2	0.4	0.9
Chemical Oxygen Demand, mg/l	A	26.3	11.3	9.4	11.3	11.3	3.8	1.9	3.8	5.7	3.8	0.9	5.5	5.5	7.3	2.3
	O	5.4	10.8	7.2	10.8	5.4	5.4	8.9	7.1	7.2	12.6	5.4	6.2	4.6	10.8	12.3
Turbidity, NTU(5)	A	0.5	1.2	0.2	3.0	2.8	1.2	2.4	0.7	3.5	0.7	4.0	3.5	4.9	0.8	1.1
	O	1.4	80	0.6	25	0.6	16	0.3	0.6	5.7	0.8	2.4	60	1.1	2.1	8.7
Total Dissolved Solids, mg/l(2000)	A	385	214	95	372	122	75	172	132	125	80	75	585	530	660	130
	O	488	176	82	224	179	410	215	248	149	139	264	748	327	665	227
Total Fixed Solids, mg/l	A	365	202	81	362	108	62	161	119	102	68	63	570	516	1026	239
	O	475	220	78	230	180	411	209	243	136	138	256	739	299	621	214
Total Alkalinity, mg/l (600)	A	72	112	68	160	94	28	28	84	22	16	20	264	268	218	40
	O	112	100	58	128	140	86	94	176	70	44	108	296	186	290	168
T. Hardness (as CaCO ₃), mg/l (600)	A	156	106	52	156	94	24	48	80	36	28	28	248	226	252	36
	O	168	108	60	136	140	140	112	172	64	56	140	370	196	312	152

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Ca, mg/l (200)	A	42.4	26.4	16.0	38.4	25.6	8.0	16.0	23.2	11.2	8.0	6.4	75.2	62.4	28.8	9.6
	O	48.0	28.8	16.0	38.4	36.8	36.8	30.4	40.0	16.0	12.8	35.2	100.1	49.6	91.2	36.8
Mg, mg/l(100)	A	12.2	9.7	2.9	14.6	7.3	1.0	1.9	5.3	1.9	1.9	2.9	14.6	17.0	43.8	2.9
	O	11.7	8.8	4.9	9.7	11.7	11.7	8.8	17.5	5.8	5.8	12.6	29.2	17.5	20.4	14.6
Chloride, mg/l (1000)	A	88.1	52.8	9.8	101.8	6.9	19.6	58.7	21.2	47.0	25.4	21.5	146.8	127.2	185.9	44.0
	O	166.4	31.3	8.8	41.1	15.7	160.0	48.9	34.2	35.2	35.2	64.6	256.0	58.7	192.4	19.6
Sulphate, mg/l (400)	A	113.6	11.8	5.7	32.8	12.3	4.5	20.5	7.7	9.0	3.5	4.4	52.2	35.9	97.5	10.2
	O	68.0	18.0	4.3	18.0	11.8	45.1	28.6	10.4	13.5	22.1	21.8	36.4	28.6	55.2	25.0
Nitrate as NO ₃ , mg/l (45)	A	0.456	10.823	12.329	11.359	7.723	10.664	12.790	5.062	3.809	28.082	27.422	0.213	2.759	2.267	5.651
	O	3.543	0.771	1.050	6.346	1.324	3.251	3.237	5.855	3.158	13.839	2.595	4.313	13.950	10.673	0.815
Ammonium-N, mg/l (0.5)	A	<0.056	<0.056	<0.056	<0.056	<0.056	0.056	<0.056	<0.056	0.280	<0.056	0.896	<0.056	2.240	<0.056	0.112
	O	0.056	0.056	0.056	0.112	0.056	0.056	0.056	0.056	0.056	0.056	1.624	0.056	0.056	0.112	0.224
Total Kjeldahl Nitrogen, mg/l	A	0.28	0.56	0.28	0.28	0.58	0.28	0.28	0.28	1.68	0.28	1.96	0.28	5.04	0.28	0.28
	O	0.56	0.56	0.56	0.84	0.84	0.84	0.56	0.56	0.56	0.84	2.24	0.56	0.56	2.24	1.12
Fluoride, mg/l (1.5)	A	0.286	0.278	0.266	0.296	0.362	0.218	0.165	0.380	0.330	0.150	0.157	0.395	0.372	0.336	0.328
	O	0.300	0.520	0.250	0.790	0.430	0.230	0.210	0.470	0.260	0.450	0.210	0.300	1.500	1.340	0.320
Phosphate-P, mg/l	A	0.542	0.089	0.038	0.019	0.096	1.096	0.734	0.067	0.667	0.036	0.062	0.058	0.080	0.094	0.034
	O	0.117	0.061	0.139	0.059	0.019	0.039	0.075	0.119	0.019	0.039	0.069	0.039	0.085	0.075	0.045
Sodium, mg/l	A	57.8	34.6	6.4	66.9	4.4	12.8	38.6	13.7	30.9	16.8	14.1	96.4	83.6	123.0	29.1
	O	98.0	18.6	5.8	26.7	9.3	90.0	32.1	22.4	23.1	23.0	41.7	105.9	38.5	114.2	12.7
Potassium, mg/l	A	19.8	2.2	5.1	11.2	2.1	5.4	6.4	2.7	4.3	2.7	1.3	32.0	32.0	32.0	3.7
	O	15.0	5.3	1.6	6.6	3.4	11.0	5.2	6.3	5.1	5.3	8.3	30.2	7.8	14.2	3.4
Boron, mg/l(1.0)	A	0.231	0.167	0.026	0.125	0.019	0.202	0.035	0.009	0.003	0.016	0.009	0.138	0.151	0.064	0.212
	O	0.115	0.035	0.061	0.09	0.115	0.058	0.029	0.045	0.096	0.103	0.042	0.138	0.369	0.393	0.054
Chromium (VI), mg/l	A	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	0.002	0.003	<0.002	<0.002	0.002	0.003	<0.002	0.005	<0.002
	O	0.007	<0.002	0.005	0.007	0.002	0.003	0.003	0.003	<0.002	<0.002	0.005	0.002	0.021	0.011	0.008
Chromium, Total, mg/l (0.05)	A	0.025	0.029	0.024	0.018	0.030	0.024	0.018	0.015	0.015	0.013	0.015	0.035	0.030	0.039	0.013
	O	0.022	0.011	0.019	0.015	0.008	0.011	0.009	0.015	0.011	0.018	0.018	0.011	0.038	0.033	0.025
Iron, Total, mg/l (0.3)	A	0.14	0.16	0.04	7.69	0.30	7.33	3.89	0.06	7.17	0.14	7.04	0.68	7.09	0.08	0.66
	O	0.02	6.34	0.25	0.99	0.28	4.38	0.03	0.20	1.05	0.21	0.07	0.02	0.38	0.03	8.42

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Mercury, mg/l(0.001)	A	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006
	O	<0.00006	0.00019	0.00025	<0.00006	0.00038	0.00038	0.00013	0.00006	0.00032	0.00038	0.00019	<0.00006	<0.00006	<0.00006	0.00019
Cadmium, mg/l (0.003)	A	0.002	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.001
Copper, mg/l (0.05)	A	0.005	0.006	0.007	0.007	0.009	0.015	0.009	0.009	0.011	0.009	0.005	0.011	0.007	0.011	0.008
Lead, mg/l (0.01)	A	0.003	0.003	0.004	0.002	0.004	0.004	0.004	0.003	0.003	0.004	0.002	0.007	0.008	0.005	0.005
Nickel, mg/l (0.02)	A	0.013	0.014	0.014	0.015	0.015	0.018	0.012	0.010	0.013	0.010	0.011	0.015	0.013	0.015	0.009
Zinc, mg/l (15)	A	0.010	0.015	0.007	0.012	0.012	0.009	0.006	0.008	0.015	0.007	0.009	0.020	0.015	0.016	0.016
Total Coliform, MPN/100ml (Absent)	A	<2	<2	<2	23	<2	<2	4	<2	<2	<2	<2	240	8	8	<2
	O	7	13	2	<2	23	<2	<2	13	2	<2	23	<2	<2	<2	23
Fecal Coliform, MPN/100ml (Absent)	A	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	49	<2	4	<2
	O	4	<2	<2	<2	4	<2	<2	2	<2	<2	8	<2	<2	<2	8

NB: BDL = Below Detection Limit

A : April

O : October

5.7.2 AIR QUALITY

5.7.2.1 National Ambient Air Quality Monitoring Programme (NAMP) and State Ambient Air Quality Monitoring Programme (SAMP)

Thirty four ambient air quality monitoring stations are operating in fourteen areas in the State for assessing ambient air quality round the year at regular interval under the National Ambient Air Quality Monitoring Programme (NAMP) of the Central Pollution Control Board and State Ambient Air Quality Monitoring Programme (SAMP) of the State Board. The areas are Angul, Rourkela, Rayagada, Bhubaneswar, Cuttack, Sambalpur, Jharsuguda, Berhampur, Balasore, Kalinga Nagar, Keonjhar, Konark, Paradeep & Puri.

Details of air quality monitoring stations, as per the areas and parameters is enlisted in Table-5.36 as per the guidelines of CPCB for NAMP. Four criteria parameters like Respirable suspended particulate matter (RSPM) or PM_{10} (particulate matter having an aerodynamic diameter less than or equal to $10\ \mu m$), $PM_{2.5}$ (particulate matter having an aerodynamic diameter less than or equal to $2.5\ \mu m$), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_x) are being regularly monitored at all stations. Beside that Ammonia, Ozone, Lead & Nickel are monitored at eight stations in Bhubaneswar, Puri and Konark. The monitoring of pollutants are carried out for 24 hours (24 hours sampling for $PM_{2.5}$, 8-hourly sampling for PM_{10} , Pb & Ni and 4-hourly sampling for gaseous pollutants like SO_2 & NO_x) with a frequency of twice a week, not in a conjugative day to have a minimum of 104 observations in a year.

Table-5.36 Ambient Air Quality Monitoring Stations

Sl. No.	Name of the areas	Monitoring stations	Station type	Parameters monitored
1.	Angul	(i) Industrial Estate, Angul	Industrial	PM_{10} , $PM_{2.5}$, SO_2 , NO_x
		(ii) NALCO Nagar, Angul	Residential	
2	Talcher	(iii) TTPS, Talcher	Industrial	
		(iv) M.C.L., Talcher	Residential	
3.	Balasore	(v) RO, SPCB office building, Sahadevkhunta	Residential	
		(vi) DIC office, Angaragadia	Residential	
		(vii) Rasalpur Industrial Estate	Industrial	
4.	Berhampur	(viii) RO, SPCB office building, Brahmanagar	Residential	
5.	Bhubaneswar	(ix) SPCB office Building, Unit-VIII	Residential	PM_{10} , $PM_{2.5}$, SO_2 , NO_x , NH_3 , O_3 , Pb & Ni
		(x) I.R.C. Village, Nayapalli	Residential	
		(xi) Capital Police Station, Unit-I	Residential	
		(xii) Patrapada	Residential	
		(xiii) Chandrasekharapur	Residential	
6.	Cuttack	(xiv) Traffic Tower, Badambadi	Residential	PM_{10} , $PM_{2.5}$, SO_2 , NO_x
		(xv) RO, SPCB office building, Surya Vihar	Residential	
		(xvi) PHD Office, Barabati	Residential	
7.	Jharsuguda	(xvii) RO, SPCB office building, Babubagicha,	Residential	

Sl. No.	Name of the areas	Monitoring stations	Station type	Parameters monitored
8	Kalinga Nagar	(xviii) Over the roof of Tata Guest House	Industrial	PM ₁₀ , PM _{2.5} , SO _x , NO _x
		(xix) Over the roof of NINL Guest House	Industrial	
		(xx) RO, SPCB Office building, Kalinganagar	Industrial	
9	Keonjhar	(xxi) RO, SPCB Office building, Baniapat	Residential	
10	Konark	(xxii) Konark Police Station	Residential	PM ₁₀ , PM _{2.5} , NO _x , NH ₃ , O ₃ , Pb & Ni
11	Paradeep	(xxiii) PPL Guest House	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		(xxiv) On the roof of IFFCO STP	Industrial	
		(xxv) On the roof of Paradeep Port Trust	Residential	
12	Puri	(xxvi) Sadar Police Station	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , NH ₃ , O ₃ , Pb & Ni
		(xxvii) Town police Station	Residential	
13	Rayagada	(xxviii) RO, SPCB Office building, Indiranagar	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		(xxix) Jakaypur	Industrial	
14	Rourkela	(xxx) Regional Office Building, Sector-5	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		(xxxii) IDL Outpost, Sonaparbat	Residential	
15	Rajgangpur	(xxxii) DISR, Rajgangpur	Residential	
16	Sambalpur	(xxxiii) PHED Office, Modipara	Residential	

Ambient air quality status with respect to the four criteria parameters at these 33 stations in addition to four parameters like ammonia (NH₃), Ozone (O₃) and lead (Pb) at Bhubaneswar, Puri & Konark during the year 2015 are shown in Table-5.35. The air quality of different cities/ towns has been compared with the national air quality standards to assess the existing air quality status.

The concentration of gaseous pollutants such as Sulphur dioxide and oxides of nitrogen at all locations are observed to be well within the prescribed standard. Concentration of ammonia (NH₃), ozone (O₃) and lead (Pb) at Bhubaneswar, Puri & Konark are also below the limit.

The concentration of Respirable suspended particulate matter (PM₁₀) with respect to the 24-hr average concentration as well as annual concentration violate the prescribed standard most of the time at all locations except at Berhampur & Rayagada town. The annual average concentration for PM_{2.5} at 15 locations exceeds the prescribed standard whereas remaining 18 locations are within the standard.

5.7.2.2 AIR QUALITY INDEX (AQI)

Air Quality Index (AQI) for the year 2015 of 16 areas with concern parameter and categorization was shown in Table-5.37. The range of AQI values, categorization and health impact was shown in Table-5.38. The AQI value of an area was found out by taking highest AQI value of the dominating parameters. From the Table-5.38, it was observed that out of 16 areas two areas are coming under Moderate category & one under good category, the rest 13 areas are under satisfactory category. The highest AQI value i.e., 152 w.r.t PM_{2.5} has observed at Talcher area.

Table- 5.37 Ambient Air Quality Status of different cities & towns of Odisha during -2015



Sl. No.	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24hourly range) except O ₃ 1-hourly Average)							% of violation of data from 24 hourly standard	
			PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb	PM ₁₀	PM _{2.5}
			(values expressed in Microgram per cubic meter)								
1	Angul										
	1. Industrial Estate, Angul	105	99 (51-187)	60 (28-137)	10.8 (7.0-18.1)	24.8 (18.8-30.0)	-	-	-	48.6%	40%
	2. NALCO Nagar, Angul	105	102 (50-159)	57 (25-134)	10.1 (7.8-14.2)	23.1 (17.2-28.5)	-	-	-	52.4%	31.4%
2	Talcher										
	3. TTPS , Talcher	104	111 (35-208)	70 (16-153)	10.0 (6.7-12.7)	24.3 (20.1-27.2)	-	-	-	50%	59.6%
	4.MCL, Talcher	104	139 (57-203)	81 (31-173)	9.9 (6.7-13.1)	24.5 (20.1-29.3)	-	-	-	90.4%	75%
3	Balasore										
	5. RO, SPCB Office building, Sahadevkhunta	105	81 (62-119)	43 (30-84)	BDL (BDL-BDL)	11.9 (10.1-14.5)	-	-	-	0.9%	6.7%
	6. DIC office, Angaragadia	39	76 (61-94)	40 (28-64)	BDL (BDL-BDL)	11.2 (9.8-13.3)	-	-	-	-	5.1%
	7.Rasalpur Industrial Estate	56	89 (74-109)	52 (34-88)	7.6 (5.6-11.0)	12.6 (10.6-14.6)	-	-	-	12.5%	23.2%
4	Berhampur										
	8. RO, SPCB Office building, Brahamanagar	104	55 (18-116)	33 (10-58)	BDL (BDL-BDL)	17.5 (13.0-22.9)	-	-	-	4.8%	-

Sl. No.	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24hourly range) except O ₃ 1-hourly Average)						% of violation of data from 24 hourly standard		
			PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb	PM ₁₀	PM _{2.5}
			(values expressed in Microgram per cubic meter)								
Bhubaneswar											
5	9. SPCB Office Building, Unit-VIII	75	89 (32-511)	32 (13-331)	BDL (BDL-17.7)	17.8 (12.1-25.8)	72.2 (50.6-86.7)	24.1 (21.3-39.4)	0.05 (0.008-0.15)	33%	2.7%
	10. I.R.C. Village, Nayapalli	74	69 (26.0-700)	27 (11-262)	BDL (BDL-20.3)	16.2 (11.9-37.5)	70.6 (58.0-85.7)	24.1 (21.3-38.4)	0.05 (0.009-0.17)	13.5%	1.3%
	11. Capital Police Station, Unit-I	73	84 (32-328)	20 (9-258)	BDL (BDL-19.1)	18.9 (12.7-34.3)	78.8 (38.3-92.2)	24.0 (21.3-38.3)	0.05 (0.003-0.02)	20.5%	2.6%
	12. Chandrasekharpur	75	94 (23-274)	25 (9-131)	BDL (BDL-9.3)	15.6 (10.0-24.6)	43.7 (BDL-89.6)	23.2 (BDL-39.8)	0.04 (BDL-0.13)	34.6%	3.2%
	13. Patrapada	73	79 (24-329)	57 (12-174)	BDL (BDL-7.6)	17.2 (9.9-29.9)	61.0 (BDL-106.2)	22.0 (BDL-36.7)	0.05 (0.003-0.12)	19.2%	5.5%
Cuttack											
6	14. Traffic Tower, Badambadi	104	98 (42-335)	36 (18-205)	BDL (BDL-10.5)	32.7 (28.6-43.8)	-	-	-	38.5%	2.9%
	15. RO, SPCB Office building, Surya Vihar	107	69 (44-236)	36 (18-158)	BDL (BDL-5.7)	28.3 (24.0-34.0)	-	-	-	3.7%	1.9%
	16. PHD office, Barabati	103	73 (49-186)	32 (18-84)	BDL (BDL-6.0)	28.3 (25.2-32.6)	-	-	-	0.97%	0.97%

