

ANNUAL REPORT

2016-2017



STATE POLLUTION CONTROL BOARD, ODISHA
A/118, NILAKANTHA NAGAR, UNIT-VIII
BHUBANESWAR

SPCB, Odisha (450 Copies)

Published By:

State Pollution Control Board, Odisha
Bhubaneswar – 751012

Printed By:

CONTENTS

Highlights of Activities

- Chapter-I Introduction
- Chapter-II Constitution of the State Board
- Chapter-III Constitution of Committees
- Chapter-IV Board Meeting
- Chapter-V Activities
- Chapter-VI Legal Matters
- Chapter-VII Finance and Accounts
- Chapter-VIII Other Important Activities

Annexures

- (I) Organisational Chart
- (II) Rate Chart for Sampling & Analysis of Env. Samples
- (III) Staff Strength

HIGHLIGHTS OF ACTIVITIES OF THE STATE POLLUTION CONTROL BOARD, ODISHA

The State Pollution Control Board (SPCB), Odisha was constituted on July, 1983 and was entrusted with the responsibility of implementing the Environmental Acts, particularly 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 the Environment (Protection) Act, 1986. Several Rules addressing specific environmental problems like Hazardous waste management, Bio-medical waste management, Solid waste management, e-Waste Management, Plastic Waste Management, Environmental Impact Assessment etc. have been brought out under the Environment (Protection) Act. The SPCB also executes and ensures proper implementation of the Environmental Policies of the Union and the State Government. The activities of the SPCB broadly cover the following:

- Planning comprehensive programs towards prevention, control or abatement of pollution and enforcing the environmental laws.
- Advising the State Government on any matter concerning prevention and control of water and air pollution.
- Environmental Monitoring and Research.
- Creating public awareness.

The achievements and activities of the Board during April'2016 to March'2017 are as follows.

Industrial Pollution Abatement and 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, stipulation of a series of guidelines and directives.

- (i) The Board has constituted different technical committees for considering consent applications of various projects for establishment.
- (ii) Implementation of the on-line consent management system (from receipt of application to consent order) for all industries, mines and on-line authorization management for Hazardous Waste, Solid Waste and Health care establishment.
- (iii) Implementation of 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 and mines in order to keep the regulator and industries alert. So far online monitoring and data transmission system has been installed in 139 industries and 22 mines.
- (iv) The Fly Ash Resource Centre (FARC) has been setup in the State Pollution Control Board for promoting safe management and utilization of fly ash in the State. This center has prepared guidelines on utilization of fly ash in various sectors and it is also co-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 this year, the utilization of fly ash was 67.82%, against 59.43% during the preceding year, i.e. 2015-16.

- (v) Initiatives have been taken to facilitate bulk utilization of other industrial solid wastes like dolochar, phospho-gypsum, blast furnace slag, anode butt, ferro-manganese sludge in different sectors like brick making, road construction, cement manufacturing and power generation etc.
- (vi) Health care establishments having 100 beds and above have been brought 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.
- (vii) 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. Similar study for Ib Valley-Jharsuguda area has been instituted by DFID in association with SPCB. The study is being conducted by TERI, Delhi. Both the institutes have submitted the draft final reports which are under evaluation.
- (viii) 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 (ICZMP) is being implemented. Office of the Pilot Executing Agency (PEA) of the Board has been operating in Central Laboratory Building, Patia, Bhubaneswar. The coastal water over a stretch of about 80 km from Paradeep to Dhamra is being monitored and PEA has collected 1114 samples during the reporting period for analysis of 40 parameters.
- (ix) The Centre for Management of Coastal Eco-system (CMCE) building at Paradeep has been operating since 16.05.2016. It is the first Govt. building in the State of Odisha to receive the coveted Platinum Rating LEED (Leadership in Energy & Environment Design) Certification from the prestigious U.S. Green Building Council (USGBC), duly certified by Green Building Certification Inc. (GBCI), Washington, DC.
- (x) The Sea Worthy Vessel with an in-built Laboratory, procured under the ICZM Project has been registered with Mercantile Marine Department (MMD) of DG Shipping, Government of India.
- (xi) Due to efforts of the Board to control dust nuisance in Paradeep Port, advance dust suppression facilities such as Fog Cannons and Wheel Washing System have been introduced for suppression of fugitive dust emissions for stack piles, haulage roads and other working areas resulting reduction of dust nuisance.
- (xii) The Board has granted consent with stipulations of appropriate pollution control measures to 906 Industries, hotels, mineral stack yards, mineral processing units, railway sidings, stone crushers, brick kilns and DG Sets (as stand by) etc. for their Establishment.
- (xiii) Consent to operate has been granted to 2780 industries, mines, hotels, hospitals, mineral stack yards, mineral processing units, railway sidings,

stone crushers, brick kilns, DG Sets (as stand by), housing projects and mineral based industries etc. during the reporting period.

- (xiv) The Board has issued 497 Show Cause Notices, 290 Refusals and 92 Closure Directions to defaulting units.
- (xv) All the Urban Local Bodies have been directed to seek consent and submit time bound action plan for construction of sewage treatment plant.
- (xvi) The Board has conducted 30 public hearings for major industrial / mining / development projects, requiring environmental clearance from Govt. of India.
- (xvii) 3458 industrial wastewater samples, samples from 1251 stack emissions, 2217 ambient air samples and 18 solid waste/ hazardous waste/soil samples from different industrial premises have been collected and analysed.
- (xviii) Under the provisions of the Water (Prevention and Control of Pollution) Cess Act, 1977 the Board has assessed an amount of ₹ 6,60,85,310.58/- from various industries and urban local bodies of the state. An amount of ₹6,72,96,052.69/- has been collected during the financial year 2016-17. Ministry of Environment, Forest and Climate Change (MoEF & CC), Govt. of India has been remitted with ₹ 7, 23,21,650/- and ₹ 5,24,27,576/- was reimbursed to the Board by MoEF & CC during the reporting period.

Regulation of Hazardous Waste Management

The Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 has come in to force on 04.04.2016. The Board has granted authorization to 95 hazardous waste generating units under the said Rules for collection, storage, treatment and disposal of hazardous wastes. 159 Industries/mines have taken membership agreement with the Common Hazardous Waste Treatment, Storage & Disposal facility (CHWTSDf) developed at Kanchichuvan, Jajpur operated by M/s. Ramky Enviro Engineers Limited, Hyderabad.

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

The Board has received 84 half yearly returns during April'2016-September'2016 and 19 half yearly returns during October'2016-March' 2017 for smooth management and handling of batteries (Lead - Acid) by Battery units under the provisions of aforesaid Rules.

Management of Bio-Medical Waste

The Board has granted authorization to 868 Health care facilities (HCF) under the provisions of the aforesaid Rules with conditions for proper management, handling, treatment and disposal of biomedical wastes. Show cause notices to 365 units and refusal of authorization to 33 HCEs have been issued for improper management of biomedical wastes.

Management of Plastic Waste

The Board is consistently vigilant on carry bag manufacturing units for their compliance with the statutory provisions of the Plastic Waste Management. The Plastic Waste Management Rules, 2016 has become effective from 18.03.2016. So far 08 plastic carry bag manufacturing units have valid authorization and no plastic carry bag manufacturing units have been registered with the Board during the reporting period.

Management of E-Waste

The E-waste Management Rules, 2016 has become effective from 01.10.2016 and under the said Rules no individual E-waste collection centre is allowed to collect E-waste. The captive collection centres of Producer / Dismantler/ Recycler/ Refurbishers are only allowed to collect E-waste. The Board has granted authorization to 03 captive E-waste collection centres for collection of electronic waste. Out of them, only one namely M/s. Saniclean (P) Ltd., Khordha has been registered as collection-cum-dismantling unit in Odisha.

Management of Municipal Solid Waste

The Solid Waste Management Rules, 2016 has become effective from 08.04.2016 for management of municipal solid waste which includes authorization, processing & disposal of solid wastes. The Board has not granted authorization to any Urban Local Body during the reporting period.

Legal Activities

The Board has filed /counter filed 310 cases and 269 cases have been disposed during the reporting period.

Right to Information

Under the Right to Information Act, 2005, the Board has disposed 547 no. of applications by providing information. 756 no. of applications were received.

Disposal of Public Complaints

The Board has addressed 472 Public Complaints on various environmental issues during April'2016-March'2017, out of 633 received.

Planning and Monitoring

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

- Board is regularly monitoring the river water quality at 79 stations on 09 major river systems of the State namely Mahanadi, Brahmani, Baitarani, Rushikulya, Subernarekha, Nagavali, Budhabalanga, Kolab and Vansadhara. Water quality is assessed in respect of 36 water quality parameters. Besides these, water quality of Taladanda Canal at six locations, religious ponds such as Bindusagar of Bhubaneswar at its four bathing ghats and Narendra, Markanda, Parbati Sagar, Indradyumna, Swetaganga of Puri town, 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 25 stations of 08 major rivers i.e. Mahanadi, Brahmani, Rushikulya, Subernarekha, Budhabalanga, Kerandi, Vansadhara and Nagavali has been monitored to assess the biological health of these river systems.
- 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.
- Survey on ground water and surface water quality around phosphatic fertilizer plants of Paradeep has been undertaken by the Board. Surface water samples from different locations of Atharabanki creek around two fertilizer plants and ground water samples from the test wells of both the plants and 02 locations from outside the plants have been monitored at regular intervals to assess fluoride contamination in the area.
- Water quality of Ganda Nallah and Kharasrota river has also been monitored at seven stations at regular intervals to assess the impacts of waste water discharge from the Industrial Units in Kalinganagar area.
- Water quality of Damasala river at five stations in Sukinda chromite area has been monitored at 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 at sixteen stations to assess the fluoride contamination in the area.
- Wastewater quality at 11 stations distributed over Cuttack, Bhubaneswar, Puri, Talcher, Dhenkanal and Rourkela has been monitored on regular basis.
- Monitoring of ground water quality at 15 stations of 03 towns i.e. Cuttack, Bhubaneswar and Puri has also been conducted in respect of 32 water quality parameters.
- The Board has analyzed 3458 industrial samples & 4932 samples under NWMP, NRCP, SWMP and other projects during this period.
- Impact of idol immersion on the water quality during different festivals has been investigated in rivers and ponds by Regional Offices of the Board. No significant impact on water bodies was observed due to implementation of guidelines of Central Pollution Control Board on safe idol immersion practices.
- Ambient air quality at 34 stations of 16 important towns and industrial areas of Angul, Talcher, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Konark, Paradeep, Puri, Rayagada, Rourkela, Rajgangpur and Sambalpur has been monitored by the Board under National Ambient Air Quality Monitoring Programme (NAMP)/ State Ambient Air Quality Monitoring Programme (SAMP). Ambient air quality in 13 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 09 stations in Bhubaneswar, Puri and Konark, ambient air quality has been assessed in respect of 07 parameters like PM_{10} , $PM_{2.5}$, SO_2 , NO_x , NH_3 , O_3 and Pb.
- 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} & $PM_{2.5}$ has been monitored in pre and on the day of Deepawali at 41 locations in 13 towns/ cities i.e Angul, Balasore, Berhampur, Bhubaneswar, Cuttack,

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

- In total 2217 industrial ambient air samples, 10,588 samples under NAMP & SAMP and 312 other ambient air samples including those collected during festive occasions have been analyzed during the reporting period.
- Study on noise levels during celebrations of Dashera at 49 locations & Deepawali at 50 locations has been conducted in 13 cities/towns such as Angul, Balasore, Berhampur, Bhubnaeswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela and Sambalpur covering Industrial, Commercial, Residential and Silence Zones during day and night time. Performance evaluation of 124 sound limiters of different band parties has been conducted in respect of noise [limited to 65 dB (A)].
- The Board has taken up the following initiatives for Ease of Doing Business in the State.
 - Online Consent and Authorization Management System & the certificates are available in public domain.
 - Mobile App for online Consent Management System and App available in Google Play Store.
 - Application Disposal Time for consent reduced from 120 days to 30 days with commitment under Odisha Right to Public Service Act, 2012 (ORTPS Act 2012).
 - Consent to operate validity period increased from one year to five years for Red and ten years for Orange category industries.
 - Auto-Renewal and Auto-Revalidation of Consent based on self-certification.
 - Frequency of Inspection reduced for industries.
 - Synchronized-Inspection with Central Inspection Coordination Group (CICG).
- The Board has empanelled 13 consultants dealing with environment related activities during the reporting period.

Board's Publications

The Board has published the following Book & Reports during April'2016-March'2017.

- "Water Quality of Major Rivers of Odisha".
- Three volumes of Newsletters Paribesh Samachar i.e. (January-March. 2016, April-June, 2016, July - December, 2016).
- Environmental Status Report of Paradeep, Gahirmatha - Bhitarkanika & Dhamra coastal stretches of Odisha (from May'2013 to March'2015) in Bay of Bengal.
- Report card of "Estuarine- Sea Eco system of Paradeep 2015".
- Status Report on Critically Polluted Area, Ib Valley - Jharsuguda Area.
- Status Report on Critically Polluted Area, Angul - Talcher Area.

Awareness Programmes

- For creation of awareness amongst the general public, the Board regularly publishes advertisements relating to environmental issues in different periodicals / newspapers / souvenirs.

- The Earth Day is being celebrated on 22nd April' 2016 by Regional Offices in collaboration with District level environment committee.
- The Board observed the World Environment Day on 5th June'2016 at its Head Office, Bhubaneswar and 12 Regional Offices to create awareness on environmental protection. Messages on protection of environment were given to the public through meetings, mass campaigns, paintings, debates & plantations etc.
- The 33rd Foundation Day of the Board was observed on 14th September' 2016 at Jayadev Bhawan, Bhubaneswar in presence of distinguished guests and delegates followed by release of Newsletter & Books. The Chief Speaker, Prof. U.C. Mohanty, Emeritus Professor, School of Earth, Ocean & Climate Sciences, Indian Institute of Technology, Bhubaneswar delivered Prof. M. K. Rout Memorial Lecture - Climate Change and Sustainable Development on the occasion.
- The Board has instituted pollution control excellence / appreciation awards to encourage the Industries, Mines and Health care facilities for adoption of pollution control measures.
- The International Coastal Clean-up Day was observed by the Board on the sea beach of Puri, Chandbali, Gopalpur & Paradeep on 17th September, 2016 for creation of mass awareness on the protection and management of environment involving District Administration, different NGOs & volunteers.
- The National Pollution Prevention Day was observed by the Board on 2nd December,2016 at Bhubaneswar & Rourkela by conducting mass rally, meeting & workshop etc..
- During Deepawali festival mobile vehicles with staff move in & around Bhubaneswar and Cuttack for creating awareness among the public on the effect of crackers on air pollution & noise pollution.
- During Holi festival, public awareness was made to use natural colors in order to make it safe.

Human Resource Development

- The Board has conducted various programmes by the Centre of Excellence for imparting training to various stakeholders on pollution control and environment protection and also deputed its officials on exposure training and to acquire knowledge in the above field. .
- The Board has imparted Training on “Water/Air quality parameters monitoring & analysis and impact of pollutants on Human Health” to 55 medical students of All India Institute of Medical Science, Bhubaneswar, 08 M.Sc., Forestry students of OUAT, Bhubaneswar & 05 Engineering students of KIST, Bhubaneswar in its Central Laboratory.
- 91 Police personnel from various districts of Odisha were imparted training on “Vehicular Pollution and its effect on Human Health”.

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 amended as the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

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.
11. The Municipal Solid Waste (Management and Handling) Rules, 2000 amended as the Solid Waste Management Rules, 2016.
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
19. The E-Waste (Management and Handling) Rules, 2011 amended as the E-Waste (Management) Rules, 2016.
20. The Construction & Demolition Waste Rules, 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 Khordha 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 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 locations of 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

Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
2.	Central Laboratory, State Pollution Control Board, Odisha ,B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar	E-Mail : centrallab@ospboard.org Website : www.ospboard.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@ospboard.org	1) Angul 2) Dhenkanal
2.	Regional Office, Balasore, 160, Sahadev Khunta, Balasore – 01	Tel/Fax-(06782) 265110 Email: rospcb.balasore@ospboard.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@ospboard.org	1) Ganjam 2) Gajapati 3) Phulbani 4) Nayagarh
4.	Regional Office, Bhubaneswar, B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar	R.O Tel - (Mob) 09438883947 E-mail : rospcb.bhubaneswar@ospboard.org Website: www.ospboard.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@ospboard.org	1) Cuttack
6.	Regional Office, Keonjhar At - Baniapat, College Road, Keonjhar-758 001	Tel / Fax - (06766) 259077 E-Mail: rospcb.keonjhar@ospboard.org	1) Keonjhar
7.	Regional Office, Rayagada 287/A, Kasturi Nagar, Rayagada – 765 001	Tel-(06856) 223073 Fax-(06856) 224281 E-Mail: rospcb.rayagada@ospboard.org	1) Rayagada 2) Koraput 3) Nawarangpur 4) Malkangiri 5) Kalahandi

Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
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) Sonapur
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 of 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 constituted the present 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.

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 Debidutta Biswal, I.F.S (29.07.2016 contd.)

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 Spong 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. (As per Table No.3.2)	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

The Technical Committee has been merged with Consent Committee vide Office Order No. 12547, dtd.20.07.2015.

Table - 3.2 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

3.1.2 Consent Committee Meetings

Tweleve Consent Committee meetings were held for consideration of 77 proposals for establishment during the financial year 2016-17. The details are given in Table - 3.3.

Table - 3.3 Details of Consent Committee Meeting

Sl. No.	Date of Consent Committee meeting	No. of cases disposed
1.	30/04/2016	08
2.	28/05/2016	06
3.	21/06/2016	02
4.	21/07/2016	06
5.	12/08/2016	03
6.	28/09/2016	13
7.	31/10/2016	09
8.	25/11/2016	05
9.	22/12/2016	04
10.	30/01/2017	07
11.	09/02/2017	03
12.	21/03/2017	11
Total		77

3.1.3 Constitution of Internal Consent Committee

In pursuance of office order No.7821 dt. 16.05.2014, an internal consent committee has been reconstituted with the members reflected in Table 3.4 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 - 3.4 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 2016-17 and the number of proposals considered are given in Table 3.5.

Table - 3.5 Details of Internal Consent Committee Meetings

Sl. No.	Date of Internal Consent Committee meeting	No. of cases disposed
1.	22/04/2016	02
2.	02/06/2016	01
Total		03

3.2 PURCHASE COMMITTEE FOR SCIENTIFIC STORE

3.2.1 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. 1536 dt.01.08.2016 and 1543 dt, 01.08.2016 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 - 3.6 and members of the other Purchase Committee for the purchases exceeding ₹ 15,000.00 but less than ₹ 50,000.00, is given in Table 3.7.

Technical Committee has been constituted vide order No. 1445 dt.12.07.2016 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 - 3.8.

Table - 3.6 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 - 3.7- Members of the Purchase Committee for more than ₹ 15,000.00 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 - 3.8- 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.	Accounts Officer, State Pollution Control Board, Odisha, Bhubaneswar.	Special Invitee
7.	Env. Engineer, LEM Cell (Purchase), State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor

3.2 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 - 3.9.

Table - 3.9 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 Engineer, In-Charge of Library	Member Convener

CHAPTER – IV

BOARD MEETING

4.1 In the year 2016-17 only one Board Meeting was held.

The 114th Board meeting of the State Pollution Control Board, Odisha was held on 7th March' 2017.

4.2 IMPORTANT DECISIONS OF THE BOARD MEETING ARE AS FOLLOWS:

- Approval of the revised budget for the Financial Year 2016-17 at ₹ 30.59 Crore and budget for the Financial Year 2017-18 at ₹ 40.41 Crore.
- Approval for the processing fee for registration of Plastic Manufacturing Units under the Plastic Waste Management Rules, 2016
- Approval of the list of classification of the Industrial Units and revised classification of additional industrial units / projects under Red/Orange/Green/ White categories as per the CPCB direction.
- Acceptance of the offer of National Insurance Company Limited in respect of Group Insurance benefit of the Board employees in lieu of payment of Medical Allowances and re-inbursement of medical expenses in case of indoor treatment on the condition of prior negotiation to be made with the National Insurance Company Limited.
- Approval of revised structure of Application Fee for Authorisation under Bio-medical Waste Management Rules, 2016 for Health Care Establishments to be collected in one go.

CHAPTER – V

ACTIVITIES

5.1 CONSENT TO ESTABLISH (CTE)

5.1.1 Projects related to Manufacturing and Service Sectors

Board received 1238 applications from different manufacturing and service sectors for consent to establish during 2016-17 and 397 pending proposals were carried forward from the year 2015-16.

Consent to establish was granted to 906 units. The detailed status of 1635 Consent to Establish applications processed during 2016-17 is given in Table-5.1 and 5.2.

Table - 5.1 Status of Consent to Establish (CTE)

Sl. No.	Status	Head office (H.O.)	Regional Office (R.O)	Total
1.	No. of applications received during 2016-17	71	1167	1238
2.	No. of applications carried forward from 2015-16	71	326	397
	Total applications	142	1493	1635
	i) Consent to establish granted	69	837	906
	ii) Consent to establish refused	00	156	156
	iii) No. of applications closed due to non-compliance	09	35	44
	iv) No. of applications under evaluation	00	444	444
	v) No. of incomplete applications and asked to comply	64	13	77
	vi) No. of applications exempted from consent administration	00	08	08

Table - 5.2 Details of Consent to Establish Status by Regional Offices

Regional Office	No. of applications received during 2016-17	No. of applications carried forward from year 2015-16	Total no. of applications	No. of units granted	No. of units refused	No. of cases disposed off	Under evaluation
(1)	(2)	(3)	(4)	(5)	(6)	(7) (5+6)	(8) (4-7)
Angul	49	15	64	41	00	41	23
Balasore	40	26	66	31	00	31	35
Berhampur	182	55	237*	100	14	114	80
Bhubaneswar	353	98	451	184	115	299	152
Cuttack	69	11	80	60	07	67	13
Jharsuguda	33	01	34	18	01	19	15
Kalinga Nagar	74	21	95	53	06	59	36
Keonjhar	20	05	25	18	00	18	07
Paradeep	33	04	37**	20	04	24	00
Rayagada	147	36	183	137	07	144	39
Rourkela	60	17	77	63	00	63	14
Sambalpur	107	37	144	112	02	114	30
Total	1167	326	1493	837	156	993	444

NB : * No. of applications rejected-35, No. of applications exempted from consent administration- 08, ** No. of incomplete applications asked to apply -13

5.1.2 Mines and Minor Minerals

The detailed status of 239 applications processed for consent to establish mining and Minor Minerals operations during 2016-17 is given in Table-5.3.

Table - 5.3 Status of Consent to Establish Mines & Minor Minerals

Sl. No.	Status	Mines & Minor Minerals
1.	Applications received during 2016-17	231*
2.	Applications carried forward from 2015-16	08
3.	Total number of applications	239
	Consent to Establish granted	169
	Consent Establish refused	07
	No. of applications under evaluation	63

N.B: * Includes 06 applications received at Head Office for expansion project of Mines

5.1.3 Status of Consent to Establish of Brick Manufacturing Units

Details of consent to establish of brick manufacturing units during 2016-17 are given in Table-5.4.

Table - 5.4 Status of Consent to Establish Brick Manufacturing Units

Sl. No.	Status	Number of Cases
1.	No. of applications received during 2016-17	28
2.	No. of applications carried forward from 2015-16	18
3.	Total number of complete applications	46
4.	Consent to Establish granted	17
5.	Consent to Establish refused	10
6.	No. of applications under evaluation	19

5.1.4 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 2016-17 is given in Table-5.5.

Table - 5.5 Status of Consent to Establish Stone Crushers, Iron Ore Crushers and Mineral Beneficiation Units

Sl. No.	Status	Number of Cases
1.	No. of applications received during 2016-17	169
2.	No. of applications carried forward from 2015-16	70
3.	Total Number of complete applications	239
4.	Consent to Establish granted	146
5.	Consent to Establish refused	28
6.	No. of applications under evaluation	65

5.2 CONSENT TO OPERATE (CTO)

5.2.1 Status of Consent to Operate

Board has received 4091 applications from industries, mines, stone crushers, iron ore crushers, brick kilns, hotels, hospitals, ceramic and refractories, telecom services, urban local bodies / townships etc. and disposed 3070 applications for consent to operate during the year 2016-17. The details are given in Table-5.6.

Table - 5.6 Status of Consent to Operate

Name of the Office	No. of applications received 2016-17	No. of cases carried forward from 2015-16	Total no. of 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	315	45	360	265	00	265	95	21
Balasore	261	64	325	278	02	280	45**	36
Berhampur	432	190	622	353	111	464	158	42
BBSR	540	203	743	404	86	490	253	126
Cuttack	153	64	217	162	06	168	49	73
Keonjhar	147	13	160	123	00	123	37	01
Rayagada	266	104	370	237	14	251	119	23
Rourkela	208	62	270	222	02	224	46	12
Sambalpur	225	130	355	242	51	293	62	56
Kalinga Nagar	185	16	201	155	08	163	38	05
Jharsuguda	59	20	79	31	00	31	48	03
Paradeep	50	09	59	44	03	47	12*	01
Head office	320	10	330	264	07	271	04	98
Total	3161	930	4091	2780	290	3070	966	497

Category wise consent to operate status during 2016-17 is given in Table-5.7 (a), (b) & (c)

Table - 5.7 Categorywise Consent to Operate Status

(a) Mines

Name of the Office	No. of application received during 2016-17	No. Of cases carried forward from 2015-16	Total no. of applications	No. of units granted CTO	No. of units refused	No. of cases disposed	No. of cases Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul.	00	01	01	01	00	01	00	00
Balasore	00	01	01	00	00	00	01	00
Berhampur	195	00	195	177	18	195	00	00
Bhubaneswar	18	00	18	18	00	18	00	00
Cuttack	10	00	10	06	00	06	04	00
Jharsuguda	02	00	02	00	00	00	02	00



Kalinga Nagar	73	00	73	72	01	73	00	00
Keonjhar	43	00	43	43	00	43	00	00
Paradeep	00	00	00	00	00	00	00	00
Rayagada	03	05	08	05	00	05	03	00
Rourkela	01	00	01	01	00	01	00	00
Sambalpur	23	00	23	06	00	06	17	01
Head office	52	05	57	52	01	53	04	14
Total	420	12	432	381	20	401	31	15

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

Name of the Regional office	No. of applications received 2016-17	No. of cases carried forward from 2015-16	Total no. of 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	181	16	197	155	00	155	42	05
Balasore	12	43	55	46	00	46	09	00
Berhampur	52	25	77	54	06	60	17	00
Bhubaneswar	168	03	171	95	23	118	53	01
Cuttack	02	00	02	01	00	01	01	02
Jharsuguda	08	09	17	04	00	04	13	03
Kalinga Nagar	33	01	34	22	00	22	12	01
Keonjhar	32	08	40	40	00	40	00	01
Paradeep	00	00	00	00	00	00	00	00
Rayagada	34	17	51	42	03	45	06	02
Rourkela	36	10	46	33	01	34	12	00
Sambalpur	62	31	93	53	20	73	20	02
Total	620	163	783	545	53	598	185	17

(c) Brick Manufacturing Units

Name of the Regional office	No. of applications received 2016-17	No. of cases carried forward from 2015-16	Total no. of 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	01	01	02	02	00	02	00	00
Balasore	22	00	22	22	00	22	00	00
Berhampur	05	13	18	13	05	18	00	40
Bhubaneswar	04	10	14	08	00	08	06	00
Cuttack	02	11	13	10	01	11	02	09
Jharsuguda	07	04	11	03	00	03	08	00

Kalinga Nagar	01	00	01	01	00	01	00	00
Keonjhar	00	00	00	00	00	00	00	00
Paradeep	04	00	04	03	00	03	01	00
Rayagada .	00	01	01	00	01	01	00	00
Rourkela	09	03	12	12	00	12	00	00
Sambalpur	02	01	03	03	00	03	00	00
Total	57	44	101	77	7	84	17	49

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.

The Board has issued directions to all Municipal authorities as per the CPCB direction dtd. 21.04.2015 to seek Consent under Water (PCP) Act, 1974 and submit the detail compliance with time bound action plan for setting up sewerage system/septage management covering proper collection, treatment & disposal of sewage generated in the local / urban area. The Board intimated all the ULBs to improve sanitary conditions of open drain carrying sewage/sullage as per the CPCB guidelines. The new standards formulated by CPCB, Delhi for treated sewage effluent has been intimated to all the ULBs and concerned departments with instruction that the treated effluent shall meet the new prescribed standard.

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 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. The central RT-DAS server has been installed in the Computer Cell of State Pollution Control Board, Odisha at its Head Office, Bhubaneswar. This RT-DAS server is receiving data from 139 industries and 22 mines operating in the State. The status of RT-DAS for the online is given in Table -5.8.