Sl. No	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24hourly range) except O ₃ 1-hourly Average							% of violation of data from 24 hourly standard	
			PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb	PM ₁₀	PM _{2.5}
			(values expressed in microgram per cubic meter)								
7	Jharsuguda										
	17. RO Building, Cox Colony, Babubagicha,	105	95 (60-124)	39 (22-63)	13.2 (6.0-19.0)	20.3 (10.0-29.0)	-	-	-	48.6%	1.4%
8	Kalinga Nagar										
	18. Over the roof of TATA Guest House	107	105 (72-262)	43 (36-58)	BDL (BDL- BDL)	10.3 (9.5-13.9)	-	-	-	55.1%	-
	19. Over the roof of NINL Guest House	96	105 (81-141)	42 (35-58)	BDL (BDL- BDL)	10.1 (9.6-10.8)	-	-	-	62.5%	-
	20. RO, SPCB Office building, Kalinganagar	105	91 (74-116)	41 (30-58)	BDL (BDL- BDL)	10.0 (9.5-10.9)	-	-	-	15.2%	-
9	Keonjhar										
	21. RO, SPCB Office building, Baniapat	94	85 (17-198)	47 (5-118)	BDL (BDL- BDL)	13.0 (11.2-17.0)	-	-	-	37.2%	27.7%
10	Konark										
	22. Konark police station	87	85 (26-248)	30 (7-85)	BDL (BDL- BDL)	13.0 (9.9-19.9)	35.5 (24.8-95.9)	24.3 (20.9-53.8)	0.04 (0.003-0.11)	29.8%	7.7%
11	Paradeep										
	23. PPL Guest House	95	87 (40-306)	31 (17-122)	11.7 (6.7-36.9)	12.0 (10.3-24.4)	-	-	-	30.5%	1.2 %
	24. On the roof of IFFCO STP	95	100 (40-289)	32 (16-61)	11.9 (6.5-26.2)	11.6 (10.0-24.0)	-	-	-	50.5%	1.2 %
	25. On the roof of Paradeep Port Trust	96	96 (43-386)	40 (22-155)	11.5 (6.9-29.7)	13.2 (10.5-27.7)	-	-	-	33.3%	4.3 %
12	Puri										
	26. Sadar Police Station	73	81 (23-223)	23 (6-97)	BDL (BDL- BDL)	15.0 (10.6-31.8)	37.3 (22.3-68.4)	23.5 (20.1-46.8)	0.03 (BDL-0.1)	31.5%	5.5%
	27. Town Police station	31	79 (34-219)	24 (9-177)	BDL (BDL- 10.0)	15.7 (11.2-25.2)	36.1 (23.8-61.3)	23.2 (20.9-45.9)	0.03 (0.007-0.09)	22.5%	11.5%

Sl. No	Area / Stations	No. of Obs. (24 hrs)	Annual Average Value (24hourly range) except O ₃ 1-hourly Average)							% of violation of data from 24 hourly standard	
			PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb	PM ₁₀	PM _{2.5}
			(values expressed in microgram per cubic meter)								
Rayagada											
13	28. RO, SPCB Office building, Indiranagar	104	45 (15-172)	26 (10-71)	BDL (BDL- 12.8)	20.8 (14.4-29.4)	-	-	-	0.96%	1.1%
	29. Jaykaypur	104	52 (17-79)	30 (12-53)	BDL (BDL- 7.0)	21.6 (13.2-25.8)	-	-	-	-	-
Rourkela											
14	30. RO, SPCB Officebuilding, Sector-V	105	104 (27-443)	43 (9-97)	7.1 (4.2-17.1)	13.7 (9.1-24.3)	-	-	-	63.8%	2.8%
Rajgangpur											
15	31. IDL Outpost, Sonaparbat	105	77 (59-173)	54 (36-83)	5.6 (4.8-7.8)	10.5 (9.6-11.7)	-	-	-	7.6%	3.8%
	32. DISIR, Rajgangpur	104	117 (25-220)	54 (12-129)	12.9 (6.3-18.6)	14.2 (9.4-25.6)	-	-	-	57.7%	29.8%
Sambalpur											
16	33. PHED Office , Modipara	116	72 (61-91)	50 (29-58)	BDL (BDL-6.0)	17.5 (13.7-20.6)	-	-	-	-	-
Prescribed Standard (24 hrly)			100	60	80	80	400	180 (1Hourly)	0.5		
Standard for Annual Avg. Value			60	40	50	40	100	100 (8Hourly)	1.0		
N.B.: BDL - Below Detectable Limit , SPM - Suspended Particulate Matter; PM ₁₀ – Particulate Matter ≤ 10 µm ; PM _{2.5} – Particulate Matter ≤ 10 µm; SO ₂ – Sulphur Dioxide, NO _x – Oxides of Nitrogen; NH ₃ - Ammonia ; O ₃ - Ozone <i>Pb-Lead</i> Ø BDL Value for SO ₂ ≤ 4 µg/m ³ , NO _x ≤ 9 µg/m ³ , NH ₃ ≤ 10 µg/m ³ , O ₃ ≤ 10 µg/m ³ , Pb ≤ 0.0022 µg/m ³ , PM ₁₀ ≤ 5 µg/m ³ , PM _{2.5} ≤ 2 µg/m ³ Ø No percentage of violation of data from 24hourly average for all monitored gaseous pollutants like SO ₂ , NO _x , NH ₃ , O ₃ & Pb											

Natiuonal Air Quality Index

AQI	Possible Health Impacts
Good (0.50)	Minimal Impact
Satisfactory (51-100)	Minor breathing discomfort to sensitive people
Moderate (101-200)	Breathing discomfort to the people with lung, heart disease, children and older adults
Poor (201-300)	Breathing discomfort to people on prolonged exposue
Very Poor (301 -400)	Respiratory illness to the p eople on prolonged exposure
Severe (>400)	Respiratory effects even on healthy people

Table-5.38 Annual Air Quality Index of Monitored Stations in Odisha for the Year, 2015

Location	PM ₁₀		PM _{2.5}		Overall AQI of the area w.r.t parameter	Categorisation
	AQI	AQI of the area	AQI	AQI of the area		
1.Angul						
1.Industrial Estate	99	100	100	98	100(PM ₁₀)	Satisfactory
2.NALCO Nagar	101		95			
2.Talcher						
3.TTPS , Talcher	107	117	133	152	152 (PM _{2.5})	Moderate
4.MCL, Talcher	126		170			
3.Balasore						
5.R.O, SPCB Sahadevkhunta	81	82	72	75	82(PM ₁₀)	Satisfactory
6.DIC office, Angaragadia	76		67			
7.Rasalpur,I.E	89		87			
4.Berhampur						
8.R.O, SPCB Brahamanagar	55	55	55	55	55 (PM ₁₀ ,PM _{2.5})	Satisfactory
5.Bhubaneswar						
9.SPCB Office Building, Unit-8	89	83	53	54	83(PM ₁₀)	Satisfactory
10.I.R.C. Village, Nayapalli	69		45			
11.Capital Police Station, Unit-I	84		33			
12.Chandrasek-harpur	94		42			
13.Patrapada	79		95			
6.Cuttack						
14.Traffic Tower Badambadi,	98	80	60	57	80(PM ₁₀)	Satisfactory
15.R.O.Building, Surya Vihar	69		60			
16.PHD office ,Barabati	73		53			
7.Jharsuguda						
17.RO Building, Cox Colony, Babubagicha,	95	95	65	65	95 (PM ₁₀)	Satisfactory
8.Kalinganagar						
18.Over the roof of TATA Guest House (G.H)	103	99	72	70	99(PM ₁₀)	Satisfactory
19.Over the roof of NINL G.H	103		70			

20.Roof of R.O Building,	91		68			
Location	PM ₁₀		PM _{2.5}		Overall AQI of the area w.r.t parameter	Categorisation
	AQI	AQI of the area	AQI	AQI of the area		
9. Keonjhar						
21.R.O, Baniapat	85	85	78	78	85 (PM ₁₀)	Satisfactory
10.Konark						
22.Konark Police Station	85	85	50	50	85 (PM ₁₀)	Satisfactory
11.Paradeep						
23.PPL Guest House	87	94	52	57	94(PM ₁₀)	Satisfactory
24.On the roof of IFFCO STP	100		53			Satisfactory
25.On the roof of Paradeep port trust	96		67			Satisfactory
12.Puri						
26. Sadar police Station	81	80	38	39	80(PM ₁₀)	Satisfactory
27. Town police Station	79		40			Satisfactory
13.Rayagada						
28. RO Building, Indiranagar	45	48	43	46	48(PM ₁₀)	Good
29. LPS High School, Jaykaypur	52		50			
14.Rourkela						
30.Regional Office Building, Sector-5	103	90	72	81	90(PM ₁₀)	Satisfactory
31. IDL Outpost	77		90			
15.Rajgangpur						
32. DISR Rajgangpur	111	111	90	90	111(PM ₁₀)	Moderate
16.Sambalpur						
33.PHD Office, Modipara	72	72	83	83	83 (PM _{2.5})	Satisfactory

NB : The AQI of the parameters like SO₂, NO_x, NH₃,O₃ & Pb come under Good Category

5.9 INDUSTRIAL INSPECTIONS, MONITORING OF WATER, AIR AND SOLID WASTE SAMPLES

The Board has analysed following samples. The status of inspection and monitoring during the year 2015-16 is given in Table-5.39.

Table - 5.39 Inspection and Monitoring of Water, Air and Solid Waste

Nos. of Inspections	Samples under NWMP, SWMP & NRCP	Nos. of Industrial samples	Nos. of other water samples	Nos. of Soil/solid waste/ Plant samples	Nos. of Stack emission samples	Ambient Air Quality studies			Ambient Noise
						Industrial premises	SAMP / NAMP	Others	
7224	3729	3378	1151	75	1365	2556	7769	697	837

5.10 PUBLIC GRIEVANCES

The status of various public complaints received and redressed on following matters during 2015-16 is given in Table 5.40.

- 17 categories of highly polluting industries
- Disposal of hazardous chemicals and hazardous wastes
- Stone crusher
- Brick Kiln
- Other industries
- Mines
- Iron Crushers
- Public nuisance
- Other miscellaneous issues

Table - 5.40 Status of Public Complaints

No. of complaint received	Disposal	Under investigation
580	399	181

5.11 IMPLEMENTATION OF RIGHT TO INFORMATION ACT, 2005

The Right to Information Act, 2005 provides for setting out the practical regime of right to information for citizens to secure access to information under the control of Public Authorities (P.A), in order to promote transparency and accountability in the working of every public authority.

According to Section 6 of this Act, any person who desires to obtain any information under this Act can apply in Form A specifying the particulars of the information sought by him or her in writing or electronically in English or in local official language. The application should be accompanied with the requisite fee, prescribed under the Act.

As per the Act, the State Pollution Control Board, Odisha is providing available information as and when sought through proper application. Shri P.C Rauta, Environmental Engineer of the Board has been declared as the Public Information Officer under the provisions of the Act. 512 nos. of requests were received under RTI during 2015-16 (Table-5.41). The total amount collected for RTI requests during 2015-16 is ₹ 25,373/-.

Table - 5.41 Status of Applications under RTI Act

SL. NO.	Details of the Application	Nos.
01.	No. of Applications received during the year	512
02.	No. of Applications on which Information provided	387
03	No. of Applications on which information rejected	75
04.	No. of requests transferred to other public Authorities	42

CHAPTER - VI
LEGAL MATTERS
6.1 STATUS OF LEGAL CASES

The Board initiates legal action against those units which fail to adopt adequate pollution control measures entailing violation of norms and directives, in spite of repeated persuasion and after having received adequate opportunity.

The Board has filed/counter filed 194 cases and disposed 52 cases during 2015-2016. The details of cases filed by the Board alongwith the status of public interest litigations and writ petitions filed in different Courts are presented in Table-6.1.

Table - 6.1 Details of Cases Filed by the Board

Sl. No	Name of the Court	No. of Cases	
		Filed/Counter filed	Disposal
A	Lower Court (SDJM)		
1.	The Water (PCP) Act	Nil	Nil
2.	The Air (PCP) Act	Nil	Nil
3.	The Environment (Protection) Act	Nil	Nil
B	High Court		
1.	PIL	49	14
2.	Writ	71	23
C	Supreme Court		
1.	PIL	Nil	Nil
2.	Writ	Nil	Nil
D	Other Court		
1.	Civil Suit	01	Nil
2.	Consumer Dispute Cases	04	Nil
3.	Lokpal Cases	01	Nil
E.	N.H.R.C. / O.H.R.C.	39 (NHRC-19+OHRC-20)	09 (NHRC-04+OHRC-05)
1.	Cases U/S-133 of CrPC	Nil	Nil
2.	Cases before the State Appellate Authority	Nil	Nil
3.	Cases before the National Green Tribunal	29	06
	Total	194	52

CHAPTER - VII
FINANCE AND ACCOUNTS

The estimated and the actual receipts during 2015-16 are given in Table-7.1.

Table-7.2 reflects the details of budget provision and actual expenditure incurred during the year 2015-16.

Table - 7.1 Receipt of the Financial Year 2015-16

Sl. No.	Head of Receipt	Estimated Receipt	Actual Receipt
		(₹ in lakhs)	
A.	Board's Own Receipt		
1.	Consent to Operate Consent to operate fee (Current Year)	2500.00	7213.78
2.	Consent to Establish	460.00	649.43
3.	Public Hearing	10.00	11.75
4.	Haz. Waste Authorisation	24.00	24.85
5.	Bio Medical Waste Authorisation	14.00	22.97
6.	Misc. Receipt	5.00	6.64
7.	Analysis Charges	1.00	1.38
8.	Pollution Charges	240.00	233.56
9.	Forfeiture of B.G.	130.00	157.64
10.	Recovery of Loan & Others	43.00	50.57
11.	Interest on Savings/ Advances	1210.00	1621.65
	Sub Total	4267.00	9603.02
B.	Cess (Reimbursement)	668.00	441.68
C.	Receipt from Schemes	105.00	31.48
	Sub-Total	773.00	473.16
	Grand Total	5410.00	10467.38

Table - 7.2 Expenditure during the Financial Year 2015-16

Sl. No.	Source of Funding	Head of Account	Budget	Actual Expenditure
			(₹ in lakhs)	
1.	Board's own fund	i. Salary	1120.35	1116.41
		ii. Recurring Expenditure	304.19	250.97
		iii. Loans & Advances	53.57	34.04
		iv. Non Recurring Expenditure	575.00	389.85
Total			2053	1791
2.	Cess Fund	i. Salary of Scientific & Technical Personnel	130.00	130.00
		ii. Establishment Cost & Office Operation	98.00	64.08
		iii. E-Governance & IT Operations	10.50	6.92
		iv. Monitoring of Air, Water, Noise Quality	91.00	72.61
		v. Other Project Activities	282.68	36.50
Total			612.18	310.11
3.	Sponsored Schemes		113.39	239.92
Grand Total			2778.68	2341.29

CHAPTER - VIII
OTHER IMPORTANT ACTIVITIES
8.1 INTEGRATED COASTAL ZONE MANAGEMENT PROJECT (ICZMP)

The World Bank assisted Integrated Coastal Zone Management Project is being implemented, in order to augment the capacity of the Board in the area of coastal environmental monitoring over a stretch of 80kms from Paradeep to Dhamra. Office of the Pilot Executing Agency (PEA) of the Board has been operating at the Central Laboratory Building of SPC Board, Patia, Bhubaneswar and the samples of Coastal Water Monitoring and Analysis has been done by the PEA regularly since April 2014 on quarterly basis. Till now only on-shore and few off-shore sampling points could have been covered with the help of trawlers. The details of monitoring conducted during 2015-16 are given in Table. 8.1.

Table. 8.1 Coastal Water Monitoring Status during the Financial Year 2015-16

Year/Monitoring Quarter	Period	Month of sampling	Name of Stretch/Zone	No. of water samples collected
2015-16/Q1	March -June	June-2015	Paradeep (Z-1)	128
2015-16/Q2	July-September	August-2015	Dhamara (Z-3)	120
2015-16/Q2	July-September	September-2015	Bhitarakanika (Z-2)	66
2015-16/Q3	October-November	November-2015	Paradeep (Z-1)	156
2015-16/Q3	October-November	November-2015	Bhitarakanika (Z-2)	164
2015-16/Q4	December - February	January-2016	Dhamara (Z-3)	244
2015-16/Q4	December - February	February-2016	Paradeep(Z-1)	619
Total no. of samples				1497


Sampling in the Trawler at Paradeep

Sampling at the Coast by PEA

Monitoring Protocol

A detailed Monitoring Protocol has been prepared for achieving the mandate of the ICZM Project, which are as follows:

- Can cover upto 12 Nautical miles and upto 5 ppt salinity towards land ward side along the River.
- Standardize sampling technique in the dynamic part of the coastal area and estuaries as well as analyzing methodologies for practical use.
- Standardization of In-situ monitoring & on-board measurement / analysis of environmental samples.
- Can identify and quantify the pollutant being carried to sea through riverine system and its concentration at confluence, its spreading and fate, which includes their concentration in different components of the marine ecosystem (Water, sediment and biota).
- Can generate data as well as status of certain ecological and historical sensitive hotspot in the stretch and to predict their effects on the ecosystem as well as to prepare mitigation plan.

Construction of Centre for Management of Coastal Eco System (CMCE) Building at Paradeep & Sea worthy vessel

The construction of the CMCE building at Paradeep is in progress and would be operative from May 2016.

The sea-worthy pollution monitoring vessel with in-built laboratory facility has the following specifications and would be operative by November, 2016.

Vessel Particulars

- Length - 18.50 M
- Breadth - 07.00 M
- Breadth Each Hull – 02.00 M
- Gaps between Hulls – 03.00 M
- Depth – 02.20 M
- Draught Loaded Mean – 01.20 Meters
- Endurance – 4/5 days
- Engine – 2x100 HP
- Passengers – 4+2 persons
- Crew – 7+2 Persons
- Speed – 8 knot



Training / Workshop/ Seminar attended by ICZMP Staffs

1. Mr. Anupam Behera, Nodal Officer cum Project Coordinator and Dr. S.N. Nanda, Project Scientist, ICZMP, SPCB, Odisha visited Milan, Italy in connection with “Training, Inspection, Testing and Demonstration of GC-MS” by Thermo Fisher Scientific Pvt Ltd, USA from 22nd July 2015 to 25th July 2015.
2. Mr. Anupam Behera, Nodal Officer cum Project Coordinator, ICZMP, SPCB, Odisha has attended the 20th National Oil Spill Disaster Contingency and Preparedness meeting held on 9th April 2015 at The International Centre, Goa.
3. Dr. S. S. Pati, Project Scientist and Dr. S.N. Nanda, Project Scientist attended IMO Oil Preparedness, Response and Co-operation(OPRC) Level-1 training Course First Responder from 6th to 9th July 2015 at Chennai Port Trust, Chennai.
4. Mr. Anupam Behera, Nodal Officer cum Project Coordinator, ICZMP, SPCB, Odisha attended a workshop on “Institutionalizing Corporate Environmental Responsibility” for enhancing conservation along the East Coast of India at Hotel “The Crown”, Bhubaneswar on 29th September, 2015 jointly organized by ICZMP, Odisha and IUCN, New Delhi. He also presented a paper on “Coastal Resources”- Reflecting the progress of ICZM Project.
5. Dr. S. S. Pati, Project Scientist and Mr. K. Sarat Kumar Mahanti, SSA visit to Mumbai from 8th to 10th December 2015 to attend the training Programme on Gas Chromatography by Shimadzu.
6. Dr. S. S. Pati, Project Scientist and Dr. S.N. Nanda, Project Scientist attended IMO Level-II “Oil Preparedness, Response and Co-operation from 22nd to 26th February 2016 at AMET University, Chennai.
7. Dr. S.N. Nanda, Project Scientist has attended training programme on “Impact of Ozone and Other Pollutants” from 4th to 6th January 2016 at TERI University, 10, Institutional Area, New Delhi.
8. Mr. Anupam Behera, Nodal Officer cum Project Coordinator, ICZMP, SPCB, Odisha has attended seminar on “Rule of law for supporting the 2030 development agenda/sustainable development goal from 4th to 6th March 2016 at New Delhi organised by NGT, New Delhi.