Table - 5.8 Status of Real Time Data Acquisition from the Online Continuous Monitoring Stations of Industries & Mines in Odisha

INDUSTRIES				
Sl. No.	Name & Address	No. of Online Monitoring Stations Connected to RT-DAS Server of the SPC Board, Odisha till 31.03.2017		
		AAQMS	CEMS	EQMS
1	Aarti Steels Ltd, Athagarh, Cuttack, Odisha,	4	7	0
2	ACC Limited, Baragarh	4	4	0
3	Action Ispat and Power (P) Ltd, Jharsuguda	4	4	0
4	Adhunik Metaliks Ltd., Chadrihariharpur,Sundargarh	4	11	0
5	Aditya Aluminium (A Unit of Hindalco Industries Limited), Lapanga, Sambalpur	4	9	1
6	Aditya Kraft & Papers Pvt. Ltd., Athagarh,Cuttack	0	1	0
7	Agrasen Sponge Private Limited., Chungimati, Sundargarh	0	2	0
8	Aryan Ispat and Power Pvt Ltd., Lapanga, Sambalpur	3	2	0
9	Aska CO-OP.Sugar Industries Ltd., Aska	0	2	1
10	B.R. Sponge and Power Ltd.. Bonai, Sundargarh	0	1	0
11	Bhagawati Steels Pvt. Ltd., Jharsuguda	0	2	0
12	Bhaskar Steel and Ferro Alloy Limited, Bonaigarh, Sundargarh	0	1	0
13	Bhubaneshwar Power Pvt. Ltd., Cuttack,	4	2	0
14	Bhushan Energy Limited , Angul	0	3	0
15	Bhushan Power and Steel Limited, Rengali, Sambalpur	0	27	4
16	Bhushan Steel Limited, Meramundali, Dhenkanal	7	22	7
17	BILT Graphics Paper Products Ltd., Jaypore, Korapur	2	3	1
18	Birla Tyres, Chhanpur, Balasore	1	3	0
19	Brand Steel and Power Pvt. Ltd., Keonjhar	0	1	0
20	BRG Iron and Steel Co. Pvt. Ltd.,Dhenkanal	4	3	0
21	Concast Steel and Power Ltd., Badmal, Jharsuguda,	0	7	0
22	Cosboard Industries Limited , Jagatpur, Cuttack	0	1	1
23	Cracker India Alloys Limited, Barbil,Keonjhar	0	1	0
24	Emmami Paper Mills Limited, Balasore	3	3	1
25	Essar Power (Odisha) Ltd., Paradeep, Jagatsinghpur	2	1	1
26	Essar Steel India Limited, Paradeep, Jagatsinghpur	3	1	0
27	FACOR Power Limited, Randia, Bhadrak,	2	1	0
28	Ganesh Sponge Pvt. Ltd.,Angul	0	1	0
29	GMR Kamalanga Energy Ltd., Kamalanga, Dhenkanal	4	3	1
30	Goa Carbon Limited, Paradeep, Jagatsinghpur	2	1	0
31	Govindam Projects Pvt Ltd., Kuarmunda, Sundargarh	0	1	0
32	Grasim Industries Limited, Ganjam	0	2	1
33	Green Waves Pvt Ltd., Bali, Cuttack	0	1	1
34	Grewal Associates Pvt. Ltd., Barbil, Keonjhar	0	2	0
35	HINDALCO Ltd., FRP Plant, Hirakud, Sambalpur	0	3	2
36	HINDALCO Ltd.,CPP, Hirakud, Sambalpur	3	5	1
37	HINDALCO Ltd.,Smelter Plant, Hirakud, Sambalpur	1	7	5
38	Hindustan CocaCola Beverages Pvt. ltd., Khurda	0	0	1
39	Indian Farmers Fertilizer Coperative Ltd., Paradeep, Jagatsinghpur	3	6	1

40	Indian Metal and Ferro Alloys Ltd (120 MW Power Plant), Choudwar, Cuttack	0	2	0
41	Indian Metal and Ferro Alloys Ltd (Charge Chrome Plant, Choudwar, Cuttack	0	4	0
42	Indian Metal and Ferro Alloys Ltd., Choudwar, Cuttack	4	6	0
43	Indian Oil Corparation Limited, Paradeep, Jagatsinghpur	7	22	1
44	Jai Balaji Jyoti Steels Limited, Tainser, Sundargarh	0	2	0
45	Jai Hanuman Udyog Ltd., Kolabira, Jharsuguda	0	1	0
46	Jalan Carbon and Chemicals Pvt. Ltd., Talcher, Angul	1	0	0
47	Jay Iron & Steels Ltd., Rourkela, Sundargarh	0	1	0
48	Jay Jagannath Steel and Power Limited Sambalpur	0	2	0
49	Jindal India Thermal Power Ltd., Talcher, Angul	4	2	0
50	Jindal Stainless Ltd.,Jajpur	4	7	2
51	Jindal Steel and Power Limited, Angul	4	25	3
52	Jindal Steel and Power Ltd., Barbil, Keonjhar	2	2	0
53	JK Paper Ltd.,Jaykaypur, Rayagada	3	2	0
54	K. J. Ispat Limited, Duburi, Jajpur	0	1	0
55	Kamal Jeet Singh Ahluwalia, Keonjhar	0	2	0
56	Kapilas Cement Manufacturing Works (A unit of OCL India Ltd., Tangi, Cuttck	3	1	0
57	Karakola Sponge Iron Ltd., Barbil, Keonjhar	0	2	0
58	Kaushal Ferrometals Pvt. Ltd., Kundukela, Sundargarh	0	1	0
59	Khedaria Ispat Ltd., Nikenbahal, Sundrgarh	0	1	0
60	L N Metalics Ltd.,Sripura, Jharsuguda	0	1	0
61	Maa Shakumbari Sponge Pvt. Ltd., Rourkela, Sundargarh	0	1	0
62	Mahakali Ispat Pvt. Ltd., Bonaigarh, Sundargarh	0	1	0
63	Maithan Ispat Limited, Jakhapura, Jajpur	0	2	0
64	Mayur Electro Ceramics Pvt. Ltd., Baripada, Mayurbhanj	0	2	0
65	Meta Sponge Pvt. Ltd., Sundargarh	0	1	0
66	MGM Minerals Limited (Steel Division), Nimidha, Dhenkanal,	0	1	0
67	Mideast Integrated Steels Ltd., Jajpur	4	3	0
68	MSP Metalics Limited, Jharsuguda	1	8	0
69	MSP Sponge Iron Limited, Keonjhar	0	3	0
70	N. K. Bhojani Pvt. Ltd., Keonjhar	0	1	0
71	NALCO Ltd.,Captive Power Plant, Angul	4	10	1
72	NALCO Ltd.,Refinery, Damanjodi, Koraput	6	13	1
73	NALCO Ltd.,Smelter Plant, Angul	4	10	1
74	Narbheram Power and Steel Pvt. Ltd., Dhenkanal	0	1	0
75	Nava Bharat Ventures Ltd., Dhenkanal	3	3	1
76	Neelachal Ispat Nigam Limited, Duburi, Jajpur	3	4	2
77	NTPC Limited (TSTPS), Deepshikha, Angul	4	6	2
78	NTPC Limited (TTPS) Talcher Thermal, Angul	4	6	1
79	NTPC-SAIL Power Company Private Limited, Rourkela, Sundargarh,	4	2	0
80	OCL India Ltd,Cement Unit, Rajgangpur, Sundargarh	4	10	1
81	OCL Iron and Steel Limited, Rajgangpur, Sundargarh	0	4	0
82	Odisha Power Generation Corporation Ltd., Banaharpali, Jharsuguda	4	2	0
83	Paradeep Phosphate Ltd., Paradeep, Jagatsinghpur	4	5	3
84	Patnaik Minerals Pvt. Ltd., Keonjhar	0	2	0



85	Patnaik Steels and Alloys Ltd., Keonjhar	0	1	0
86	Pawanjay Sponge Iron Limited, Bijabahal, Sundargarh	0	1	0
87	Penguin Trading and Agencies Ltd (Seven Star), Jharsuguda, Jharsuguda,	0	2	0
88	Pooja Sponge Pvt. Ltd., Kalunga, Sundargarh	0	2	0
89	Prabhu Sponge(p) Limited, Rajgangpur, Sundargarh	0	2	0
90	R. B. Sponge Pvt. Ltd., Jayantpur, Sambalpur	0	1	0
91	Reliable Sponge Pvt. Ltd. (Bonai Unit), Bonaigarh, Sundargarh	0	1	0
92	Reliable Sponge Pvt. Ltd.,(KALUNGA), Sundergarh	0	1	0
93	Rexon Strips Ltd., Rourkela, Sundargarh	0	1	0
94	Rourkela Steel Plant, Rourkela, Sundargarh	5	20	6
95	Rungta Mines Limited, Koira, Sundargarh	4	5	0
96	Sakthi Sugars Limited (Distillery), Haripur, Dhenkanal	0	1	2
97	Sakthi Sugars Limited, Haripur, Dhenkanal	0	1	1
98	Samaleswari Ferro Metals Ltd., Bishalkhinda, Sambalpur,	0	1	0
99	Scan Steels Limited (Unit-2), Budhakata, Sundargarh	0	3	0
100	Scan Steels Limited (Unit-I), Rajgangpur, Sundargarh	0	1	0
101	Seeta Integrated Steel and Energy Ltd., Sundargarh	0	2	0
102	Sesa Sterlite Ltd (IPP), Jharsuguda	4	4	1
103	Sesa Sterlite Ltd (Smelter and CPP), Bhurkamunda, Jharsuguda	4	16	2
104	Shiv Metallicks (P) Ltd., Rourkela, Sundargarh, Odisha	0	1	0
105	Shiva Cement Ltd., Rourkela, Sundargarh, Odisha	0	1	0
106	Shree Ganesh Metalics(Kuarmunda), Rourkela, Sundargarh	0	3	0
107	Shree Hari Sponge Pvt. Ltd., Bonaigarh, Sundargarh,	0	1	0
108	Shri Hardev Steels Pvt. Ltd., Athagarh, Cuttack	0	1	0
109	Shri Jagannath Steels and Power Ltd., Barbil, Keonjhar	0	2	0
110	Shri Mahavir Ferro Alloys Pvt. Ltd., Rourkela, Sundargarh	0	4	0
111	Shyam Metalics and Energy Ltd., Lapanga, Sambalpur	4	8	1
112	SMC Power Generation Limited, Hirma, Jharsuguda	4	2	0
113	Sponge Udyog Pvt. Ltd., Kalunga, Sundargarh	0	1	0
114	Sree Metaliks Ltd., Rugudihi, Keonjhar	0	4	0
115	Sri Balaji Metalics Pvt. Ltd., Birkela, Sundargarh	0	1	0
116	Sumrit Metaliks Pvt. Ltd., Barbil, Keonjhar	0	1	0
117	Suraj Products Pvt. Ltd., Rajgangpur, Sundargarh	0	1	0
118	Surendra Mining Industries (P) Ltd., Bonai, Sundargarh	0	2	0
119	Swastik Ispat Pvt. Ltd., Kuarmunda, Sundargarh	0	2	0
120	Tata Sponge Iron Ltd., Joda, Keonjhar	3	3	0
121	TATA STEEL Kalinganagar, Keonjhar	4	16	3
122	Thakur Prasad Sao and Sons Pvt. Ltd., Lahandabud, Jharsuguda	0	2	0
123	The Bargarh Co-operative Sugar Mills Ltd., Bargarh	0	0	1
124	Times Steel and Power Pvt. Ltd., Rourkela, Sundargarh	0	1	0
125	Toshali Cement Private Limited, Ampavalli, Koraput	0	1	0
126	T R Chemicals Ltd., Rajgangpur, , Sundargarh	0	1	0
127	TRL Krosaki Refractories Ltd., Belpahar, Jharsuguda	2	0	0
128	UltraTech Cement Ltd., Arda, , Jharsuguda	3	2	0
129	Utkal Alumina International Ltd., Doraguda, Rayagada	4	5	1



130	Utkal Metaliks Limited, Rourkela, Sundargarh	0	1	0
131	Vasundhara Metaliks Pvt Ltd., Sundargarh	0	1	0
132	Vedanta Ltd., Lanjigarh, Kalahandi	1	3	0
133	Vikram Pvt. Ltd., Bonai, Sundargarh	0	1	0
134	Viraj Steel and Energy Ltd., Lapanga, Sambalpur	0	2	0
135	Viraja Steel & Power Private Limited, Athgarh, Cuttack	0	1	0
136	Visa Steel Limited, Kalinganagar, Jajpur	4	5	0
137	VISA SunCoke Limited, Kalinganagar, Jajpur	0	2	0
138	Vishal Metaliks Pvt Ltd., Bonai, Sundargarh	0	1	0
139	Yazdani Steel and Power Limited, Kalinga Nagar, Jajpur	0	2	0
	Total	191	496	67
MINES				
1	Barsuan Taldihi Kalta Mines (SAIL), Sundargarh	1	0	0
2	Joda East Iron Mine(Tata), Joda, Keonjhar	4	0	0
3	Balda Block Iron Mines of Serajuddin & Co. (Balda), Keonjhar	4	0	0
4	BC Mohanty and Sons Pvt Ltd (Duburi), Jajpur	0	0	2
5	Jajang Iron and Manganese (Jajang), Keonjhar	4	0	0
6	Joda West Colony, (Township), Banspani road, Keonjhar,	1	0	0
7	Kalarangiatta Chromite Mines of M/s FACOR (Sukinda), Jajpur	0	0	2
8	Kaliapani Chromite mines of M/s Balasore Alloys Ltd. (Kaliapani), Jajpur	0	0	2
9	Katamati Iron Mine(Tata), Deojhar, Keonjhar	3	0	0
10	Nadidihi Iron and Mines (B), Nididihi, Sundargarh	3	0	0
11	Nadidihi Iron and Mines (F), Nididihi, Sundargarh	6	0	0
12	Nuagaon Iron Ore Mines (M/s. KJS Ahluwalia), Barbil, , Keonjhar	3	0	0
13	Oraghat Iron Mine, Koira, Sundargarh	5	0	0
14	Ostapal Chromite mines of M/s FACOR, Sukinda, Jajpur	0	0	2
15	SAIL RMD, Bolani, , Keonjhar	3	0	0
16	Saruabil Chromite mines of M/s Misrilal Mines Pvt. Ltd, Jajpur	0	0	2
17	SBBK Iron And Manganese Mines(M/S OMC Limited), Barbil, , Keonjhar	1	0	0
18	South Kaliapani Chromite Mines,OMC, Kaliapani, Jajpur	0	0	5
19	Sukinda Chromite mines & Mahagiri Chromite mines of M/s IMFA, Sukinda, Jajpur	0	0	2
20	Sukinda Chromite mines of M/s Tata Steel Ltd., Sukinda, Jajpur	0	0	3
21	Talangi Chromite mines, Talangi, Jajpur	0	0	2
22	Thakurani iron ore mines of M/s Kaypee Enterprises, Barbil, Keonjhar	4	0	0
	Total	42	0	22

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 5.6) followed by personal hearing and are generally prescribed time bound action plan for compliance. Consistent non-compliances lead to issue of closure directions. Table-5.9 shows the status of closure directions, issued by the Board.

Table - 5.9 Status of Closure Directions Issued During 2016-17.

No. of directions issued	No of industries under closure	No. of revocations after due compliance
92	58	40*

N.B: *No. of closure directions issued earlier - 06

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 2016-17 are given in Table-5.10 and 5.11.

Table - 5.10 Status of Public Hearings

1.	Number of projects received by the Board for public hearing during the financial year 2016-17.	21
2.	Number of projects carried forward from previous financial year 2015-16	09
	Total Number of projects received for public hearing	30
3	Number of projects for which public hearing have been conducted	17
4	Number of cases for which public hearing date fixed	03
5	Number of cases withdrawn	01
6	Number of cases wherein Collectors were requested to fix up date	09

Table - 5.11 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	Garjanbahal OCP M/s MCL, Basundhara Siarmal Area, Sundargarh.	Production of 10 MTPA (normative) and 13 MTPA (peak),M.L.area-795.38Ha.	6.4.2016	A

Sl No.	Name & Address of the project	Purpose of Public hearing	Date of Public Hearing	Category
2	Jagannath Washery (Bhubaneswar OCP), M/s MCL, P.O-Dera Colliery, Angul.	Establishment of 10 MTPA Coal washery	12.4.2016	A
3	Rourkela Steel Plant M/s Steel Authority of India ,Rourkela, Sundargarh.	1MTPA hot strip mill,3.3MTPA beneficiation plant, 2MTPA pellet plant, expansion of special plate plant of capacity from 3000TPA to 15000TPA	16.6.2016	A
4	Sirkaguttu Iron and Mn mines M/s Prakash Industries Ltd Sirkaguttu Village, Banspal Village, Keonjhar.	Production of 1.325 MTPA iron ore over an area of 19.532 Ha.	24.6.2016	B
5	Jharsuguda Air Port M/s Air port Authority of India, Jharsuguda.	Development of Jharsuguda Airport for A-320 operation	24.6.2016	A
6	Basundhara Coal Washery,M/s Mahanadi Coal-Fields Ltd., Sundargarh.	Installation of coal washery on Built Operate & Maintain (BOM) concept having raw coal throughput 10 MTPA	27.7.2016	A
7	Chilika Distilleries Pvt. Ltd, Kanaka village ,Khalikote Block, Ganjam.	Establishment of 55KLD grain based distillery	27.7.2016	B
8	IB Valley Coal washery(Lakhanpur-Lilari-Belpahar OCP) M/s MCL, At-Chharla village, Lakhanpur, Jharsuguda.	Washery of 10 MTPA	31.8.2016	A
9	Peta decorative Stone Mines of Sri Ch. Venugopal At-Peta no-47,Motu Tahasil Dist-Malkangiri	Peta Decorative Stone Mines of Sri. Ch. Venugopal for production of decorative stone upto 60,488 cum/year over an area of 19.425 ha.	15.9.2016	B
10	NALCO Ltd., 3 rd Phase expansion of Alumina Refinery(2.275MTPA to 3.275MTPA) and CPP from 92.5 MW to 111MW Damonjodi ,Koraput.	3 rd phase expansion of Alumina Refinery (from 2.275 MTPA to 3.275MTPA) and expansion of steam cum Co-generation Power plant (from 92.5 MW to 111MW).	28.9.2016	A

Sl No.	Name & Address of the project	Purpose of Public hearing	Date of Public Hearing	Category
11	Gambharia Rudragopalpur Samil Naharpatna River Sand Bed, Remuna Tahasil, Balasore.	Excavation of sand of capacity 6538 m ³ /annum from river bed of Budhabalanga River over an area of 38.442 ha.	29.9.2016	B
12	Putka Limestone Mines of Sri Jyoti Paramanik, At-Putka, Dist- Bargarh.	Production of lime stone upto 70.200TPA over an area of 97.031ha with opencast semi mechanized mining method	4.11.2016	A
13	Kasaba-Dhapada Sand Quarry, (Budhabalanga river Sand Bed) of Sri Karunakar Das, At- Kasaba-Dhapada, Dist-Balasore.	Kasaba-Dahapada sand srial over an area of 41.015ha.	16.11.2016	B
14	Tata Steel Special Economic Zone Ltd., Gopalpur, Ganjam	Proposed Multiproduct SEZ//Industrial park	02.12.2016	B
15	Indian Rare Earth Ltd., At-Orissa Sand Complex, Matikhalo, Chatrapur, Ganjam.	Production of 1900TPA Zircon and 3500TPA Ilimunite within the existing premises	06.12.2016	A
16	Kakudi and Kishoripal Sand Mine, (Brahmani river sand Bed) M/s MCL ,Kakudi village, Talcher Area, Angul	0.25MTPA sand mining over an area of 41.885Ha	20.12.2016	A
17	Emami Cement Ltd, At-Anatira, Dangadi Tahasil Dist-Jajpur.	Cement grinding unit	22.02.2017	B

5.5 STATUS OF WATER CESS

Status of Water Cess Assessment, Collection, Remittance and Reimbursement for the Year 2016-17 is given in Table-5.12.

Table - 5.12 Status of Water Cess

Sl.No	Water Cess Assessment	Amount in Rupees (₹)
1	Total Assessment of Industry & ULBs	6,60,85,310.58
2	Total Collection from Industry & ULBs	6,72,96,052.69
3	Remittance to MoEF	7,23,21,650.00
4	Reimbursement to the Board	5,24,27,576.00

5.6 ENFORCEMENT UNDER THE ENVIRONMENT (P) ACT, 1986

5.6.1 Implementation of the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016.

Ministry of Environment, Forest and Climate Change, Govt. of India in supersession of Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008 has notified the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 on 4th April, 2016. These rules apply to the management of hazardous and other waste as specified in the Schedules to these rules.

The important features of the new rule are as Follows:

- New Rule has introduced the concept of 'Actual user' i.e. an occupier who procures and processes hazardous and other wastes for reuse, recycling, recovery, pre-processing, utilization including co-processing.
- New Rules has also introduced 'Other wastes' import or export.
- The provision of Rule-11 of Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008 has been replaced by Rule-9 in Hazardous and other wastes (Management & Transboundary Movement) Rules, 2016 which gives a clear guideline for disposal of applications for utilization of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use inside the premises of the generator.
- Format of authorization application in Form-1 and Authorization order in Form-2 has also been revised and simplified.

A public notice has been issued in 'The Samaj', 'The Dharitri' and 'The New Indian Express' addressing the industries handling hazardous wastes to apply online as per the provision of Hazardous and other wastes (Management & Transboundary Movement) Rules, 2016.

5.6.1.1. Authorisation

The Authorization status of hazardous waste generating industries during 2016-17 is given in Table 5.13.

Table 5.13 Authorization Status of Hazardous Waste

Sl. No.	Authorization status	Number
(i)	Total no. of applications received	151*
(ii)	No. of units granted authorisation	95
(iii)	No. of units being issued Show Cause Notices	25

(iv)	No. of units refused	02
(v)	No. of closure direction issued	01
(vi)	No. of direction issued	03
(vii)	Total No. of applications disposed	126

N.B: *Includes 25 No. of incomplete applications.

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-09 of the Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016 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.

(A) Authorization Status of Actual Users of Hazardous Waste

During the financial year 2016-17, the following industries were granted authorization for recycling/ re-processing of different hazardous waste under Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016.

List of Actual Users			
Sl. No.	Name & Address of the Actual Users Authorized by SPCB, Odisha	Quantity of Hazardous Waste	Validity
1	Chemical & Metallurgical Co., Shed No. S/III-24, Industrial Estate, Kalunga, Rourkela	Used Oil-720 KL/A	31.03.2021
2	N. S. Chemicals, Plot No.-E/72, Chhend Colony, Rourkela, Sundargarh	Used Oil-936 KL/A	31.03.2020
3	Ratna Industries, At- Jamunanki, Po- Kuarmunda, Dist-Sundargarh-770039.	Used Oil-750 KL/A	31.03.2020
4	Raj Lubricants, At/ P.O- Januganj, Dist-Balasore, Odisha	Used Oil-1500 KL/A	31.03.2019
5	Susim Enterprises, At- 154/F & G, New Industrial Estate, Jagatpur, Dist- Cuttack, Odisha	Used Oil-1200 KL/A	31.03.2019
6	Gouri Shankar Lubricants, At- Gurujang, Po- Talcher, Dist- Angul, Odisha - 759100	Used Oil-600 KL/A	31.03.2022
7	Asian Petro Chemicals, At- Asanabahali, Po.-Barada, Gundichapada, Dist-Dhenkanal	Used Oil -960 KL/A	31.03.2021
8	Shree Durga Petrochemicals, Plot No. 89A, New Industrial Estate, Phase-II, Jagatpur, Dist - Cuttack, Odisha - 754021	Used lubricating oil / Transformer oil 2160 KL/A	31.03.2022

9	Swaraj Lubricants, At- Gobinda, Po- Haldipada, Dist-Balasore, Odisha	Used Oil -1500 KL/A & Waste Oil-6000 KL/A	31.03.2018
10	Purbanchal Petroleum Private Limited, At - Kalagada, Po - Jadupur, Dist - Kendrapara, Odisha - 754213	Used Oil/Spent Oil :3650KL/A & Waste Oil : 12045 KL/A	31-03-2021
11	Shriya Metals & Chemicals, At- Khairbandh, PO- Ranto Birkera, PS- Bramhanitarang, Dist - Sundargarh, Odisha - 770037	Waste Oil-7350 KL/A	31.03.2018
12	N. C. Oil Refinery Pvt. Ltd. Vill- Sova, Po-Osakana, Balikuda, Dist- Jagatsinghpur, Odisha	Waste Oil-3500 KL/A	31.03.2018
13	Agrawal Rasayan, At/PO-Jayantpur, P.S: Jujumura, Dist- Sambalpur, Odisha	Waste Oil-2400 KL/A	31.03.2017
14	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
15	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
16	Omm Cee Business, At- IDCO Plot NO. 3, Sanabramanitarang, Industrial Estate, Kalunga, Dist - Sundargarh, Odisha	Used Anode Butt - 3300 T/A	31-03-2020
17	Metacast International, At/Po - Katapali, Dist-Sambalpur, Odisha	Used Anode Butt, 10,080 T/A	27-07-2019
18	Metakani Resources, At/Po- Kabrapali, Dist - Sambalpur, Odisha	Used Anode Butt, 47040 T/A	31-03-2018
19	Hindalco Industries Limited, Hirakud Complex, Hirakud-768 016, Dist- Sambalpur, Odisha	Aluminium Dross 3960 T/A	31-03-2018
20	A K Enterprises, Plot No. - 7, Khordha Industrial Estate, Dist - Khordha, Odisha	Aluminium Dross 8400 T/A	31-03-2018
21	Gaurav Aluminium, At-/Po- Hirma, Dist - Jharsuguda, Odisha	Aluminium Dross 12000 T/A	31-03-2018
22	Hirakud Metallics, Nuakhurigaon, Po- Sason, Dist-Sambalpur	Aluminium Dross 15000 T/A	16.07.2017
23	Shree Sai Metallik, At - Jamunalia, PO - Badaposhi, VIA - Naranpur, Dist- Keonjhar, Odisha	Aluminium Dross 9960 T/A	16.07.2017
24	Green Energy Resources, Shanti Nagar Road, Near Furniture Point, Budharaja, Sambalpur	Spent Pot Lining (SPL) to manufacture Carbon Fuel - 25200 T/A	31.03.2020
25	Subhra Chemicals, Plot No.10, Old Industrial Estate, Jagatpur, Cuttack	Spent Pot Lining (SPL) Carbon Portion 4,320 T/4 Months	Lr. no.4461, dtd. 22-03-2017 4 months w.e.f the date of first batch of procurement

26	Suraj Products Ltd., At- Barapali, Post - Kesharmal, Rajgangpur, Dist - Sundargarh, Odisha	Flue Gas Dust / Gas Cleaning Plant (GCP) Sludge of LD Furnace / Electric Arc Furnace (EAF) / Blast Furnace of Steel Plant / Captive Blast Furnace 68500 T/A GCP Sludge of Ferro Alloy Plant 2400 T/A	31.03.2019
----	--	--	------------

(B) 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., Hyderabad with consented capacity of 25,000 T/A for secured landfill, 12,000 T/A of waste treatment & stabilisation and 3,000 T/A of incinerable hazardous waste storage. So far, 159 no. of Industries / Mines have taken membership agreement with Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF).

The status of disposal of hazardous waste at CHWTSDF is as follows:

- Hazardous waste received from various Industries/Mines by CHWTSDF - 38,522.027 T
 - i. Landfill after treatment - 31,369.905 T
 - ii. Direct Landfill - 7,061.310 T

(C) Remediation of Contaminated sites

- Central pollution Control Board (CPCB), New Delhi vide letter No. F. No: B-29016/59(1)/HWMD/NCEF (1&3)/2014/2716, dtd. 05-08-2014 had communicated the Board indicating the details of project to be undertaken for remediation of two identified contaminated sites (Mercury contaminated site of M/s Jayshree Chemicals, Ganjam and Chromium contaminated site at M/s Orichem Ltd., Angul) located in the state of Odisha under National Clean Energy Fund (NCEF) project of Ministry of Environment, Forest & Climate change, Govt. of India.
- CPCB has engaged a consultant namely M/s ERM India Pvt. Ltd. to undertake the remediation project which broadly divided into 2 phases: Phase-1- to prepare a detailed project report based on assessment of levels and nature of contaminants in surface/ sub-surface, ground water and soils in and around the contaminated site and by conducting reassessment studies; Phase-2- actual remediation work, validation of work and preparation of post-remediation monitoring plan.

- Site visit-cum-8th Technical Expert Committee (TEC) meeting was held on 17th January, 2017 at Ganjam, Odisha and 18th January, 2017 at Talcher, Odisha to finalize technologies for “Remediation of mercury and chromium contaminated areas at Ganjam and Talcher, Odisha respectively” under NCEF Project. The site visit cum meeting was held on these sites in the presence of TEC members namely Shri. N. K. Verma, Former Addl. Director, CPCB, Dr. D. V. Reddy, Chief Scientist, NGRI, Hyderabad and Dr. Indumathi M Nambi, Associate Professor, IIT Madras; Officials of CPCB namely Sh. Vinod Babu, Addl. Director, HWM Division, Sh. G. Rambabu, Scientist-C and Dr. Chandan Singh, CPCB, New Delhi; officials of SPCB, Regional officers of Angul and Berhampur.
- During the TEC meeting the consultant who is undertaking the remediation study made a presentation on “Remediation goals / Objectives” as per step-5 of study. The consultant has proposed remediation technology options for contaminated soil, sediment, ground water, surface water etc. for both the sites. After the site visit, TEC members have recommended various remedial technologies to be adopted for both the sites.



Site visit of Mercury contaminated areas of M/s Jayshree Chemicals(Grasim Industries Ltd), Berhampur on 17-01-2017



Technical Expert Committee meeting to discuss various technologies for remediation of Mercury contaminated areas at M/s Jayshree Chemiclacs (Grasim Industries Ltd), Ganjam



Site visit of Chromium contaminated areas of M/s Orichem Ltd, Angul on 18-01-2017



Discussion on Chromium contaminated areas of M/s Orichem Ltd, Angul on 18-01-2017

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 2016-17.

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. Efforts have been made to create awareness among the concerned industries to take such insurances. In total 43 no. of industries have taken insurance policies under PLI Act, 1991.

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

The Board has received 84 no. of half yearly returns from April' 2016 to Sep' 2016 and 19 no. of half yearly returns from Oct' 2016 to March' 2017 from battery units. These returns have been received from Manufacturer, Re-conditioner, Assembler, Dealer, Bulk Consumer, Auctioneer, Importer & Recycler.

5.6.5 Implementation of the Biomedical Waste Management Rules, 2016

Biomedical wastes generated in different Health Care Establishments (HCEs) need to be disposed off 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 Rules, 2016.

The important features of the 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.
- The 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 2193 no. of HCEs under the authorization administration under the Biomedical Waste Management Rules 2016 and the district wise distribution of such HCEs with respect to bed strength is given in Table- 5.14.

Table – 5.14 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	00	01	08	39	04	52
2	Balangir	00	00	02	38	18	58
3	Balasore	00	01	02	54	81	138
4	Bargarh	00	00	02	37	24	63
5	Bhadrak	00	01	03	33	09	46
6	Boudh	00	00	01	04	00	05
7	Cuttack	01	02	22	202	102	329
8	Deogarh	00	00	02	05	03	10
9	Dhenkanal	00	00	04	38	06	48
10	Gajapati	00	00	03	17	00	20
11	Ganjam	01	00	05	135	28	169
12	Jagatsinghpur	00	00	02	23	06	31
13	Jajpur	00	01	00	27	21	49
14	Jharsuguda	00	00	05	31	25	61
15	Kalahandi	00	01	03	25	01	30
16	Kandhamal	00	00	02	10	06	18
17	Kendrapara	00	00	01	23	32	56
18	Keonjhar	00	00	06	40	35	81
19	Khordha	05	06	21	134	118	284
20	Koraput	00	00	04	23	28	55
21	Malkangiri	00	00	01	33	02	36
22	Mayurbhanj	00	01	05	34	07	47
23	Nawarangpur	00	00	02	12	16	30
24	Nayagarh	00	01	03	40	21	65
25	Nuapada	00	00	03	06	00	09
26	Puri	00	01	03	47	28	79
27	Rayagada	00	01	02	28	17	48
28	Sambalpur	01	01	02	57	22	83
29	Sonepur	00	00	01	08	03	12
30	Sundargarh	01	01	13	66	100	181
	Total	09	19	133	1269	763	2193

NB : *Pathological Laboratories, Diagnostic Centres etc.