World Bank team visit

The 8th implementation support mission of World Bank visited ICZM Project, Odisha on 22nd September, 2015 and reviewed the progress so far made by different PEAs under ICZM Project. The Nodal Officer cum project coordinator presented on the progress of implementation of ICZMP at SPMU, ICZMP, Odisha before the mission.

8.2 FLYASH RESOURCE CENTRE (FARC)

Fly Ash Resource Centre (FARC) is working in the Board since June'2013 as per the decision of High Level Committee, Chaired by the Chief Secretary, Govt. of Odisha. During the financial year 2015-16 about 28583143 MT of fly ash is being generated, of which the utilisation of fly ash is about 16987063 MT i.e 59.43%.

The mandate of the FARC is to facilitate & enhance the utilisation of fly ash in the state by facilitating and exploring various options such as construction of roads & building, cement making, agriculture, filling of morrum, stone and laterite quarries, manufacture of fly ash bricks etc. the

Board has also taken up awareness from time to time among the stakeholders. FARC has prepared the following guidelines and uploaded in the Board's website.

- a. Guidelines for Manufacturing of Quality Fly Ash Bricks
- b. Guidelines for Low lying area filling with fly ash
- c. Guidelines for Use of Fly ash Tiles in canal lining
- d. Best Practices in Fly ash utilization
- e. Fly ash in Road construction

8.3 UNIDO-GEF-FUNDED MOEF PROJECT ON BIOMEDICAL WASTE MANAGEMENT

Odisha has been identified, as one of the five States in the Country (Other States are Maharashtra, Gujarat, Punjab, Karnataka) for implementing UNIDO-GEF-Funded MoEF Project on Biomedical Waste Management. SPC Board has been designated by the Govt. as the Nodal Agency. SPC Board has already signed the contract with UNIDO. The project is to be implemented in 28 Health Care Establishments (HCEs) and one district (Sambalpur) as model project. The HCEs include three Govt. Medical College and Hospitals. Govt. of Odisha is also co-financing this project. During the period, base line survey of identified health care establishments has been conducted.

8.4 OBSERVATIONS DURING DIFERENT FESTIVALS

8.4.1 Impact of Festive Activities during Dasher a and Deepawali on the Noise level and Ambient Air Quality (AAQ) of Some Selected Towns and Cities of Odisha

A. Impacts of Dasher a, 2015 on the Ambient Noise Level

The State Pollution Control Board, Odisha has conducted ambient noise monitoring at 34 different locations of Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Keonjhar, Rayagada, Rourkela and Sambalpur covering Industrial, Commercial, Residential and Silence Zone during day and night time in pre, during and post Dasher a to assess the impact of Dasher a festival on the ambient noise level.

The results of the monitoring are as follows and are presented in Fig. 8.1 – 8.4.

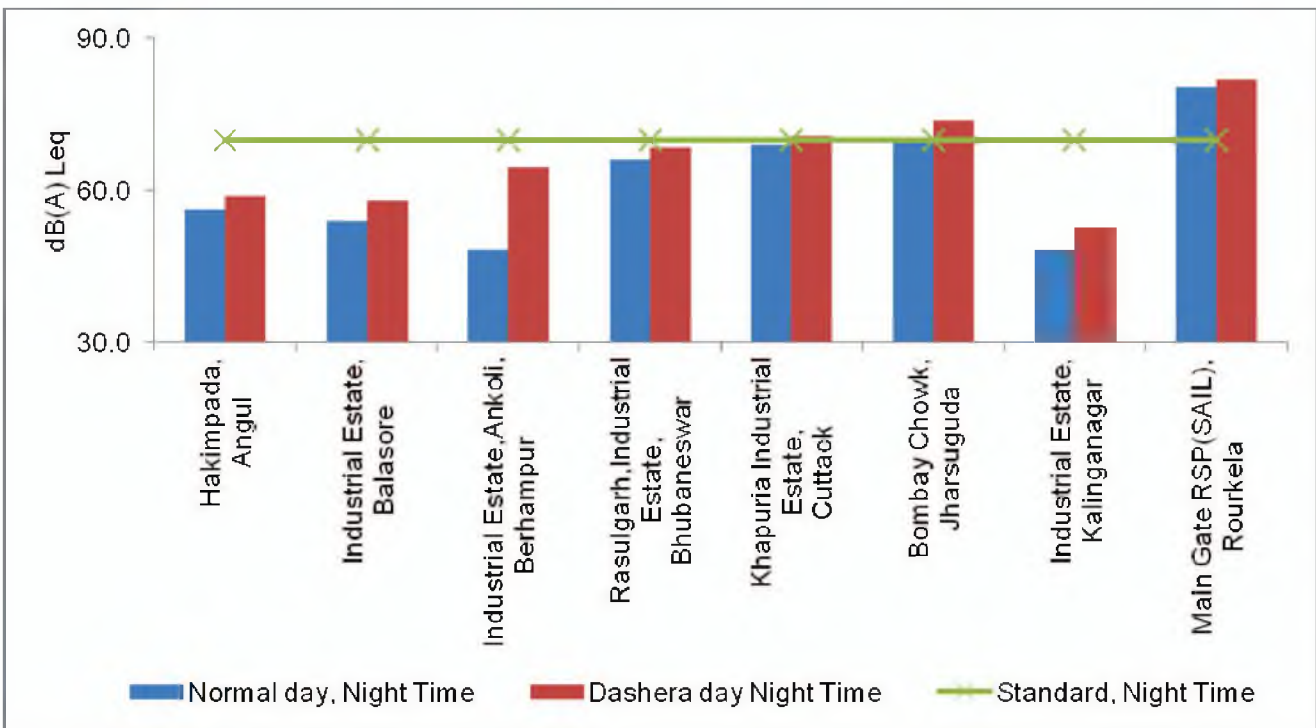
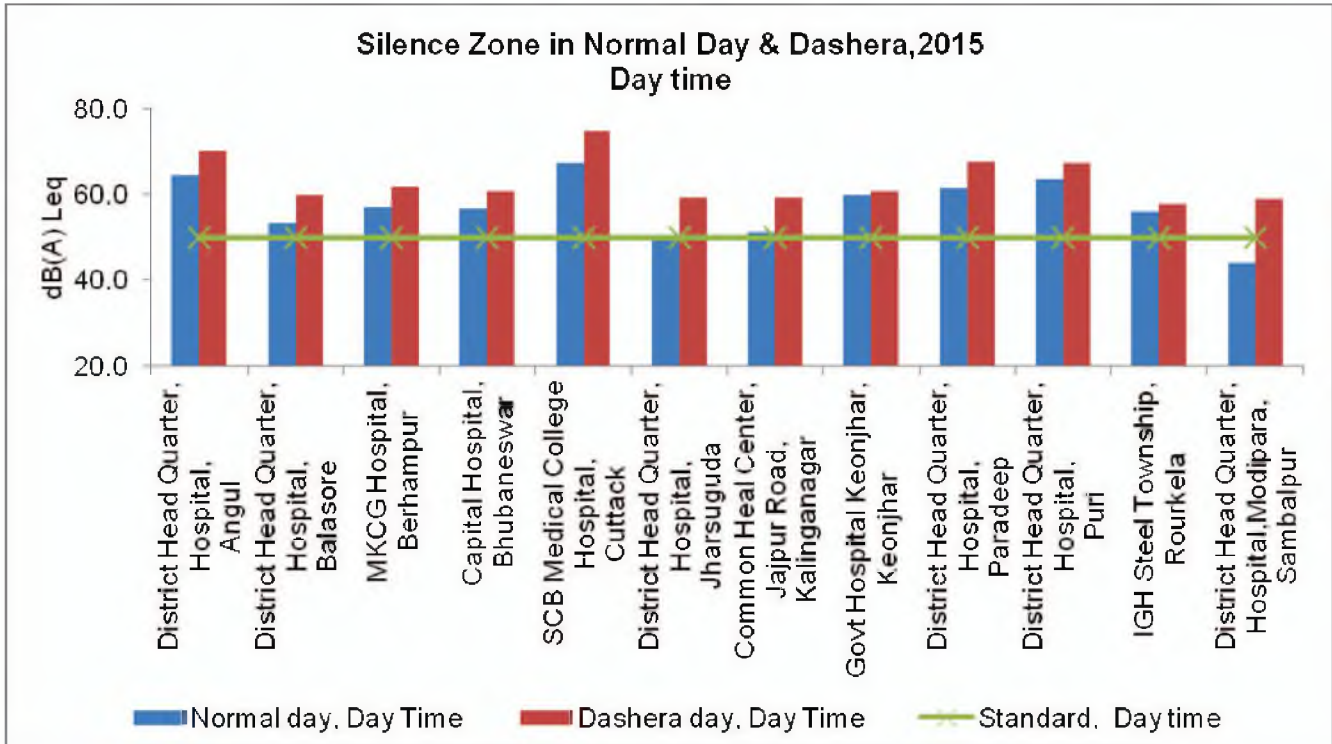
OBSERVATIONS

a. Silence Zone

The Noise monitoring near Hospital area (silence zone) in all the cities (under study) were conducted. The noise level at all locations during day time and night time in both pre & on the day of Dasher a were more than the prescribed standard i.e. 50 dB (A) & 40 dB (A) Leq respectively except at Dist Head Quarter Hospital,, Sambalpur in both day time and night time.

The noise level on the day of Dasher a were more than that of pre value at all locations both in day & night time. The maximum noise level during day time & night time were at SCB Medical college, Cuttack i.e. 74.7 and 68.7dB(A)Leq respectively. The results are given in Fig. 8.1.

Fig. 8.1 Day time and Night time Noise Levels during Dashera in Silence Zones (2015)



NB: Day time-6AM-10PM, Night time-10PM-6AM

b. Residential Zone

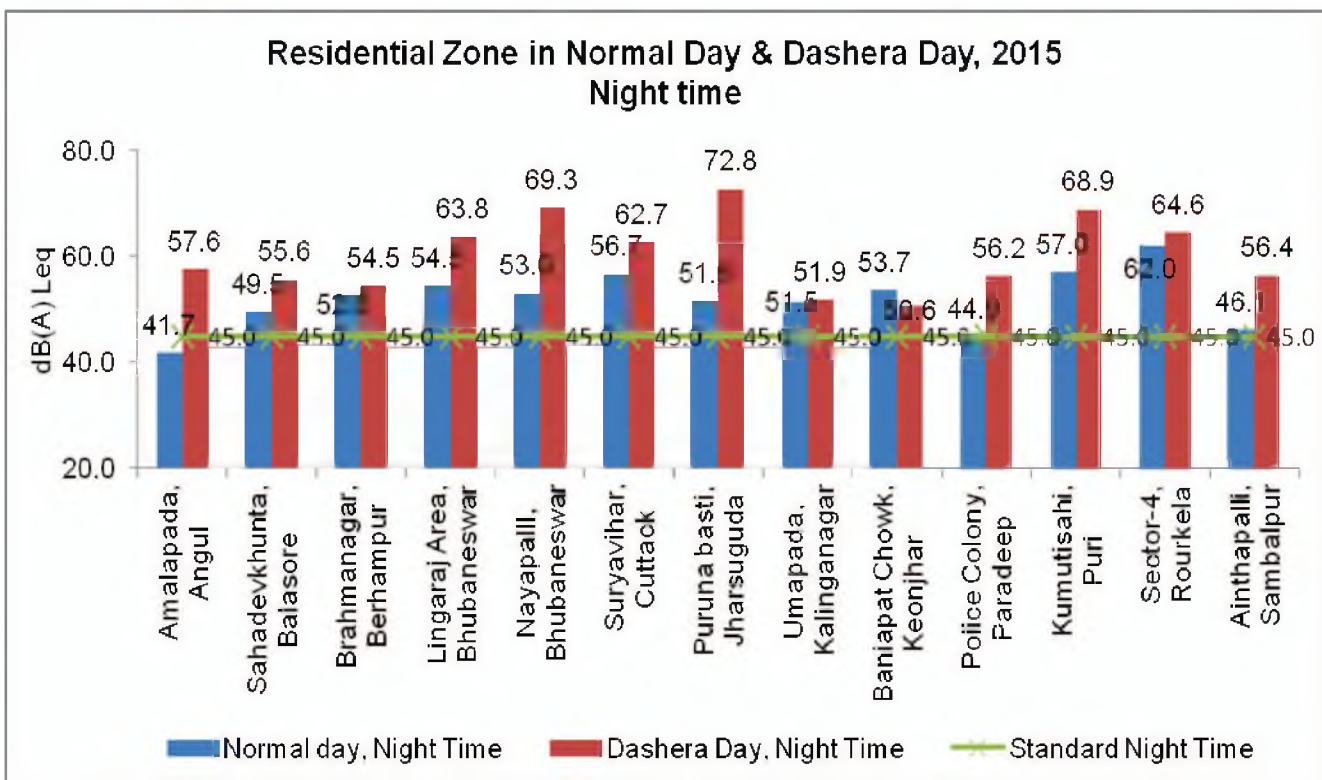
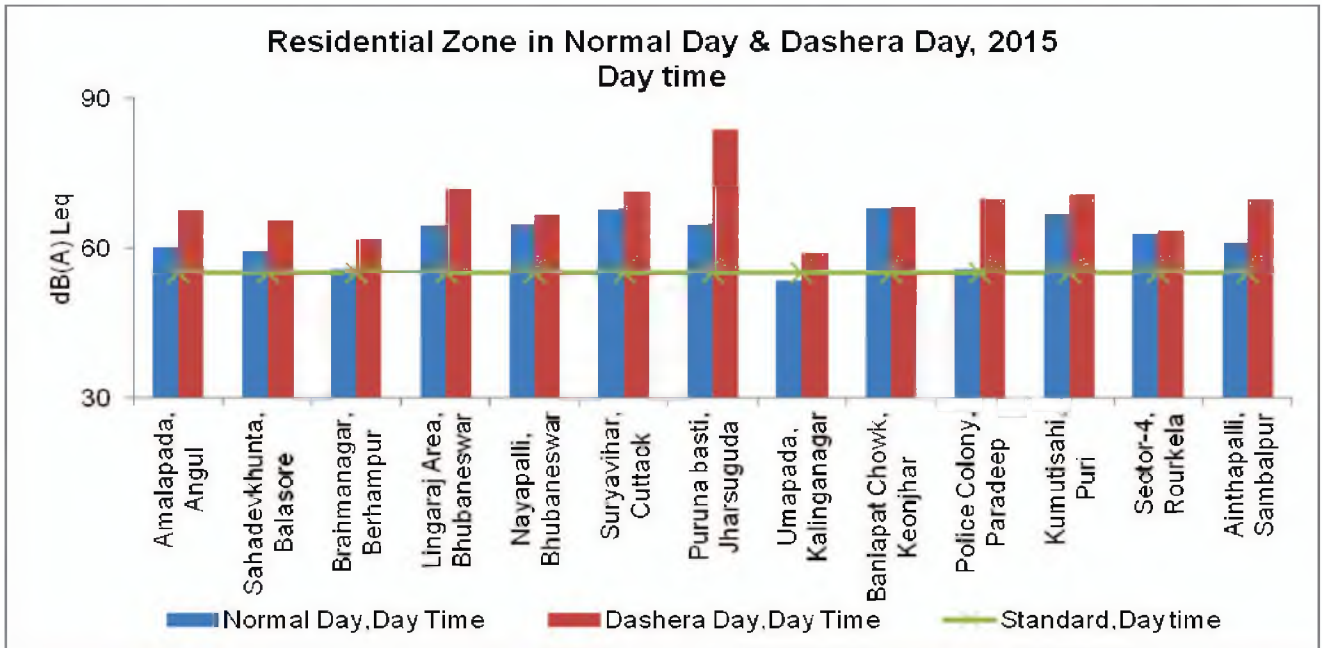
The day time noise level in residential areas exceeded the prescribed standard i.e. 55 dB (A) Leq at all locations in the pre day & during Dashera except at Umapada, Kalinganagar i.e 53.4dB(A)Leq in pre day of Dashera. As expected noise level during Dashera in Day time at all locations were more than that of pre day of Dashera.

The night time noise level in residential areas were also found exceeded the standard i.e. 45 dB (A) Leq at all locations in the pre day & during festival except at Amalapada, Angul in pre day of Dashera. In night time i.e 41.7dB(A)Leq.

At all locations the noise level during Dashera were more than their respective noise level in pre Dashera except at Banialpat Chowk,Keonjhar in night time.

The results are given in Fig. 8.2.