5.6.5.2 Management of Biomedical Waste

- As per the provisions of the Biomedical Waste Management Rules, 2016 all the HCEs are required to treat and dispose different types of biomedical waste properly. Most of the 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 such as incinerator, shredder, microwave etc. which are being operated by engaging private agencies for the treatment of Biomedical Wastes. The

agencies are: M/s. Medi-Aid Marketing Services - engaged by SCB MCH, MKCG MCH and M/s. Biotech Solution- engaged by VSS MCH. These two facilities are also being shared by other nearby small Government HCEs.

- The Common Biomedical Waste Treatment Disposal Facility (CBWTDF) namely M/s Saniclean Pvt. Ltd., at Tangiapada, Khordha is taking care of segregated biomedical waste of hospitals in Cuttack city, Bhubaneswar city, Jagatpur, Choudwar, Duburi, Jatni, Paradeep & Khordha 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 2193 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 2016-17 is presented in Table-5.15

Table - 5.15 Authorisation Status of HCEs During 2016-17

Sl. No.	Status of HCEs	
1	No. of applications received during 2016-17	1167
2	No. of cases carried over from year 2015-16	719
3	Total no. of applications received	1886
4	No. of HCEs granted authorisation	868
5	No. of HCEs refused authorisation	33
6	Total No. of applications disposed	901
7	No. HCEs under evaluation / Incomplete application	788
8	No. of HCEs violating the Rules	105
9	No. of HCEs issued show cause notices	365*
10	No. of HCEs inspection conducted	1395

N.B: * Includes HCEs operating without authorization.

5.6.6. Implementation of the Solid Waste Management Rules, 2016

Ministry of Environment, Forest and Climate Change, Govt. of India in supersession of Municipal Solid Waste (Management & Handling) Rules, 2000 has notified the Solid Waste Management Rules, 2016 under Environment (Protection) Act, 1986 on 8th April, 2016. Applicability of the Rules extended beyond Municipal Area, outgrowths in Urban agglomerations, census towns, notified industrial townships, areas under the control of Indian Railways, Airports, Airbase, Port and Harbours, Defence establishments, Special Economic zones, State and Central Govt. Organizations, Places of Pilgrims, Religious and Historical importance.

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.

During 2016-17, 02 ULBs and 01 Township have applied for authorization and the Board has not granted authorization to any ULB/Township during this period. Show cause notice has been issued to one ULB for non compliance.

5.6.7. Implementation of Plastic Waste Management Rules, 2016

As per the provisions of the Plastic Waste Management Rules, 2016, so far 08 no. of plastic product/carry bag manufacturing units have valid authorization and no plastic carry bag manufacturing unit has been registered with the Board during 2016-17.

Table-5.16 List of Authorised Plastic Product Manufacturing Units in Odisha

Sl. No.	Name & Address
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.
03.	M/s. Sriram Poly Udyog. Plot No.B/3, New Industrial Estate, Jagatpur, Phase-III, Cuttack.
04.	M/s. Utkal Plastic Industries, B-21/22, Khapupria, Dist : Cuttack -10
05.	M/s. Jit Multilayers Pvt. Limited, 65 New Industrial Estate, Jagatpupr, Cutatck.
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, I.E, Khapuria, Cuttack – 10.

5.6.8 Implementation of the E-Waste Management Rules, 2016.

As per the provisions of the E-Waste Management Rules, 2016, no individual E-Waste collection center is allowed to collect E-Waste. The Captive collection centres of producer / dismantler / recyclers / refurbishers are only allowed to collect E-Wastes. So far the Board has granted authorization to 03 Captive E-Waste collection centres for collection of electronic waste and one collection-cum-dismantling unit in the State (Table- 5.17).

Table-5.17 List of Captive E-Waste Collection Centers Authorised in Odisha.

Sl. No.	Name of Collection Centers
1.	M/s Green Vortex Waste Management (P) Ltd., Plot No.155, Mancheswar Industrial Estate, Bhubaneswar, Dist : Khordha
2.	M/s. J.S Pigments Pvt. Ltd., NH-6, At/PO: Bareipalli, Dist; Sambalpur
3.	M/s. Attero Recycling Pvt. Ltd., Nakhara, Baliana, Dist : Khordha.
Name of Collection Center-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 registred dismantlers/recyclers.

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 etc.
- The authorities of Revenue Department, Housing & Urban Development Department, Works Department and Town Planning, Government of Odisha have been requested to take appropriate action towards wide publicity of the Rules to create awareness amongst the local authorities and sensitize the general public about their responsibilities in handling such type of waste.
- All the construction and demolition waste generators have been requested through public notice in Daily News Papers to go through the aforesaid Rules which is available at the SPC Board website www.ospcboard.org and Ministry website www.moef.nic.in. Furthermore, the operators of the waste processing facilities have been asked to apply for authorization from State Pollution Control Board.

5.7 MONITORING NETWORK FOR WATER AND AIR QUALITY

5.7.1 National Water Quality Monitoring Programme (NWMP)

Inland Surface Water

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 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 Anshupa lake and coastal water at Puri, Gopalpur and Paradeep under NWMP. Details of monitoring stations are presented in Table-5.18.

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, Sodium Absorption Ratio (SAR), Total Hardness (TH) , Chloride, Sulphate, Fluoride.
- (e) Nutrients: Nitrate (Nitrate + Nitrite) - Nitrogen, Phosphate - Phosphorous
- (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-5.18 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 Brajarajnaragar 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	
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 - Nandira 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 WATER QUALITY MONITORING PROGRAM

The annual average and range values of the criteria parameters such as pH, DO, BOD and TC, obtained during the year 2016 for the river water quality monitoring stations listed under Table-5.18 are given in Table-5.20. Water quality in respect of other parameters is given in Table-5.21. Spatial variation of BOD, DO and TC are presented in Figs.2-8.

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-5.20 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 49 stations for TC alone and 11 stations for both BOD & TC (Table-5.19). 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-5.19 Water quality status of river monitoring stations during 2016

Sl. No.	River System	Total no. of Monitoring Stations	Conforming Stations	Non-conforming stations		
				Both BOD & TC	BOD alone	TC alone
1	Mahanadi	32	11	6	-	15
2	Brahmani	26	4	3	-	19
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	19	11	-	49

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.

Table-5.20 - Annual Average and Range values of Four Criteria Parameters (January-December, 2016)
(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	7.9 (7.5-8.3)	8.1 (6.1-9.3)	0.8 (0.3-1.8)	1762 (460-5400)	0	1 (8)	C	C		
2.	Jharsuguda	12	7.9 (7.4-8.4)	7.7 (6.5-9.4)	0.9 (0.3-1.5)	5192 (1700-13000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
3.	Brajarajnaragar U/s	12	7.8 (7.2-8.3)	8.2 (6.4-9.7)	0.8 (0.4-1.6)	2472 (330-4900)	0	0	C	C		
4.	Brajarajnaragar D/s	12	7.9 (7.2-8.4)	8.0 (6.2-9.3)	1.1 (0.7-1.8)	3832 (790-11000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Bheden river												
5.	Jharsuguda	12	7.9 (7.5-8.4)	7.7 (6.3-9.0)	0.9 (0.1-1.8)	3191 (790-9200)	0	2 (17)	C	C		
Hirakud reservoir												
6.	Hirakud reservoir	12	8.0 (7.4-8.3)	7.1 (5.3-8.0)	0.8 (0.5-1.3)	2393 (220-9200)	0	2 (17)	C	C		
Power Channel												
7.	Power Channel U/s	12	7.9 (7.5-8.3)	6.9 (5.6-8.3)	0.7 (0.3-1.5)	1667 (170-5400)	0	2 (17)	C	C		
8.	Power Channel D/s	12	7.9 (7.6-8.3)	6.7 (5.8-7.7)	1.0 (0.5-1.8)	3325 (1100-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Mahanadi river												
9	Sambalpur U/s	12	8.0 (7.5-8.3)	7.3 (5.6-9.3)	1.0 (0.5-1.7)	17924 (490-160000)	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)						
10	Sambalpur D/s	12	8.0 (7.4-8.4)	6.4 (4.4-8.7)	2.2 (1.3-3.6)	47992 (4900-160000)	2 (17)	11 (92)	C	Doesn't conform to Class C	BOD, TC	Waste water of Sambalpur town
11.	Sambalpur FD/s at Shankarmath	12	7.9 (7.3-8.5)	6.9 (4.2-8.9)	1.5 (0.7-2.2)	15442 (2200-92000)	0	8 (67)	C	Doesn't conform to Class C	TC	Waste water of Sambalpur town
12.	Sambalpur FFD/s at Huma	12	8.0 (7.4-8.4)	7.4 (5.3-9.7)	1.1 (0.4-1.8)	22075 (1300-160000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
13.	Sonepur U/s	12	8.1 (7.5-8.5)	7.8 (6.6-9.1)	0.7 (0.3-1.3)	1363 (230-5400)	0	1 (8)	C	C		
14.	Sonepur D/s	12	8.2 (7.5-8.4)	7.8 (6.2-10.3)	1.1 (0.7-2.0)	4875 (700-11000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
15.	Tikarapada	12	8.1 (7.5-8.4)	7.9 (6.0-10.3)	0.7 (0.4-1.6)	2358 (23-11000)	0	1 (8)	C	C		
16.	Narasinghpur	12	8.0 (7.3-8.4)	7.7 (6.6-8.7)	0.7 (0.4-1.4)	2858 (1300-4900)	0	0	C	C		
17.	Mundali	12	8.0 (7.5-8.4)	7.6 (6.1-8.9)	0.8 (0.5-1.5)	5391 (790-17000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
18.	Cuttack U/s	12	7.9 (7.2-8.5)	7.8 (6.3-9.1)	1.0 (0.5-1.9)	1922 (490-5400)	0	1 (8)	C			



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	7.9 (7.4-8.5)	7.7 (6.0-8.9)	1.8 (1.4-2.5)	50342 (2300-160000)	0	11 (92)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
20.	Cuttack FD/s	12	7.9 (7.0-8.4)	7.7 (6.4-8.4)	1.1 (0.6-1.8)	37617 (2300-160000)	0	8 (67)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
21.	Paradeep U/s	12	7.8 (7.3-8.3)	6.9 (6.0-8.1)	1.1 (0.4-1.9)	10971 (460-35000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
22.	Paradeep D/s	12	7.9 (7.4-8.2)	6.5 (5.6-7.1)	1.4 (0.8-2.1)	7384 (20-35000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Tel River												
23.	Monmunda	12	8.1 (7.6-8.4)	7.8 (6.4-9.7)	1.0 (0.3-2.4)	1632 (130-5400)	0	2 (17)	C	C		
Kathajodi river												
24.	Cuttack U/s	12	8.0 (7.5-8.4)	7.7 (6.5-8.9)	1.2 (0.6-2.1)	2490 (490-9200)	0	2 (17)	C	C		
25.	Cuttack D/s	12	7.8 (6.7-8.4)	7.1 (4.5-8.9)	3.5 (1.7-5.8)	76500 (7000-160000)	9 (75)	12 (100)	C	Doesn't conform to Class C	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)						
26.	Mattagajpur (Cuttack FD/s)	12	7.8 (7.4-8.4)	7.9 (1.2-14.3)	7.9 (1.8-17.4)	78250 (7000-160000)	10 (83)	12 (100)	C	Doesn't conform to Class C	DO*, BOD,TC	Waste water of Cuttack city
Serua River												
27.	Sankhatrasa (Cuttack FD/s)	12	7.6 (6.9-8.4)	6.6 (4.9-9.0)	2.8 (1.4-4.8)	50233 (4900-160000)	5 (32)	10 (83)	C	Doesn't conform to Class C	BOD, TC	Waste water of Cuttack city
Kuakhai river												
28	Bhubaneswar FU/s	12	8.0 (7.0-8.4)	8.3 (7.2-9.8)	1.0 (0.4-1.7)	7892 (1300-17000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
29.	Bhubaneswar U/s	12	7.7 (6.4-8.4)	7.2 (5.7-9.0)	1.2 (0.7-1.8)	26833 (7000-54000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
Daya river												
30.	Bhubaneswar D/s	12	7.4 (6.6-8.1)	4.6 (3.1-7.8)	4.7 (2.4-6.7)	93833 (54000-160000)	10 (83)	12 (100)	C	Doesn't conform to Class C	DO**, BOD, TC	Waste water of Bhubaneswar city
31.	Bhubaneswar FD/s	12	7.6 (6.6-8.4)	5.1 (3.2-7.7)	4.0 (2.0-5.5)	69167 (35000-160000)	9 (75)	12 (100)	C	Doesn't conform to Class C	DO***, BOD, TC	Waste water of Bhubaneswar city

* Frequency of violation for DO is 1 time (8% of observation)
 ** Frequency of violation for DO is 3 times (25% of observation)
 *** Frequency of violation for DO is 3 times (25% of observation)

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)						
Birupa River												
32.	Choudwar D/s	12	8.0 (7.0-8.4)	8.1 (5.1-9.6)	1.1 (0.5-1.8)	7383 (790-35000)	0	7 (58)	C	Doesn't conform to Class C	TC	Waste water 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)



(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 (6.9-8.4)	7.8 (6.3-9.7)	0.8 (0.4-1.7)	4167 (1100-13000)	0	2 (17)	C	C		
Koel River												
2.	Koel U/s	12	7.7 (7.2-8.2)	6.9 (5.8-8.3)	1.2 (0.5-2.9)	14958 (790-35000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Brahmani river												
3.	Panposh U/s	12	7.7 (7.1-8.3)	7.4 (5.8-9.0)	0.9 (0.6-1.5)	18625 (1400-92000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
4.	Panposh D/s	12	7.2 (6.5-7.9)	6.6 (4.2-8.2)	4.7 (2.3-5.8)	82917 (22000-160000)	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	7.2 (6.7-7.9)	6.5 (4.2-8.3)	3.9 (2.0-5.4)	49500 (13000-160000)	10 (83)	12 (100)	C	Doesn't conform to Class C	BOD, TC	-do-
6.	Rourkela FD/s (Attaghat) #	11	7.7 (6.9-8.4)	7.5 (5.9-9.8)	2.1 (0.6-4.6)	18983 (790-92000)	3 (27)	6 (55)	C	Doesn't conform to Class C	BOD, TC	-do-
7.	Rourkela FD/s (Biritola)	12	7.7 (7.1-8.3)	7.7 (6.3-9.7)	1.3 (0.5-2.5)	4856 (170-17000)	0	4 (33)	C	Doesn't conform to Class C	TC	-do-

for the period January-December, 2016 excluding November, 2016

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)						
8.	Bonaigarh	12	7.6 (7.1-8.1)	8.0 (6.2-9.9)	1.0 (0.5-1.8)	4183 (20-17000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
9.	Rengali	12	7.8 (7.2-8.2)	7.5 (6.3-8.7)	0.7 (0.3-1.8)	2134 (170-9200)	0	2 (17)	C	C		
10.	Samal	12	7.6 (7.2-8.2)	7.5 (5.8-9.7)	0.8 (0.4-1.4)	3179 (230-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
10.	Talcher FU/s	12	8.0 (7.6-8.3)	7.5 (6.2-9.7)	0.8 (0.3-1.7)	2995 (170-7900)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
10.	Talcher U/s	12	8.0 (7.7-8.3)	7.7 (6.3-9.1)	1.0 (0.5-1.8)	6048 (490-17000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
13.	Talcher D/s	12	8.0 (7.6-8.4)	7.2 (5.6-8.6)	1.6 (0.7-2.5)	8600 (2400-22000)	0	7 (58)	C	Doesn't conform to Class C	TC	Waste water of Talcher township
14.	Talcher FD/s	12	8.1 (7.3-8.4)	7.2 (4.0-8.2)	1.1 (0.6-1.7)	4733 (1300-13000)	0	4 (33)	C	Doesn't conform to Class C	TC	-do-
15.	Dhenkanal U/s	12	7.9 (7.3-8.3)	7.5 (5.5-9.7)	1.0 (0.5-1.6)	30725 (3500-92000)	0	10 (83)	C	Doesn't conform to Class C	TC	Human activities
16.	Dhenkanal D/s	12	8.0 (7.3-8.4)	7.6 (6.4-9.5)	1.3 (0.8-2.1)	22700 (2300-92000)	0	9 (75)	C	Doesn't conform to Class C	TC	Waste water of Dhenkanal township



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)						
17.	Bhuban	12	7.9 (6.7-8.4)	7.9 (5.8-9.8)	1.0 (0.5-1.6)	6359 (330-22000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
18.	Kabatabandha	12	7.9 (6.9-8.5)	7.5 (6.2-9.2)	1.0 (0.6-1.8)	7078 (330-22000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
19.	Dharmasala U/s	12	8.0 (7.4-8.5)	7.5 (6.3-9.4)	0.9 (0.4-1.4)	2184 (230-5400)	0	11 (92)	B	Doesn't conform to Class B	TC	Human activities
20.	Dharmasala D/s	12	8.1 (7.5-8.5)	7.6 (5.2-9.7)	1.2 (0.6-1.7)	3563 (170-9400)	0	11 (92)	B	Doesn't conform to Class B	TC	Human activities
21.	Pottamundai	12	8.0 (7.6-8.4)	7.4 (6.0-10.3)	1.1 (0.2-2.9)	9516 (790-35000)	0	12 (100)	B	Doesn't conform to Class B	TC	Human activities
Nandira river												
22.	Nandira river before confluence with river Brahmani	12	8.3 (7.7-8.5)	7.6 (4.0-9.1)	2.2 (0.6-3.0)	8283 (490-24000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
Kisindajhor												
23.	Kisindajhor	12	8.2 (7.7-8.5)	8.5 (5.7-12.1)	1.2 (0.5-2.5)	6757 (490-24000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
Kharasuan River												
24.	Khanditara	12	7.9 (7.1-8.4)	7.4 (5.7-8.4)	0.8 (0.4-1.6)	2965 (490-7900)	0	2 (17)	C	C		

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)						
25.	Binjharpur	12	8.0 (7.3-8.4)	7.8 (6.3-9.1)	0.7 (0.3-1.5)	4150 (1400-7900)	0	2 (17)	C	C		
26.	Aul	12	7.9 (7.1-8.3)	7.1 (5.9-9.7)	1.0 (0.4-1.3)	28403 (2200-160000)	0	8 (67)	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	11	8.2 (7.8-8.4)	7.8 (6.1-9.5)	0.8 (0.3-1.4)	10645 (1300-35000)	0	5 (45)	C	Doesn't conform to Class C	TC	Human activities
Baitarani River												
2.	Joda	12	7.8 (7.1-8.3)	7.2 (5.6-8.5)	0.9 (0.3-2.0)	5166 (790-16000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
3.	Anandpur	12	7.9 (7.5-8.4)	7.1 (6.2-8.6)	0.8 (0.3-1.5)	6975 (1300-35000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
4.	Jajpur	12	7.9 (7.4-8.3)	7.5 (5.4-8.8)	1.5 (0.8-2.5)	9733 (2100-24000)	0	10 (83)	C	Doesn't conform to Class C	TC	Human activities
5.	Chandbali U/s	12	7.7 (7.2-8.3)	6.2 (5.0-7.4)	1.0 (0.2-1.9)	13267 (2400-24000)	0	11 (92)	C	Doesn't conform to Class C	TC	Human activities
6.	Chandbali D/s	12	7.8 (7.5-8.3)	6.2 (5.0-7.8)	1.1 (0.5-1.7)	33450 (9400-160000)	0	12 (100)	C	Doesn't conform to Class C	TC	Human activities
Salandi River												
7.	Bhadrak U/s	12	8.0 (7.0-8.6)	7.3 (5.5-9.1)	0.9 (0.4-1.6)	27790 (490-160000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
8.	Bhadrak D/s	12	7.9 (7.2-8.5)	6.4 (4.3-10.2)	1.5 (0.6-2.5)	52575 (7900-160000)	0	12 (100)	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)						
Dhamra River												
9.	Dhamra	12	7.6 (7.1-8.2)	5.8 (5.0-6.5)	1.6 (0.8-2.7)	23627 (230-160000)	0	10 (82)	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)



(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	8.1 (7.7-8.4)	7.7 (5.7-9.3)	1.0 (0.3-1.9)	5043 (170-17000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
2.	Potagarh	12	8.0 (7.4-8.4)	7.2 (6.4-8.2)	1.1 (0.3-2.1)	1263 (<1.8-5400)	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			

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)



(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 (7.0-8.2)	6.8 (6.2-7.5)	0.9 (0.2-1.7)	10233 (1700-35000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
2.	J.K. Pur D/S	12	7.9 (7.3-8.3)	6.8 (5.9-7.7)	2.1 (0.4-3.2)	23508 (7900-54000)	1 (8)	12 (100)	C	Doesn't conform to Class C	BOD,TC	Human activities
3.	Rayagada D/S	12	7.8 (7.5-8.3)	6.9 (6.4-7.4)	1.3 (0.3-2.0)	27817 (5400-92000)	0	12 (100)	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 (7.8-8.5)	7.5 (5.6-8.8)	1.3 (0.6-1.9)	3733 (490-7900)	0	2 (17)	C	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			

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)

(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	7.9 (7.6-8.4)	6.9 (5.6-8.8)	1.4 (0.6-2.7)	18625 (4900-54000)	0	10 (83)	C	Doesn't conform to Class C	TC	Human activities
2.	Balasore U/s	12	7.9 (7.3-8.3)	7.0 (6.0-8.2)	1.3 (0.4-2.2)	10425 (1300-35000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
3.	Balasore D/s	12	7.8 (7.3-8.2)	6.6 (5.6-7.6)	1.9 (0.7-3.5)	33933 (4900-92000)	2 (17)	11 (92)	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	7.5 (6.8-8.1)	6.9 (6.3-7.9)	1.0 (0.5-1.7)	14817 (1300-92000)	0	5 (42)	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)

(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	7.9 (7.4-8.3)	6.7 (6.0-7.2)	0.8 (0.5-1.6)	3043 (230-5400)	0	1 (8)	C	C		
2.	Gunupur	12	7.9 (7.6-8.4)	6.9 (6.3-7.9)	0.8 (0.4-1.6)	3424 (790-9400)	0	2 (17)	C	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			

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-5.21 Water quality with respect to Other Parameters during 2016 (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	72 (2-352)	58 (28-72)	7.1 (3.3-20.2)	0.065 (0.056-0.112)	0.004 (0.001-0.009)	1.12 (0.56-1.40)	873 (130-3500)	141 (82-171)	0.30 (0.19-0.52)	0.098 (0.003-0.428)	81 (58-95)	53 (32-60)	8.1 (3.9-14.7)	6.2 (.7-10.7)	0.324 (0.150-0.550)
2.	Jharsuguda	65 (3-243)	58 (24-76)	8.5 (4.9-12.8)	0.075 (0.056-0.224)	0.004 (0.001-0.007)	1.20 (0.84-2.24)	2643 (330-7900)	150 (99-181)	0.32 (0.22-0.47)	0.111 (0.003-0.421)	86 (52-100)	54 (24-66)	8.9 (5.9-12.7)	8.7 (3.2-14.0)	0.315 (0.180-0.540)
3.	Brajrajnagar U/s	80 (4-337)	60 (24-76)	7.8 (3.3-16.5)	0.056 (0.056-0.056)	0.002 (0.001-0.005)	1.07 (0.56-1.40)	1200 (130-3300)	151 (96-188)	0.34 (0.19-0.48)	0.082 (0.003-0.393)	85 (56-112)	55 (32-66)	9.1 (5.9-13.7)	8.3 (2.5-16.3)	0.341 (0.260-0.530)
4.	Brajrajnagar D/s	85 (4-353)	58 (20-72)	10.5 (5.7-18.3)	0.061 (0.056-0.112)	0.003 (0.001-0.009)	1.09 (0.56-1.40)	2066 (330-7000)	155 (103-181)	0.35 (0.23-0.53)	0.088 (0.003-0.411)	89 (58-117)	56 (32-74)	9.4 (4.9-15.7)	9.5 (4.2-18.7)	0.365 (0.250-0.660)
Bheden river																
5.	Jharsuguda	51 (9-167)	71 (36-96)	9.0 (5.1-13.1)	0.061 (0.056-0.112)	0.003 (0.001-0.014)	1.09 (0.84-1.68)	1273 (460-5400)	224 (127-338)	0.47 (0.27-0.83)	0.103 (0.021-0.260)	131 (78-209)	83 (42-116)	16.2 (6.9-33.3)	23.4 (5.7-48.7)	0.526 (0.330-0.890)
Hirakud Reservoir																
6.	Hirakud reservoir	27 (4-174)	76 (52-92)	7.9 (5.1-10.6)	0.065 (0.056-0.112)	0.004 (0.001-0.011)	1.17 (0.56-1.68)	1031 (130-3500)	190 (167-219)	0.32 (0.24-0.42)	0.047 (0.007-0.253)	107 (92-127)	76 (66-82)	9.8 (7.8-12.7)	10.1 (4.7-17.7)	0.401 (0.270-0.630)
Power Channel																
7.	Power Channel U/s	27 (1-185)	76 (60-84)	7.3 (4.9-10.4)	0.056 (0.056-0.056)	0.003 (0.001-0.005)	1.02 (0.56-1.40)	567 (78-2400)	191 (163-230)	0.34 (0.23-0.50)	0.061 (0.007-0.302)	108 (92-126)	75 (62-86)	10.8 (7.8-14.7)	9.7 (4.6-16.4)	0.415 (0.250-0.640)



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)							
8.	Power Channel D/s	34 (2-241)	76 (52-88)	9.7 (6.6-15.0)	0.056 (0.056-0.056)	0.003 (0.001-0.005)	1.04 (0.84-1.40)	1728 (490-5400)	195 (156-231)	0.32 (0.20-0.62)	0.061 (0.011-0.260)	110 (96-128)	77 (62-86)	10.5 (5.9-21.5)	10.5 (5.4-17.0)	0.405 (0.250-0.650)	
Mahanadi river																	
9.	Sambalpur U/s	23 (3-152)	78 (52-92)	9.4 (5.7-13.3)	0.084 (0.056-0.168)	0.005 (0.001-0.011)	1.30 (0.84-2.24)	15230 (110-160000)	205 (159-250)	0.39 (0.22-0.56)	0.119 (0.003-0.460)	116 (93-142)	77 (56-90)	12.5 (7.8-19.6)	10.8 (7.1-17.5)	0.504 (0.290-0.930)	
10.	Sambalpur D/s	25 (1-131)	87 (60-116)	18.8 (10.5-24.8)	0.089 (0.056-0.168)	0.005 (0.002-0.014)	1.35 (0.84-1.68)	36825 (3300-160000)	228 (176-284)	0.43 (0.26-0.71)	0.131 (0.028-0.442)	131 (98-175)	87 (54-100)	14.7 (7.8-25.4)	12.6 (8.2-21.4)	0.437 (0.290-0.710)	
11.	Sambalpur FD/s at Shankarmath	24 (3-131)	88 (60-108)	13.4 (6.6-16.7)	0.061 (0.056-0.112)	0.004 (0.001-0.009)	1.09 (0.56-1.40)	8174 (790-54000)	238 (167-296)	0.44 (0.30-0.64)	0.140 (0.007-0.463)	135 (96-187)	87 (64-102)	15.4 (9.8-23.5)	13.0 (5.7-30.4)	0.474 (0.320-0.760)	
12.	Sambalpur FFD/s at Huma	24 (1-174)	78 (52-96)	10.7 (6.6-17.5)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.09 (0.56-1.40)	19473 (490-160000)	194 (164-220)	0.32 (0.23-0.41)	0.091 (0.003-0.316)	110 (94-124)	77 (58-88)	10.5 (7.8-13.7)	10.2 (5.0-18.6)	0.437 (0.240-0.710)	
13.	Sonepur U/s	22 (3-146)	79 (60-96)	7.8 (5.1-12.5)	0.061 (0.056-0.112)	0.004 (0.001-0.009)	1.20 (0.56-1.40)	538 (78-2200)	201 (176-219)	0.36 (0.26-0.73)	0.055 (0.003-0.253)	113 (98-124)	80 (62-90)	11.7 (8.8-21.5)	8.9 (3.6-17.9)	0.430 (0.280-0.650)	
14.	Sonepur D/s	22 (2-123)	84 (68-116)	10.1 (7.0-14.6)	0.070 (0.056-0.112)	0.007 (0.001-0.014)	1.17 (0.56-1.68)	2410 (130-4900)	212 (173-282)	0.32 (0.23-0.43)	0.066 (0.003-0.242)	121 (98-156)	86 (72-102)	10.8 (7.8-15.7)	10.0 (6.0-18.8)	0.433 (0.270-0.750)	
15.	Tikarapada	50 (4-310)	82 (60-104)	7.7 (5.0-15.9)	0.056 (0.056-0.056)	0.004 (0.001-0.007)	1.20 (0.84-1.68)	169 (13-7900)	201 (181-238)	0.33 (0.16-0.60)	0.046 (0.011-0.091)	116 (105-132)	79 (64-88)	10.7 (5.9-17.6)	10.5 (4.5-19.6)	0.468 (0.220-0.970)	
16.	Narasinghpur	25 (3-58)	74 (56-96)	8.0 (4.9-11.8)	0.084 (0.056-0.336)	0.007 (0.001-0.033)	1.35 (0.84-2.52)	1446 (490-3500)	211 (131-489)	0.37 (0.25-0.89)	0.091 (0.025-0.312)	107 (78-142)	73 (52-84)	11.3 (7.8-29.4)	8.8 (1.5-19.2)	0.421 (0.240-0.920)	