Fig. 8.2 Day time and Night time Noise Levels during Dashera in Residential Zones (2015)



NB: Day time-6AM-10PM, Night time-10PM-6AM

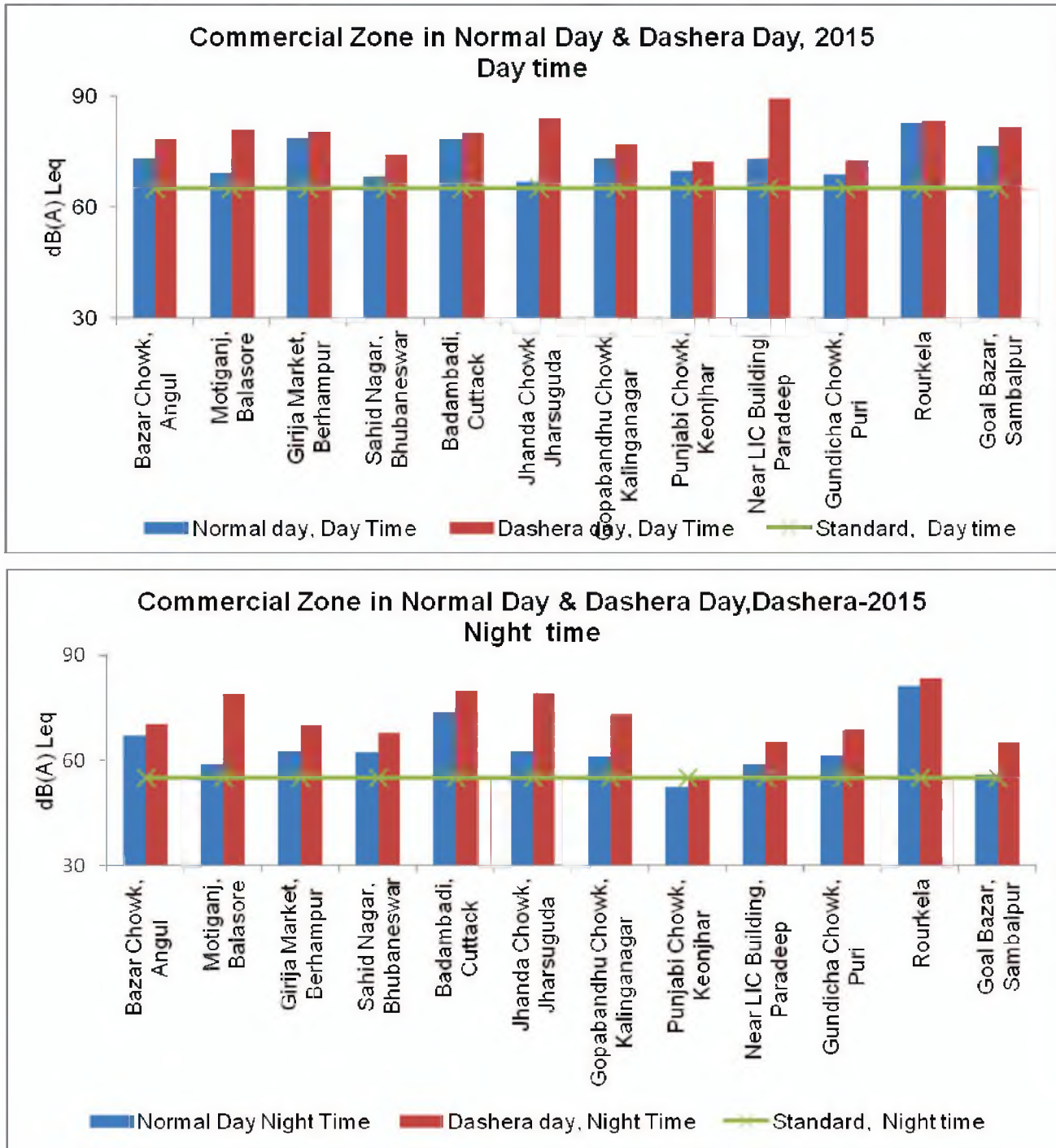
c. Commercial Zone

The noise level at all locations in commercial areas during day time on festive period were found above the prescribed standard of 65 dB (A) Leq . The night time noise level in commercial areas were also exceeded the stipulated standard i.e. 55 dB (A) Leq at all locations in pre day and during festive period except at Punjabi chowk during night time on the pre day of Dasher.

The noise level during dushera were more than their respective noise level in pre day of Dasher.

The results are depicted in Fig. 8.3.

Fig. 8.3 Day time and Night time Noise Levels during Dasher in Commercial Zones (2015)



NB: Day time-6AM-10PM, Night time-10PM-6AM

d. Industrial Zone

The noise level at all locations in industrial areas during day time and night time in the pre day & , during festive period were found to be within the prescribed standard of 75 dB (A) Leq (day time) and 70 dB (A) Leq (night time) except at Industrial Estate,Ankoli, Berhampur day time,Bombay chowk,Jharsuguda and at main gate of RSP, Rourkela both in day & night time during Dashera, The pre day noise level at all locations in both day & night time ware mostly below their respective limit except Bombay chowk in day time and main gate RSP both in day & night time. The noise level during Dashera at all locations were more than their respective pre day value for both day & night time.

The results are reflected in Fig. 8.4

Fig. 8.4 Day time and Night time Noise Levels during Dashera in Industrial Zones (2015)



NB: Day time-6AM-10PM, Night time-10PM-6AM

B. Impact of Deepawali Celebration-2015 on the Ambient Air Quality and Noise Level

The State Pollution Control Board, Odisha has conducted an indepth noise monitoring at various locations of Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Keonjhar, Rayagada, Rourkela and Sambalpur town covering Industrial, Commercial, Residential and Silence Zone in the day and night time to assess the impact of noise created by different fireworks during celebration of Deepawali as well as in the pre and post Deepawali for a comparative study.

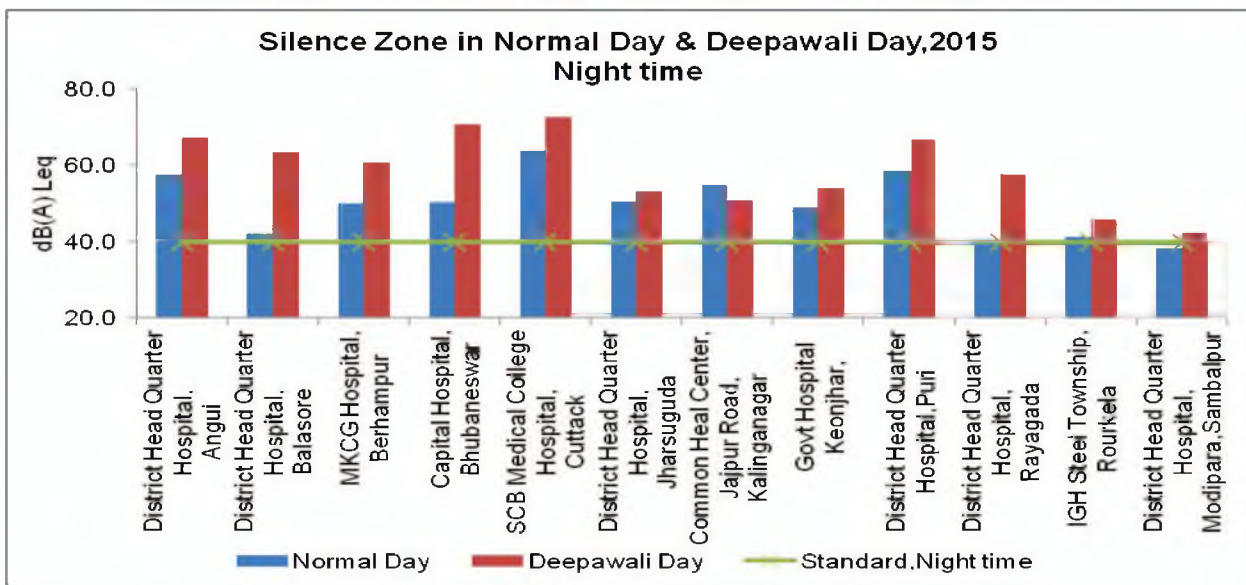
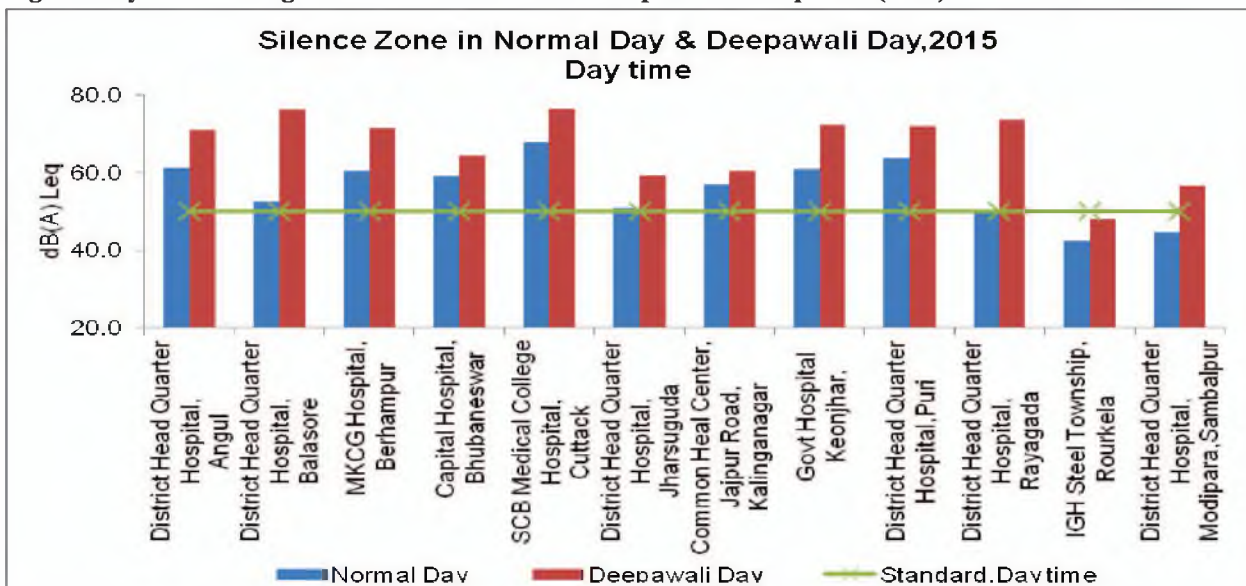
The findings of the monitorings are summarized below and results are presented in Fig. 8.5 -8.8.

a. Silence Zone

The day time & night time noise levels in silence zone exceeded the standard of 50 dB (A) Leq & 40 dB (A) Leq respectively at all locations in pre & during Deepawali except at IGH Steel township, Rourkela in both pre & during Deepawali in day time and District Medical Office, Sambalpur on pre Deepawali at night time.

The monitoring results are shown in Fig. 8.5.

Fig. 8.5 Day time and Night time noise Levels in Festive period of Deepawali (2015) in Silence Zones



NB: Day time-6AM-10PM, Night time-10PM-6AM

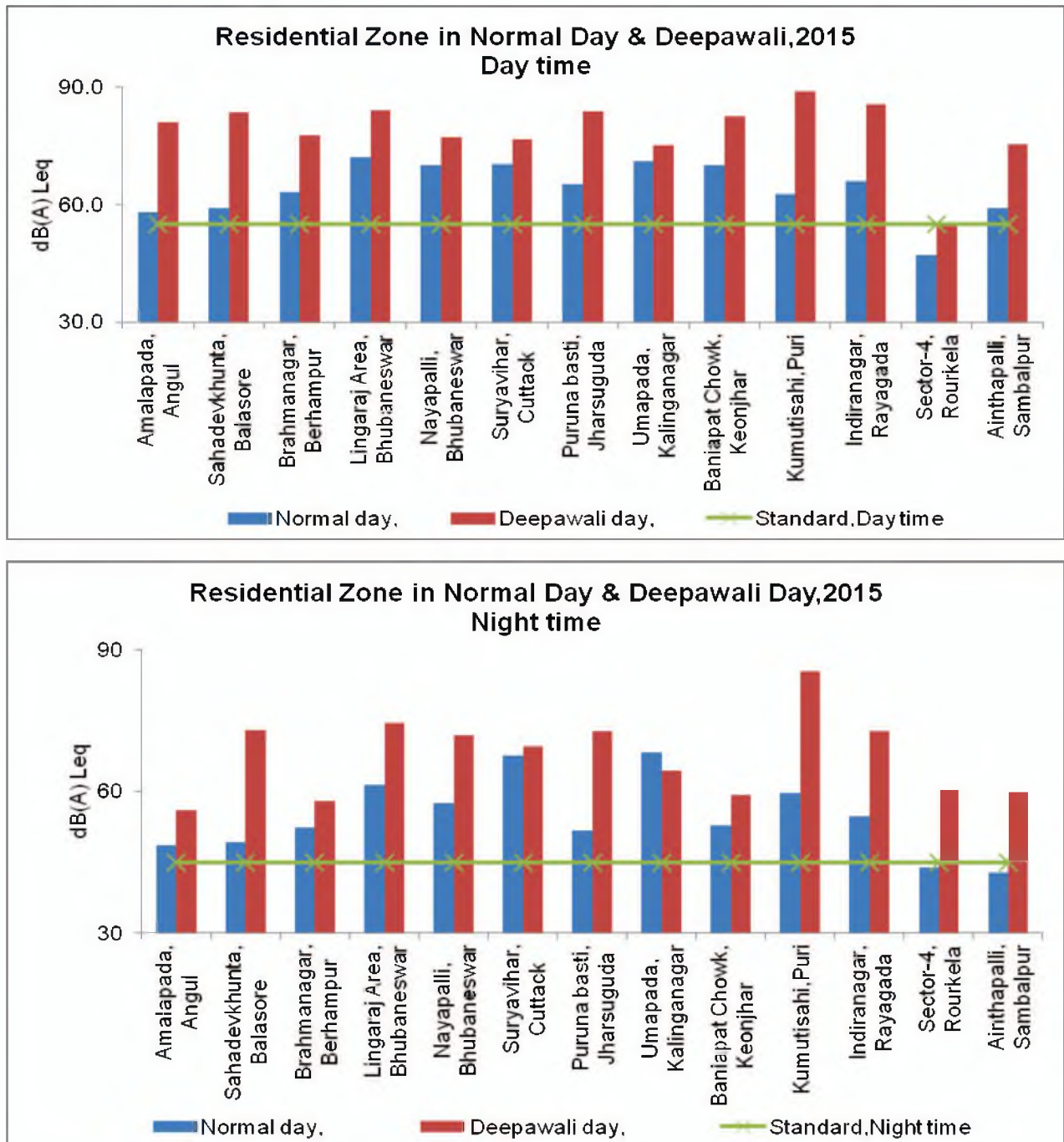
b. Residential Zone

The day time noise levels in residential zone exceeded the standard of 55 dB (A) Leq at all locations in pre & during Deepawali in day time except at Sector-4, Rourkela in pre Deepawali. The maximum noise level was 88.7 dB (A) Leq at Kumutisahi, Puri in day time.

The night time noise level in residential zone exceeded the standard of 45 dB (A) Leq at all locations in pre & during Deepawali except at two locations in pre Deepawali i.e Sector-4, Rourkela in day time & Ainthapali, Sambalpur at night time. The maximum noise level in night time was 85.5 dB (A) Leq at Kumuti sahi, Puri.

The results are given in Fig. 8.6.

Fig. 8.6 Day time and Night time Noise Levels in Festive period of Deepawali (2015) in Residential Zones



NB: Day time-6AM-10PM, Night time-10PM-6AM

c. Commercial Zone

The day time & night time noise level were above the prescribed standard of 65 dB(A) Leq and 55 dB(A)Leq respectively at all the locations both in pre & during Deepawali except at main market Rayagada on pre Deepawali in the night time.

At all locations the pre noise level during day & night time were less than their respective values during Deepawali except at Punjabi chowk, Keonjhar in night time.

The monitoring results of both day & night time are shown in Fig. 8.7.

Fig. 8.7 Day time and Night time Noise Levels in Festive period of Deepawali (2015) in Commercial



NB: Day time-6AM-10PM, Night time-10PM-6AM

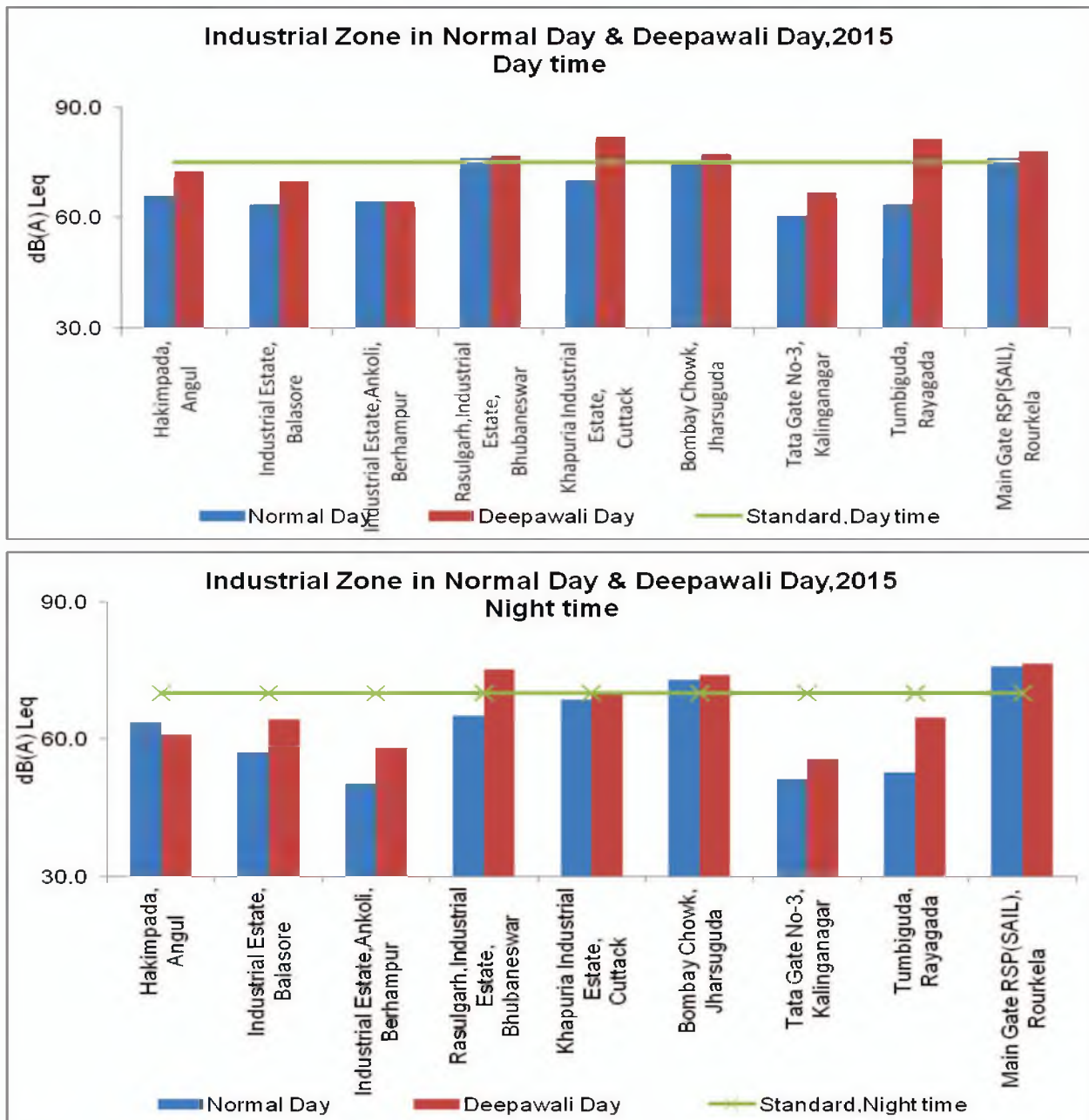
d. Industrial Zone

The day time noise levels in the pre and during Deepawali were found below the prescribed standard of 75dB (A) Leq at all locations except at Rasulgarh Industrial Estate, main gate RSP, Rourkela, Bombay chowk, Jharsuguda both in pre and during deepawali day. Khapuria Industrial estate & Tumbiguda, Rayagada on the day of Deepawali were exceeded the limit.

In night time the noise level in normal and during Deepawali day were within the prescribed standard of 70dB (A)Leq at all locations except at Bombay chowk, Jharsuguda Ind. Estate, main gate RSP, Rourkela both in pre & during Deepawali period , Rasulgarh Industrial estate, Bhubaneswar and Khapuria industrial estate cuttack in on Deepawali day were exceeded the limit

The results of both day & night time are shown in Fig 8.8.

Fig-8.8 Day time and Night time Noise levels in festive period of Deepawali (2015) in Industrial Zones



NB: Day time-6AM-10PM, Night time-10PM-6AM

Impacts of Deepawali on the Ambient Air Quality

The State Pollution Control Board, Odisha has also monitored the Ambient Air Quality on pre, during & post Deepawali at 34 locations in 13 areas i.e., Angul, Balasore, Berhampur Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Konark, Puri, Rayagada, Rajgangpur Rourkela & Sambalpur with respect to parameters like SO₂, NO_x & PM₁₀ to assess the impact of bursting of fire crackers on the surrounding ambient air quality.

The SO₂ & NO_x values on pre and during Deepawali were below the prescribed limit i.e., 80µg/m³ on 24 hourly average basis at all locations. The respirable dust particle (PM₁₀) value was below prescribed limit 100µg/m³ on 24hourly average basis at 05 locations on the day of Deepawali and at 27 locations on pre Deepawali. The concentration of gaseous pollutants and respirable particulate matter shows higher value on the day of Deepawali than the pre period of the monitoring at most of the locations. The highest PM₁₀ value observed on the day of Deepawali was 700µg/m³ at IRC village Nayapalli in Bhubaneswar.

The monitoring results are given in Table -8.2.

Table - 8.2 Ambient Air Quality Status of Major Cities/Towns of Odisha in the Pre / During Deepawali, 2015

Sl No	AREA	LOCATIONS	SO ₂		NO _x		PM ₁₀	
			Normal Day	During	Normal Day	During	Normal Day	During
1	Angul	1. Amalapada	10.4	14.1	26.4	30.0	91	137
		2. Bazar Chowk	9.2	13.8	29.2	31.6	96	123
		3. Industrial Estate, Hakimpada	9.5	11.1	24.6	27.8	91	175
		4. Dist. Hq. Hospital Angul	11.2	14.0	2.1	29.4	78	158
2	Balasore	5. Sahadevkhunta,	BDL	BDL	11.2	13.8	77	119
		6. Motiganj Bazar,	BDL	4.9	14.4	18.5	92	137
		7. Dist. Hq. Hospital	BDL	BDL	9.9	BDL	68	81
3	Berhampur	8. RO SPCB bulding, Brahmanar	BDL	16.1	17.7	31.9	95	274
		9. Girija Market, Berhampur	BDL	32.1	24.7	45.9	117	332
		10. MKCG Medical Hospital	BDL	16.6	15.0	28.6	96	236
4	Bhubaneswar	11. Office Premises	BDL	17.7	20.1	25.8	147	511
		12. IRC village Naypalli	BDL	18.2	17.3	37.5	94	700
		13. Capital Police Station	BDL	19.1	18.9	34.3	59	328
		14. Patrapada	BDL	7.6	13.3	21.5	79	329
		15. Chandrasekharpur	BDL	9.3	16.2	24.6	93	274
5	Cuttack	16. Roof of Office Building, Suryavihar	BDL	5.7	28.0	33.1	63	236
		17. Roof of Traffic Tower, Badambadi	4.4	10.5	35.4	43.8	55	186
		18. PHD Office Barabati	BDL	6.0	30.0	32.3	92	335
6	Jharsuguda	19. Ro SPCB Building, Jharsuguda	12.2	26.7	21.7	26.7	75	118
7	Kalinganagar	20. Sapagadia	BDL	8.5	9.6	13.5	78	223
		21. Near bus stand bypass	BDL	11.3	9.7	15.9	105	293
		22. Inside premises of CHC	BDL	10.1	9.3	14.1	58	245
		23. Near Tata Officers Guest House	BDL	BDL	9.9	14.0	152	263

Sl No	AREA	LOCATIONS	SO ₂		NO _x		PM ₁₀	
			Normal Day	During	Normal Day	During	Normal Day	During
8	Keonjhar	24.Over the roof of Regional Office	BDL	BDL	14.0	21.5	70	237
		25.Punjabi Chawk, Keonjhor	BDL	BDL	17.0	22.2	91	226
9	Puri	26.Over the roof of sadar police station	BDL	10.7	16.6	19.6	52	182
		27.Town Police station	BDL	10.0	17.1	18.9	61	219
10	Rayagada	28.Over the roof of Regional Office	4.7	12.8	23.8	29.4	28	71
11	Rourkela	29.RO SPCB building	8.2	17.1	14.5	24.3	103	443
		30.IDL Sonaparbat	11.4	13.3	21.7	24.2	111	449
		31.DISIR Rajgangpur	12.5	18.6	14.1	25.6	155	221
12	Sambalpur	32. Ainthapali, Sambalpur	4.3	8.2	20.8	24.0	75	93
		33.Goal Bazar, Sambalpur	4.8	8.0	18.0	25.3	83	97
		34.District Head Quarter Hospital	4.6	8.3	17.0	24.7	68	77
Standard On 24hrly Avg. Basis			80		80		100	

N.B. BDL- Below Detectable Limit

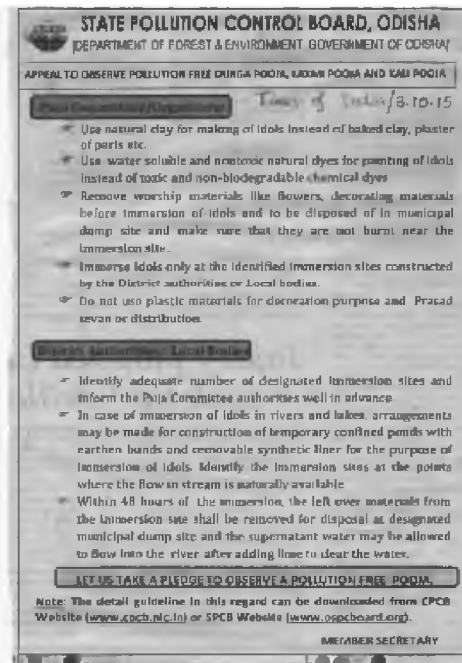
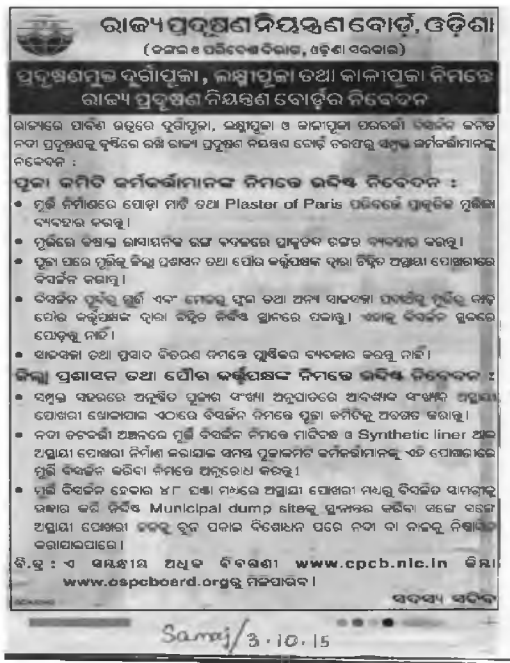
*** Standard as per Notification No. S.O. 955 (E) Air (PCP), dt. 18.11.2009.

8.4.2 Impacts of Idol Immersion on the Water Bodies

Ganesh Puja and Durga Puja are celebrated in massive scale in most of the cities of the State of Odisha. However, celebrations of other Pujas like Gajalaxmi Puja and Kali pujas, are limited to certain cities of the State. Generally the idols are immersed on a single day at the designated sites of the rivers flowing along the cities. In recent past years, the Board was informing all the District Collectors of the State to implement the Guidelines developed by CPCB "Guidelines for Idol Immersion" (PROBES/136/2010). Besides these, the Board was also conducting the water quality monitoring of only two rivers i.e. Kathajodi river along Cuttack city and Kuakhai river along Bhubaneswar city to assess the impact of idol immersion. However, in the year 2015, the Hon'ble High Court of Orissa have intervened in this matter and vide their order dated 07.10.2015 directed the State Pollution Control Board, Odisha to render necessary assistance to the District Collectors and ensure strict compliances of the Guidelines for Idol Immersion during the ensuing Durga Puja and other pujas to follow thereof. In compliance to the order, the Board made an intensive approach to ensure the implementation of the Guidelines in all the urban local bodies of the State as follows:

- Informed all the District Collectors and authorities of urban local bodies of the State prior to Ganesh Puja and Durga Puja to implement the Guidelines of Immersion in their areas of jurisdiction.
- Created public awareness through Public Notice on safe Idol immersion practices in Local Newspapers and in Board's website and through public address system.
- Made several meetings with the local bodies/ authorities, Puja Committee Organizers to create awareness on ill impacts of Idol immersion in water bodies.

- Coordinated with the local bodies/ authorities for construction of temporary immersion ponds near rivers as prescribed in the Guideline.
- Conducted water quality assessment of the water body in three stages i.e. Pre-immersion. During immersion and post-immersion, preferably in Class-I cities (having population more than one lakh) and other cities where pujas are celebrated in massive scale.



Appeal to Public to observe pollution free Durga Puja, Laxmi Puja and Kali Puja through Public Notices on Local Newspapers

From the water quality data, it has been observed that

- During immersion period, parameters like turbidity and total solids increase at the immersion sites in comparison to the upstream and downstream stations which may be ascribed to the increase in suspended materials on the water body during immersion of idols.
- Dumping of puja materials and left-overs into the water body disrupts the oxygen level of water body and therefore lowering of dissolved oxygen (DO) at the immersion site was observed. Simultaneous increase in BOD and COD values at the immersion site on the day of idol immersion were also observed. By the time of post-immersion monitoring, the river water rejuvenates itself due to continuous flow of water.
- During immersion period increase in the conductivity and total dissolved solids at the immersion site in comparison to the upstream and downstream stations may be ascribed to the leaching of dissolved materials from the puja materials and idols immersed in the water body.
- Variation in concentrations of heavy metals such as cadmium, lead, copper and hexavalent chromium during the period of study was not significant.
- However, significant increase in water quality parameters like DO, BOD, COD, EC, TDS and TS in the temporary idol immersion ponds were observed in comparison to its upstream station in during-immersion period. As the left-overs of the idol immersion were removed from the

idol immersion ponds in subsequent days of idol immersion, the values of DO, BOD, COD, EC, TDS and TS parameters has been decreased in post-immersion monitoring period.

- In the temporary idol immersion ponds, the concentration of heavy metals such as cadmium, chromium, iron, lead, zinc and copper in both during-immersion and post-immersion period remain much below the tolerance limit for most beneficial uses of water. This may be correlated to the very slow leaching process of heavy metals from the synthetic paints and other materials used in the idols in natural conditions of water bodies.
- Further, because of the preventive measures taken by the district administration not to allow the water of idol immersion ponds to flow into the river, water quality of downstream stations in during-immersion and Post-immersion periods remained well within the tolerance limits of the designated use.

From the study, it may be concluded that all the parameters specified for the study remained within the tolerance limit for designated class of the river i.e. Class-C (Drinking water source with conventional treatment followed by disinfection) even after immersion of idols). Concentration of heavy metals such as cadmium, chromium, iron, lead, zinc and copper remain much below the tolerance limits and no significant impact is exerted on the heavy metal concentration of the water bodies due to immersion of idols. Such observation may be ascribed to the heavy flow in river during that period. Though some of the physical and chemical parameters like Turbidity, electrical conductivity, TDS and BOD shows higher values during-immersion period in comparison to the pre-and post-immersion period, but still remained much below the tolerance limit. Further, immersion of idols in the temporary immersion ponds has minimized the probability of contamination of the main course of river water.

8.4.3 Impacts of Mass Bathing during Kartika Purnima on the Water Quality of Mahanadi and Kathajodi River (Cuttack Stretch)

The Kartika Purnima is a holy festival of Odisha which is observed by mass bathing/ lighting Dwipa with prayers in rivers. The State Pollution Control Board, Odisha conducted water quality monitoring at the major bathing ghats in the Pre, Post & on the day of Kartika Purnima to assess the impact of mass bathing during Kartika Purnima on the water quality of river Mahanadi and Kathajodi (Cuttack stretch). This assessment was based on the physico-chemical parameters like pH, BOD, COD, DO and Suspended Solids and bacteriological parameters e.g., Total Coliform and Fecal Coliform. The water quality analysis revealed that there was no significant impact on the physico-chemical parameters due to mass bathing. However, there was significant impact on the bacteriological quality. Water quality with respect to total coliform and fecal coliform at the major bathing ghats of Mahanadi river and Kathajodi rivers on Pre (Dt. 21.11.2015), on the day of Kartika Purnima (Dt. 25.11.2015) & Post (Dt.10.12.2015), are given in Table- 8.3.

Table- 8.3 Bacteriological water quality of bathing ghats of Mahanadi River and Kathajodi Rivers on Pre-, During- and Post-Kartika Purnima

Sampling location	TC (MPN/100 ml)			FC (MPN/100 ml)		
	Pre	During	Post	Pre	During	Post
	Dt.	Dt.	Dt.	Dt.	Dt.	Dt.
	21.11.2015	25.11.2015	10.12.2015	21.11.2015	25.11.2015	10.12.2015
(a) Mahanadi River						
Naraj	2100	2200	1100	680	680	330
Chahata ghat	>160000	>160000	>160000	>160000	>160000	>160000
Gadgadia ghat	>160000	>160000	>160000	>160000	>160000	>160000
Jobra	92000	>160000	160000	35000	92000	92000
Kanheipur	22000	28000	24000	14000	17000	13000
(a) Kathajodi River						
Puri ghat	2200	4900	3300	930	1700	1300
Khan nagar	22000	28000	22000	13000	17000	13000
Urali	540000	79000	24000	24000	49000	13000
Tolerance limit for Class B (IS-2296-1982) / E (P) Rule, 1986 *	500			2500* (Permissible)		

NB: * MoEF Notification G.S.R. No. 742(E) Dt. 25th September, 2000

From the above Table, it is observed that the coliform bacteria are much above the prescribed limit for bathing water.

8.5. OTHER ONGOING PROJECTS

8.5.1 Survey and Monitoring of Ground and Surface Water Quality with respect to Fluoride around Phosphatic Fertilizer Units, Paradeep

The Board has conducted a survey on ground water and surface water quality around phosphatic fertilizer plants of Paradeep e.g., M/s Indian Farmers Fertiliser Corporation (IFFCO) and M/s Paradeep Phosphates Ltd. (PPL). During 2015, surface water sample were collected from Atharabanki creek from different locations around these two fertilizer plants. Ground water samples were collected from the test wells of both the plants and from two locations outside the plant. The fluoride concentration in Atharabanki creek at the upstream of the fertilizer plants varies within 0.524-1.02 mg/l. As the flow of Atharabanki creek depends upon the tidal condition of the sea, it is not unidirectional, and therefore, wide fluctuation in fluoride content is observed in Atharabanki creek water. The fluoride concentration in Atharabanki creek varies within 0.558-23.2 mg/l. The test wells around M/s IFFCO exhibit fluoride concentration within 0.194-8.04 mg/l, whereas, those around M/s PPL exhibit fluoride concentration 0.573-12.1 mg/l. Fluoride content in ground water samples collected from outside of the plant area i.e, at Badapadia, varies within 1.58-1.67 mg/l which is more than the desirable limit of drinking water (IS :10500-2012), whereas in Musadiha, the fluoride concentration remains always within the desirable limit of drinking water.

8.5.2 Monitoring of Water Quality at Rushikulya and Devi River Mouths in connection with protection of Olive Ridley Sea Turtles

The State Pollution Control Board, Odisha is monitoring the water quality of Rushikulya and Devi river mouths in connection with the protection of Olive Ridley sea turtles. The water quality

parameters are compared with the quality criteria for coastal water laid down under the E (P) Act, 1986 and inland surface water bodies (IS : 2296-1982). The water quality for all parameters except fecal coliform (on some occasions) and oil and grease, remain within the criteria limits prescribed by MoEF for Class SW-I (Salt pans, shell fishing, mariculture and ecologically sensitive zone) and SW-II (Coastal water used for bathing, contact water sports and commercial fishing) and within the tolerance limits (IS 2296-1982) prescribed for Class-D inland surface water bodies for fish culture and wild life propagation.

Table- 8.4 Water Quality of Muhan Area

Month	pH	DO (mg/l)	BOD (mg/l)	FC (MPN/ 100 ml)	Hg (mg/l)	Cd (mg/l)	Pb (mg/l)	O&G (mg/l)
(A) Rushikulya River Muhan (2015)								
Feb	7.8	7.5	0.4	20	<0.00006	<0.001	<0.001	0.5
May	8.2	7.5	1.3	78	<0.00006	<0.001	<0.001	0.2
Aug	7.8	6.3	1.3	230	<0.00006	0.001	<0.001	0.6
Nov	7.9	9.3	3.9	20	<0.00006	<0.001	<0.001	0.8
(B) Devi River Muhan (2015)								
Feb	8.1	6.9	1.9	20	<0.00006	0.001	<0.001	0.3
May	8.1	6.0	0.5	<2	<0.00006	<0.001	<0.001	0.2
Aug	7.9	6.0	1.1	20	<0.00006	0.001	<0.001	0.2
Nov	8.3	6.7	1.0	20	<0.00006	0.001	<0.001	1.1
Quality Criteria for Coastal Water								
SW I	6.5- 8.5	5	--	--	0.001	0.01	0.001	0.1
SW II	6.5- 8.5	4	3	100 *	--	--	--	
Tolerance limits for Inland Surface Water								
Class D	6.5- 8.5	4	--	--	--	--	--	0.1

N.B. - * Average value not exceeding 200/100 ml in 20% of samples

8.5.3 Studies related to Pollution Control and Planning

- Board has engaged Centre for Environment Planning and Technology University, Ahmedabad to prepare the Regional Environmental Management Plan (REMP) for Joda, - Barbil Area. The Institute has submitted its final report which is under finalization.
- The Board has engaged NEERI, Nagpur for the "Preparation of Regional Environmental Management Plan Based Carrying Capacity of Sambalpur – Jharsuguda Region". The study report submitted by NEERI is under finalization.