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)						
17.	Munduli	27 (3-111)	75 (56-100)	8.1 (4.9-11.9)	0.061 (0.056-0.112)	0.004 (0.001-0.007)	1.17 (0.84-1.40)	2813 (170-11000)	190 (136-284)	0.36 (0.25-0.49)	0.087 (0.006-0.316)	104 (78-132)	73 (48-92)	10.8 (7.8-15.7)	9.4 (2.0-18.3)	0.384 (0.230-0.570)
18.	Cuttack U/s	28 (4-167)	72 (64-88)	10.2 (5.1-16.9)	0.075 (0.056-0.168)	0.004 (0.001-0.013)	1.20 (0.84-1.40)	701 (170-1700)	181 (157-203)	0.38 (0.25-0.58)	0.036 (0.003-0.144)	104 (89-115)	70 (56-82)	11.9 (7.8-16.6)	7.8 (2.5-14.5)	0.395 (0.240-0.590)
19.	Cuttack D/s	41 (7-194)	78 (64-88)	15.8 (11.9-20.2)	0.070 (0.056-0.112)	0.004 (0.001-0.009)	1.25 (1.12-1.40)	36433 (1300-160000)	198 (140-254)	0.34 (0.26-0.48)	0.048 (0.003-0.221)	112 (86-134)	77 (60-92)	10.8 (7.8-15.7)	10.4 (4.1-17.8)	0.369 (0.260-0.470)
20.	Cuttack FD/s	30 (2-171)	80 (56-92)	10.9 (6.7-15.9)	0.061 (0.056-0.112)	0.003 (0-0.007)	1.17 (0.84-1.40)	33667 (1300-160000)	200 (152-244)	0.35 (0.27-0.46)	0.042 (0.003-0.197)	112 (84-128)	77 (60-88)	11.1 (7.8-15.7)	9.6 (5.3-21.6)	0.386 (0.270-0.640)
21.	Paradeep U/s	78 (5-155)	87 (56-112)	15.1 (9.4-22.0)	0.089 (0.056-0.168)	0.004 (0.001-0.013)	1.45 (1.12-2.24)	6486 (170-24000)	8893 (146-29050)	24.67 (0.31-64.63)	0.404 (0.025-1.122)	5800 (98-21580)	885 (66-2400)	3117.0 (10.8-11644.1)	370.4 (7.6-1318.4)	0.508 (0.230-0.980)
22.	Paradeep D/s	142 (12-303)	99 (72-124)	29.9 (21.8-42.0)	0.070 (0.056-0.168)	0.004 (0.001-0.009)	1.27 (0.84-1.96)	5116 (20-22000)	25227 (187-42170)	50.82 (0.61-87.89)	1.426 (0.063-3.233)	19896 (102-37488)	2848 (76-4750)	10648.7 (18.6-19570.0)	1273.6 (8.3-2394.2)	0.683 (0.220-1.000)
Tel River																
23.	Monmunda	58 (4-342)	79 (40-108)	9.0 (4.9-14.0)	0.079 (0.056-0.224)	0.006 (0.001-0.015)	1.30 (0.84-1.68)	833 (45-5400)	185 (121-227)	0.32 (0.17-0.48)	0.053 (0.014-0.119)	103 (72-128)	72 (44-100)	9.3 (4.9-13.7)	6.8 (1.5-11.4)	0.451 (0.300-0.620)
Kathajodi River																
24.	Cuttack U/s	29 (4-154)	72 (56-100)	10.1 (6.0-12.9)	0.089 (0.056-0.224)	0.005 (0.001-0.014)	1.35 (0.84-1.96)	1028 (140-5400)	189 (154-238)	0.39 (0.25-0.60)	0.043 (0.003-0.197)	107 (89-132)	69 (52-104)	11.6 (7.8-16.6)	8.5 (2.5-15.5)	0.364 (0.260-0.510)
25.	Cuttack D/s	39 (17-139)	93 (60-112)	23.5 (16.1-30.3)	2.086 (0.056-8.624)	0.041 (0-0.273)	3.95 (0.84-13.72)	58492 (4900-160000)	271 (162-361)	0.63 (0.25-1.16)	0.061 (0.006-0.260)	153 (95-212)	88 (64-108)	22.6 (7.8-43.1)	13.2 (5.3-26.1)	0.341 (0.180-0.520)



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)	43 (5-114)	129 (60-192)	43.1 (16.1-84.3)	3.831 (0.056-16.240)	0.148 (0.001-0.650)	5.93 (1.68-17.04)	62650 (2100-160000)	429 (169-618)	1.18 (0.35-1.85)	0.063 (0.003-0.291)	236 (98-342)	115 (58-160)	45.7 (10.8-74.4)	18.1 (2.6-41.4)	0.320 (0.190-0.470)
Serua River																
27.	Sankhatrasa (Cuttack FD/s)	54 (3-243)	94 (64-116)	19.5 (11.3-31.3)	1.849 (0.056-6.216)	0.022 (0-0.098)	4.07 (1.12-11.48)	36175 (2300-160000)	285 (152-395)	0.74 (0.26-1.63)	0.064 (0.003-0.225)	158 (92-218)	87 (62-102)	25.8 (7.8-58.7)	12.6 (3.6-21.1)	0.322 (0.190-0.450)
Kuakhai River																
28.	Bhubaneswar FU/s	28 (2-210)	75 (48-88)	8.4 (5.0-14.6)	0.056 (0.056-0.056)	0.004 (0-0.007)	1.04 (0.84-1.12)	3908 (790-9200)	191 (139-220)	0.36 (0.22-0.49)	0.061 (<0.003-0.305)	105 (78-122)	71 (50-80)	10.8 (5.9-15.7)	9.3 (4.2-17.3)	0.362 (0.200-0.520)
29.	Bhubaneswar U/s	40 (3-270)	79 (52-92)	10.5 (6.6-15.9)	0.065 (0.056-0.112)	0.003 (0-0.007)	1.20 (0.84-1.40)	19400 (4900-54000)	208 (152-251)	0.40 (0.32-0.52)	0.071 (0.006-0.316)	116 (94-128)	74 (52-84)	12.0 (9.8-13.7)	11.2 (4.6-18.0)	0.334 (0.160-0.480)
Daya River																
30.	Bhubaneswar D/s	48 (11-229)	81 (60-104)	28.3 (16.5-44.7)	4.569 (0.112-11.536)	0.075 (0-0.346)	6.80 (1.40-19.60)	75750 (22000-160000)	303 (199-409)	0.97 (0.38-1.59)	0.098 (0.023-0.337)	167 (121-232)	83 (68-100)	31.7 (11.7-58.7)	18.1 (10.6-32.2)	0.314 (0.280-0.470)
31.	Bhubaneswar FD/s	51 (11-253)	79 (64-100)	24.2 (14.9-35.2)	4.531 (0.168-10.976)	0.120 (0-0.504)	6.47 (1.68-11.76)	52000 (22000-160000)	285 (316-389)	0.88 (0.40-1.68)	0.075 (0.011-0.326)	151 (118-185)	79 (62-92)	26.2 (11.7-42.1)	14.3 (7.0-22.4)	0.303 (0.160-0.440)
Birupa River																
32.	Choudwar D/s	24 (3-71)	82 (68-96)	8.9 (5.0-17.1)	0.065 (0.056-0.112)	0.004 (0-0.014)	1.25 (0.84-1.40)	4245 (330-24000)	208 (176-255)	0.35 (0.23-0.48)	0.049 (0.007-0.151)	116 (98-128)	80 (60-94)	11.6 (7.8-15.7)	9.6 (4.1-16.0)	0.357 (0.190-0.550)
* Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
* Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

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)

(a) 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	5.412 (0.724-24.054)	0.088 (0.002-0.310)	0.004 (<0.002-0.013)	0.020 (0.003-0.044)	1.910 (0.14-5.36)	0.009 (0.002-0.019)	0.003 (0.001-0.009)	0.012 (0.004-0.018)	0.0009 (0.0003-0.0020)	0.00007 (<0.00006-0.00019)	0.007 (0.002-0.013)
2.	Jharsuguda	5.206 (0.903-23.989)	0.071 (0.021-0.157)	0.005 (<0.002-0.011)	0.025 (0.008-0.044)	1.359 (0.210-5.200)	0.008 (0.002-0.014)	0.005 (0.002-0.013)	0.013 (0.005-0.024)	0.0010 (0.0003-0.0028)	0.00009 (<0.00006-0.00032)	0.007 (0.002-0.009)
3.	Brajraj nagar U/s	4.366 (0.688-12.594)	0.078 (0.002-0.172)	0.008 (<0.002-0.015)	0.024 (0.012-0.042)	1.524 (0.140-6.400)	0.010 (0.002-0.022)	0.003 (0.001-0.014)	0.010 (0.001-0.015)	0.0009 (0.0003-0.0024)	0.00013 (<0.00006-0.00044)	0.007 (0.004-0.010)
4.	Brajraj nagar D/s	5.436 (0.471-13.442)	0.159 (0.024-0.619)	0.010 (<0.002-0.020)	0.031 (0.018-0.077)	1.574 (0.220-6.400)	0.012 (0.003-0.024)	0.004 (0.002-0.012)	0.019 (0.005-0.066)	0.0010 (0.0004-0.0024)	0.00014 (<0.00006-0.00032)	0.007 (0.005-0.016)
Bheden River												
5.	Jharsuguda	2.411 (0.473-8.039)	0.108 (0.017-0.255)	0.007 (<0.002-0.023)	0.028 (0.007-0.071)	1.196 (0.021-6.200)	0.007 (0.003-0.014)	0.003 (<0.001-0.006)	0.015 (0.004-0.026)	0.0009 (0.0003-0.0021)	0.00009 (<0.00006-0.0003019)	0.007 (0.005-0.015)
Hirakud Reservoir												
6.	Hirakud reservoir	2.897 (0.676-9.057)	0.129 (0.022-0.407)	0.006 (<0.002-0.028)	0.023 (0.011-0.079)	0.687 (0.11-2.300)	0.008 (0.004-0.018)	0.003 (0.001-0.005)	0.011 (0.001-0.024)	0.0009 (0.0003-0.0024)	0.00004 (<0.00006-0.00019)	0.007 (0.004-0.011)
Power channel												
7.	Power channel U/s	1.781 (0.614-3.028)	0.073 (0.045-0.110)	0.008 (<0.002-0.028)	0.028 (0.012-0.079)	0.787 (0.040-3.700)	0.007 (0.002-0.014)	0.002 (0.001-0.004)	0.008 (0.001-0.017)	0.0009 (0.0003-0.0022)	0.00009 (<0.00006-0.00051)	0.007 (0.004-0.011)
8.	Power Channel D/s	3.204 (1.565-6.143)	0.088 (0.045-0.286)	0.011 (<0.002-0.028)	0.035 (0.018-0.069)	0.608 (0.060-1.810)	0.011 (0.004-0.019)	0.003 (0.001-0.005)	0.014 (0.008-0.019)	0.0012 (0.0003-0.0027)	0.00010 (<0.00006-0.00025)	0.010 (0.006-0.018)

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	2.473 (1.010-5.963)	0.066 (0.004-0.158)	0.006 (<0.002-0.016)	0.025 (0.012-0.044)	0.900 (0.030-5.500)	0.008 (0.004-0.018)	0.004 (0.002-0.005)	0.011 (0.003-0.019)	0.0009 (0.0004-0.0025)	0.00004 (<0.00006-0.00010)	0.007 (0.004-0.012)
10.	Sambalpur D/s	5.126 (1.723-14.157)	0.098 (0.021-0.212)	0.010 (<0.002-0.030)	0.034 (0.013-0.076)	0.963 (0.03-6.900)	0.010 (0.003-0.026)	0.005 (0.002-0.008)	0.015 (0.008-0.022)	0.0011 (0.0005-0.0025)	0.00019 (<0.00006-0.00089)	0.009 (0.004-0.016)
11.	Sambalpur FD/s at Shankarmath	2.731 (0.563-7.139)	0.117 (0.004-0.381)	0.008 (<0.002-0.025)	0.028 (0.012-0.047)	0.676 (0.020-3.000)	0.009 (0.001-0.022)	0.003 (0.001-0.007)	0.012 (0.001-0.029)	0.0008 (0.0003-0.0023)	0.00005 (<0.00006-0.00025)	0.006 (0.003-0.008)
12.	Sambalpur FD/s at Huma	6.236 (1.054-25.882)	0.076 (0-0.138)	0.008 (<0.002-0.023)	0.026 (0.007-0.059)	0.719 (0.06-2.500)	0.009 (0.004-0.022)	0.003 (0.001-0.006)	0.010 (0.001-0.017)	0.0010 (0.0003-0.0023)	0.00007 (<0.00006-0.00038)	0.007 (0.005-0.011)
13.	Sonepur U/s	2.966 (0.093-10.936)	0.118 (0.025-0.378)	0.007 (<0.002-0.018)	0.027 (0.013-0.060)	0.475 (0.020-2.150)	0.010 (0.003-0.023)	0.003 (0.001-0.005)	0.008 (0.003-0.012)	0.0009 (0.0003-0.0027)	0.00007 (<0.00006-0.00025)	0.008 (0.004-0.011)
14.	Sonepur D/s	5.628 (2.028-22.759)	0.141 (0.029-0.350)	0.008 (<0.002-0.020)	0.030 (0.015-0.066)	0.493 (0.07-1.81)	0.017 (0.004-0.048)	0.004 (0.001-0.011)	0.013 (0.006-0.036)	0.0010 (0.0003-0.0026)	0.00007 (<0.00006-0.00038)	0.008 (0.004-0.013)
15.	Tikarapada	4.116 (0.277-15.396)	0.104 (0.043-0.230)	0.006 (<0.002-0.016)	0.024 (0.011-0.035)	0.862 (0.01-2.500)	0.010 (0.003-0.024)	0.003 (0.001-0.005)	0.011 (0.006-0.026)	0.0009 (0.0003-0.0026)	0.00004 (<0.00006-0.00025)	0.007 (0.004-0.011)
16.	Narasinghpur	5.116 (0.805-36.468)	0.075 (0.002-0.191)	0.008 (<0.002-0.015)	0.028 (0.008-0.049)	1.303 (0.010-4.830)	0.011 (0.002-0.033)	0.004 (0.001-0.008)	0.010 (0.001-0.021)	0.0007 (0.0003-0.0018)	0.00006 (<0.00006-0.00006)	0.006 (0.003-0.015)
17.	Munduli	2.583 (0.576-5.261)	0.085 (0.006-0.352)	0.004 (<0.002-0.011)	0.019 (0.005-0.035)	0.851 (0.04-3.87)	0.011 (0.004-0.031)	0.004 (0.001-0.008)	0.012 (0.005-0.030)	0.0007 (0.0003-0.0014)	0.00006 (<0.00006-0.00006)	0.007 (0.002-0.011)
18.	Cuttack U/s	2.145 (0.456-10.169)	0.123 (0.019-0.280)	0.006 (<0.002-0.020)	0.023 (0.012-0.052)	0.400 (0.110-1.200)	0.009 (0.002-0.023)	0.003 (0.001-0.004)	0.011 (0.001-0.016)	0.0007 (0.0003-0.0011)	0.00006 (<0.00006-0.00006)	0.006 (0.002-0.012)

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	5.520 (1.721-11.979)	0.119 (0.030-0.400)	0.010 (<0.002-0.025)	0.033 (0.012-0.066)	0.368 (0.090-1.200)	0.013 (0.004-0.039)	0.005 (0.002-0.008)	0.015 (0.006-0.023)	0.0009 (0.0004-0.0018)	0.00007 (<0.00006-0.00051)	0.008 (0.004-0.012)
20.	Cuttack FD/s	3.368 (0.965-10.823)	0.105 (0.017-0.364)	0.008 (<0.002-0.023)	0.029 (0.015-0.064)	0.437 (0.07-1.23)	0.010 (0.003-0.028)	0.004 (0.002-0.007)	0.012 (0.006-0.018)	0.0007 (0.0003-0.0011)	0.00013 (<0.00006-0.00032)	0.008 (0.005-0.012)
21.	Paradeep U/s	3.134 (0.648-10.329)	0.099 (0.008-0.428)	0.011 (<0.002-0.030)	0.036 (0.010-0.081)	1.389 (0.34-2.900)	0.014 (0.001-0.046)	0.005 (0.001-0.011)	0.024 (0.002-0.091)	0.0009 (0.0004-0.0013)	0.00013 (<0.00006-0.00019)	0.008 (0.004-0.016)
22.	Paradeep D/s	5.523 (0.794-13.319)	0.155 (0.012-0.338)	0.012 (0.002-0.035)	0.041 (0.012-0.086)	2.245 (0.03-8.72)	0.018 (0.005-0.048)	0.009 (0.003-0.018)	0.019 (0.008-0.034)	0.0010 (0.0005-0.0018)	0.00016 (<0.00006-0.00032)	0.010 (0.005-0.021)
Tel River												
23.	Monmunda	5.006 (0.182-17.284)	0.144 (0.029-0.279)	0.010 (<0.002-0.018)	0.033 (0.013-0.076)	1.652 (0.080-6.480)	0.011 (0.003-0.032)	0.003 (0.001-0.007)	0.012 (0.002-0.026)	0.0008 (0.0003-0.0023)	0.00006 (<0.00006-0.00025)	0.007 (0.004-0.011)
Kathajodi River												
24.	Cuttack U/s	2.317 (0.639-9.625)	0.091 (0.025-0.220)	0.005 (<0.002-0.017)	0.022 (0.012-0.042)	0.603 (0.070-1.430)	0.008 (0.003-0.021)	0.003 (0.001-0.006)	0.009 (0.001-0.014)	0.0006 (0.0003-0.0009)	0.00011 (<0.00006-0.00051)	0.006 (0.004-0.011)
25.	Cuttack D/s	11.290 (1.038-32.608)	0.250 (0.024-1.168)	0.013 (<0.002-0.028)	0.042 (0.015-0.071)	0.755 (0.100-2.470)	0.012 (0.006-0.028)	0.004 (0.002-0.007)	0.026 (0.010-0.093)	0.0010 (0.0005-0.0018)	0.00034 (0.00019-0.00082)	0.011 (0.006-0.021)
26.	Mattagajpur (Cuttack FD/s)	13.491 (4.740-28.879)	0.382 (0.082-0.913)	0.016 (<0.002-0.033)	0.049 (0.018-0.076)	0.983 (0.050-4.410)	0.013 (0.003-0.034)	0.006 (0.001-0.010)	0.034 (0.014-0.085)	0.0010 (0.0004-0.0023)	0.00028 (<0.00006-0.00071)	0.014 (0.003-0.031)
Serua River												
27.	Sankhatrasa (Cuttack FD/s)	11.009 (2.548-30.637)	0.351 (0.059-1.445)	0.012 (<0.002-0.031)	0.032 (0.013-0.069)	0.958 (0.080-3.290)	0.008 (0.003-0.019)	0.004 (0.001-0.009)	0.010 (0.001-0.017)	0.0007 (0.0004-0.0011)	0.00022 (<0.00006-0.00082)	0.008 (0.004-0.018)



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	1.580 (0.279-3.547)	0.110 (0.028-0.298)	0.006 (<0.002-0.012)	0.028 (0.012-0.052)	0.655 (0.056-3.10)	0.008 (0.003-0.012)	0.002 (0.001-0.003)	0.008 (0.003-0.011)	0.0011 (0.0002-0.0024)	0.00007 (<0.00006-0.00019)	0.009 (0.003-0.040)
29.	Bhubaneswar U/s	2.541 (0.914-5.923)	0.090 (0.009-0.234)	0.007 (<0.002-0.015)	0.027 (0.012-0.47)	1.606 (0.220-7.000)	0.008 (0.003-0.013)	0.002 (0.002-0.003)	0.009 (0.006-0.012)	0.0010 (0.0002-0.0021)	0.00006 (<0.00006-0.00013)	0.009 (0.004-0.032)
Daya River												
30.	Bhubaneswar D/s	15.000 (6.876-40.984)	0.451 (0.005-1.119)	0.015 (<0.002-0.025)	0.041 (0.005-0.077)	1.850 (0.36-7.200)	0.012 (0.005-0.021)	0.005 (0.001-0.008)	0.016 (0.004-0.024)	0.0013 (0.0004-0.0026)	0.00017 (<0.00006-0.00032)	0.010 (0.006-0.029)
31.	Bhubaneswar FD/s	13.532 (3.197-40.578)	0.312 (0.094-0.629)	0.009 (<0.002-0.023)	0.030 (0.007-0.064)	1.563 (0.201-3.800)	0.009 (0.003-0.018)	0.004 (0.002-0.007)	0.011 (0.005-0.018)	0.0010 (0.0004-0.0023)	0.00009 (<0.00006-0.00025)	0.009 (0.006-0.031)
Birupa River												
32.	Choudwar D/s	2.575 (0.235-7.830)	0.074 (0.011-0.230)	0.006 (<0.002-0.021)	0.022 (0.012-0.052)	0.743 (0.130-2.200)	0.008 (0.005-0.016)	0.004 (0.002-0.011)	0.009 (0.002-0.018)	0.0010 (0.0003-0.0026)	0.00008 (<0.00006-0.00025)	0.006 (0.004-0.009)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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)				(MPN/100ml)	(µS/cm)	(mg/l)						
Sankh river																
1.	Sankha U/s	68 (5-378)	47 (24-60)	8.8 (3.6-15.2)	0.056 (0.056-0.056)	0.002 (0-0.007)	1.19 (0.84-1.68)	1583 (330-4900)	143 (97-169)	0.39 (0.20-0.64)	0.052 (0.003-0.273)	82 (57-96)	49 (30-68)	10.1 (5.9-15.7)	9.7 (4.0-31.6)	0.439 (0.280-0.630)
Koel river																
2.	Koel U/s	165 (7-1037)	69 (24-120)	11.4 (4.0-24.2)	0.065 (0.056-0.112)	0.002 (0.001-0.004)	1.28 (0.84-1.68)	9153 (330-24000)	179 (122-267)	0.27 (0.15-0.40)	0.061 (0.007-0.283)	101 (72-144)	69 (36-106)	8.0 (3.9-10.8)	11.4 (3.7-27.5)	0.390 (0.240-0.590)
Brahmani river																
3.	Panposh U/s	103 (5-655)	64 (32-116)	9.3 (4.0-16.2)	0.439 (0.056-4.424)	0.018 (0-0.177)	1.28 (0.56-1.96)	10240 (490-54000)	157 (94-271)	0.31 (0.24-0.38)	0.070 (0.003-0.296)	92 (56-154)	60 (28-98)	8.6 (5.9-13.7)	10.4 (4.1-22.3)	0.385 (0.230-0.490)
4.	Panposh D/s	159 (14-926)	52 (20-88)	33.9 (20.3-52.5)	5.273 (0.056-11.648)	0.035 (0-0.175)	9.08 (1.12-23.24)	53167 (11000-160000)	257 (151-363)	0.62 (0.22-0.96)	0.109 (0.011-0.354)	149 (81-206)	85 (58-106)	22.4 (7.8-48.9)	36.6 (9.6-67.0)	1.066 (0.300-1.900)
5.	Rourkela D/s	163 (6-986)	55 (20-90)	28.9 (17.8-52.5)	3.085 (0.056-10.808)	0.020 (0-0.108)	5.32 (1.12-12.88)	38567 (7900-160000)	220 (133-286)	0.49 (0.25-0.71)	0.077 (0.003-0.307)	125 (79-156)	75 (56-94)	16.1 (6.9-22.5)	25.3 (7.7-57.1)	0.833 (0.290-1.700)
6.	Biritola	166 (5-938)	66 (32-136)	13.0 (6.8-18.2)	0.966 (0.056-9.968)	0.037 (0-0.399)	1.45 (0.56-2.52)	2862 (68-13000)	197 (112-319)	0.44 (0.16-0.75)	0.060 (0.003-0.297)	114 (66-198)	71 (40-144)	13.9 (3.9-24.4)	15.2 (4.3-29.0)	0.583 (0.300-1.000)
7.	Attaghat#	151 (7-861)	67 (28-112)	18.6 (10.7-28.8)	1.125 (0.056-11.2)	0.031 (0-0.336)	2.80 (1.12-15.96)	11459 (220-54000)	220 (143-307)	0.59 (0.20-1.20)	0.058 (0.003-0.151)	126 (82-168)	72 (42-116)	19.1 (4.9-35.2)	18.6 (3.6-31.0)	0.582 (0.290-0.890)
8.	Bonaigarh	120 (4-778)	65 (20-96)	10.5 (5.6-17.8)	0.098 (0.056-0.168)	0.003 (0-0.007)	1.45 (0.84-1.96)	2542 (<1.8-13000)	200 (93-282)	0.52 (0.32-0.88)	0.139 (0.003-0.667)	114 (58-156)	67 (36-84)	15.9 (7.8-27.4)	14.2 (4.8-27.5)	0.529 (0.300-0.810)

Data for the period January-December, 2015 excluding November, 2016



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	37 (3-131)	49 (36-60)	8.1 (3.6-17.8)	0.065 (0.056-0.112)	0.002 (0.001-0.006)	1.33 (0.84-1.68)	1366 (45-5400)	138 (88-169)	0.32 (0.19-0.45)	0.069 (0.007-0.287)	79 (59-99)	49 (38-64)	8.5 (5.9-12.7)	10.2 (5.5-19.4)	0.372 (0.170-0.690)
10.	Samal	43 (5-169)	50 (34-64)	8.9 (5.6-13.7)	0.056 (0.056-0.056)	0.001 (0-0.004)	1.07 (0.84-1.40)	1405 (78-3500)	141 (103-205)	0.42 (0.22-0.95)	0.085 (0.003-0.322)	82 (65-119)	48 (36-60)	10.6 (5.9-22.5)	7.3 (2.7-15.1)	0.376 (0.220-0.510)
11.	Talcher FU/s	34 (2-156)	49 (40-58)	8.4 (3.9-14.1)	0.056 (0.056-0.056)	0.004 (0.001-0.005)	1.17 (0.84-1.40)	1586 (78-4900)	144 (117-198)	0.40 (0.23-0.95)	0.048 (0.014-0.105)	82 (65-109)	50 (36-64)	10.4 (5.9-23.5)	9.7 (3.6-17.2)	0.390 (0.200-0.920)
12.	Talcher U/s	41 (2-156)	50 (36-64)	10.4 (6.7-14.8)	0.070 (0.056-0.112)	0.004 (0.002-0.011)	1.21 (0.56-1.68)	3260 (130-7900)	138 (116-163)	0.30 (0.23-0.50)	0.080 (0.021-0.376)	80 (68-98)	50 (36-64)	8.1 (5.9-14.7)	10.6 (4.1-17.9)	0.371 (0.210-0.610)
13.	Talcher D/s	58 (10-277)	59 (38-108)	15.6 (4.9-23.9)	0.065 (0.056-0.112)	0.004 (0.001-0.011)	1.24 (0.56-1.68)	5278 (330-17000)	175 (133-358)	0.30 (0.20-0.36)	0.068 (0.011-0.130)	103 (75-218)	68 (46-164)	8.9 (7.8-11.7)	18.5 (5.6-68.4)	0.548 (0.250-1.900)
14.	Talcher FD/s	57 (9-278)	63 (56-80)	10.8 (6.6-15.2)	0.065 (0.056-0.112)	0.004 (0.001-0.007)	1.17 (0.84-1.40)	2149 (330-7900)	181 (151-240)	0.39 (0.22-0.47)	0.059 (0.003-0.141)	105 (88-138)	68 (52-118)	11.6 (8.8-14.7)	15.2 (6.0-29.1)	0.668 (0.280-2.200)
15.	Dhenkanal U/s	44 (3-123)	59 (40-96)	8.4 (4.1-11.6)	0.061 (0.056-0.112)	0.003 (0.001-0.006)	1.28 (0.84-1.68)	19225 (1700-54000)	157 (113-242)	0.31 (0.23-0.43)	0.083 (0.007-0.326)	91 (68-138)	57 (42-92)	8.7 (5.9-11.7)	11.5 (6.7-16.9)	0.468 (0.250-0.770)
16.	Dhenkanal D/s	46 (5-122)	65 (46-96)	10.7 (6.2-15.7)	0.061 (0.056-0.112)	0.004 (0.001-0.007)	1.21 (0.84-1.68)	12567 (1300-54000)	179 (140-285)	0.37 (0.27-0.77)	0.079 (0.010-0.323)	105 (80-157)	64 (46-100)	11.2 (6.8-25.4)	13.2 (6.7-18.9)	0.436 (0.260-0.650)
17.	Bhuban	67 (4-267)	53 (40-86)	10.2 (3.9-14.4)	0.079 (0.056-0.280)	0.004 (0.001-0.011)	1.31 (0.84-1.96)	3602 (130-17000)	155 (111-267.3)	0.34 (0.22-0.56)	0.065 (0.003-0.330)	87 (67-107)	54 (44-74)	9.2 (5.9-15.7)	11.7 (4.2-23.5)	0.441 (0.290-0.590)
18.	Kabatabandha	66 (6-234)	54 (44-72)	9.8 (5.8-18.2)	0.075 (0.056-0.112)	0.004 (0-0.009)	1.28 (0.84-1.68)	4388 (130-16000)	159 (138-184)	0.35 (0.22-0.57)	0.084 (0.003-0.351)	91 (79-104)	56 (44-68)	9.5 (5.9-15.7)	11.8 (5.1-22.5)	0.416 (0.270-0.600)



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	31 (2-170)	71 (48-96)	9.0 (4.0-12.1)	0.076 (0.056-0.112)	0.005 (0.001-0.009)	1.19 (0.56-1.68)	1053 (78-2200)	180 (135-225)	0.42 (0.21-0.62)	0.096 (0.003-0.604)	103 (77-132)	69 (50-90)	12.8 (5.9-17.6)	7.1 (1.4-14.0)	0.293 (0.110-0.420)	
20.	Dharmasala D/s	30 (5-151)	71 (48-92)	11.4 (5.6-18.8)	0.098 (0.056-0.168)	0.007 (0.001-0.017)	1.24 (0.28-1.68)	2048 (78-7000)	185 (130-237)	0.38 (0.21-0.63)	0.118 (0.007-0.713)	107 (71-136)	71 (44-90)	12.0 (5.9-18.6)	9.2 (2.8-14.4)	0.269 (0.120-0.400)	
21.	Pottamundai	48 (5-259)	76 (48-100)	10.1 (4.0-19.8)	0.075 (0.056-0.112)	0.005 (0.001-0.014)	1.31 (0.56-1.68)	6832 (490-24000)	210 (147-264)	0.45 (0.36-0.51)	0.080 (0.010-0.232)	120 (85-147)	76 (48-100)	14.8 (10.8-19.6)	11.8 (3.5-17.4)	0.407 (0.250-0.620)	
Nandira River																	
22.	Nandira river before confluence with river Brahmani	22 (12-38)	139 (104-212)	19.3 (8.2-25.6)	0.075 (0.056-0.224)	0.008 (0.002-0.028)	1.28 (0.56-1.96)	3827 (130-13000)	435 (332-535)	0.60 (0.46-0.72)	0.203 (0.034-0.390)	254 (191-312)	170 (120-208)	28.8 (22.5-34.3)	47.6 (17.9-81.1)	1.924 (0.750-3.000)	
Kisinda Jhor																	
23.	Kisindajhor	38 (5-154)	121 (72-172)	12.1 (4.0-18.3)	0.089 (0.056-0.224)	0.008 (0.002-0.018)	1.40 (0.84-2.24)	3278 (78-17000)	431 (213-573)	0.92 (0.47-1.48)	0.160 (0.08-0.228)	247 (124-336)	150 (74-200)	43.3 (15.6-76.3)	40.0 (12.3-59.5)	1.389 (0.230-2.600)	
Kharasrota River																	
24.	Khanditara	33 (5-158)	53 (42-68)	8.3 (3.9-15.7)	0.084 (0.056-0.280)	0.004 (0.001-0.013)	1.26 (0.84-1.96)	1435 (330-3300)	157 (129-194)	0.37 (0.22-0.68)	0.079 (0.010-0.288)	90 (72-116)	57 (40-78)	10.1 (5.9-19.6)	11.7 (3.8-21.4)	0.389 (0.120-0.790)	
25.	Binjharpur	31 (5-142)	59 (42-80)	7.9 (4.0-12.5)	0.061 (0.056-0.112)	0.003 (0.001-0.007)	1.05 (0.56-1.40)	2116 (790-4900)	160 (121-197)	0.37 (0.23-0.67)	0.076 (0.007-0.284)	92 (69-114)	61 (46-82)	10.4 (5.9-16.6)	10.6 (3.6-21.4)	0.271 (0.100-0.460)	
26.	Aul	59 (11-203)	63 (48-84)	10.1 (5.4-18.0)	0.084 (0.056-0.336)	0.005 (0-0.033)	1.26 (0.84-1.96)	12216 (790-92000)	187 (133-337)	0.52 (0.31-1.67)	0.107 (0.021-0.485)	108 (77-198)	65 (46-82)	16.1 (8.8-54.8)	12.2 (6.3-22.0)	0.381 (0.240-0.530)	
*Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5	
*Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-	