8.6 LIBRARY AND INFORMATION SERVICE

Board's library acts as a document repository and referral center for dissemination of information in the field of environmental science, engineering and associated areas. The library is used by research scholars of different universities and technical colleges, institutions in Odisha, various NGOs and social activists. The library has a collection of books, reports, audio-visual materials, maps, photographs, toposheets, river basin atlas and soft copies of different aspects of environmental science and engineering.

During 2015-16, the library has received 239nos. of books, 117 nos of reports, 24 nos of journals, 16 nos. of newspapers and 07 nos. of magazines. News clippings on environmental issues from various sources of information have been compiled for reference users. 07 nos. of scholars have been enrolled during the period. 104 nos. of Public Hearing Notices for Environmental Clearance have been collected for in-house use.

8.7 TRAINING OF BOARD OFFICIALS

The Board has deputed its officials on various training programmes, seminars and workshops for the up-gradation of their knowledge and exposure to recent technological advancements in the field of pollution control and environment protection issues.

The list of officials of the Board along with name of training programmes / workshops / seminars(national international) in various institutions attended during 2015-16 are given in Table - 8.5.

Table - 8.5 Training Programme attended by Officials of the Board

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
1.	Dr. D. K. Behera Sr. Env. Scientist (PCP)	11 th April, 2015	Seminar on Electronic Waste Management and Entrepreneurship Development	Gandhi Institute for Technology, At-Gramadiha, PI-Gangapada, Via-Janla, Bhubaneswar-752054	Gandhi Institute for Technology, At-Gramadiha, PI-Gangapada, Via-Janla, Bhubaneswar-752054
2.	Dr. S. K. Mohanty, DES,	13-17 April, 2015	Training programme on "Air Quality Management Plan"	Centre for Science and Environment, New Delhi & sponsored by CPCB	Centre for Science and Environment, New Delhi
3.	Shri P. C. Behera, DES,	13-17 April, 2015	Training programme on "Air Quality Management Plan"	Centre for Science and Environment, New Delhi & sponsored by CPCB	Centre for Science and Environment, New Delhi
4.	Dr. D. K. Behera Sr. Env. Scientist (PCP)	15 th April, 2015	GM, DIC Conference on Fly Ash Utilisation in Odisha	GM, DIC, Cuttack	GM, DIC, Cuttack
5.	Shri U. N. Behera, IAS, Addl. Chief Secretary-Cum-Development Commissioner and Chairman,SPC Board	10-16 May, 2015	ECAMRA	Ghana	Ghana
6.	Shri Rajiv Kumar, IFS Member Secretary	10-16 May, 2015	ECAMRA	Ghana	Ghana
7.	Er. N. R. Sahoo Sr. Env. Engineer- (L-I)	10-23 May, 2015	ECAMRA	Ghana and Indonesia	Ghana and Indonesia
8.	Er. Subhadarshini Das Dy. Env, Engineer	10-23 May, 2015	ECAMRA	Ghana and Indonesia	Ghana and Indonesia
9.	Dr. D. K. Behera Sr. Env. Scientist	4 th June, 2015	Fly Ash Management	C-FARM, New Delhi	C-FARM, New Delhi

Sl No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
10.	Shri C. R. Nayak Sr. Env. Scientist(L-II)	23 rd June, 2015	Workshop on Carrying Capacity Studies for Environmentally Sustainable Mining of Iron & Manganese Ore Mines in Keonjhar, Sundargarh & Mayurbhanj District	CSIR-NEERI, Nagpur	Hotel The Crown
11.	Er. D. K. Dash Env. Engineer	23 rd June, 2015	Workshop on Carrying Capacity Studies for Environmentally Sustainable Mining of Iron & Manganese Ore Mines in Keonjhar, Sundargarh & Mayurbhanj District	CSIR-NEERI, Nagpur	Hotel The Crown
12.	Er. B. K. Sethi Dy. Env. Engineer	23 rd June, 2015	Workshop on Carrying Capacity Studies for Environmentally Sustainable Mining of Iron & Manganese Ore Mines in Keonjhar, Sundargarh & Mayurbhanj District	CSIR-NEERI, Nagpur	Hotel Crown
13.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	3 rd July, 2015	Awareness programme for Lean Manufacturing Competitiveness Scheme	NPC, Bhubaneswar	Hotel Crown, Bhubaneswar
14.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	20-22 July, 2015	Training Programme on Forest Fire : Risk Mitigation and Management	Gopabandhu Academy of Administration, Bhubaneswar	Gopabandhu Academy of Administration , Bhubaneswar
15.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	27 th July, 2015	Training Programme Quantifying the Impact of Urbanisation and Climate Change on the Micro-Climate of Bhubaneswar	A2-702, IIT Bhubaneswar , Toshali Bhawan, Satyanagar, Bhubaneswar	IIT, Bhubaneswar

Sl No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
16.	Shri B. N. Bhol, Sr. Env. Scientist (L-I)	17-19 September , 2015	Training Programme on “Air Quality Assessment, Prediction and Control for Industrial Areas”	Department of Environmental Science & Engineering, (Centre of Mining Environment) Indian School of Mines, Dhanbad-826004, Jharkhand, India	Department of Environmental Science & Engineering, (Centre of Mining Environment) Indian School of Mines, Dhanbad-826004, Jharkhand, India
17.	Dr. (Mrs.) R. B. Samal, Env. Scientist	23 rd – 25 th September , 2015	International Symposium on “Solid Waste from Industries, Rural and Urban Settlements – Issues, Challenges and Management”	Natural Resources Development Foundation (NRDF), 80A-81A, Lewis Road, Bhubaneswar-751002	Hotel “The New Marrion”, Bhubaneswar
18.	Er. Narottam Behera, Dy. Env. Engineer	23 rd – 25 th September , 2015	International Symposium on “Solid Waste from Industries, Rural and Urban Settlements – Issues, Challenges and Management”	Natural Resources Development Foundation (NRDF), 80A-81A, Lewis Road, Bhubaneswar-751002	Hotel “The New Marrion”, Bhubaneswar
19.	Er. B. K. Behera, Sr. Env. Engineer(L-II)	28-30 September , 2015	Training Programme on “Environmental Impact Assessment – Methods and Procedures”	EM Division, Engineering Staff College of India, Gachi Bowli, Hyderabad-500032 & sponsored by CPCB	EM Division, Engineering Staff College of India, Gachi Bowli, Hyderabad-500032
20.	Er. S. N. Mohanty, Asst.Env.Engineer,	07-09 October, 2015	Monitoring Techniques of Organic Pollutants (PAH and VOC)	National Geophysical Research Institute, Hyderabad & sponsored by CPCB	National Geophysical Research Institute, Hyderabad
21.	Shri Pradeep Ku. Rout, Asst.Scientific Officer	07-09 October, 2015	Monitoring Techniques of Organic Pollutants (PAH and VOC)	National Geophysical Research Institute, Hyderabad & sponsored by CPCB	National Geophysical Research Institute, Hyderabad
22.	Shri Rajiv Kumar, IFS Member Secretary	16 th October, 2015	Stakeholder Consultation Workshop on Odisha Climate Change Action Plan	F& E Dept., Govt. of Odisha, Bhubaneswar	Hotel The Crown, Bhubaneswar

Sl No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
23.	Dr. D. K. Behera, Sr. Env. Scientist (L-I)	16 th October, 2015	Stakeholder Consultation Workshop on Odisha Climate Change Action Plan	F& E Dept., Govt. of Odisha, Bhubaneswar	Hotel The Crown, Bhubaneswar
24.	Er. N. R. Sahoo, Sr. Env. Engineer (L-I)	16 th October, 2015	Stakeholder Consultation Workshop on Odisha Climate Change Action Plan	F& E Dept., Govt. of Odisha, Bhubaneswar	Hotel The Crown, Bhubaneswar
25.	Dr. A. K. Swar, Sr. Env. Engineer (L-I)	16 th October, 2015	Stakeholder Consultation Workshop on Odisha Climate Change Action Plan	F& E Dept., Govt. of Odisha, Bhubaneswar	Hotel The Crown, Bhubaneswar
26.	Dr. (Mrs.) S. P. Samantray, Env. Scientist	14 th & 15 th November, 2015	International Conference on "Hospital Waste Management and Infection Control (ISHWMCON 2015)	ISHWMCON 2015, Dept. of Hospital Administration, Room No.4, Old Pvt., Ward Gd. Floor, MS Office Wing, All India Institute of Medical Sciences, New Delhi- 110029	Jawahar Lal Auditorium, AIIMS, New Delhi
27.	Er. N. R. Sahu, Sr. Env. Engineer (L-I)	16 th – 18 th November, 2015	Clean Development Mechanism (CDM) CDM Project Implementation for Industrial Sector, Wasteland Sector, Mining Sector and Carbon Trading	Environment Protection Training and Research Institute, Hyderabad & sponsored by CPCB	Environment Protection Training and Research Institute, Hyderabad
28.	Dr. Sohan Giri, Env. Scientist	16 th – 18 th November, 2015	Clean Development Mechanism (CDM) CDM Project Implementation for Industrial Sector, Wasteland Sector, Mining Sector and Carbon Trading	Environment Protection Training and Research Institute, Hyderabad & sponsored by CPCB	Environment Protection Training and Research Institute, Hyderabad
29.	Er. Ashok Kumar Bhoi, Asst. Env. Engineer	16-20 November, 2015	Monitoring of PM2.5 and other notified Air Pollutants as per revised NAAQS	National Environmental Engineering Research Institute (NEERI), Delhi & sponsored by CPCB	National Environmental Engineering Research Institute (NEERI), Delhi
30.	Dr. D. K. Behera, Sr. Env. Scientist (L-I)	22 nd November, 2015	Conference on Recent Trends in Water Supply and Sanitation	IWWA, Bhubaneswar	Hotel Mayfair Lagoon, Bhubaneswar

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
31.	Shri H. B. Panigrahi, Env.Scientist	23-27 November, 2015	Vehicular Emission and Exhaust Monitoring (Receptor and Dispersion Modeling)	The Energy & Resource Institute, IHC Complex, Lodi Road, New Delhi & sponsored by CPCB	The Energy & Resource Institute, IHC Complex, Lodi Road, New Delhi
32.	Er. Deepak Kumar Sahoo, Asst.Env.Engineer	07-09 December, 2015	Municipal Solid Waste Management – Collection, Transportation and Disposal	International Institute of Waste Management, Bhopal & sponsored by CPCB	International Institute of Waste Management, Bhopal
33.	Er. Maheswar Behera, Asst.Env.Engineer	07-11 December, 2015	Batteries and Electronic Waste Management – Rules and Practical Aspects	Engineering Staff College of India, Hyderabad & sponsored by CPCB	Engineering Staff College of India, Hyderabad
34.	R. K. Sahu, Asst.Env.Engineer	2-4 December, 2015	Source Emission Monitoring for Parameters Notified under Source Emission	PCRI, Haridwar & sponsored by CPCB	PCRI, Haridwar
35.	Dr. Rebati Kanta Mishra, Dy.Env.Scientist	14-18 December, 2015	Laboratory Quality System, Management and Internal Audit as per ISO/IEC 17025, 2005	National Institute of Training for Standardization, Noida & sponsored by CPCB	National Institute of Training for Standardization, Noida
36.	Kali Prasad Mohanty, Accounts Officer	22-24 December, 2015	Tendering & Contracting Management	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar
37.	Dr. Satyanarayan Nanda, Project Scientist, ICZMP	04-06 January, 2016	Impact of Ozone and Other Pollutants	TERI University, Delhi & sponsored by CPCB	TERI University, Delhi
38.	Dr. (Mrs.) U. R. Pattanaik, Env.Scientist	04-08, January, 2016	Calibration of Instrument / Equipment and Measurement of Traceability / Uncertainty of Chemical and Biological Testing	National Institute of Training for Standardization, Noida & sponsored by CPCB	National Institute of Training for Standardization, Noida
39.	Shri Dillip Kumar Pattnaik, Asst.Scientific Officer	04-08, January, 2016	Calibration of Instrument / Equipment and Measurement of Traceability / Uncertainty of Chemical and Biological Testing	National Institute of Training for Standardization, Noida & sponsored by CPCB	National Institute of Training for Standardization, Noida

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
40.	Er. S. K. Panda, Env.Engineer	05-07 January, 2016	Four R's – Reduce, Reuse, Recycle and Recover – Case Studies	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune & sponsored by CPCB	Vasantdada Sugar Institute, Pune
41.	Er. Debabrata Sethi, Dy.Env.Engineer	05-07 January, 2016	Four R's – Reduce, Reuse, Recycle and Recover – Case Studies	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune & sponsored by CPCB	Vasantdada Sugar Institute, Pune
42.	Dr. A. K. Swar, Sr.Env.Engineer (L-I)	07-09 January, 2016	Investigation, Remediation and Management of Soil and Groundwater Contaminated Sites	Indian Institute of Technology Madras, Chennai & sponsored by CPCB	Indian Institute of Technology Madras, Chennai
43.	Dr. B. B. Dash, Env.Scientist	07-09 January, 2016	Investigation, Remediation and Management of Soil and Groundwater Contaminated Sites	Indian Institute of Technology Madras, Chennai & sponsored by CPCB	Indian Institute of Technology Madras, Chennai
44.	Sanjib Kumar Kuanr, Accounts Officer	11-13 January, 2016	Training Programme on “Tendering & Contracting Management”	Madhusudan Das Regional Academy of Financial Management	Madhusudan Das Regional Academy of Financial Management
45.	Er. S. K. Sahu, Env.Engineer	12-14 January, 2016	Workshop on Climate Change and Mitigation for the Officers of State Govt. Dept.	State Team Leader-Odisha, Action on Climate Today, M-29, Samanta Vihar, 2 nd Floor, BDA-MIG Colony, Bhubaneswar	Hotel Swosti Premium, Leisure Centre, Bhubaneswar
46.	Er. Subhadarsini Das, Dy. Env. Engineer	12-14 January, 2016	Workshop on Climate Change and Mitigation for the Officers of State Govt. Dept.	State Team Leader-Odisha, Action on Climate Today, M-29, Samanta Vihar, 2 nd Floor, BDA-MIG Colony, Bhubaneswar	Hotel Swosti Premium, Leisure Centre, Bhubaneswar
47.	Madanmohan Sahu, Asst. Env. Engineer	18-22 January, 2016	Water Quality Management Plan	Centre for Science and Environment & sponsored by CPCB	Centre for Science and Environment, New Delhi
48.	Er. Dillip Kumar Dash, Env.Engineer	20-22 January, 2016	Environmental Monitoring, Control and Implementation of Pollution Control (Distilleries, Textiles, Sugar, Cement, Thermal Power Plant, Iron & Steel, Aluminium, Lead, Copper and Zinc Smelting Units)	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune & sponsored by CPCB	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
49.	Er.Mamata Pattnaik, Env.Engineer	20-22 January, 2016	Environmental Monitoring, Control and Implementation of Pollution Control (Distilleries, Textiles, Sugar, Cement, Thermal Power Plant, Iron & Steel, Aluminium, Lead, Copper and Zinc Smelting Units)	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune & sponsored by CPCB	Vasantdada Sugar Institute, Manjari (Bk) Tal. Haveli, Pune
50.	Shri Laxmidhar Pal Env.Scientist	01-05 February, 2016	Environmental Data Interpretation, Compilation, Analysis, Presentation and Reporting - Hands-on Training and Case Study	Indian Statistical Institute, Delhi & sponsored by CPCB	Indian Statistical Institute, New Delhi
51.	Er. Deepesh Kumar Biswal, Asst.Env.Engineer	01-05 February, 2016	Environmental Data Interpretation, Compilation, Analysis, Presentation and Reporting - Hands-on Training and Case Study	Indian Statistical Institute, Delhi & sponsored by CPCB	Indian Statistical Institute, New Delhi
52.	Er. Bijay Kumar Bhoi, Asst. Env. Engineer	18-22 January, 2016	Two Weeks Foundation Course and one week Specification Course on Compliance, Monitoring & Enforcement	Centre for Science and Environment & sponsored by CPCB	Centre for Science and Environment, New Delhi
53.	Er. Bibechita Sarangi, Asst.Env.Engineer	08-10 February, 2016	National Ambient Noise Monitoring Network – Design, Implementation and Control Technique	Indian Institute of Technology Roorkee, Roorkee & sponsored by CPCB	Indian Institute of Technology Roorkee, Roorkee
54.	Ms. K. M. Bihari, Asst.Env.Scientist,	08-10 February, 2016	National Ambient Noise Monitoring Network – Design, Implementation and Control Technique	Indian Institute of Technology Roorkee, Roorkee & sponsored by CPCB	Indian Institute of Technology Roorkee, Roorkee
55.	Er. Simanchal Dash, Sr.Env.Engineer (L-II)	08-12 February, 2016	Environmental Legislations, Interpretation, Enforcement, Legal and Statutory Requirements-Case Studies	National Law School of Indian University, Bangalore & sponsored by CPCB	National Law School of Indian University, Bangalore

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
54.	Ms. K. M. Bihari, Asst.Env.Scientist,	08-10 February, 2016	National Ambient Noise Monitoring Network – Design, Implementation and Control Technique	Indian Institute of Technology Roorkee, Roorkee & sponsored by CPCB	Indian Institute of Technology Roorkee, Roorkee
55.	Er. Simanchal Dash, Sr.Env.Engineer (L-II)	08-12 February, 2016	Environmental Legislations, Interpretation, Enforcement, Legal and Statutory Requirements-Case Studies	National Law School of Indian University, Bangalore & sponsored by CPCB	National Law School of Indian University, Bangalore
56.	Shri S. K. Kuanr, Law Officer	08-12 February, 2016	Environmental Legislations, Interpretation, Enforcement, Legal and Statutory Requirements-Case Studies	National Law School of Indian University, Bangalore & sponsored by CPCB	National Law School of Indian University, Bangalore
57.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	19 th February, 2016	Orientation Programme on Environmental Safeguards & Contract Management	CAD-PIM Directorate, Project Management Unit, Rajiv Bhawan, Bhubaneswar	Hotel Suryansh, Bhubaneswar
58.	Dr. S. N Nanda, Project Scientist, ICZMP	22-26 February, 2016	IMO Level-II Pollution Response Course	AMET University, Chennai	AMET University, Chennai
59.	Dr. S. S. Pati, Project Scientist, ICZMP	22-26 February, 2016	IMO Level-II Pollution Response Course	AMET University, Chennai	AMET University, Chennai
60.	Shri Niranjana Mallick, Env.Scientist	24-26 February, 2016	Occupational Health and Safety Management (OHSAS) 18001:2007	Pollution Control Research Institute, Bharat Heavy Electrical Limited, Ranipur, Haridwar & sponsored by CPCB	Pollution Control Research Institute, Bharat Heavy Electrical Ltd, Ranipur, Haridwar
61.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	28 th February, 2016	International Conference on Medical Informatics-2016	AIIMS, Sijua, Bhubaneswar	AIIMS, Sijua, Bhubaneswar
62.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	4 th March, 2016	Training Programme for the Judicial Officers of all Cadres	Odisha Judicial Academy, Sector-1, CDA, Abhinav Bidanasi, Cuttack	Odisha Judicial Academy, Sector-1, CDA, Abhinav Bidanasi, Cuttack

Sl. No.	Name & Designation	Date	Title of the training programme	Organised by	Venue
63.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	11 th March, 2016	Training Programme on Biomedical Waste Management	Health & Family Welfare Dept., Govt. of Odisha	Hotel Keshari, Bhubaneswar
64.	Dr. D. K. Behera Sr. Env. Scientist (L-I)	18 th March, 2016	National Seminar on "S.M.A.R.T. Energy"	SPC Board & NTPC Ltd. & OMS Power Training and Research Institute (OMSPTRI)	Hotel The Crown, Bhubaneswar
65.	Dr.(Mrs.) S. P. Samantroy, Env. Scientist	22 nd March, 2016	Workshop on BMW Management	SVPPGIP, Cuttack	State New Born Care Centre of SVPPGIP Hospital

8.8 OTHER ACTIVITIES

8.8.1. Training on Pollution Control and Environmental Protection



Workshop on Fly Ash Utilization in Road Construction held on 8th Jan, 2016 at Swosti Premium, Bhubaneswar



Workshop on Fly Ash Utilization on 17th Feb, 2016 at Brahmani Club, Rourkela

The Board has established a Center of Excellence on Training on Pollution Control and Environmental Protection issues by organizing participatory training programmes for various executives for effective implementation of various Acts and Rules promulgated for pollution control and protection of environment. The Centre of Excellence has successfully conducted 14 nos. of training programmes for different stakeholders mostly on Fly Ash utilization and Management, Carbon Sequestration, Water Quality & River Pollution etc.

The details of the training programmes/ workshop / seminar conducted by the Board are given in Table – 8.6.

Table – 8.6 Training Programmes conducted by Centre of Excellence

Sl. No.	Training Programme	Duration	Venue	Organised / Sponsored by
1.	Workshop on Fly Ash Utilisation & Management	17 th April, 2015	J. K. Paper Mill, Rayagada	SPC Board
2.	Workshop on Fly Ash Utilisation & Management	6 th May, 2015	NTPC, Kaniha, Angul	SPC Board
3.	World Environment Day	5 th June, 2015	Swosti Premium Ltd., Bhubaneswar	Times of India and SPC Board

Sl. No.	Training Programme	Duration	Venue	Organised / Sponsored by
4.	Fly Ash Utilisation and Entrepreneurship Development	29 th August, 2015	Swosti Premium Ltd., Bhubaneswar	CII, Bhubaneswar and SPC Board
5.	Workshop on Environmental Issues Associated with Aluminium Industries of Odisha	29 th October, 2015	Hotel The Presidency, Bhubaneswar	SPC Board, Odisha, Bhubaneswar
6.	Workshop on Fly Ash Utilisation	30 th October, 2015	Pradeep, Jagatsinghpur	SPC Board, Odisha, Bhubaneswar
7.	Workshop on Fly Ash Utilisation	15 th November, 2015	Vedanta Aluminium Ltd., Jharsuguda	SPC Board, Odisha, Bhubaneswar
8.	Workshop on Fly Ash Utilisation	30 th November, 2015	Balasore	SPC Board, Odisha, Bhubaneswar
9.	2 nd Carbon Sequestration Seminar 201 on Microalgae in Developing a Sustainable Society	17 th December, 2015	Suryansh Hotels & Resort, Bhubaneswar	SPC Board, Odisha, Bhubaneswar
10.	Pertaining Water Quality, River Pollution and Environmental Issues in Odisha	27 th January, 2016	Conference Hall, SPC Board, Odisha	Rivers of the World Foundation, 1496 Harwell Avenue, Crofton, MD 21114 USA
11.	Workshop on Fly Ash Utilisation	17 th February, 2016	Brahmani Club, Rourkela	SPC Board & NTPC Ltd.
12.	Workshop on Fly Ash Utilisation	24 th February, 2016	TSIL, Barbil, Keonjhar	SPC Board & NTPC Ltd.
13.	Workshop on “Solid Waste Management”	2 nd March, 2016	Hotel The New Marrion, Bhubaneswar	M/s Toxics Link, H2 (Ground Floor), Jungpura Extension, New Delhi-110014 & SPC Board, Odisha
14.	National Seminar on “S.M.A.R.T. Energy”	18-19 March, 2016	Hotel The Crown, Bhubaneswar	SPC Board & NTPC Ltd. & OMS Power Training and Research Institute (OMSPTRI)

8.8.2 Training on “Ambient Air Quality and its measurement”.

The State Pollution Control Board, Odisha has imparted training on “Ambient Air Quality and its measurement” to 142 nos. of students of All India Institute of Medical Sciences (AIIMS) at its Central Laboratory, Patia, Bhubaneswar, out of which Nursing students - 57 and MBBS students - 85.

8.8.3 Observation of Important Days

World Environment Day

To mark the occasion of the World Environment Day (WED) on 5th June 2015, the Board observed WED at its Head Office and at its Regional Offices to create awareness on environmental protection through public rallies, meetings, painting & debate competition and vehicular monitoring as well as plantation programmes.



Mass Rally organized by Regional Office, SPC Board , Rourkela



Distribution of Prizes among School Children by Regional Office , SPC Board ,Balasore

32nd Foundation Day

The Board celebrated its 32nd Foundation Day on 14th September, 2015 at Bharatiya Vidya Bhawan, Bhubaneswar with Sri G.C.Pati, ex-Chief Secretary, Govt. of Odisha and other dignitaries. The Chief Speaker, Prof. R. V. Raja Kumar, Director, Indian Institute of Technology, Bhubaneswar delivered the Prof. M. K. Rout Memorial Lecture on *Green Radio* on the occasion. During the function opening song “Bande Utkal Janani” was sang by divyang children of Odisha Association for the Blind, Bhubaneswar. Distinguished guests from various sectors like Government, Industries, Officers & staffs from Regional Offices & Head Office of the Board attended the function.



Deliberation By Esteemed Chief Guest Sri G.C.Pati, Ex-Chief Secretary, Govt. Of Odisha



Release of Paribesh Samachar

The Board has instituted pollution control excellence / appreciation awards to encourage the Industries / Mines and Health Care Units for adoption of pollution control measures.

In the category of Health Care Unit Pollution Control Excellence Award was given to the Govt. Hospital i.e. Capital Hospital, Bhubaneswar for better management practice of biomedical waste.



Prof. M.K.Rout Memorial Lecture by Prof. R. V. Raja Kumar, Director, IIT, Bhubaneswar



Pollution Control Excellence Award to Capital Hospital, Bhubaneswar

In the category of Large & Medium Scale Industries, Pollution Control Excellence and Pollution Control Appreciation Awards were awarded to M/s Nava Bharat Ventures Ltd., Kharagprasad, Dhenkanal and M/s Hindustan Coca cola Beverages Pvt. Limited, Industrial Estate, Khordha respectively.

In the category of Mines, Pollution Control Excellence and Pollution Control Appreciation Awards were awarded to Panchapatamali Bauxite Mines of M/s NALCO , Damonjodi, Koraput and Lanjiberna Lime Stone & Dolomite Mines M/s. OCL India Limited, Rajgangpur, Sundergarh respectively.

The Newsletter Paribesh Samachar (April – June, 2015) and the book on “Ambient Air Quality Status & Trends in Odisha (2006-2014)” were released on the occasion.



Pollution Control Excellence Award to Panchapatamali Bauxite Mines of M/s. NALCO , Damonjodi, Koraput



Pollution Control Excellence to M/s.Nava Bharat Ventures Ltd., Dhenkanal

★ **International Coastal Clean-Up Day**

The International Coastal Clean-up Day has been observed by the Board on the Sea Beach, Puri, Gopalpur, Paradeep & Balasore on 19th September, 2015 for creation of mass awareness on the protection and management of coastal environment involving District Administration, different NGOs, volunteers etc.



International Coastal Cleanup day Celebration at Gopalpur Sea Beach



International Coastal Cleanup day Celebration at Puri Sea Beach

★ **National Pollution Prevention Day**

The National Pollution Prevention Day was observed by the Board at different Regional offices on 2nd December, 2015 to create awareness on environmental pollution and to mark the occasion through various activities such as garbage cleaning, quiz competition, prize distribution, meetings etc.



Rally organised by RO, Paradeep



Meeting organized by RO Bhubaneswar

8.9 AWARENESS ACTIVITIES

The Board had released several advertisements related to awareness on Environment Protection, Pollution Control etc. in different print and electronic media.

During Deepawali, mobile vehicles with staffs were moving throughout the State by Regional offices for awareness on effect of crackers on noise pollution and monitoring of the noise level was made during the night time . During Holi festival, Board representatives were moving throughout the State for awareness on celebration of safe Holi using natural colours.A squad constituting District Administration with Regional offices were making raid at color vendors and retailers to ban artificial/ chemical colours.

8.10 PUBLICATIONS

Board has has published a book on “Ambient Air Quality Status & Trends in Odisha (2006-2014)” of State Pollution Control Board, Odisha and Paribesh Samachar (April-June, 2015) Vol. XXII, No.3 during the financial year 2015-16.



Ambient Air Quality Status & Trends in Odisha (2006-2014)



Paribesh Samachar (April-June, 2015)



8.11 EMPANELLED ENVIRONMENTAL CONSULTANTS

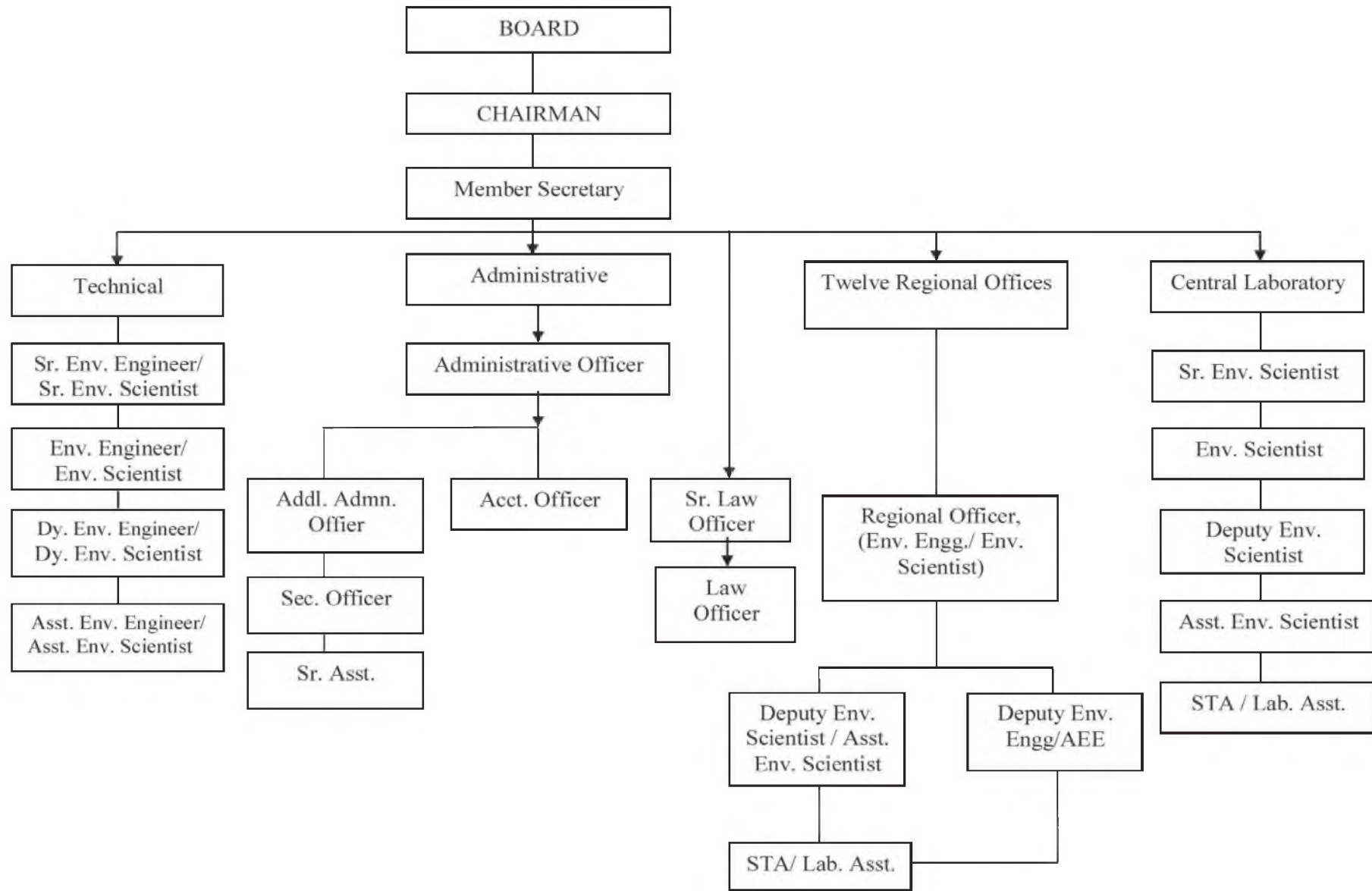
The Board empanels consultants working in the field of environment under A, B or C category considering their expertise and available laboratory facilities. During the year April 2015-March 2016, numbers of Environmental consultants empanelled under 'A' Category and 'B' category were 7 numbers & 4 numbers respectively. The details are given in Table-8.7.

Table – 8.7 Lists of Consultants Empanelled with State Pollution Control Board, Odisha

Sl. No	Name of the Consultant	Category	Validity Period
1	M/S Bhagabati Ana labs Ltd., 7-2-C7 & 8/4,Industrial Estate Sanath Nagar, Hyderabad - 500018 <u>Email: environ@bhagavathianalabs.com</u> <u>Web: www.bhagavathianalabs.com</u>	A	03.07.2015 to 02.07.2018
2	M/s. Ecological Development Consultancy Pvt. Ltd., Plot No.- 1215/1550, Behind Brindaban Enclave, Khandagiri Bari, Bhubaneswar -751030, Khurda, Odisha,Email : <u>edcbbsr@gmail.com</u>	A	14.08.2015 to 13.08.2018
3	M/s Vision labs H.No 16-11- 23/37/A, Flat No.205, 2 nd Floor, Opp. R.T.A Office, N-mart Building,Musarambagh, Malakpet, Hyderabad-500036	A	10.08.2015 to 09.08.2018
4	M/s Pollution project consultants P-145,Bangur Avenue Block-a,Kolkata-700055 Phone-913325742984/913325742985/ 913325747575 Fax:913325742984 Email- <u>awsppc@airtelmail.in</u>	A	18.08.2015 to 17.08.2018
5	M/s. Envirocheck 189 &190, Rashtraguru Avenue,Kolkata. E-mail: <u>envcheck@ca12.vsnl.net.in</u> Website: <u>http://envirocheck.org</u> Ph: 033- 2579-2889/289 Fax: 033- 2529-9141 1674- 2430363	A	01.10.2015 to 30.09.2018
6	M/s B.S.Envitech-Tech Pvt.Ltd 12-13-1270/71/73,4 th Floor,Amity Ville, St. Annas Road, Tarnaka, Secunderabad-500017	A	06.11.2015 to 05.11.2018
7	M/s Kalyani Laboratory (P) Ltd. 841-A, Rasulgarh, Bhubaneswar-10 Email : <u>Kalvanilab@yahoo.co.in</u> Website : <u>www.kalvanilabs.com</u> Tel No. 0674-6081992, 2585026	A	11.02.2016 to 10.02.2019
8	M/s Sai Biocare Pvt. Ltd. Plot No. - 1789/4898, 2nd Floor, NuaSahi, Nayapalli, Bhubaneswar - 12, Email: <u>info@saibiocare.com</u> , Website: <u>www.saibiocare.com</u>	B	03.07.2015 to 02.07.2018
9	M/s. Bharat Foundation, 25/11, AKP Roy, Roy Lane, Kolkata – 700 031, Ph: 033- 2415-2145 E-mail: <u>bharatfoundation@rediffmail.com</u>	B	24.08.2015 to 23.08.2018
10	M/s. Orbital Infrastructure Consultancy & Research Pvt. Ltd., Plot No. 1134, Mahanadi Vihar, Cuttack – 753004 Tel/ Fax: (0671) 2443588, 2443408 E-mail : <u>orbital6@hotmail.com</u>	B	30.10.2015 to 29.10.2018
11	M/s Biosphere Scientific Research Centre VIM-808, Sailashree vihar, Bhubaneswar Emai <u>bsrc.reaserch@gmail.com</u> Tel : 0674-2742633	B	19.03.2016- 18.03.2019



ORGANIZATIONAL CHART



ANNEXURE - II
RATE CHART FOR SAMPLING AND ANALYSIS OF ENVIRONMENTAL SAMPLES
(Office Order No. 24287 dated 07.11.2008)
A. SAMPLING CHARGES
(I) Sampling charges for Ambient Air/ Fugitive emission samples

Sl. No.	Type of sampling	Charges in Rs.
1.	Sampling (upto each 8 hrs) for suspended particulate matter and gaseous pollutants	2000.00
2.	Sampling (24 hrs) for suspended particulate matter and gaseous pollutants	6000.00
3	Sampling of volatile organic compounds (VOCs) / Benzene Toluene Xylene (BTX)	2000.00
4	Sampling of Poly Aromatic Hydrocarbons (PAHs)	2500.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(II) Source Emission Monitoring / Sampling Charges

Sl. No	Type of Sampling	Charges in Rs.
(a)	Sampling/ measurement of velocity, flow rate, temperature and molecular weight of Flue Gas (each specific location/ each sample in duplicate for the mentioned parameter)	5500.00
(b)	Sampling of SO ₂ / NO ₂	2000.00
(c)	Sampling of PAHs	3000.00
(d)	Sampling of VOCs / BTX	3500.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(III) Noise Monitoring

Type of Monitoring	Charges in Rs.
First Monitoring	4000.00
Each Subsequent Monitoring within same premises	2000.00
For 08 hours Continuous Monitoring or more in a day	10,000.00

Note: (i) Transportation charges will be separate as per actual basis.