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality * Tolerance limit for Inland Surface water water bodies (IS-2296-1982)



(b) 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)										
Sankha River												
1.	Sankha U/s	2.406 (0.704-10.963)	0.144 (0.029-0.430)	0.009 (<0.002-0.028)	0.026 (0.010-0.054)	1.879 (0.050-7.200)	0.009 (0.001-0.052)	0.003 (0.001-0.007)	0.007 (0.001-0.013)	0.0008 (0.0004-0.0021)	0.00013 (<0.00006-0.00057)	0.005 (0.003-0.007)
Koel River												
2.	Koel U/s	5.022 (0.154-20.507)	0.161 (0.018-0.439)	0.008 (<0.002-0.025)	0.030 (0.010-0.071)	2.727 (0.120-7.850)	0.007 (0.003-0.020)	0.005 (0.001-0.012)	0.010 (0.005-0.016)	0.0009 (0.0003-0.0023)	0.00013 (<0.00006-0.00044)	0.007 (0.004-0.009)
Brahmani river												
3.	Panposh U/s	3.266 (1.101-12.200)	0.156 (0.017-0.394)	0.010 (<0.002-0.026)	0.026 (0.008-0.057)	1.900 (0.150-6.700)	0.005 (0.002-0.012)	0.003 (0.001-0.007)	0.008 (0.002-0.018)	0.0008 (0.0003-0.0018)	0.00005 (<0.00006-0.00019)	0.005 (0.003-0.008)
4.	Panposh D/s	12.763 (0.219-42.519)	0.217 (0.002-1.100)	0.015 (0.002-0.028)	0.042 (0.020-0.076)	2.977 (0.260-6.100)	0.010 (0.004-0.020)	0.006 (0.002-0.014)	0.015 (0.004-0.031)	0.0012 (0.0006-0.0019)	0.00027 (0.00012-0.00070)	0.008 (0.006-0.010)
5.	Rourkela D/s	13.099 (2.866-28.884)	0.269 (0.004-1.210)	0.013 (<0.002-0.028)	0.038 (0.018-0.066)	1.638 (0.150-6.800)	0.011 (0.005-0.034)	0.006 (0.001-0.012)	0.015 (0.005-0.026)	0.0011 (0.0004-0.0023)	0.00018 (<0.00006-0.00044)	0.008 (0.004-0.012)
6.	Biritola	7.021 (0.556-18.937)	0.170 (0.004-0.810)	0.010 (<0.002-0.021)	0.030 (0.013-0.054)	1.791 (0.160-7.900)	0.013 (0.002-0.068)	0.004 (0.001-0.009)	0.011 (0.001-0.023)	0.0010 (0.0004-0.0023)	0.00010 (<0.00006-0.00032)	0.006 (0.003-0.011)
7.	Attaghat#	8.222 (1.069-17.006)	0.191 (0.003-0.830)	0.009 (<0.002-0.026)	0.028 (0.015-0.054)	2.486 (0.110-7.000)	0.008 (0.004-0.021)	0.006 (0.002-0.010)	0.013 (0.004-0.022)	0.0009 (0.0004-0.0023)	0.00019 (<0.00006-0.00082)	0.007 (0.004-0.010)
8.	Bonaigarh	6.972 (0.912-16.873)	0.155 (0.020-0.770)	0.008 (<0.002-0.025)	0.023 (0.011-0.047)	1.171 (0.110-6.700)	0.008 (0.004-0.021)	0.004 (0.002-0.008)	0.012 (0.006-0.023)	0.0008 (0.0004-0.0022)	0.00009 (<0.00006-0.00032)	0.006 (0.003-0.011)
9.	Rengali	2.807 (0.700-5.939)	0.132 (0.002-0.324)	0.009 (<0.002-0.018)	0.025 (0.013-0.044)	1.502 (0.110-7.600)	0.011 (0.005-0.021)	0.004 (0.002-0.008)	0.013 (0.006-0.022)	0.0004 (0.0004-0.0021)	0.00010 (<0.00006-0.00038)	0.008 (0.004-0.014)

Data for the period January-December, 2016 excluding November, 2016

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	9.150 (1.096-44.016)	0.131 (0.003-0.390)	0.009 (<0.002-0.020)	0.026 (0.013-0.059)	2.348 (0.120-8.100)	0.010 (0.004-0.018)	0.004 (0.001-0.007)	0.012 (0.004-0.031)	0.0009 (0.0003-0.0019)	0.00013 (<0.00006-0.00051)	0.008 (0.004-0.013)
11.	Talcher FU/s	2.784 (0.713-13.066)	0.113 (0.011-0.380)	0.007 (<0.002-0.018)	0.024 (0.012-0.040)	0.948 (0.120-3.120)	0.009 (0.002-0.021)	0.003 (0.001-0.005)	0.010 (0.001-0.030)	0.0009 (0.0003-0.0020)	0.00008 (<0.00006-0.00063)	0.005 (0.002-0.008)
12.	Talcher U/s	3.294 (1.036-13.467)	0.117 (0.024-0.340)	0.009 (<0.002-0.018)	0.026 (0.012-0.044)	1.423 (0.060-7.900)	0.008 (0.001-0.014)	0.004 (0.001-0.006)	0.009 (0.001-0.018)	0.0010 (0.0003-0.0023)	0.00003 (<0.00006-0.00013)	0.006 (0.002-0.009)
13.	Talcher D/s	6.096 (1.377-16.036)	0.183 (0.022-0.540)	0.013 (<0.002-0.023)	0.034 (0.025-0.047)	1.296 (0.090-4.700)	0.011 (0.003-0.018)	0.006 (0.003-0.010)	0.016 (0.009-0.025)	0.0014 (0.0004-0.0024)	0.00010 (<0.00006-0.00025)	0.008 (0.005-0.011)
14.	Talcher FD/s	5.019 (0.881-24.400)	0.143 (0.019-0.590)	0.011 (<0.002-0.021)	0.031 (0.022-0.039)	1.725 (0.020-8.000)	0.011 (0.002-0.025)	0.005 (0.001-0.010)	0.010 (0.002-0.017)	0.0011 (0.0003-0.0023)	0.00004 (<0.00006-0.00006)	0.005 (0.003-0.009)
15.	Dhenkanal U/s	3.888 (1.009-14.159)	0.127 (0.025-0.470)	0.009 (<0.002-0.021)	0.027 (0.015-0.042)	2.045 (0.020-9.000)	0.009 (0.002-0.026)	0.004 (0.001-0.008)	0.010 (0.003-0.017)	0.0010 (0.0004-0.0023)	0.00009 (<0.00006-0.00019)	0.007 (0.003-0.012)
16.	Dhenkanal D/s	5.472 (0.895-14.159)	0.133 (0.025-0.370)	0.011 (<0.002-0.028)	0.032 (0.015-0.044)	2.038 (0.040-8.200)	0.011 (0.006-0.023)	0.005 (0.003-0.008)	0.014 (0.003-0.025)	0.0011 (0.0004-0.0023)	0.00014 (<0.00006-0.00032)	0.009 (0.004-0.014)
17.	Bhuban	4.322 (0.607-15.766)	0.147 (0.009-0.500)	0.014 (<0.002-0.035)	0.044 (0.013-0.092)	1.403 (0.080-3.470)	0.007 (0.004-0.012)	0.006 (0.001-0.012)	0.010 (0.005-0.014)	0.0010 (0.0002-0.0023)	0.00017 (<0.00006-0.00025)	0.008 (0.004-0.011)
18.	Kabatabandha	4.532 (0.416-20.696)	0.186 (0.030-0.440)	0.015 (<0.002-0.042)	0.047 (0.018-0.094)	2.117 (0.050-7.400)	0.043 (0.001-0.039)	0.004 (0.001-0.009)	0.009 (0.002-0.015)	0.0010 (0.0003-0.0020)	0.00014 (<0.00006-0.00044)	0.007 (0.002-0.012)
19.	Dharmasala U/s	2.142 (0.394-5.091)	0.097 (0.009-0.320)	0.008 (<0.002-0.015)	0.026 (0.013-0.044)	1.201 (0.080-7.900)	0.008 (0.004-0.013)	0.004 (0.002-0.006)	0.008 (0.002-0.017)	0.0009 (0.0004-0.0025)	0.00006 (<0.00006-0.00025)	0.007 (0.006-0.009)



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	3.233 (0.965-6.429)	0.098 (0.017-0.300)	0.010 (<0.002-0.025)	0.028 (0.012-0.037)	1.121 (0.040-7.200)	0.008 (0.004-0.013)	0.005 (0.003-0.008)	0.012 (0.002-0.022)	0.0009 (0.0004-0.0021)	0.00008 (<0.00006-0.00032)	0.007 (0.005-0.010)
21	Pottamundai	3.956 (0.828-11.806)	0.087 (0.014-0.370)	0.008 (<0.002-0.030)	0.027 (0.008-0.052)	1.468 (0.100-4.450)	0.008 (0.004-0.011)	0.005 (0.001-0.008)	0.012 (0.005-0.036)	0.0009 (0.0002-0.0016)	0.00018 (<0.00006-0.00095)	0.006 (0.002-0.012)
Nandira River												
22.	Nandira river before confluence with river Brahmani	7.131 (0.935-31.738)	0.289 (0.049-1.300)	0.015 (<0.002-0.033)	0.041 (0.015-0.072)	1.092 (0.100-4.100)	0.014 (0.006-0.032)	0.006 (0.003-0.012)	0.027 (0.013-0.050)	0.0013 (0.0005-0.0026)	0.00025 (<0.00006-0.00070)	0.011 (0.006-0.016)
Kisinda Jhor												
23.	Kisindajhor	4.111 (0.519-8.167)	0.263 (0.021-1.900)	0.015 (<0.002-0.031)	0.040 (0.018-0.064)	0.567 (0.120-2.000)	0.015 (0.005-0.038)	0.007 (0.001-0.014)	0.024 (0.006-0.049)	0.0014 (0.0004-0.0029)	0.00023 (<0.00006-0.00057)	0.011 (0.005-0.021)
Kharasrota River												
24.	Khanditara	3.181 (0.519-10.336)	0.133 (0.012-0.790)	0.010 (<0.002-0.023)	0.030 (0.015-0.054)	0.739 (0.130-2.700)	0.008 (0.004-0.014)	0.004 (0.001-0.008)	0.008 (0.004-0.016)	0.0009 (0.0002-0.0023)	0.00011 (<0.00006-0.00044)	0.007 (0.005-0.010)
25.	Binjharpur	1.974 (0.768-7.949)	0.109 (0.017-0.430)	0.011 (<0.002-0.028)	0.034 (0.013-0.064)	0.861 (0.170-2.600)	0.008 (0.002-0.012)	0.003 (0.001-0.006)	0.007 (0.001-0.012)	0.0008 (0.0003-0.0023)	0.00015 (<0.00006-0.00070)	0.006 (0.003-0.009)
26.	Aul	4.439 (1.289-12.564)	0.088 (0.014-0.410)	0.010 (<0.002-0.023)	0.033 (0.013-0.049)	2.196 (0.260-5.800)	0.009 (0.006-0.012)	0.005 (0.002-0.007)	0.013 (0.007-0.041)	0.0008 (0.0002-0.0011)	0.00009 (<0.00006-0.00070)	0.007 (0.003-0.011)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
* Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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 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)						
Kusei river																
1.	Deogan	163 (3-1279)	109 (64-144)	8.2 (4.2-13.6)	0.056 (0.056-0.056)	0.006 (0.002-0.007)	1.20 (0.84-1.40)	6196 (490-24000)	260 (161-326)	0.33 (0.19-0.48)	0.096 (0.003-0.337)	142 (92-172)	105 (62-130)	12.4 (5.9-17.6)	10.0 (3.8-23.9)	0.374 (0.230-0.510)
Baitarani river																
2.	Joda	163 (6-1200)	46 (28-72)	9.1 (3.6-20.3)	0.070 (0.056-0.112)	0.002 (0.001-0.004)	1.21 (0.56-1.68)	2387 (330-5400)	129 (103-183)	0.35 (0.22-0.71)	0.057 (0.003-0.292)	75 (62-100)	46 (36-60)	7.8 (5.9-10.8)	10.1 (3.1-18.7)	0.323 (0.180-0.450)
3.	Anandpur	65 (5-277)	64 (48-92)	8.9 (4.0-16.9)	0.065 (0.056-0.112)	0.003 (0.001-0.004)	1.10 (0.56-1.68)	4032 (490-24000)	168 (127-300)	0.36 (0.21-1.05)	0.055 (0.003-0.279)	98 (72-168)	62 (40-84)	10.8 (5.9-35.2)	9.6 (3.6-21.0)	0.329 (0.170-0.450)
4.	Jajpur	32 (3-135)	67 (44-76)	13.1 (7.8-19.0)	0.079 (0.056-0.224)	0.004 (0.001-0.009)	1.26 (0.84-1.68)	6308 (1400-17000)	170 (126-230)	0.35 (0.23-0.54)	0.101 (0.007-0.639)	99 (76-124)	65 (40-80)	10.4 (6.9-12.7)	9.1 (1.6-22.4)	0.258 (0.150-0.420)
5.	Chandbali U/s	164 (39-432)	75 (36-112)	18.0 (7.9-30.0)	0.084 (0.056-0.224)	0.003 (0.001-0.011)	1.28 (0.84-1.96)	7399 (490-16000)	11389 (148-58120)	24.13 (0.42-100.66)	0.981 (0.021-4.146)	8502 (84-48240)	1055 (40-5100)	4641 (9.8-26909)	422.7 (3.1-2170.3)	0.382 (0.230-0.670)
6.	Chandbali D/s	235 (31-796)	71 (40-108)	20.1 (9.9-35.0)	0.075 (0.056-0.112)	0.004 (0.001-0.011)	1.31 (0.84-1.68)	25083 (4900-160000)	8635 (149-39160)	21.58 (0.50-80.64)	0.805 (0.062-2.423)	6090 (87-26120)	787 (40-2460)	3308 (11.7-15166.8)	327.4 (2.4-1113.1)	0.335 (0.220-0.470)
Salandi river																
7.	Bhadrak U/s	16 (3-39)	80 (40-120)	9.4 (6.2-12.7)	0.098 (0.056-0.448)	0.007 (0-0.014)	1.31 (0.84-2.24)	13062 (330-54000)	190 (114-277)	0.38 (0.32-0.51)	0.059 (0.010-0.137)	109 (68-152)	75 (40-104)	12.2 (8.8-14.7)	6.9 (2.4-14.3)	0.273 (0.130-0.380)
8.	Bhadrak D/s	24 (2-76)	85 (36-116)	13.3 (7.9-18.2)	0.079 (0.056-0.168)	0.008 (0.001-0.017)	1.35 (1.12-1.68)	42650 (4900-160000)	212 (125-287)	0.44 (0.28-0.76)	0.066 (0.010-0.154)	123 (72-162)	82 (44-120)	14.7 (7.8-25.4)	9.0 (3.7-24.6)	0.273 (0.130-0.370)



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)								
Dhamra river																
9.	Dhamra	316 (49-656)	96 (64-164)	35.8 (20.7-49.0)	0.084 (0.056-0.112)	0.002 (0-0.004)	1.38 (1.12-1.68)	9578 (45-16000)	22873 (1698-50910)	45.89 (4.12-98.45)	1.579 (0.021-3.630)	17569 (988-42430)	2694 (350-5400)	9687.1 (293.6-23973.3)	1340.6 (10.4-3905.4)	0.445 (0.170-0.820)
*Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
* Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

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)



(c) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃ ⁻ (mg/l)	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
Kusei river												
1.	Deogan	2.879 (0.226-6.526)	0.180 (0.022-0.450)	0.009 (<0.002-0.023)	0.027 (0.013-0.039)	2.049 (0.140-7.400)	0.007 (0.003-0.011)	0.004 (0.001-0.010)	0.009 (0.001-0.021)	0.0009 (0.0004-0.0025)	0.00018 (<0.00006-0.00051)	0.007 (0.004-0.011)
Baitarani river												
2.	Joda	4.866 (0.535-22.200)	0.222 (0.038-0.860)	0.012 (<0.002-0.027)	0.039 (0.015-0.070)	1.538 (0.490-5.500)	0.008 (0.002-0.016)	0.004 (0.001-0.013)	0.009 (0.006-0.017)	0.0008 (0.0003-0.0021)	0.00013 (<0.00006-0.00057)	0.006 (0.005-0.009)
3.	Anandpur	4.003 (0.755-25.014)	0.137 (0.012-0.342)	0.009 (<0.002-0.020)	0.032 (0.013-0.044)	1.806 (0.080-6.400)	0.008 (0.003-0.013)	0.004 (0.001-0.006)	0.014 (0.007-0.028)	0.0009 (0.0003-0.0021)	0.00008 (<0.00006-0.00019)	0.007 (0.004-0.011)
4.	Jajpur	2.889 (0.485-8.497)	0.101 (0.012-0.269)	0.006 (<0.002-0.013)	0.024 (0.017-0.032)	1.111 (0.050-3.600)	0.009 (0.004-0.017)	0.005 (0.002-0.010)	0.010 (0.006-0.018)	0.0011 (0.0003-0.0024)	0.00010 (<0.00006-0.00019)	0.007 (0.004-0.010)
5.	Chandbali U/s	3.964 (1.041-11.330)	0.087 (0.011-0.350)	0.014 (0.003-0.025)	0.040 (0.018-0.079)	5.042 (0.870-7.950)	0.007 (0.004-0.013)	0.006 (0.003-0.009)	0.027 (0.007-0.152)	0.0010 (0.0004-0.0017)	0.00014 (<0.00006-0.00044)	0.008 (0.003-0.016)
6.	Chandbali D/s	6.980 (2.591-15.297)	0.125 (0.022-0.330)	0.014 (0.002-0.028)	0.041 (0.018-0.087)	5.148 (0.780-9.870)	0.007 (0.004-0.011)	0.006 (0.003-0.010)	0.018 (0.006-0.041)	0.0011 (0.0004-0.0018)	0.00018 (<0.00006-0.00057)	0.009 (0.002-0.018)
Salandi river												
7.	Bhadrak U/s	1.638 (0.899-2.414)	0.098 (0.002-0.332)	0.010 (<0.002-0.028)	0.028 (0.015-0.044)	0.555 (0.120-1.900)	0.006 (0.001-0.009)	0.002 (0.001-0.005)	0.007 (0.002-0.012)	0.0007 (0.0004-0.0021)	0.00011 (<0.00006-0.00051)	0.005 (0.003-0.008)
8.	Bhadrak D/s	3.722 (0.934-13.693)	0.132 (0.007-0.394)	0.010 (<0.002-0.028)	0.039 (0.018-0.077)	1.410 (0.030-6.220)	0.010 (0.001-0.019)	0.004 (0.001-0.008)	0.010 (0.003-0.016)	0.0010 (0.0003-0.0024)	0.00012 (0.00006-0.00025)	0.007 (0.004-0.012)



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)								
Dhamara river												
9.	Dhamra	6.228 (1.262-14.269)	0.142 (0.022-0.317)	0.014 (0.002-0.026)	0.035 (0.020-0.069)	4.950 (0.340-9.360)	0.010 (0.001-0.023)	0.008 (0.001-0.020)	0.013 (0.002-0.026)	0.0011 (0.0004-0.0023)	0.00008 (<0.00006-0.00025)	0.008 (0.004-0.014)
	*Class 'C'	50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
	*Class 'E'	-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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	43 (18-133)	107 (68-142)	10.5 (6.8-18.2)	0.061 (0.056-0.112)	0.006 (0.002-0.009)	1.25 (0.84-1.40)	3357 (170-17000)	2564 (246-25070)	5.11 (0.33-52.82)	0.108 (0.039-0.330)	1820 (132-18300)	321 (78-2500)	914.6 (11.7-9785)	117.5 (5.3-1169.1)	0.371 (0.220-0.630)
2.	Potagarh	166 (24-533)	125 (94-200)	28.8 (6.8-45.2)	0.066 (0.056-0.112)	0.003 (0.001-0.004)	1.02 (0.28-1.96)	895 (<1.8-5400)	27904 (308-62730)	56.56 (0.90-128.62)	1.933 (0.070-3.841)	22414 (168-51320)	2577 (96-5600)	12443 (37-29355)	977 (11-2650)	0.514 (0.240-0.880)
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	6.042 (0.635-24.377)	0.058 (0.003-0.135)	0.010 (<0.002-0.025)	0.031 (0.003-0.071)	1.055 (0.060-2.140)	0.010 (0.006-0.017)	0.003 (0.001-0.005)	0.009 (0.002-0.018)	0.0008 (0.0002-0.0013)	0.00003 (<0.00006-0.00013)	0.007 (0.004-0.013)
2.	Potagarh	6.914 (2.352-30.349)	0.087 (0.003-0.199)	0.013 (<0.002-0.030)	0.039 (0.015-0.081)	2.164 (0.260-5.400)	0.010 (0.006-0.016)	0.005 (0.002-0.009)	0.011 (0.002-0.021)	0.0012 (0.0004-0.0023)	0.00010 (<0.00006-0.00038)	0.009 (0.006-0.011)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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	55 (6-194)	83 (62-96)	7.9 (3.6-19.6)	0.061 (0.056-0.112)	0.003 (BDL-0.004)	1.24 (0.84-1.96)	5189 (490-17000)	190 (147-214)	0.31 (0.22-0.51)	0.074 (0.003-0.282)	113 (102-126)	79 (66-94)	10.4 (7.8-19.6)	11.3 (2.6-21.8)	0.283 (0.160-0.420)
2.	Jaykaypur D/s	80 (14-213)	96 (68-132)	18.3 (9.7-24.2)	0.065 (0.056-0.112)	0.003 (0.001-0.009)	1.24 (0.84-1.40)	13650 (3300-35000)	259 (199-404)	0.44 (0.31-0.80)	0.081 (0.003-0.297)	149 (114-232)	97 (76-134)	16.2 (10.8-34.2)	19.5 (4.5-35.9)	0.281 (0.180-0.400)
3.	Rayagada D/s	103 (14-330)	110 (80-182)	12.2 (6.3-19.6)	0.065 (0.056-0.112)	0.003 (0.001-0.007)	1.24 (0.84-1.68)	17058 (1300-54000)	301 (210-393)	0.53 (0.30-0.82)	0.087 (0.003-0.309)	169 (125-226)	107 (74-148)	20.5 (10.8-33.3)	17.3 (4.8-28.7)	0.285 (0.190-0.390)
Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality



(e) 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)								
Nagavali river												
1.	Penta	3.304 (0.155-10.137)	0.086 (0.018-0.250)	0.010 (<0.002-0.028)	0.029 (0.013-0.050)	2.433 (0.010-6.660)	0.006 (0.002-0.011)	0.003 (0.001-0.005)	0.007 (0.002-0.012)	0.0014 (0.0003-0.0069)	0.00010 (<0.00006-0.00051)	0.005 (0.003-0.006)
2.	Jaykaypur D/s	6.558 (1.996-15.088)	0.169 (0.012-0.379)	0.015 (<0.002-0.037)	0.038 (0.018-0.069)	2.990 (0.130-6.680)	0.010 (0.004-0.017)	0.005 (0.001-0.008)	0.015 (0.002-0.026)	0.0010 (0.0004-0.0021)	0.00026 (0.00006-0.00044)	0.008 (0.004-0.011)
3.	Rayagada D/s	7.621 (0.667-20.960)	0.189 (0.040-0.349)	0.014 (<0.002-0.035)	0.036 (0.015-0.062)	3.418 (0.120-8.600)	0.008 (0.003-0.014)	0.005 (0.001-0.010)	0.013 (0.005-0.019)	0.0010 (0.0004-0.0024)	0.00017 (0.00006-0.00038)	0.007 (0.002-0.009)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016

(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	39 (9-197)	80 (46-96)	10.7 (5.6-16.1)	0.056 (0.056-0.056)	0.004 (0.002-0.005)	1.26 (1.12-1.40)	1671 (330-4900)	266 (123-363)	0.76 (0.27-1.45)	0.075 (0.003-0.435)	151 (75-207)	84 (46-100)	26.1 (6.9-48.9)	17.5 (6.2-36.1)	0.513 (0.090-0.910)
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	2.185 (0.576-4.787)	0.146 (0.004-0.800)	0.011 (<0.002-0.020)	0.030 (0.006-0.052)	1.410 (0.190-5.500)	0.006 (0.003-0.011)	0.004 (0.001-0.011)	0.008 (0.004-0.013)	0.0008 (0.0003-0.0021)	0.00007 (<0.00006-0.00032)	0.007 (0.004-0.014)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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-Dec, 2016 excluding May and June, 2016

(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	55 (11-238)	89 (48-116)	13.0 (3.8-22.6)	0.061 (0.056-0.112)	0.004 (0.001-0.007)	1.35 (1.12-1.68)	11434 (2300-35000)	237 (149-328)	0.47 (0.27-1.09)	0.066 (0.003-0.428)	1511 (102-9980)	88 (52-108)	17.1 (9.6-39.1)	13.6 (6.2-24.6)	0.306 (0.100-0.530)
2.	Balasore U/s	52 (7-164)	81 (44-112)	11.2 (3.9-16.1)	0.070 (0.056-0.224)	0.004 (0.001-0.005)	1.21 (0.84-1.68)	6483 (490-24000)	227 (132-371)	0.50 (0.28-1.24)	0.153 (0.007-0.980)	79 (46-100)	16.7 (7.8-45.0)	14.0 (8.0-24.4)	0.348 (0.190-0.510)	0.348 (0.190-0.510)
3.	Balasore D/s	124 (10-293)	95 (64-138)	16.9 (7.1-26.9)	0.065 (0.056-0.112)	0.003 (0.001-0.004)	1.31 (1.12-1.68)	20158 (3300-54000)	2319 (186-16000)	6.96 (0.40-33.43)	0.225 (0.025-1.604)	282 (60-1600)	704.3 (12.7-4941.4)	179.6 (2.2-1170.0)	0.438 (0.070-0.810)	0.438 (0.070-0.810)
*Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
*Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

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 ⁻ (mg/l)	PO ₄ ³⁻ -P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
Budhabalanga river												
1.	Baripada D/s	2.624 (0.062-4.033)	0.121 (0.018-0.281)	0.009 (<0.002-0.018)	0.028 (0.017-0.054)	0.855 (0.100-2.930)	0.008 (0.003-0.012)	0.006 (0.001-0.015)	0.014 (0.002-0.032)	0.0009 (0.0004-0.0021)	0.00018 (<0.00006-0.00063)	0.008 (0.004-0.018)
2.	Balasore U/s	1.802 (0.064-6.355)	0.097 (0.003-0.290)	0.008 (<0.002-0.020)	0.028 (0.008-0.064)	1.888 (0.120-5.700)	0.008 (0.004-0.017)	0.005 (0.001-0.015)	0.018 (0.006-0.064)	0.0009 (0.0003-0.0023)	0.00008 (<0.00006-0.00038)	0.007 (0.002-0.014)
3.	Balasore D/s	5.654 (0.381-13.427)	0.149 (0.006-0.320)	0.016 (0.002-0.026)	0.047 (0.012-0.071)	5.363 (0.490-25.000)	0.010 (0.006-0.016)	0.005 (0.001-0.012)	0.022 (0.004-0.040)	0.0011 (0.0004-0.0024)	0.00023 (0.00006-0.00076)	0.010 (0.004-0.018)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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	89 (9-730)	26 (20-32)	8.8 (5.1-14.5)	0.075 (0.056-0.224)	0.002 (BDL-0.004)	1.33 (0.84-1.68)	8755 (170-54000)	93 (79-116)	0.37 (0.25-0.48)	0.127 (0.003-0.700)	53 (43-68)	29 (24-42)	7.3 (5.9-9.8)	8.7 (2.7-17.7)	0.243 (0.100-0.370)
*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	3.503 (1.089-9.017)	0.114 (0.010-0.212)	0.011 (<0.002-0.025)	0.031 (0.012-0.069)	2.999 (0.460-7.800)	0.006 (0.001-0.012)	0.004 (0.001-0.011)	0.009 (0.002-0.018)	0.0007 (0.0003-0.0022)	0.00006 (<0.00006-0.00044)	0.005 (0.001-0.011)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

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, 2016 excluding May and June, 2016



(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	42 (9-155)	82 (64-132)	7.4 (4.0-9.5)	0.056 (0.056-0.056)	0.004 (0.001-0.005)	1.10 (0.56-1.40)	1804 (130-4600)	193 (157-293)	0.33 (0.24-0.38)	0.056 (0.014-0.253)	111 (95-168)	76 (58-114)	10.35 (7.82-13.69)	7.6 (3.0-16.3)	0.281 (0.150-0.410)
2.	Gunupur	115 (9-508)	94 (56-140)	8.6 (3.2-14.2)	0.056 (0.056-0.056)	0.003 (0.001-0.007)	1.19 (0.84-1.40)	1676 (330-4600)	226 (133-322)	0.34 (0.23-0.66)	0.087 (0.023-0.288)	126 (78-172)	86 (50-120)	11.82 (6.85-26.42)	9.5 (2.4-19.8)	0.280 (0.170-0.410)
Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

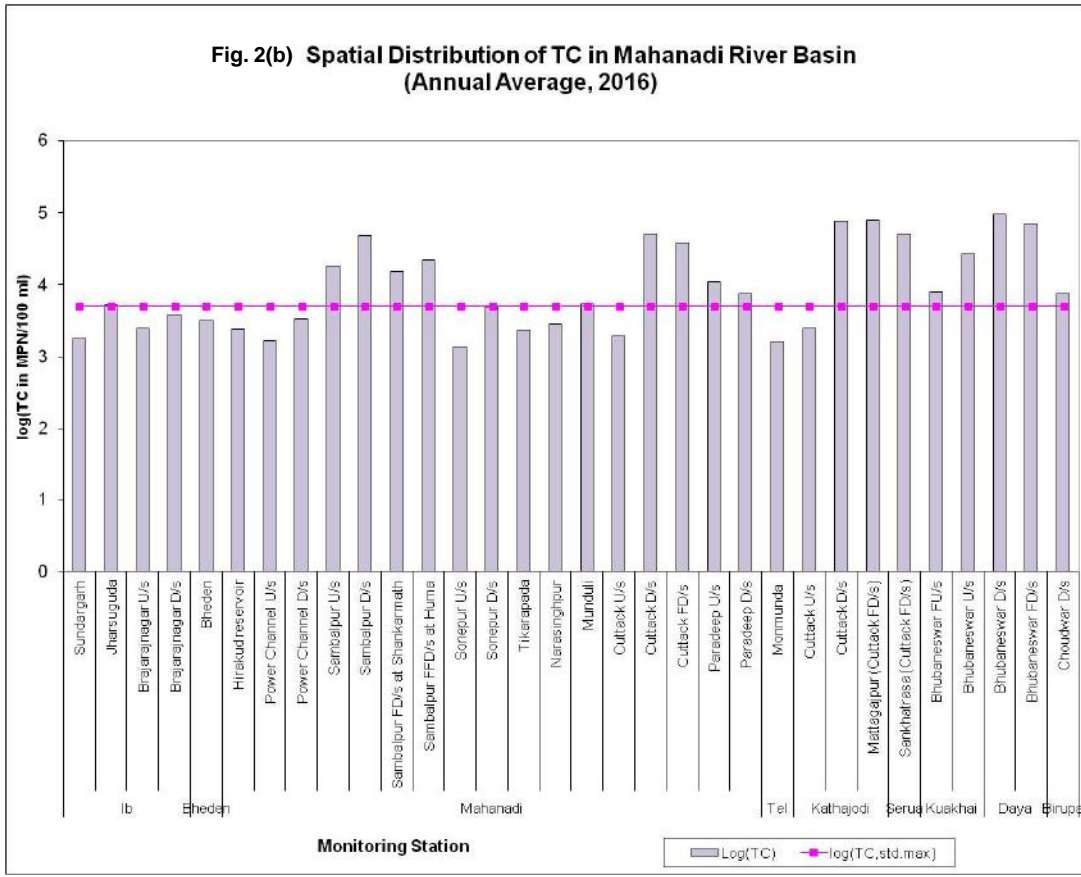
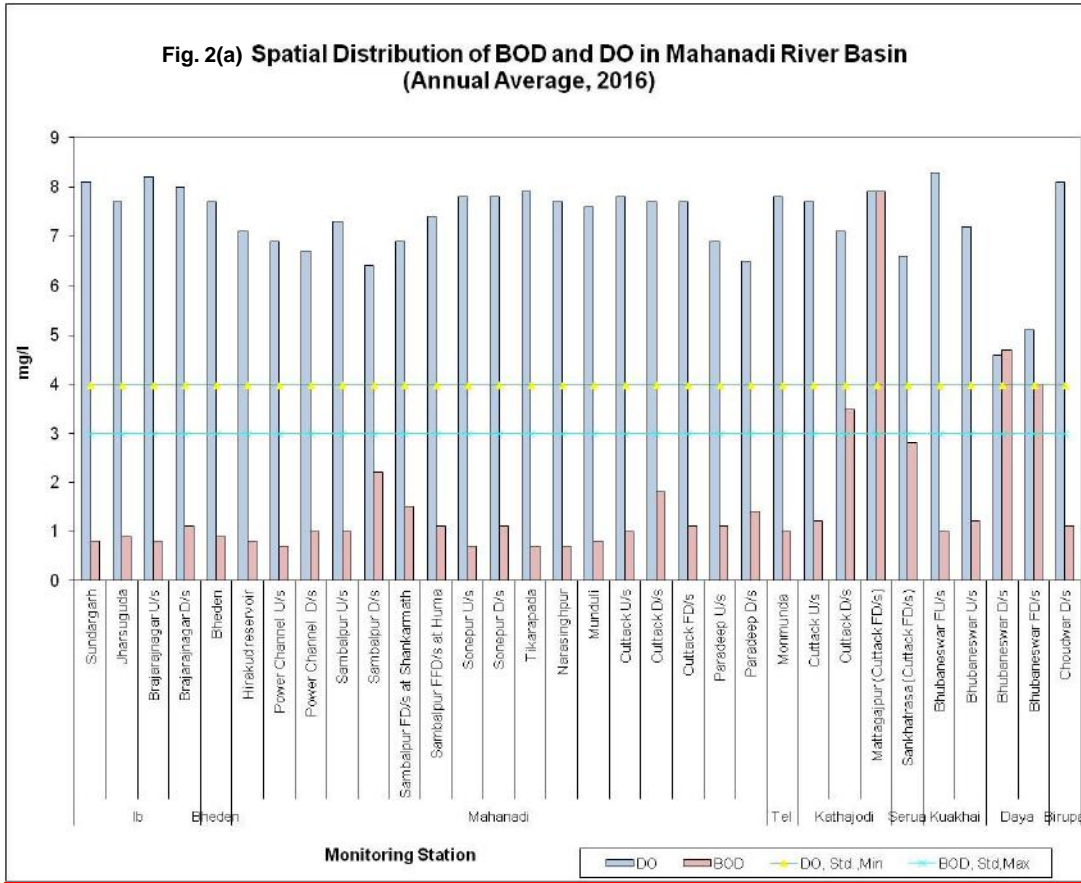
Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO ₃	PO ₄ ³⁻⁻ P	Cr(VI)	T. Cr	Fe	Ni##	Cu##	Zn##	Cd##	Hg	Pb##
		(mg/l)		(mg/l)								
Vansadhara river												
1.	Muniguda	3.334 (0.337-10.093)	0.108 (0.014-0.296)	0.009 (<0.002-0.021)	0.027 (0.013-0.056)	1.787 (0.170-5.970)	0.008 (0.005-0.011)	0.005 (0.002-0.008)	0.015 (0.004-0.036)	0.0009 (0.0003-0.0023)	0.00008 (<0.00006-0.00044)	0.006 (0.004-0.009)
2.	Gunupur	3.901 (0.376-13.959)	0.116 (0.015-0.330)	0.010 (0.002-0.025)	0.034 (0.018-0.066)	2.581 (0.16-8.19)	0.008 (0.004-0.016)	0.004 (0.001-0.006)	0.011 (0.004-0.018)	0.0009 (0.0003-0.0021)	0.00013 (<0.00006-0.00038)	0.006 (0.004-0.011)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

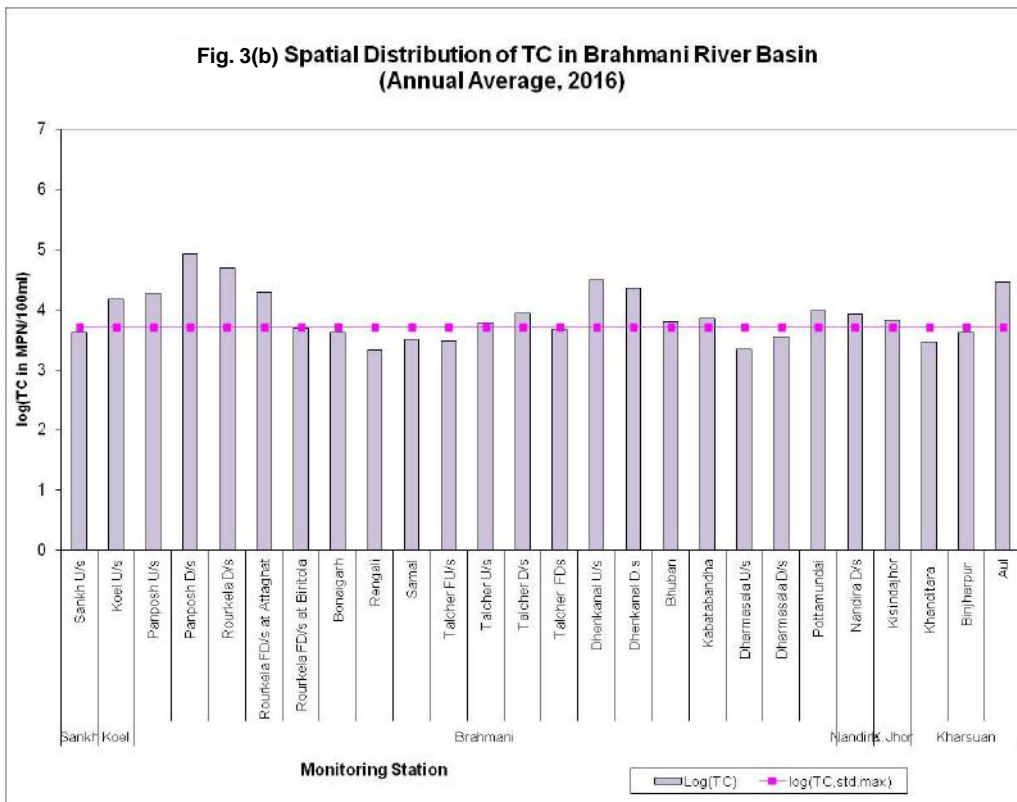
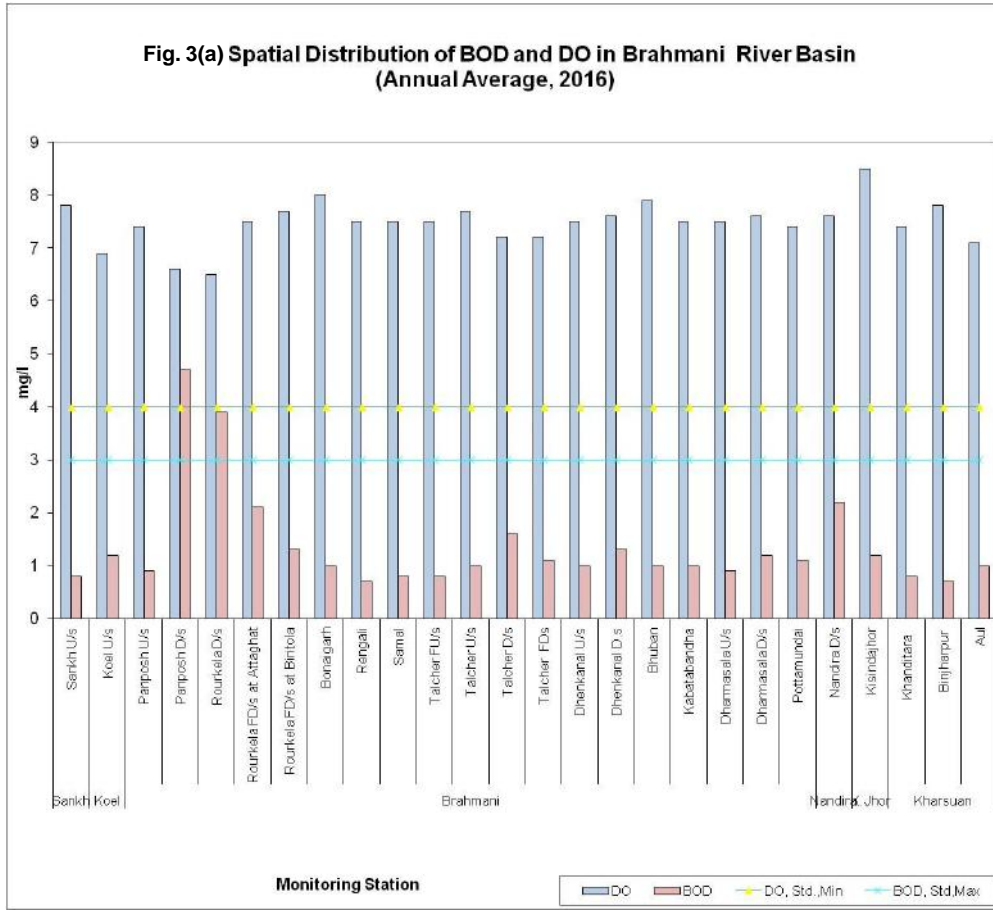
Class 'C' : Drinking water source with conventional treatment followed by disinfection

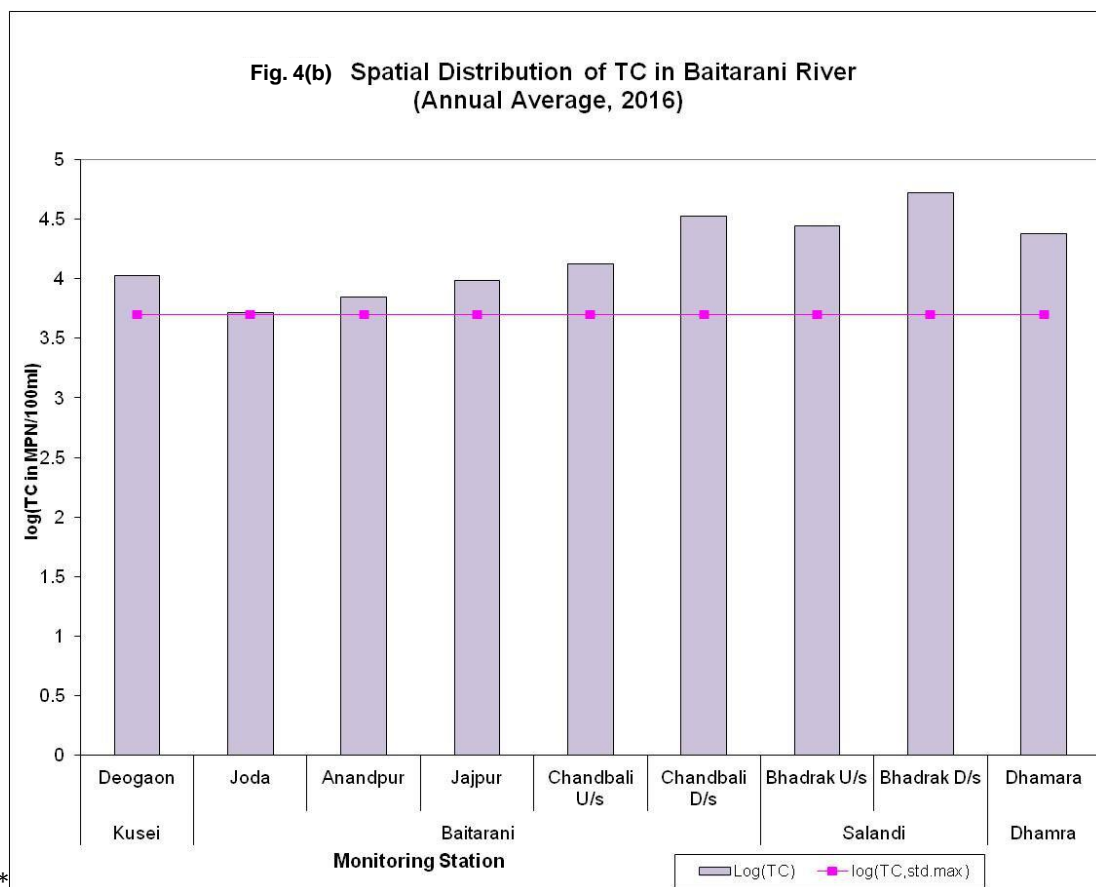
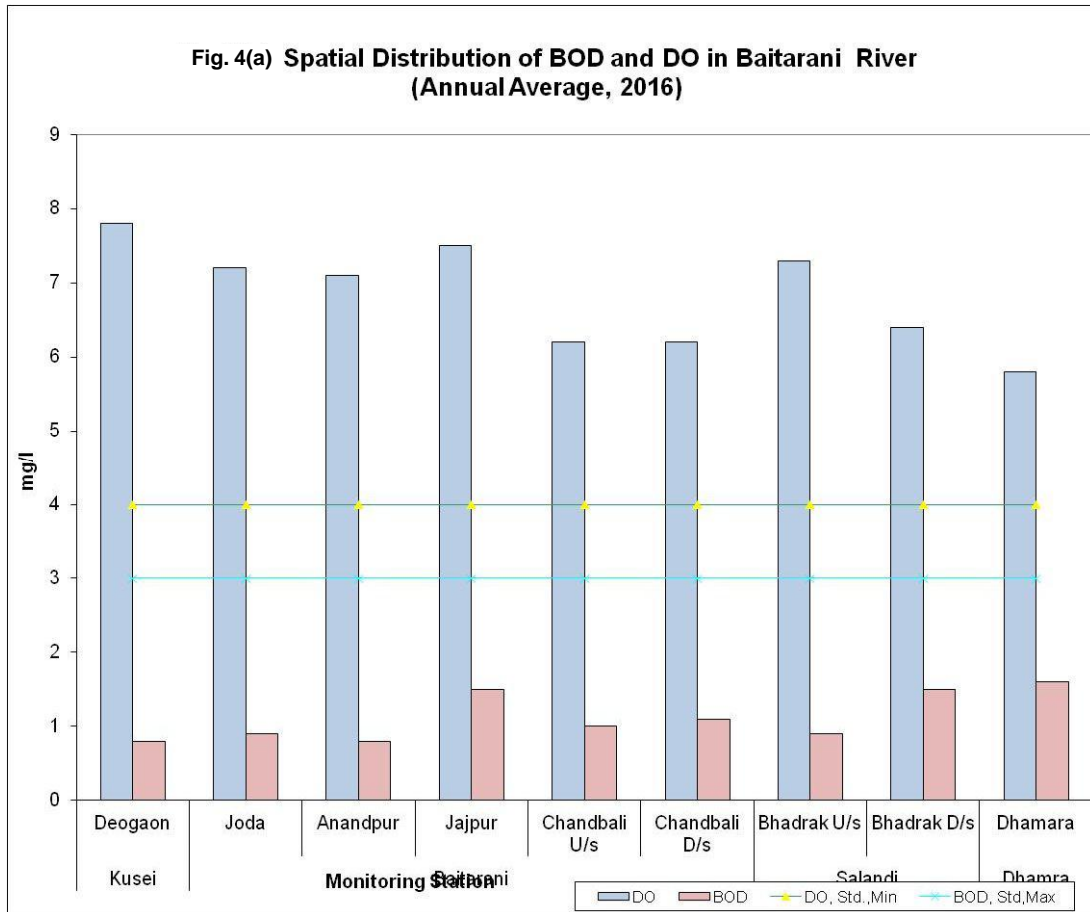
Class 'E' : Irrigation water quality

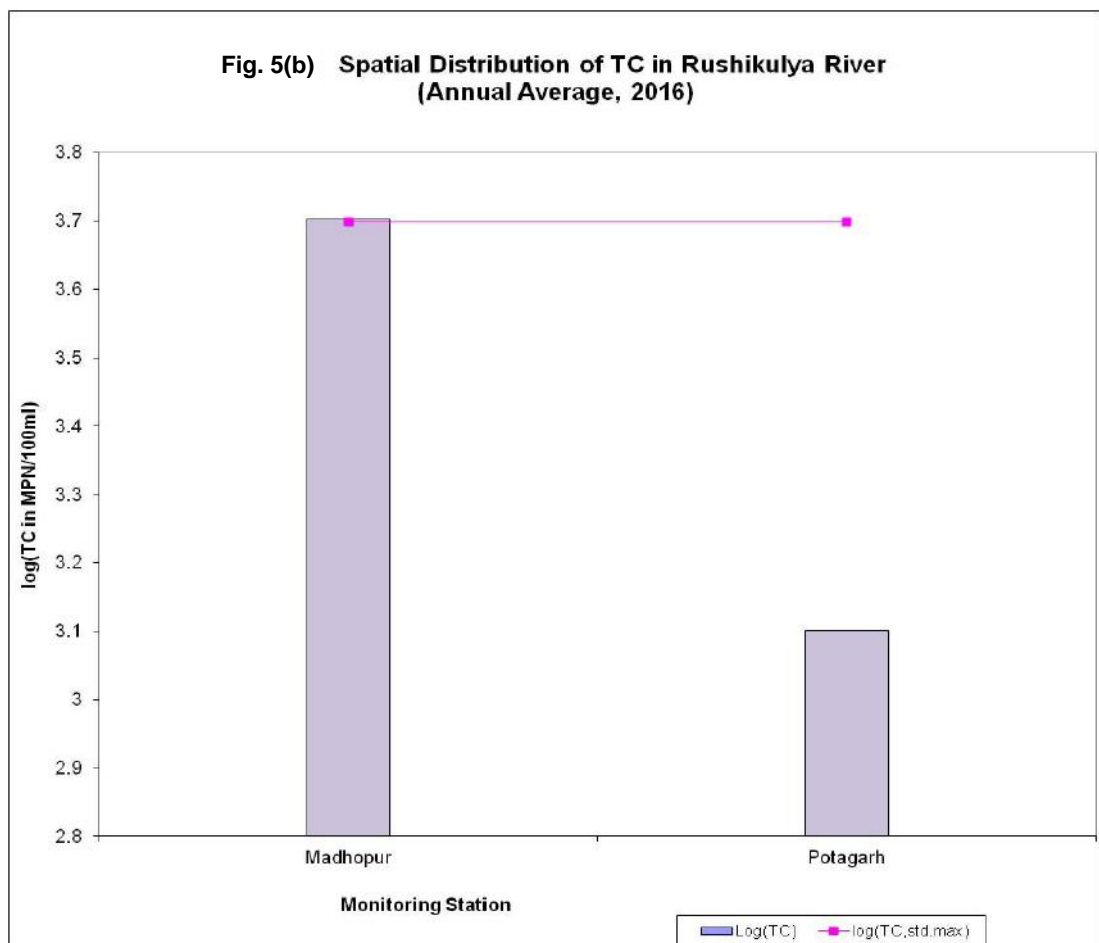
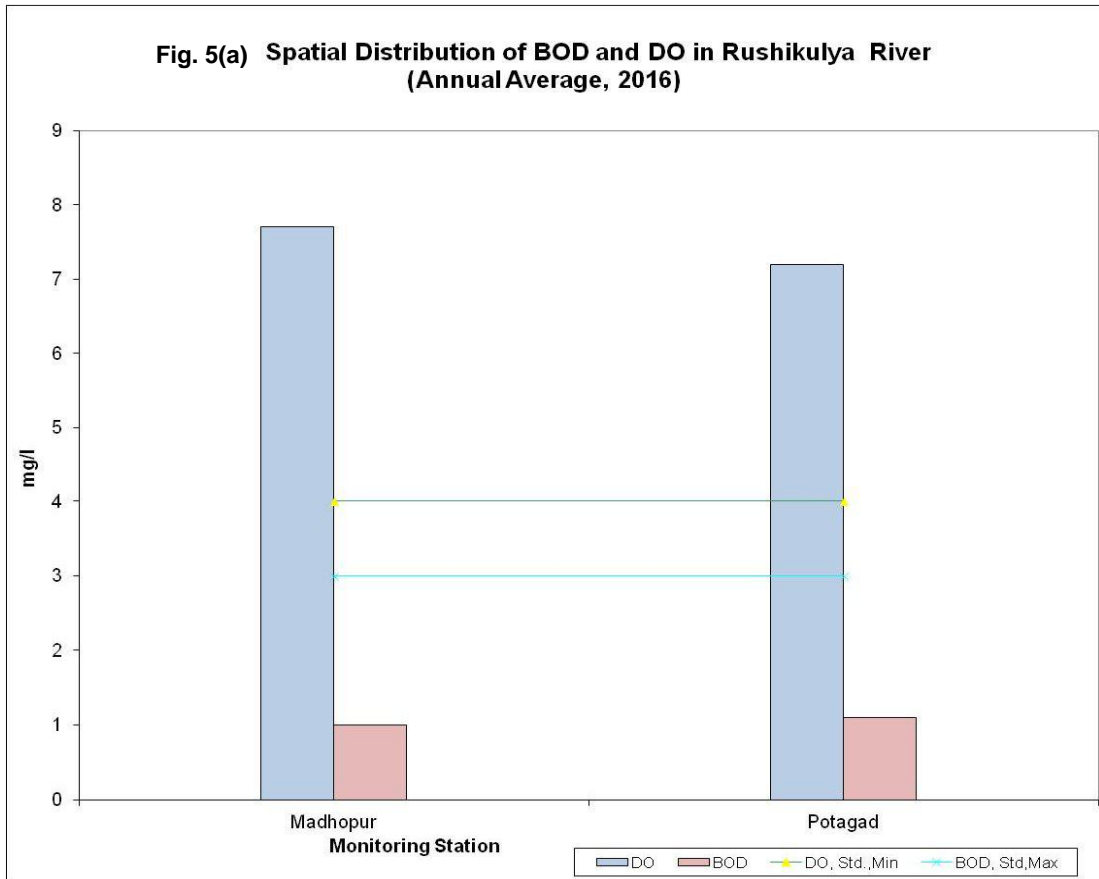
* Tolerance limit for Inland Surface water bodies (IS-2296-1982)

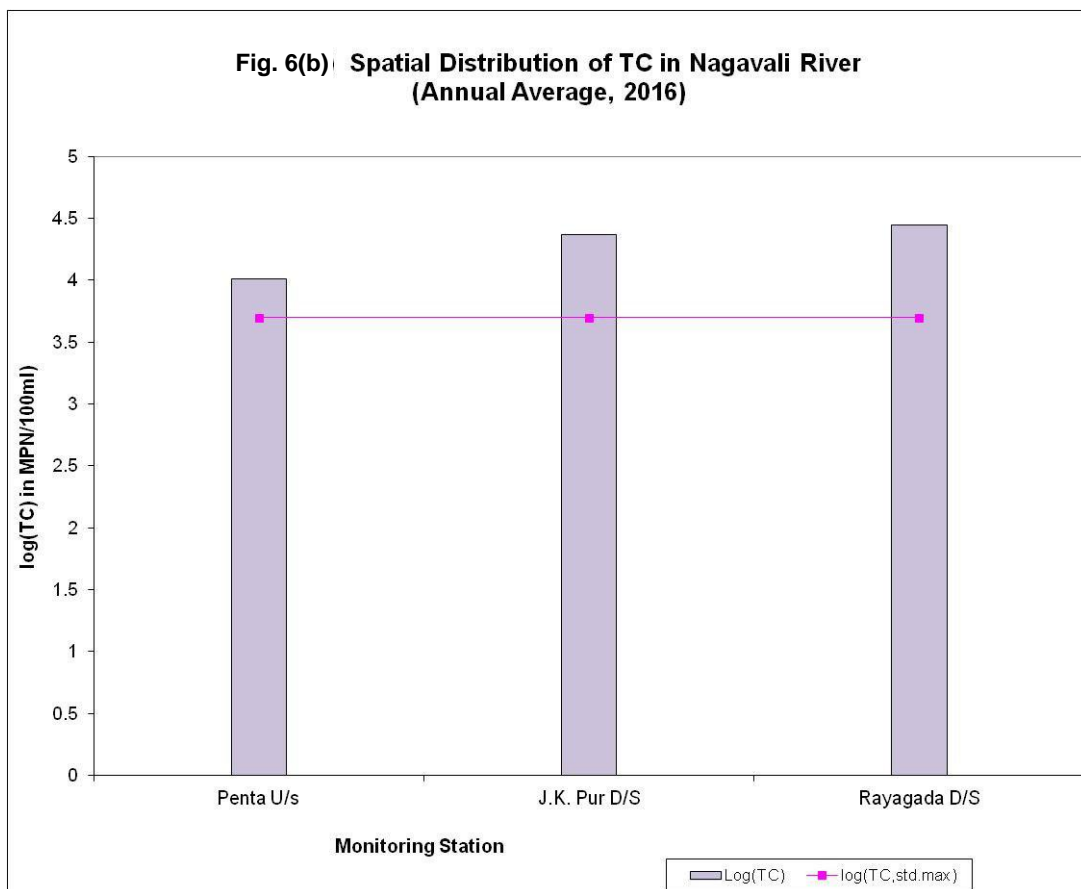
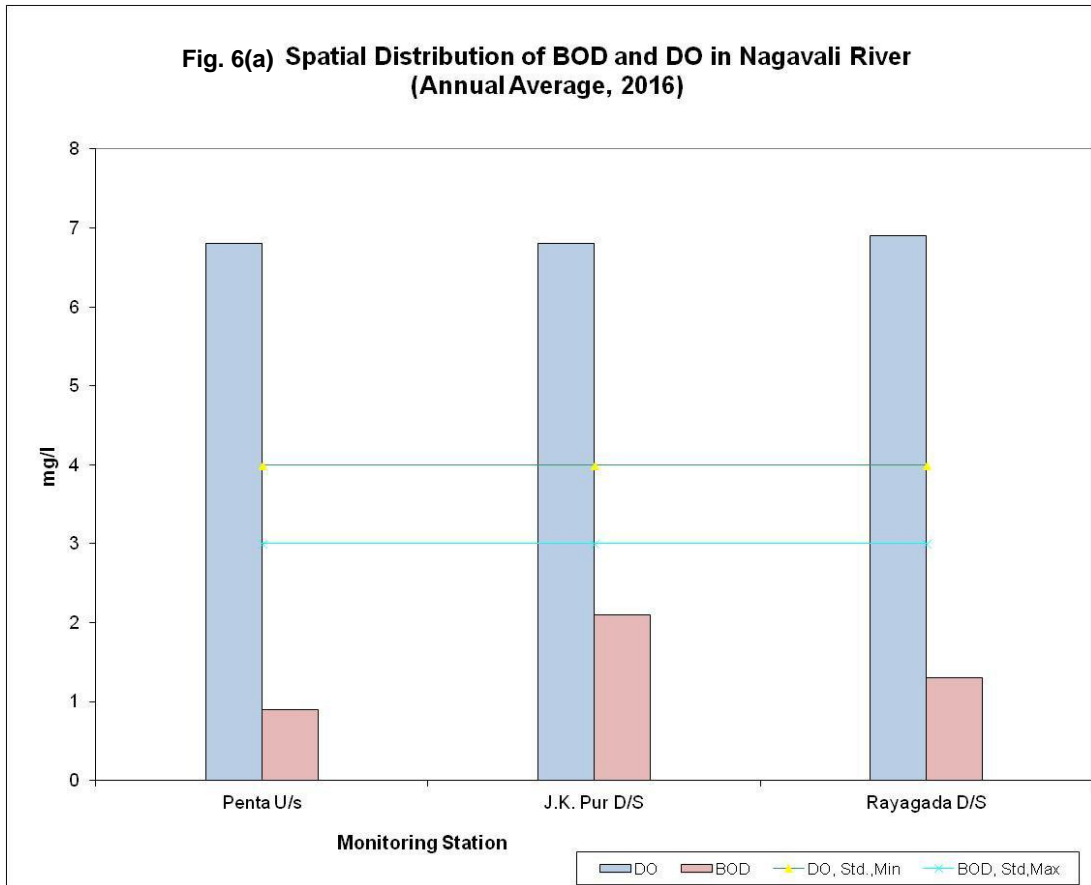
Data for the period January-December, 2016 excluding May and June, 2016