(IV) Sampling Charges for Water & Wastewater Samples

Sl. No.	Type of sampling	Charges in Rs.
1.	GRAB SAMPLING: 1) Grab sampling/ samples/ place 2) For every additional Grab sampling / same place (at same point)	550.00 250.00
2.	COMPOSITE SAMPLING: 1) Composite sampling/source/place upto 8 hrs. -do- upto 16 hrs. -do- upto 24 hrs. 2) For every additional composite sampling/same place but different source upto 8 hrs. -do- upto 16 hrs -do- upto 24 hrs	1000.00 2000.00 3000.00 550.00 1100.00 1650.00
3.	Flow rate measurement/ source - Once - Every additional	400.00 150.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(V) Sampling charges for Soil samples

Type of Sampling	Charges in Rs.
Grab sampling/ sample/ place	600.00
For additional Grab sampling / same place	300.00

Note: (i) Transportation charges will be separate as per actual basis.

(ii) Sample analysis charges of respective parameters are separate as per list.

(VI) Hazardous Waste Sample collection charges at the premises of Industry/ Import site/ Disposal site

Type	Charges in Rs.
Integrated sample collection charges	1000.00

Note: (i) Transportation charges will be separate as per actual basis.

(ii) Sample analysis charges of respective parameters are separate as per list.

B. ANALYSIS CHARGES
1. Analysis charges of Ambient Air/ Fugitive Emission Samples

Sl. No	Parameters (Air)	Analysis charges per sample in Rs.
1.	Ammonia	600.00
2.	Analysis using dragger (per tube)	400.00
3.	Benzene, Toluene, Xylene (BTX)	1000.00
4.	Carbon Monoxide	600.00
5.	Chlorine	600.00
6.	Fluoride (gaseous)	600.00
7.	Fluoride (particulate)	600.00
8.	Hydrogen Chloride	600.00
9.	Hydrogen Sulphide	600.00
10.	Lead & Other Metals (per metal)	As mentioned in respective group at clause 5.0
11.	NO ₂	600.00
12.	Ozone	1000.00
13.	Poly Aromatic Hydrocarbons (PAHs)	As mentioned in respective group at clause 5.0
14.	Suspended Particulate Matter (SPM)	600.00
15.	Particulate Matter (PM _{2.5})	1000.00
16.	Respirable Suspended Particulate Matter (PM ₁₀)	600.00
17.	Sulphur Dioxide	600.00
18.	Volatile Organic Carbon	2000.00
19.	Trace metals on air, filter paper using ED-XRF Aluminium, Antimony, Arsenic, Barium, Bromine, Cadmium, Calcium, Cesium, Chlorine, Chromium, Cobalt, Copper, Gallium, Germanium, Gold, Iodine, Iron, Lanthanum, Lead, Magnesium, Manganese, Molybdenum, Nickel, Palladium, Phosphorous, Potassium, Rubidium, Rutherfordium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Tin, Titanium, Tungsten, Vanadium, Ytterbium and Zinc	3000.00 Per filter paper
20.	Water extractable ions in air particulate matter using Ion Chromatograph (IC) Processing / pretreatment charge per sample (filter paper) Cations (Na ⁺ , NH ₄ ⁺ , K ⁺ , Ca ⁺⁺ , & Mg ⁺⁺) and Anions (F ⁻ , Br ⁻ , Cl ⁻ , NO ₃ ⁻ , NO ₂ ⁻ , SO ₄ ⁻ & PO ₄ ⁻)	300.00 1200.00 (for 12 ions)
21.	Organic and Elemental Carbon (OC/EC) on quartz filter paper	2000.00

2. Analysis charges for Source Emission Parameters

Sl. No.	Parameters	Analysis charges per test in Rs.
1	Acid mist	600.00
2	Ammonia	600.00
3	Carbon Monoxide	600.00
4	Chlorine	600.00
5	Fluoride (Gaseous)	600.00
6	Fluorides (Particulate)	600.00
7	Hydrogen Chloride	600.00
8	Hydrogen Sulphide	600.00
9	Oxides of Nitrogen	600.00
10	Oxygen	500.00
11	Polycyclic Aromatic Hydrocarbons (Particulate)	As mentioned in respective group at clause 5.0
12	Suspended particulate matter	600.00
13	Sulphur Dioxide	600.00
14	Benzene Toluene Xylene (BTX)	1500.00
15	Volatile Organic Compounds (VOC)	3000.00

3. Ambient Air Quality Monitoring using on-line monitoring instruments by Mobile Van

Parameters	Charges in Rs.
PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , SPM, CO along with Meteorological data viz. temperature, Humidity, wind speed, wind direction	Rs.3,500/hour (minimum charges) Rs.15,000/-) + Rs.50.00/km run of the van for 24 hours monitoring.

4. Auto Exhaust Monitoring – One time checking of Vehicular Exhaust

Sl. No.	Type of vehicles	Charges in Rs. (including cost of the computerized photo)
1	2 & 3 wheelers	40.00
2	Light motor vehicles	60.00
3	Medium and heavy motor vehicles	100.00

5. Analysis Charges of Water and Wastewater Samples

Sl. No.	Parameters	Analysis charges per test in Rs.
PHYSICAL PARAMETERS		
1.	Conductivity	60.00
2.	Odour	60.00
3.	Sludge Volume index (S.V.I)	200.00
4.	Solids (dissolved)	100.00
5.	Solids (fixed)	150.00
6.	Solid (Volatile)	150.00
7.	Suspended Solids	100.00
8.	Temperature	60.00

Sl. No.	Parameters	Analysis charges per test in Rs.
PHYSICAL PARAMETERS		
8.	Temperature	60.00
9.	Total Solids	100.00
10.	Turbidity	60.00
11.	Velocity of Flow (Current Meter)	200.00
12.	Velocity of Flow (other)	550.00
CHEMICAL PARAMETERS		
1.	Acidity	100.00
2.	Alkalinity	100.00
3.	Ammonical Nitrogen	200.00
4.	Bicarbonate	100.00
5.	Biochemical Oxygen Demand (BOD)	600.00
6.	Bromide	100.00
7.	Calcium (Titrimetric)	100.00
8.	Carbon dioxide	100.00
9.	Carbonate	100.00
10.	Chloride	100.00
11.	Chlorine Demand	200.00
12.	Chlorine Residual	100.00
13.	Chemical Oxygen Demand (COD)	350.00
14.	Colour	40.00
15.	Cyanide	350.00
16.	Detergents	200.00
17.	Dissolved Oxygen (DO)	100.00
18.	Fluoride	200.00
19.	Free ammonia	260.00
20.	H. Acid	350.00
21.	Hardness (Calcium)	100.00
22.	Hardness (Total)	100.00
23.	Iodide	100.00
24.	Nitrite – Nitrogen	200.00
25.	Nitrate – Nitrogen	200.00
26.	Percent Sodium	600.00
27.	Permanganate Value	200.00
28.	pH	60.00
29.	Phosphate (Ortho)	200.00
30.	Phosphate (Total)	350.00
32.	Salinity	100.00
33.	Sodium Absorption Ratio (SAR)	600.00
35.	Settleable Solids	100.00
36.	Silica	200.00
37.	Sulphate	150.00
38.	Sulphide	200.00
39.	Sulphite	250.00
40.	Total Kjeldahl Nitrogen (TKN)	350.00
41.	Urea Nitrogen	350.00
42.	Cations (Na^+ , NH_4^+ , K^+ , Ca^{++} , & Mg^{++}) and Anions (F^- , Br^- , Cl^- , NO_3^- , NO_2^- , SO_4^- & PO_4^{--}) in surface and ground water samples using Ion Chromatograph	1200.00 (for 12 ions)
Metals		
	Processing / pre treatment charge per sample	500.00
1.	Aluminium	300.00
2.	Antimony	300.00
3.	Arsenic	300.00



Sl. No.	Parameters	Analysis charges per test in Rs.
Metals		
4.	Barium	300.00
5.	Beryllium	300.00
6.	Boron	300.00
7.	Cadmium	300.00
8.	Chromium Hexavalent	200.00
9.	Chromium Total	300.00
10.	Cobalt	300.00
11.	Copper	300.00
12.	Iron	300.00
13.	Lead	300.00
Sl. No	Parameters	Analysis charges per test in Rs.
14.	Magnesium	200.00
15.	Manganese	300.00
16.	Mercury (Processing and Analysis)	800.00
17.	Molybdenum	300.00
18.	Nickel	300.00
19.	Potassium	200.00
20.	Selenium	300.00
21.	Silver	300.00
22.	Sodium	200.00
23.	Strontium	300.00
24.	Tin	300.00
25.	Vanadium	300.00
26.	Zinc	300.00
Organo Chlorine Pesticides (OCPs)		
	Processing / pre treatment charge per sample	1000.00
1.	Aldrine	400.00
2.	Dicofol	400.00
3	Dieldrin	400.00
4	Endosulfan-1	400.00
5	Endosulfan-2	400.00
6	Endosulfan-Sulfate	400.00
7	Heptachlor	400.00
8	Hexachlorobenzene (HCB)	400.00
9	Methoxychlor	400.00
10	o,p DDT	400.00
11	p,p' - DDD	400.00
12	p,p' - DDT	400.00
13	p'p DDE	400.00
14	-HCH	400.00
15	β-HCH	400.00
16	γ-HCH	400.00
17	δ-HCH	400.00
Organo Phosphorous Pesticides (OPPs)		
	Processing / pre treatment charge per sample	1000.00
18	Chlorpyrifos	400.00
19	Dimethoate	400.00
20	Ethion	400.00
21	Malathion	400.00
22	Monocrotophos	400.00
23	Parathion-methyl	400.00
24	Phorate	400.00

Sl. No.	Parameters	Analysis charges per test in Rs.
25	Phosphamidon	400.00
26	Profenophos	400.00
27	Quinalphos	400.00
Synthetic Pyrethroids (SPs)		
	Processing / pre treatment charge per sample	1000.00
28	Deltamethrin	400.00
29	Fenpropethrin	400.00
30	Fenvalerate	400.00
31	-Cypermethrin	400.00
32	β -Cyfluthrin	400.00
33	γ -Cyhalothrin	400.00
Herbicides		
	Processing / pre treatment charge per sample	1000.00
34	Alachlor	400.00
35	Butachlor	400.00
36	Fluchloralin	400.00
37	Pendimethalin	400.00
Polycyclic Aromatic Hydrocarbons (PAHs)		
	Processing / pre treatment charge per sample	1000.00
38	Polycyclic Aromatic Hydrocarbon	750.00
39	Acenaphthene	400.00
40	Acenaphthylene	400.00
41	Anthracene	400.00
42	Benzo(a)anthracene	400.00
43	Benzo(a)Pyrene	400.00
44	Benzo(b)fluoranthene	400.00
45	Benzo(e)Pyrene	400.00
46	Benzo(g,h,i) Perylene	400.00
47	Benzo(k)fluoranthene	400.00
48	Chrysene	400.00
49	Dibenzo(a,h)anthracene	400.00
50	Fluoranthene	400.00
51	Fluorane	400.00
52	Indeno (1,2,3-cd)pyrene	400.00
53	Naphthalene	400.00
54	Perylene	400.00
55	Phenanthrene	400.00
56	Pyrene	400.00
Polychlorinated Biphenyls (PCBs)		
	Processing / pre treatment charge per sample	1000.00
57	Aroclor 1232	400.00
58	Aroclor 1242	400.00

Sl. No.	Parameters	Analysis charges per test in Rs.
58	Aroclor 1242	400.00
59	Aroclor 1248	400.00
60	Aroclor 1254	400.00
61	Aroclor 1260	400.00
62	Aroclor 1262	400.00
Trihalomethane (THM)		
	Processing / pre treatment charge per sample	800.00
63	Bromodichloromethane	400.00
64	Bromoform	400.00
65	Chloroform	400.00
66	Dibromochloromethane	400.00
Other Organic Parameters		
67	Adsorbable Organic halogens (AOX)	2000.00
68	Tanin/ Lignin	350.00
69	Oil and Grease	200.00
70	Phenol	200.00
71	Total Organic carbon (TOC)	500.00
72	Volatile organic acids	350.00
BIOLOGICAL TEST		
1.	Bacteriological Sample Collection	200.00
2.	Benthic Organism Identification and Count (each sample)	600.00
3.	Benthic Organism Sample collection	1000.00
4.	Chlorophyll Estimation	600.00
5.	E. Coli (MFT technique)	400.00
6.	E. Coli (MPN technique)	350.00
7.	Fecal Coliform (MFT technique)	400.00
8.	Fecal Coliform (MPN technique)	350.00
9.	Fecal Streptococci (MFT technique)	450.00
10.	Fecal Streptococci (MPN technique)	400.00
11.	Plankton (sample collection)	250.00
12.	Plankton (Phytoplankton) count	600.00
13.	Plankton (Zooplankton) count	600.00
14.	Standard Plate Count	200.00
15.	Total Coliform (MFT technique)	400.00
16.	Total Coliform (MPN technique)	350.00
17.	Total Plate Count	350.00
18.	Toxicological Bio-assay (LC ₅₀)	2800.00
19.	Toxicological –Dimensionless toxicity test	1600.00

6. Analysis charges of Soil/ Sludge/ Sediment/ Solid waste/ Solid samples

Sl.	Parameters	Analysis charges per test in Rs.
1	Ammonia	300.00
2	Bicarbonate	200.00
3	Boron	400.00
4	Bulk Density	100.00
5	Calcium	150.00
6	Calcium Carbonate	350.00
7	Cation Exchange Capacity (CEC)	400.00
8	Chloride	150.00
9	Colour	100.00
10	Electrical Conductivity (EC)	100.00
11	Exchangeable Sodium Percentage (ESP)	550.00
12	Fluoride	200.00
13	Gypsum requirement	350.00
14	H. Acid	400.00
15.	Heavy metal	As mention in respective group at clause 5.0
16.	Trace metals using ED-XRF Aluminium, Antimony, Arsenic, Barium, Bromine, Cadmium, Calcium, Cesium, Chlorine, Chromium, Cobalt, Copper, Gallium, Germanium, Gold, Iodine, Iron, Lanthanum, Lead, Magnesium, Manganese, Molybdenum, Nickel, Palladium, Phosphorous, Potassium, Rubidium, Rutherfordium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Tin, Titanium, Tungsten, Vanadium, Ytterbium and Zinc per sample	4000.00
17.	Magnesium	300.00
18.	Mechanical Soil analysis(soil texture)	150.00
19.	Nitrate	300.00
20.	Nitrite	300.00
21.	Nitrogen available	350.00
22.	Organic Carbon/ Matter (chemical method)	350.00
23.	Oil and Grease	200.00
24.	Polycyclic Aromatic Hydrocarbons (PAH)	As mention in respective group at clause 5.0
25.	Polychlorinated Biphenyls (PCBs)	As mention in respective group at clause 5.0
26.	Pesticides	As mention in respective group at clause 5.0
27.	pH	100.00
28.	Phosphorous (available)	400.00
29.	Phosphate(ortho)	300.00
30.	Phosphate(total)	400.00
31.	Potash(Available)	200.00
32.	Potassium	300.00

33.	SAR in Soil extract	650.00
34.	Sodium	300.00
35.	Soil Moisture	100.00
36.	Soil Porosity	100.00
37.	Sulphate	200.00
38.	Sulphur	350.00
39.	Total Kjeldhal Nitrogen (TKN)	400.00
40.	TOC	550.00
41.	Total Water Soluble Salts	200.00
42.	Water Holding Capacity	100.00

Note: (i) Sampling charges for soil samples are as specified in Clause A (V).

(ii) Transportation charges are separate on actual basis

7. Analysis charges for Hazardous Waste samples

Sl. No.	Parameters	Analysis Charges per test in Rs.
1.	Preparation of Leachate (TCLP extract / Water Extract)	1000.00
2.	Determination of various parameters in Leachate	As mention in respective group at clause 5.0
3.	Determination of various parameters in Waste (Total)	Soil Sample Analysis Charges
3.	Flash point/ Ignitibility	550.00
4.	Reactivity	550.00
5.	Corrosivity	550.00
6.	Measurement of Toxicity	
	- LC ₅₀	2800.00
	- Dimensionless Toxicity	1600.00
7.	Total Organic Carbon	500.00
8.	Adsorbable organic Halogen (AOx)	2000.00

AQC Participation Fees :

To be charged by the Board from respective recognized laboratories for Analytical Quality Control Exercise (AQC) samples.

1	Laboratories of Govt./Semi -Govt. / Public sector undertaken/Autonomous bodies	10000.00
2	Private Sector laboratories	15000.00

STAFF STRENGTH

Sl. No.	Name of the Post	Total No. of Post Sanctioned	Staff in Position
Technical Staff			
1.	Senior Env. Scientist (L-I)	03	03
2.	Senior Env. Engineer (L-I)	03	02
3.	Senior Env. Scientist (L-II)	03	03
4.	Senior Env. Engineer (L-II)	03	03
5.	Environmental Scientist	48	19
6.	Deputy Environmental Scientist		03
7.	Assistant Env. Scientist		08
8.	Environmental Engineer	46	07
9.	Dputy Environmental Engineer		08
10.	Assistant Env. Engineer		22
11.	Assistant Scientific Officer	07	05
12.	Senior Scientific Assistant	15	13
Administrative Staff			
13.	Administrative Officer	01	01
14.	Additional Administrative Officer	01	01
15.	Accounts Officer	02	02
16.	Section Officer	08	07
17.	Accountant	05	00
18.	Senior Assistant	13	13
19.	Junior Assistant	18	06
20.	Senior Law Officer (L-II)	01	01
21.	Law Officer	01	01
22.	Assistant Law Officer	01	00
23.	Private Secretary (Gr.A)	01	01
24.	Private Secretary (Gr.B)	02	02
25.	Personal Assistant	08	03
26.	Senior Stenographer	09	05
27.	Junior Stenographer	07	00
28.	Sr. Typist	02	02
29.	Jr. Typist	08	05
Other Staff			
30.	Store Keeper	01	01
31.	Assistant Librarian	01	01
32.	Xerox Assistant	01	01
33.	Diarist	01	01
34.	Head Driver	01	01
35.	Driver	12	10
36.	Record Supplier	01	01
37.	Laboratory Attendant	10	09
38.	Library Attendant	01	01
39.	Peon	21	20
40.	Watchman-cum-Sweeper	05	05
41.	Watchman	02	02
42.	Daftary	01	01
43.	Zamadar	01	01
44.	Treasury Sarkar	01	01
45.	Lift Operator	01	01
Total		277	203



STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII,

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