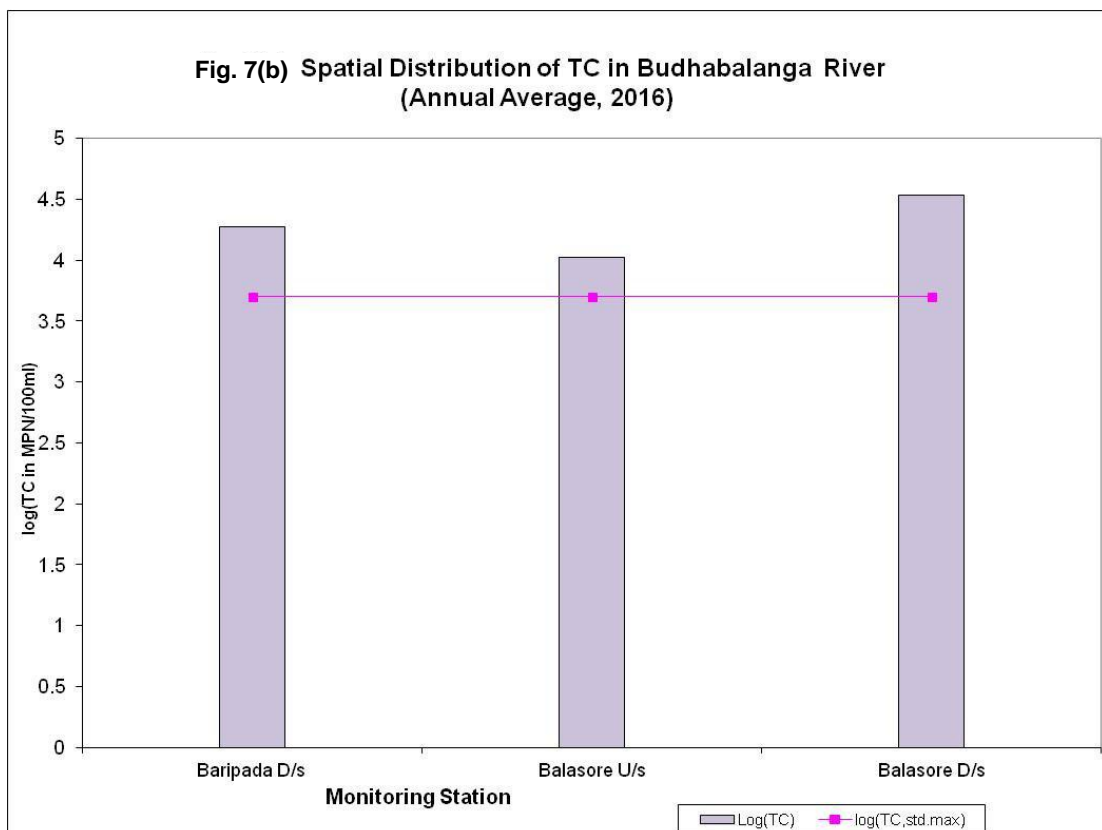
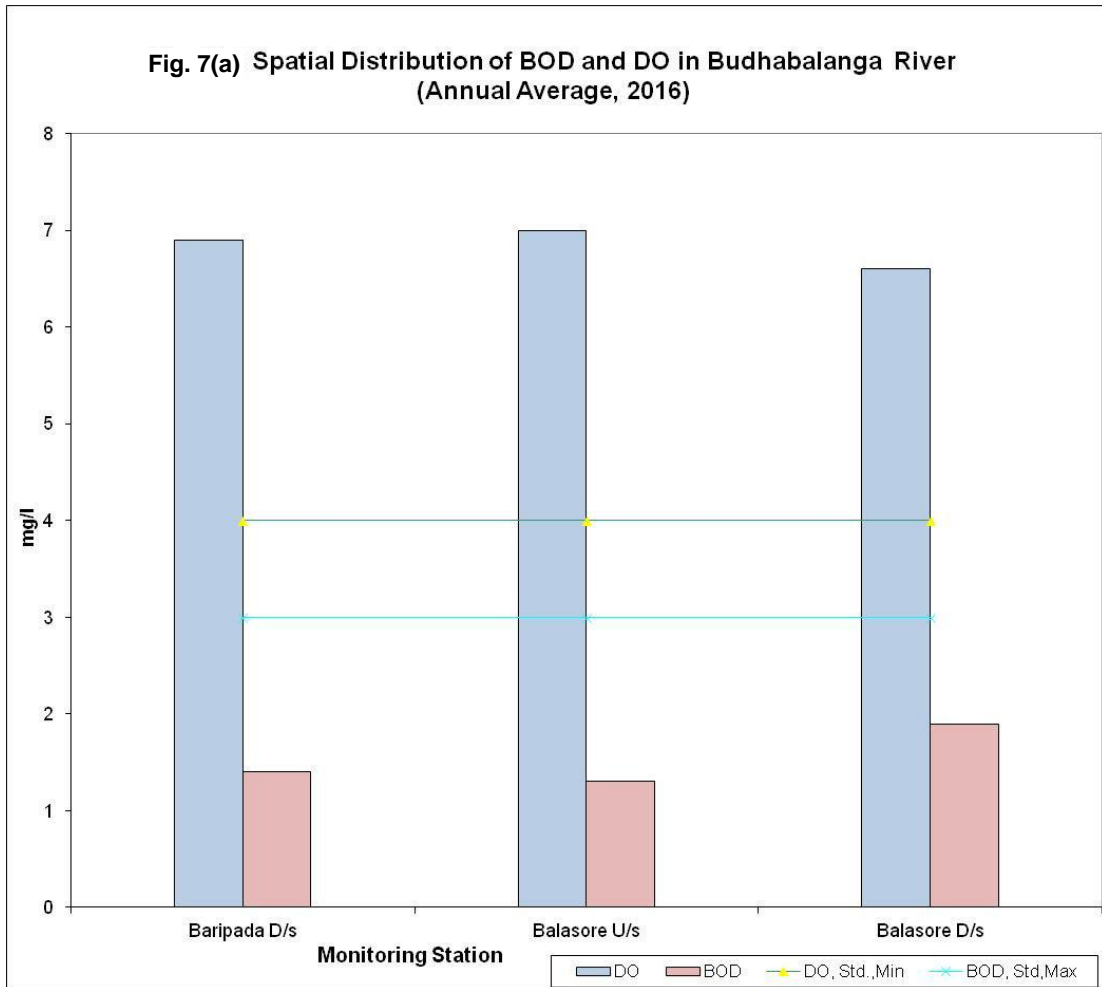


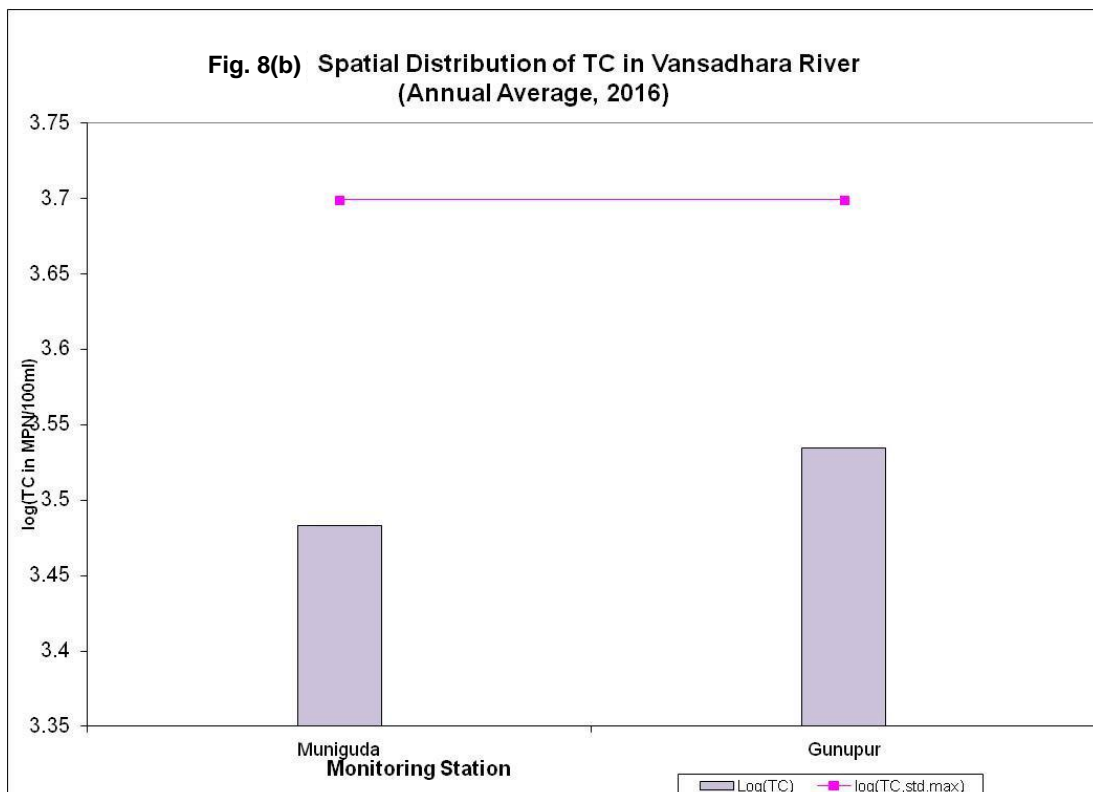
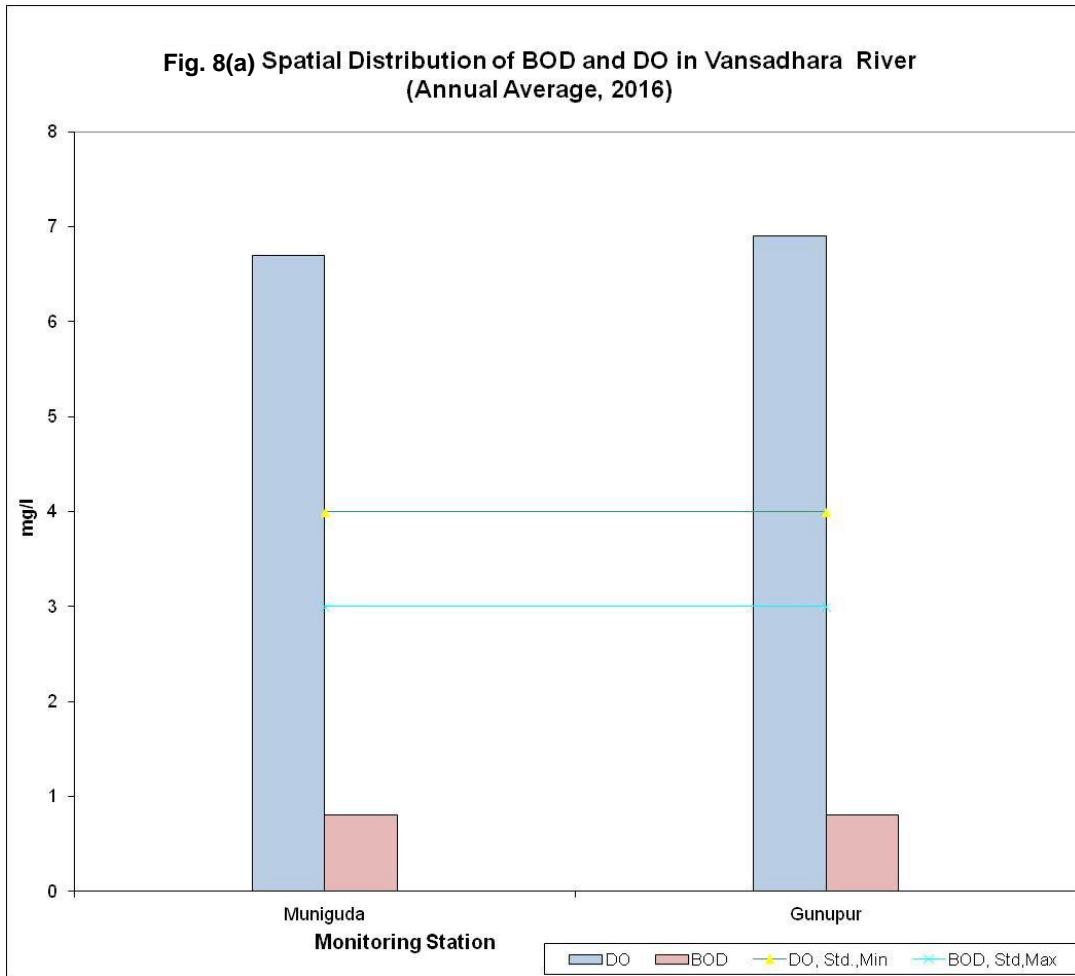












(B) TALADANDA CANAL

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 2016 are given in Table-5.22 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 remained 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 2016, whereas BOD values do not remain within the tolerance limit at Ranihat and Nuabazar. DO values do not meet the prescribed limit at Atharabanki.

Water quality for other parameters given in Table-5.23 remain well within the tolerance limit for Class - C water quality.



Table-5.22 Water Quality of Taladanda Canal with respect to Criteria parameters during 2016 (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					DO	BOD	TC	FC			
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	FC (MPN/100 ml)							
1.	Jobra*	4	8.0 (7.8-8.4)	6.9 (6.1-7.6)	0.7 (0.4-1.3)	9525 (3300-22000)	5725 (2300-14000)	0	0	4 ^{\$} (100) 2 ^{\$\$} (50)	3 (75)	Does not conform to Class B,C	TC,FC	Human activities
2.	Ranihat*	4	7.9 (7.6-8.5)	6.8 (6.4-7.3)	1.8 (0.8-3.7)	238000 (92000-540000)	181000 (54000-350000)	0	1 (25)	4 ^{\$} (100) 4 ^{\$\$} (100)	4 (100)	Does not conform to Class B & C	BOD, TC,FC	Human activities and waste water of Cuttack town
3.	Chhatrabazar*	4	7.9 (7.8-8.4)	7.0 (6.1-8.0)	1.4 (0.4-2.8)	503000 (92000 - >1600000)	476500 (54000 -1600000)	0	0	4 ^{\$} (100) 4 ^{\$\$} (100)	4 (100)		TC,FC	
4.	Nuabazar*	4	7.9 (7.4-8.5)	6.7 (5.9-7.6)	1.7 (1.0-3.1)	162500 (160000-170000)	118500 (92000-160000)	0	1 (25)	4 ^{\$} (100) 4 ^{\$\$} (100)	4 (100)	Does not conform to Class B & C	BOD, TC,FC	Human activities
5.	Biribati*	4	7.9 (7.4-8.4)	6.6 (6.1-7.3)	1.1 (0.9-1.2)	116500 (54000-160000)	85250 (35000-160000)	0	0	4 ^{\$} (100) 4 ^{\$\$} (100)	4 (100)		TC,FC	
6.	Atharabanki**	11	8.0 (7.4-8.5)	6.7 (4.9-9.6)	3.0 (1.4-5.3)	86818 (13000 - >160000)	63900 (7900 ->160000)	1 ^{\$} (9)	4 (36)	4 ^{\$} (100) 4 ^{\$\$} (100)	4 (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)						

* Data for the period August-November, 2016

** Data for the period January-December, 2016 excluding February, 2016

*** Tolerance limits for Inland Surface water bodies (IS-2296-1982) \$ for Class C and \$\$ for Class B

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: (Ref : IS 2296-1982 foot note)

For Class B : TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.

For Class C : 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.

Contd..

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*	4	8.0 (7.8-8.4)	188 (166-235)	0.31 (0.25-0.34)	0.037 (0.025-0.049)	0	0	0	Conform to Class E		
2.	Ranihat*	4	7.9 (7.6-8.5)	183 (153-234)	0.28 (0.23-0.35)	0.038 (0.014-0.074)	0	0	0			
3.	Chhatrabazar*	4	7.9 (7.8-8.4)	170 (154-184)	0.27 (0.20-0.32)	0.074 (0.026-0.116)	0	0	0			
4.	Nuabazar*	4	7.9 (7.4-8.5)	175 (162-204)	0.29 (0.26-0.33)	0.033 (0.016-0.060)	0	0	0			
5.	Biribati*	4	7.9 (7.4-8.4)	189 (161-235)	0.32 (0.27-0.34)	0.079 (0.021-0.165)	0	0	0			
6.	Atharabanki***	11	8.0 (7.4-8.5)	1585 (174-9548)	5.15 (0.31-34.81)	0.054 (0.021-0.133)	2 (18)	1 (9)	0			
*** Class 'E'			6.5-8.5	2250 or less	26 or less	2 or less				Irrigation, Industrial Cooling or controlled waste disposal		

* Data for the period August-November, 2016

** Data for the period January-December, 2016 excluding February, 2016

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

Table-5.23 Water Quality of Taladanda Canal with respect to other parameters during 2016 (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*	69 (8-177)	75 (56-98)	11.4 (8.04-15.9)	0.070 (0.056-0.112)	0.005 (0.002-0.014)	1.12 (0.84-1.40)	104 (92-130)	72 (64-92)	9.8 (7.8-11.7)	9.9 (4.9-20.5)	0.405 (0.270-0.490)
2.	Ranihat*	70 (6-159)	78 (68-98)	13.8 (10.0-19.4)	0.154 (0.056-0.392)	0.009 (0.001-0.017)	1.47 (1.12-1.96)	108 (95-134)	72 (62-92)	8.3 (7.8-9.8)	9.7 (5.7-16.8)	0.378 (0.270-0.450)
3.	Chhatrabazar*	62 (8-132)	71 (60-78)	13.1 (10.0-17.7)	0.084 (0.056-0.168)	0.004 (0.002-0.007)	1.19 (0.84-1.68)	99 (96-104)	71 (66-80)	7.8 (5.9-9.8)	8.5 (4.1-19.4)	0.373 (0.260-0.430)
4.	Nuabazar*	73 (7-135)	71 (56-80)	12.4 (8.0-19.4)	0.140 (0.056-0.336)	0.008 (0.001-0.017)	1.33 (0.84-1.68)	100 (93-111)	73 (64-88)	8.8 (7.8-9.8)	9.3 (5.1-20.4)	0.385 (0.260-0.480)
5.	Biribati*	63 (10-107)	75 (64-100)	13.0 (8.0-17.7)	0.112 (0.056-0.280)	0.004 (0.002-0.007)	1.26 (0.84-1.68)	105 (98-123)	71 (60-92)	9.8 (9.8-9.8)	9.1 (4.6-19.4)	0.368 (0.250-0.430)
6.	Atharabanki**	40 (14-59)	98 (66-168)	24.9 (16.2-58.5)	0.291 (0.056-0.952)	0.020 (0-0.062)	1.85 (0.84-3.64)	1504 (102-7360)	285 (70-900)	571.2 (9.8-3816.2)	127.3 (5.2-659.2)	0.822 (0.330-1.900)
***Class 'C'		-	-	-	-	-	-	1500	-	600	400	1.5
***Class 'E'		-	-	-	-	-	-	2100	-	600	1000	-

* Data for the period August-November, 2016

** Data for the period January-December, 2016 excluding February, 2016

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

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.	Jobra*	1.636 (0.948-3.067)	0.089 (0.030-0.173)	0.006 (0.003-0.008)	0.027 (0.018-0.045)	0.883 (0.130-2.190)	0.009 (0.006-0.014)	0.005 (0.001-0.011)	0.013 (0.009-0.020)	0.0011 (0.0008-0.0016)	0.00006 (<0.00006-0.00025)	0.008 (0.007-0.009)
2.	Ranihat*	2.650 (1.189-4.728)	0.113 (0.047-0.191)	0.011 (0.003-0.015)	0.032 (0.020-0.053)	1.083 (0.470-1.630)	0.008 (0.003-0.012)	0.007 (0.001-0.021)	0.012 (0.004-0.018)	0.0010 (0.0006-0.0015)	0.00006 (<0.00006-0.00014)	0.007 (0.005-0.009)
3.	Chhatrabazar*	4.587 (0.360-13.857)	0.108 (0.050-0.211)	0.014 (0.002-0.026)	0.041 (0.018-0.064)	1.460 (0.490-2.150)	0.009 (0.006-0.011)	0.002 (0.001-0.003)	0.017 (0.007-0.027)	0.0010 (0.0008-0.0011)	0.00017 (<0.00006-0.00025)	0.008 (0.005-0.012)
4.	Nuabazar*	5.237 (0.498-16.882)	0.152 (0.078-0.221)	0.007 (0.002-0.013)	0.034 (0.025-0.057)	1.030 (0.330-1.800)	0.009 (0.004-0.016)	0.003 (0.001-0.005)	0.009 (0.001-0.012)	0.0009 (0.0007-0.0011)	0.00006 (<0.00006-0.00013)	0.009 (0.005-0.013)
5.	Biribati*	5.220 (0.849-13.772)	0.100 (0.038-0.162)	0.007 (0.002-0.011)	0.037 (0.024-0.057)	0.508 (0.100-1.080)	0.008 (0.005-0.011)	0.003 (0.002-0.006)	0.028 (0.008-0.077)	0.0011 (0.0007-0.0016)	0.00021 (<0.00006-0.00063)	0.010 (0.006-0.016)
6.	Atharabanki**	3.857 (0.049-6.120)	0.684 (0.009-4.649)	0.010 (0.002-0.025)	0.027 (0.013-0.047)	0.683 (0.050-2.100)	0.010 (0.004-0.020)	0.004 (0.002-0.007)	0.015 (0.008-0.033)	0.0009 (0.0003-0.0013)	0.00006 (<0.00006-0.00025)	0.008 (0.002-0.015)
***Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
***Class 'E'		-	-	-	-	-	-	-	-	-	-	-

* Data for the period August-November, 2016

** Data for the period January-December, 2016 excluding February, 2016

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

Data for the period January-December, 2016 excluding May and June, 2016

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 2016 are given in Table-5.24 (a) & (b). 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-5.25 (a) & (b) which remained within the tolerance limits for Class 'C'.

(D) LAKES

Water quality of Chilka and Anshupa lakes monitored by the Board during 2016 are given in Table-5.26 and 5.27.

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 fecal coliform organism occasionally remained 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 remained 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 2016 are given in Table-5.28 and 5.29. From the data it is observed that the criteria parameters at Gopalpur and Paradeep remained within the prescribed limit for harbour water (Class SW-IV). Further, fecal coliform organism in coastal water at Puri, Gopalpur and Paradeep remained above the prescribed limit for Bathing, Contact Water Sports and Commercial Fishing (SW-II).



Table -5.24 (a) Water Quality of Bindusagar Pond with respect to Criteria parameters during 2016 (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					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	8.1 (7.1-8.8)	5.5 (1.5-10.8)	3.2 (1.0-4.8)	52658 (7900- >160000)	42108 (3300- >160000)	1 (8)	3 (25)	9 (75)	12 (100)	12 (100)	Does not conform to Class B	pH, DO,BOD, TC,FC	Human activities
2.	Ananta Vasudev	12	8.1 (7.1-8.5)	7.0 (4.2-11.7)	3.5 (1.2-8.8)	72658 (7900- >160000)	60558 (2700- >160000)	0	2 (17)	8 (83)	12 (100)	12 (100)		DO,BOD, TC,FC	
3.	Near Kedarnath Research Centre	12	8.1 (6.9-8.7)	6.8 (3.9-10.1)	3.2 (0.7-4.9)	64325 (7900- >160000)	51917 (3300- >160000)	1 (8)	4 (33)	9 (75)	12 (100)	12 (100)		pH, DO,BOD, TC,FC	
4.	Gyananagar	12	8.1 (7.3-8.5)	4.6 (2.6-8.1)	3.4 (0.4-4.9)	108750 (17000- >160000)	93083 (11000- >160000)	0	9 (75)	9 (75)	12 (100)	12 (100)		DO,BOD, TC,FC	
*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								

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

Note : 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 -5.24 (b) Water Quality of Religious Ponds in Puri with respect to Criteria parameters during 2016 (**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	8.4 (7.4-9.4)	9.8 (3.7-16.6)	6.7 (2.9-10.9)	13400 (330-54000)	7442 (170-35000)	4 (33)	1 (8)	11 (92)	10 (83)	6 (50)	Does not conform to Class B	pH, DO, BOD, TC,FC	Human activities
2.	Markanda	12	8.3 (7.5-9.2)	14.9 (8.1-20.8)	9.6 (3.7-23.2)	15581 (18-92000)	8384 (18-54000)	5 (42)	0	12 (100)	9 (75)	7 (58)		pH, BOD, TC,FC	
3.	Indradyumna	12	8.2 (7.7-9.1)	8.9 (4.0-11.8)	6.2 (3.2-10.0)	26183 (1400-92000)	15258 (700-54000)	3 (25)	1 (8)	12 (100)	12 (100)	9 (75)		pH, DO, BOD, TC,FC	
4.	Swetaganga	12	8.4 (7.9-9.2)	10.4 (4.0-19.6)	7.4 (3.3-12.8)	29108 (170->160000)	21788 (78->160000)	4 (33)	1 (8)	12 (100)	10 (83)	7 (58)		pH, DO, BOD, TC,FC	
5.	Parvati sagar	12	8.1 (7.5-9.5)	8.2 (3.9-17.2)	8.6 (4.1-27.3)	40403 (230-160000)	33628 (230-160000)	2 (17)	4 (33)	12 (100)	11 (92)	10 (83)		pH, DO, BOD, TC,FC	
*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								

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

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 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/100 ml.
(Ref : IS 2296-1982 foot note)

Table- 5.25 (a) Water quality of Bindusagar pond with respect to other parameters during 2016 (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)				(μS/cm)	(mg/l)						
Bindusagar Pond (Bhubaneswar)															
1.	Lingaraj Temple side	15 (2-80)	112 (92-144)	20.1 (10.6-30.8)	0.177 (0.056-0.392)	0.013 (0.001-0.035)	1.70 (1.12-1.96)	430 (392-492)	1.86 (1.29-2.26)	0.053 (0.003-0.137)	243 (208-302)	91 (78-106)	66.4 (48.9-78.3)	12.2 (7.6-23.6)	0.475 (0.260-0.720)
2.	Ananta Vasudev	14 (6-28)	106 (94-152)	20.9 (11.9-36.6)	0.238 (0.056-1.064)	0.016 (0.001-0.043)	1.94 (0.84-3.92)	410 (370-491)	1.83 (1.35-2.37)	0.048 (.003-0.137)	230 (210-265)	84 (72-118)	61.7 (48.9-78.3)	11.1 (4.7-20.5)	0.467 (0.260-0.590)
3.	Near Kedarnath research Centre	14 (7.0-29.0)	102 (78-126)	21.3 (13.9-29.1)	0.215 (0.056-0.504)	0.020 (0-0.074)	1.80 (1.12-2.24)	421 (385-454)	1.91 (1.63-2.30)	0.049 (0.007-0.189)	234 (222-256)	82 (64-114)	64.4 (53.8-68.5)	11.4 (5.7-21.4)	0.482 (0.280-0.580)
4.	Gyananagar	10 (4-17)	113 (92-152)	22.3 (14.2-33.3)	0.247 (0.056-0.672)	0.018 (0.003-0.078)	1.89 (1.40-2.80)	421 (378-475)	1.82 (1.35-2.29)	0.061 (0.003-0.147)	238 (218-265)	91 (72-120)	63.2 (48.9-78.3)	11.7 (8.4-20.1)	0.451 (0.230-0.600)
*Class 'C'		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

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

Class 'C' : Drinking water source with conventional treatment followed by disinfection



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)								
Bindusagar Pond (Bhubaneswar)												
1.	Lingaraj Temple side	6.271 (1.568-18.546)	0.175 (0.016-0.590)	0.009 (<0.002-0.023)	0.029 (0.012-0.054)	0.495 (0.090-1.890)	0.007 (0.002-0.012)	0.003 (0.002-0.005)	0.017 (0.004-0.028)	0.0010 (0.0003-0.0025)	0.00011 (<0.00006-0.00025)	0.009 (0.002-0.018)
2.	Ananta Vasudev	3.772 (1.461-10.165)	0.178 (0.018-0.450)	0.010 (<0.002-0.038)	0.031 (0.011-0.060)	0.600 (0.050-2.210)	0.007 (0.004-0.011)	0.003 (0.002-0.004)	0.024 (0.007-0.038)	0.0011 (0.0004-0.0024)	0.00014 (<0.00006-0.00044)	0.008 (0.004-0.017)
3.	Near Kedarnath research Centre	4.017 (1.225-12.717)	0.215 (0.033-0.580)	0.009 (<0.002-0.026)	0.027 (0.012-0.040)	0.800 (0.070-2.000)	0.008 (0.001-0.016)	0.004 (0.002-0.008)	0.020 (0.007-0.034)	0.0011 (0.0003-0.0024)	0.00009 (<0.00006-0.00032)	0.008 (0.003-0.017)
4.	Gyananagar	4.798 (2.257-9.994)	0.163 (0.025-0.600)	0.009 (<0.002-0.021)	0.026 (0.012-0.045)	0.638 (0.060-2.040)	0.007 (0.004-0.013)	0.003 (0.002-0.005)	0.022 (0.005-0.033)	0.0011 (0.0003-0.0023)	0.00012 (<0.00006-0.00051)	0.010 (0.003-0.016)
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10

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

Data for the period January-December, 2016 excluding May and June, 2016

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table- 5.25 (b) Water quality of ponds in Puri with respect to other parameters during 2016 (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 (μS/cm)	SAR	B	TDS	TH	Cl	SO ₄	F
		(mg/l)		(mg/l)				(mg/l)							
Ponds (Puri)															
1.	Narendra	18 (7-32)	196 (108-268)	42.2 (21.1-87.3)	0.468 (0.112-0.840)	0.083 (0.004-0.376)	2.64 (1.40-5.04)	920 (788-1104)	3.60 (2.03-4.66)	0.263 (0.137-0.730)	527 (446-716)	165 (116-212)	172.0 (107.6-303.3)	30.7 (9.6-63.7)	0.308 (0.180-0.580)
2.	Markanda	37 (12-87)	210 (164-248)	65.7 (23.5-176.5)	0.719 (0.112-1.400)	0.126 (0.007-0.504)	3.45 (2.24-8.12)	773 (702-916)	2.04 (1.66-3.75)	0.216 (0.102-0.470)	442 (372-590)	188 (146-224)	107.5 (83.2-195.7)	31.9 (23.0-42.3)	0.25 (0.15-0.49)
3.	Indradyumna	24 (7-59)	132 (106-156)	46.1 (19.6-72.4)	0.439 (0.112-1.232)	0.043 (0.010-0.174)	2.45 (1.40-4.20)	609 (471-703)	3.10 (2.06-4.05)	0.150 (0.017-0.588)	342 (258-400)	92 (74-120)	106.0 (78.2-136.9)	16.9 (6.1-32.0)	0.290 (0.180-0.620)
4.	Swetaganga	29 (6-62)	252 (164-316)	52.7 (3.3-12.8)	0.551 (0.112-1.344)	0.085 (0.006-0.208)	2.64 (1.40-3.36)	1066 (565-1530)	2.93 (1.30-4.55)	0.270 (0.162-0.586)	611 (329-840)	233 (168-280)	171.6 (63.6-273.9)	48.2 (33.6-103.2)	0.233 (0.140-0.800)
5.	Parvati sagar	25 (10-42)	149 (96-284)	51.2 (23.1-108.9)	0.742 (0.168-2.632)	0.125 (0.004-1.161)	3.08 (1.68-8.40)	568 (389-1318)	1.80 (1.28-2.76)	0.163 (0.039-0.444)	324 (238-708)	136 (88-260)	79.5 (53.8-166.3)	28.9 (2.7-87.9)	0.261 (0.140-0.780)
*Class 'C'		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

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

Class 'C' : Drinking water source with conventional treatment followed by disinfection

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)										
Ponds (Puri)												
1.	Narendra	8.508 (0.886-18.613)	0.293 (0.107-0.570)	0.011 (<0.002-0.025)	0.032 (0.013-0.047)	0.256 (0.030-0.490)	0.013 (0.006-0.032)	0.006 (0.002-0.014)	0.019 (0.003-0.036)	0.0012 (0.0004-0.0027)	0.00016 (<0.00006-0.00070)	0.011 (0.004-0.026)
2.	Markanda	19.574 (0.648-43.071)	0.91 (0.07-2.21)	0.007 (<0.002-0.021)	0.027 (0.018-0.047)	0.372 (0.030-0.750)	0.014 (0.006-0.033)	0.006 (0.002-0.018)	0.021 (0.003-0.032)	0.0011 (0.0003-0.0021)	0.00016 (<0.00006-0.00044)	0.012 (0.004-0.026)
3.	Indradyumna	11.154 (4.730-36.385)	0.186 (0.027-0.394)	0.010 (<0.002-0.023)	0.028 (0.015-0.044)	0.304 (0.010-0.800)	0.013 (0.001-0.025)	0.007 (0.002-0.016)	0.020 (0.009-0.038)	0.0009 (0.0003-0.0016)	0.00017 (<0.00006-0.00044)	0.010 (0.005-0.019)
4.	Swetaganga	21.227 (3.626-42.767)	0.709 (0.033-1.569)	0.011 (<0.002-0.025)	0.029 (0.012-0.040)	0.197 (0.070-0.480)	0.015 (0.005-0.030)	0.007 (0.001-0.019)	0.027 (0.009-0.066)	0.0013 (0.0004-0.0026)	0.00012 (<0.00006-0.00032)	0.012 (0.007-0.035)
5.	Parvati sagar	13.321 (3.189-42.376)	0.184 (0.025-0.698)	0.011 (<0.002-0.025)	0.031 (0.018-0.055)	0.325 (0.040-0.600)	0.012 (0.005-0.039)	0.006 (0.002-0.017)	0.023 (0.004-0.042)	0.0008 (0.0004-0.0016)	0.00017 (<0.00006-0.00076)	0.009 (0.002-0.019)
*Class 'C'				0.05	-	50	-	1.5	15.0	0.01	-	0.10

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

Data for the period January-December, 2016 excluding May and June, 2016

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table-5.26 Water Quality of Lakes with respect to Criteria parameters during 2016 (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 (7.6-8.9)	6.8 (5.1-9.6)	1.6 (0.6-2.6)	43 (9-260)	1887 (<1.8-16000)	1 (8)	0	0	6 (50)	Does not conform to Class-SW-II	FC	Human activities
2.	Satpada	12	7.9 (6.9-8.5)	6.5 (4.9-7.6)	1.7 (0.9-2.5)	33 (11-110)	447 (20-1300)	0	0	0	8 (67)		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				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				pH	DO	Free ammonia	EC			
			pH	DO (mg/l)	Free ammonia (mg/l)	EC (micro Siemens /cm)							
1.	Kadalibari	12	7.7 (7.0-8.4)	7.2 (4.5-12.6)	0.016 (0-0.067)	165 (107-234)	0	1 (8)	0	0	D	-	-
2.	Bishnupur	12	7.6 (7.1-8.1)	6.6 (3.8-11.0)	0.006 (0.001-0.018)	176 (118-232)	0	0	0	0	D	-	-
3.	Subarnapur	12	7.6 (6.9-8.5)	6.7 (4.6-9.4)	0.006 (0.001-0.015)	158 (106-219)	0	0	0	0	D	-	-
4.	Sarandagarh	12	7.7 (6.5-8.4)	6.9 (4.0-10.7)	0.006 (0-0.020)	168 (104-239)	0	0	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						

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

Table-5.27 Water Quality of Lakes with respect to other parameters during 2016 (January-December)

(a) Chilka Lake

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriologic al 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	110 (63-242)	139 (112-180)	34.0 (17.7-56.9)	0.084 (0.056-0.168)	0.002 (0-0.011)	1.26 (0.84-1.68)	2485 (<1.8-16000)	31593 (17530-41370)	61.59 (34.75-76.49)	24024 (12660-31770)	1.902 (0.102-2.794)	3127 (2300-3920)	13038.0 (7045.0-17613.0)	1396.5 (528.6-2033.0)	0.588 (0.400-0.740)
2.	Satapada	144 (43-342)	111 (72-138)	39.3 (24.5-66.4)	0.107 (0.056-0.224)	0.006 (0-0.020)	1.54 (1.12-2.52)	868 (170-3500)	39849 (12916-59380)	75.48 (42.31-107.34)	32356 (8950-49100)	2.306 (0.706-3.999)	3982 (900-5980)	18387.2 (4892.5-27887.3)	1652.9 (349.5-2817.1)	0.652 (0.290-0.900)

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	4.352 (0.893-9.185)	0.104 (0.009-0.740)	0.012 (<0.002-0.031)	0.033 (0.017-0.081)	1.223 (0.020-8.900)	0.009 (0.001-0.017)	0.006 (0.001-0.018)	0.014 (0.002-0.024)	0.0014 (0.0002-0.0054)	0.00005 (<0.00006-0.00019)	0.007 (0.002-0.014)
2.	Satapada	4.200 (2.215-9.960)	0.111 (0.013-0.650)	0.011 (<0.002-0.033)	0.028 (0.008-0.053)	2.822 (0.340-12.090)	0.012 (0.005-0.024)	0.007 (0.003-0.022)	0.018 (0.010-0.026)	0.0012 (0.0003-0.0040)	0.00011 (<0.00006-0.00063)	0.008 (0.004-0.012)
* Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10

Data for the period January-December, 2016 excluding May and June, 2016



(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	40 (8-140)	66 (40-88)	3.1 (1.4-4.3)	21.9 (13.6-38.2)	0.425 (0.112-2.016)	2.12 (1.68-4.48)	17088 (460-35000)	9097 (170-17000)	97 (62-138)	0.074 (0.010-0.312)	0.39 (0.16-0.71)	62 (40-84)	11.2 (3.9-21.5)	8.5 (1.9-25.0)	0.375 (0.200-0.550)	
2.	Bishnupur	25 (7-67)	65 (48-88)	3.2 (1.2-3.9)	24.1 (17.6-35.3)	0.205 (0.056-0.336)	1.75 (1.40-2.24)	27492 (4900-160000)	17800 (1300-92000)	103 (68-128)	0.049 (0.006-0.119)	0.45 (0.23-0.71)	62 (42-86)	12.7 (5.9-18.6)	11.1 (3.2-26.9)	0.366 (0.220-0.510)	
3.	Subarnapur	26 (7-75)	59 (38-92)	3.4 (1.7-4.9)	21.1 (13.2-29.4)	0.219 (0.056-0.336)	1.77 (1.12-2.52)	11550 (1300-54000)	7408 (490-35000)	92 (61-129)	0.048 (0.013-0.123)	0.39 (0.22-0.58)	60 (40-88)	10.9 (6.9-15.7)	8.6 (1.1-28.1)	0.336 (0.190-0.510)	
4.	Sarandagarh	20 (2-50)	64 (40-98)	2.7 (0.9-3.8)	19.5 (10.2-27.9)	0.177 (0.056-0.392)	1.63 (1.12-2.24)	9733 (3300-14000)	4917 (1100-7900)	97 (65-132)	0.068 (0.007-0.319)	0.37 (0.22-0.61)	62 (36-94)	10.7 (5.0-17.6)	11.5 (2.6-24.3)	0.390 (0.180-0.560)	
* Class 'C'		-	-	-	-	-	-	5000		1500	-	-	-	600	400	1.5	

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

Class 'C' : Drinking water source with conventional treatment followed by disinfection

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.	Kadlibari	6.819 (0.429-42.023)	0.147 (0.026-0.450)	0.012 (<0.002-0.041)	0.029 (0.005-0.057)	2.816 (0.230-7.210)	0.008 (0.004-0.014)	0.003 (0.001-0.006)	0.022 (0.005-0.089)	0.0007 (0.0003-0.0010)	0.00012 (<0.00006-0.00032)	0.007 (0.002-0.011)
2.	Bishnupur	4.242 (0.641-9.848)	0.129 (0.017-0.430)	0.012 (0.003-0.046)	0.032 (0.018-0.054)	2.350 (0.670-6.170)	0.008 (0.003-0.016)	0.004 (0.002-0.010)	0.027 (0.004-0.118)	0.0008 (0.0003-0.0012)	0.00011 (<0.00006-0.00044)	0.006 (0.002-0.009)
3.	Subarnapur	3.715 (0.678-7.357)	0.132 (0.018-0.350)	0.011 (<0.002-0.043)	0.030 (0.012-0.064)	2.372 (0.240-7.400)	0.008 (0.002-0.016)	0.004 (0.001-0.010)	0.017 (0.004-0.034)	0.0006 (0.0003-0.0011)	0.00008 (<0.00006-0.00019)	0.002 (0.001-0.010)
4.	Sarandagarh	5.409 (0.704-22.951)	0.191 (0.019-0.530)	0.010 (<0.002-0.036)	0.029 (0.005-0.054)	2.548 (0.290-6.700)	0.009 (0.002-0.018)	0.004 (0.001-0.009)	0.022 (0.001-0.080)	0.0008 (0.0003-0.0018)	0.00010 (<0.00006-0.00025)	0.006 (0.001-0.009)
* Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Data for the period January-December, 2016 excluding May and June, 2016

Table-5.28 Coastal Water Quality with respect to Criteria parameters during 2016 (January-December)

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	FC			
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)					
1.	Puri											
(a)	Swargadwara	12	8.0 (7.6-8.5)	6.2 (5.1-6.9)	1.3 (0.3-2.3)	23.2 (1.5-170.0)	1706 (<1.8 -16000)	0	5 (42)	Does not confirm to Class-SW-II	FC	Human activities
(b)	Bankimuhan	12	8.1 (7.8-8.6)	6.1 (5.6-6.7)	1.6 (0.7-2.9)	23.4 (1.7-180.0)	3427 (<1.8- >16000)	0	5 (42)	Does not confirm to Class-SW-II	FC	Human activities
(c)	Baliapanda	12	8.0 (7.7-8.3)	6.3 (5.6-7.1)	1.3 (0.2-2.0)	12.5 (2.2-40.0)	338 (<1.8-1700)	0	9 (75)	Does not confirm to Class-SW-II	FC	Human activities
2.	Gopalpur	12	8.0 (7.7-8.5)	6.2 (5.5-6.7)	1.0 (0.5-1.4)	22.2 (2.4-100.0)	55 (<1.8-270)	0	2 (17)	Does not confirm to Class-SW-II	FC	Human activities
3.	Paradeep	12	8.0 (7.7-8.3)	6.4 (5.8-7.1)	1.4 (0.8-2.7)	28.0 (1.3-200.0)	42 (<1.8-230)	0	2 (17)	Does not confirm to Class-SW-II	FC	Human activities
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		



Contd..

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	8.0 (7.7-8.5)	6.2 (5.5-6.7)	1.0 (0.5-1.4)	0.5 (0.1-0.8)	55 (<1.8-270)	0	0	0	Class-SW-IV		
2.	Paradeep	12	8.0 (7.7-8.3)	6.4 (5.8-7.1)	1.4 (0.8-2.7)	0.5 (0.1-0.8)	42 (<1.8-230)	0	0	0	Class-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-5.29 Coastal Water Quality with respect to other parameters during 2016 (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)	(μ S/cm)		(mg/l)					
1.	Puri															
(a)	Swargadwara	140 (54-214)	117 (100-128)	33.9 (27.9-41.3)	0.061 (0.056-0.112)	0.004 (0.001-0.009)	0.97 (0.56-1.40)	2056 (<1.8-16000)	49795 (36000-63740)	86.16 (63-65-106.51)	2.371 (0.748-3.985)	41224 (28100-51030)	5119 (2800-6600)	22954 (15648-28866)	1928 (620-3296)	0.578 (0.250-0.900)
(b)	Bankimuhan	152 (81-224)	132 (104-236)	34.5 (24.5-47.4)	0.177 (0.056-0.672)	0.011 (0.002-0.029)	1.31 (0.56-2.80)	3666 (<1.8->16000)	50261 (35940-63480)	95.53 (60-53-191.39)	2.649 (1.106-4.518)	41738 (28680-50690)	4732 (816-6100)	23114 (16137-28377)	2078 (895-3482)	0.657 (0.220-0.990)
(c)	Baliapanda	156 (74-244)	109 (48-132)	34.2 (23.7-54.5)	0.075 (0.056-0.280)	0.005 (0.002-0.018)	1.00 (0.56-1.40)	678 (<1.8-2800)	50131 (35950-63920)	85.40 (60.12-107.46)	2.912 (1.505-5.063)	41499 (26890-51400)	5089 (2650-6250)	23115 (15159-28866)	1956 (814-3028)	0.647 (0.270-0.980)
2.	Gopalpur	173 (64-450)	120 (92-140)	33.8 (24.1-44.6)	0.081 (0.056-0.336)	0.005 (0.002-0.013)	1.20 (0.56-1.96)	85 (<1.8-330)	52880 (31920-62680)	89.80 (53.17-131.05)	2.8 (0.119-4.048)	43670 (23760-53580)	5045 (2800-6800)	24379(1 (3692-30318)	2083 (842-3694)	0.709 (0.440-1.000)
3.	Paradeep	147 (13-305)	117 (92-146)	35.9 (25.2-51.4)	0.061 (0.056-0.112)	0.004 (0.002-0.005)	1.12 (0.56-1.68)	56 (<1.8-230)	46042 (30960-62670)	81.61 (52.77-113.82)	2.553 (0.534-4.304)	37876 (22690-51230)	4910 (2400-6300)	20681 (12720-28377)	2146 (1147-3250)	0.665 (0.410-1.100)



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	5.119 (2.441-15.989)	0.046 (0.011-0.079)	0.009 (<0.002-0.023)	0.027 (0.017-0.054)	0.751 (0.120-2.480)	0.008 (0.004-0.014)	0.005 (0.002-0.009)	0.013 (0.007-0.018)	0.0007 (0.0002-0.0013)	0.00001 (<0.00006-0.00006)	0.006 (0.004-0.009)
(b)	Bankimuhan	3.414 (2.180-5.186)	0.144 (0.010-0.616)	0.007 (<0.002-0.030)	0.024 (0.015-0.041)	1.141 (0.320-4.470)	0.008 (0.004-0.017)	0.005 (0.002-0.011)	0.014 (0.008-0.018)	0.0007 (0.0002-0.0011)	0.00009 (<0.00006-0.00038)	0.007 (0.003-0.011)
(c)	Baliapanda	4.195 (2.259-11.475)	0.113 (0.010-0.770)	0.011 (<0.002-0.031)	0.030 (0.013-0.045)	1.424 (0.240-7.120)	0.008 (0.004-0.017)	0.005 (0.002-0.012)	0.013 (0.006-0.018)	0.0008 (0.0002-0.0016)	0.00009 (<0.00006-0.00076)	0.007 (0.004-0.011)
2.	Gopalpur	4.869 (2.637-9.184)	0.049 (0.017-0.116)	0.011 (<0.003-0.025)	0.030 (0.013-0.059)	2.005 (0.150-9.510)	0.008 (0.004-0.016)	0.004 (0.002-0.009)	0.014 (0.004-0.024)	0.0007 (0.0002-0.0013)	0.00005 (<0.00006-0.00032)	0.007 (0.004-0.011)
3.	Paradeep	3.370 (0.258-8.024)	0.066 (0.30-0.135)	0.008 (<0.002-0.015)	0.026 (0.013-0.047)	0.976 (0.190-1.740)	0.007 (0.001-0.012)	0.004 (0.001-0.007)	0.013 (0.002-0.026)	0.0007 (0.0002-0.0013)	0.00006 (<0.00006-0.00032)	0.006 (0.002-0.012)

BDL = Below Detection Limit

Data for the period January-December, 2016 excluding May and June, 2016

(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-5.30

Table- 5.30 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 25 selected stations during 2016. Biological data generated from these stations were analysed for computing the saprobity indices (SI) and diversity indices (DI), which are presented in Table-5.31. From the Table it is evident that the biological water quality class at fourteen stations conform to the Class 'B-C' (slight to moderate pollution) and at eleven stations conform to Class C (moderate pollution) water quality.

Table-5.31 Biomonitoring of River Bodies (2016)

Station	Annual Average value (Range of values)		Existing Biological Water Quality Class	
	Saprobity Index	Diversity Index		
(A) Mahanadi				
1.	Brajarajnagar D/s	6.1 (5.6-6.7)	0.53 (0.36-0.71)	B-C
2.	Sambalpur D/s	5.1 (4.9-5.4)	0.65 (0.51-0.78)	C
3.	Cuttack U/s	6.0 (5.8-6.1)	0.60 (0.53-0.67)	B-C
4.	Cuttack D/s	5.7 (5.2-6.0)	0.55 (0.47-0.62)	C
5.	Kathajodi U/S	6.1 (5.8-6.4)	0.64 (0.57-0.71)	B-C
6.	Kathajodi D/S	4.9 (4.8-5.0)	0.58 (0.47-0.67)	C
7.	Kuakhai U/s	5.7 (5.6-5.8)	0.65 (0.54-0.79)	C
8.	Kuakhai D/s	5.7 (5.6-5.9)	0.65 (0.61-0.68)	C
9.	Birupa D/s	5.6 (5.3-5.8)	0.60 (0.35-0.75)	C
(B) Brahmani				
10.	Panposh U/s	6.0 (5.0-6.6)	0.62 (0.50-0.78)	B-C
11.	Panposh D/s	5.1 (5.1-5.2)	0.61 (0.40-0.75)	C
12.	Rourkela D/s	5.6 (5.5-5.8)	0.71 (0.65-0.77)	C
13.	Talcher U/s	6.1 (5.6-6.8)	0.59 (0.43-0.69)	B-C
14.	Talcher D/s	5.9 (5.0-6.8)	0.50 (0.36-0.70)	B-C
(C) Rushikulya				
15.	Potagarh	6.6 (6.4-6.7)	0.50 (0.32-0.68)	B-C
(D) Nagavali				
16.	Penta U/s	6.1 (5.8-6.8)	0.65 (0.50-0.84)	B-C
17.	J. K. Pur D/s	5.8 (5.7-5.9)	0.47 (0.38-0.60)	C
18.	Rayagada D/s	5.9 (5.7-6.0)	0.53 (0.40-0.76)	C
(E) Subarnarekha				
19.	Rajghat	6.0 (5.8-6.1)	0.65 (0.50-0.75)	B-C
(F) Budhabalnga				
20.	Baripada D/s	5.8 (5.1-6.4)	0.79 (0.69-0.91)	B-C
21.	Balasore U/s	5.8 (5.1-6.6)	0.64 (0.50-0.80)	B-C
22.	Balasore D/s	5.6 (5.4-5.6)	0.75 (0.70-0.85)	C
(G) Kerandi				
23.	Sunabeda	6.0 (5.5-6.5)	0.49 (0.44-0.56)	B-C
(H) Vansadhara				
24.	Muniguda	5.9 (4.8-6.6)	0.59 (0.50-0.75)	B-C
25.	Gunupur	5.9 (5.4-6.4)	0.57 (0.50-0.66)	B-C

(G) GROUND WATER QUALITY STATUS

The Board monitors ground water quality at 15 locations of Cuttack, Bhubaneswar and Puri cities in the State. Ground water quality status during the year 2016 at these locations alongwith the Permissible limit for drinking water under IS : 10500-2012 are given in Table-5.32.

pH of ground water at Jharpada in Bhubaneswar during April is found to be beyond the permissible range of 6.5-8.5. Whereas, pH value at Jagatpur Industrial area in Cuttack, Khandagiri in Bhubaneswar and Secretariate-Governor House area in Bhubaneswar during April is observed to be very close to the lower limit of permissible range. However, pH at all other places remained well within the permissible range.

Ground water in Puri area is mostly of hard category (Hardness > 120 mg/l) at Badadanda, Mousima Mandir and Sea beach site, whereas, at Baliapanda, it is of moderate hard category (hardness within 60-120 mg/l). 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-5.32 Ground water Quality Status (Tube well) of Cuttack, Bhubaneswar and Puri cities (2016)

Location Parameter (Permissible limit, max. - IS :10500 :2012)	Month	Cuttack					Bhubaneswar						Puri			
		Jagatpur Industrial area	Madhupatna- Kalyan nagar area	Bidanasi - Tuisipur 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	7.3	7.9	7.1	7.8	6.6	7.6	8.5	6.3	8.4	6.9	7.9	7.3	7.8	7.8
	O	7.3	7.7	8.2	7.7	8.1	7.3	7.6	7.7	7.6	8.1	8.3	7.9	7.5	8.1	8.2
Conductivity, µS/cm	A	649	408	183	546	266	105	307	380	243	221	286	834	993	393	277
	O	636	374	129	624	298	303	192	641	253	125	290	1157	705	1187	682
Biological Oxygen Demand, mg/l	A	0.3	0.3	0.4	0.5	0.2	0.1	0.9	0.5	0.5	0.5	0.4	0.1	0.1	0.5	0.8
	O	0.4	0.4	0.5	0.3	0.1	0.1	0.2	0.8	0.3	0.1	0.1	0.9	0.2	0.4	0.9
Chemical Oxygen Demand, mg/l	A	1.8	1.8	3.6	1.8	1.8	5.4	7.2	7.2	7.2	9.0	9.0	3.5	1.8	3.5	3.5
	O	4.0	4.0	4.0	2.0	2.0	7.3	7.3	5.5	3.6	5.5	5.5	10.9	3.6	7.3	20.0
Turbidity, NTU(5)	A	0.6	0.7	0.9	1.7	0.8	30.0	150.0	0.8	1.4	1.0	1.8	80.0	13.0	1.2	1.4
	O	13	1.7	2.2	30	9.2	6.4	110	4.2	20	70	1.6	6.6	10	5.6	5.4
Total Dissolved Solids, mg/l(2000)	A	347	217	113	286	153	64	183	213	137	122	155	498	561	239	150
	O	357	215	78	364	158	162	118	345	142	72	158	652	388	682	372
Total Fixed Solids, mg/l	A	328	192	88	260	132	52	165	187	112	98	138	479	540	220	128
	O	326	198	62	324	146	142	126	321	122	62	127	622	365	624	646
Total Alkalinity, mg/l (600)	A	82	116	76	132	116	28	36	84	22	72	64	232	196	72	68
	O	152	120	56	232	140	56	42	304	24	28	88	240	82	252	92
T. Hardness (as CaCO ₃), mg/l (600)	A	140	104	66	130	100	20	52	110	32	80	78	222	204	86	74
	O	176	120	44	222	112	64	40	242	40	28	100	256	52	254	86



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Ca, mg/l (200)	A	32.9	25.7	19.2	31.3	28.1	6.4	16.0	31.3	11.2	20.8	22.4	38.5	36.9	14.4	19.2
	O	54.5	33.7	14.4	67.3	32.1	14.4	11.2	49.7	11.2	6.4	25.7	52.9	12.8	56.9	24.0
Mg, mg/l(100)	A	14.1	9.8	4.4	12.7	7.3	1.0	2.9	7.8	1.0	6.8	5.4	30.7	27.3	12.2	6.3
	O	9.8	8.8	2.0	13.2	7.8	6.8	2.9	28.8	2.9	2.9	8.8	30.2	4.9	27.3	6.3
Chloride, mg/l (1000)	A	97.8	47.9	10.8	60.7	11.7	13.7	58.7	41.1	52.9	15.7	37.2	127.2	185.8	78.3	29.4
	O	93.9	50.9	9.8	62.6	11.7	52.8	35.2	39.1	54.8	17.6	33.3	166.3	156.5	176.0	146.7
Sulphate, mg/l (400)	A	62.3	17.4	13.1	32.6	14.4	4.0	25.6	32.8	3.1	12.2	16.9	49.1	42.8	22.6	20.6
	O	37.4	10.9	6.8	29.7	4.5	5.6	5.8	2.4	9.7	9.6	6.2	93.6	12.1	97.3	18.3
Nitrate as NO ₃ , mg/l (45)	A	27.400	3.308	1.302	32.758	4.101	9.344	9.362	2.914	36.934	2.006	9.105	10.296	13.760	3.902	1.151
	O	23.975	4.315	3.951	6.223	5.100	43.532	20.036	7.802	24.633	7.994	14.127	46.968	46.237	18.210	0.438
Ammonium-N, mg/l (0.5)	A	<0.056	<0.056	0.112	<0.056	<0.056	<0.056	0.224	<0.056	0.448	<0.056	<0.056	0.056	<0.056	<0.056	<0.056
	O	<0.056	<0.056	0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	0.056
Total Kjeldahl Nitrogen, mg/l	A	0.56	0.56	0.84	0.56	0.56	0.56	1.40	0.56	1.68	0.56	0.56	1.12	0.56	0.56	0.56
	O	0.56	0.56	0.56	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Fluoride, mg/l (1.5)	A	0.340	0.240	0.360	0.390	0.290	0.190	0.210	0.270	0.280	0.310	0.180	0.230	0.500	0.300	0.290
	O	0.210	0.210	0.220	0.240	0.310	0.160	0.170	0.480	0.150	0.170	0.160	0.170	0.200	0.180	0.290
Phosphate-P, mg/l	A	0.189	0.083	0.066	0.002	0.105	0.004	0.002	0.554	0.002	0.002	0.060	0.144	0.056	0.113	0.396
	O	0.092	0.067	0.076	0.073	0.042	0.033	0.096	0.056	0.023	0.032	0.082	0.079	0.392	0.146	0.019
Sodium, mg/l	A	58.8	30.5	7.1	39.9	7.7	8.8	38.4	27.2	31.9	10.3	24.2	83.0	115.7	50.2	19.2
	O	58.20	28.5	6.39	37.75	7.52	30.83	21.95	25.98	33.37	10.52	19.22	103.2	98.8	115.4	85.9
Potassium, mg/l	A	14.7	5.7	2.0	11.8	3.2	0.8	7.4	11.9	5.5	2.3	3.7	18.2	20.8	7.2	4.7
	O	3.7	4.0	1.2	7.2	4.0	2.0	3.1	6.1	5.1	2.4	6.2	46.8	37.6	49.2	29.8
Boron, mg/l(1.0)	A	<0.003	<0.003	<0.003	<0.003	<0.003	0.007	<0.003	<0.003	0.056	<0.003	<0.003	0.147	0.133	0.056	0.053
	O	0.158	0.126	0.042	0.333	0.056	0.028	0.07	0.14	0.046	0.039	0.063	0.281	0.162	0.172	0.126
Chromium (VI), mg/l	A	0.018	0.023	0.025	0.025	0.015	0.015	0.015	0.023	0.025	0.025	0.010	0.015	0.010	0.013	0.020
	O	0.008	0.015	0.005	0.020	0.023	0.021	<0.002	0.005	0.023	0.005	0.005	<0.002	0.017	0.005	<0.002
Chromium, Total, mg/l (0.05)	A	0.023	0.031	0.031	0.031	0.023	0.025	0.040	0.040	0.030	0.040	0.024	0.037	0.030	0.030	0.031
	O	0.030	0.030	0.024	0.057	0.054	0.057	0.018	0.020	0.057	0.030	0.027	0.013	0.035	0.030	0.015
Iron, Total, mg/l (1.0)	A	0.170	0.260	0.260	0.100	0.080	1.800	7.750	0.120	0.400	0.130	0.340	7.270	2.720	0.340	0.220
	O	0.070	0.056	0.130	5.100	0.110	7.770	6.800	3.580	4.910	1.120	7.840	0.270	0.420	0.340	1.690



(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	0.00013	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006
	O	<0.00006	0.00006	0.00006	0.00013	<0.00006	0.00006	0.00013	0.00013	0.00006	<0.00006	0.00013	0.00006	0.00006	<0.00006	0.00006
Cadmium, mg/l (0.003)	A	0.0008	0.0004	0.0004	0.0004	0.0004	0.0006	0.0004	0.0006	0.0004	0.0004	0.0005	0.0004	0.0006	0.0006	0.0005
	O	0.002	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001	0.002	0.002	0.001	0.002	0.001	0.001
Copper, mg/l (1.5)	A	0.002	0.002	0.004	0.003	0.002	0.003	0.002	0.006	0.002	0.002	0.004	0.001	0.003	0.002	0.004
	O	0.004	0.004	0.005	0.002	0.005	0.001	0.008	0.002	0.001	0.001	0.001	0.002	0.007	0.003	0.002
Lead, mg/l (0.01)	A	0.004	0.004	0.005	0.003	0.004	0.005	0.005	0.005	0.003	0.003	0.003	0.004	0.004	0.004	0.004
	O	0.006	0.007	0.006	0.003	0.007	0.004	0.004	0.014	0.004	0.006	0.005	0.009	0.009	0.007	0.009
Nickel, mg/l (0.02)	A	0.008	0.012	0.004	0.008	0.011	0.011	0.005	0.009	0.009	0.009	0.007	0.004	0.006	0.004	0.008
	O	0.008	0.010	0.007	0.008	0.007	0.008	0.004	0.009	0.004	0.005	0.004	0.009	0.012	0.007	0.008
Zinc, mg/l (15)	A	0.012	0.016	0.008	0.015	0.018	0.017	0.008	0.021	0.011	0.011	0.018	0.017	0.011	0.014	0.007
	O	0.023	0.012	0.015	0.017	0.023	0.016	0.005	0.006	0.003	0.003	0.042	0.009	0.031	0.012	0.030
Total Coliform, MPN/100ml (Absent)	A	4.5	35	<1.8	<1.8	<1.8	<1.8	920	<1.8	<1.8	<1.8	<1.8	13	<1.8	540	<1.8
	O	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	540	<1.8	<1.8	>1600	<1.8	<1.8	<1.8	<1.8
Fecal Coliform, MPN/100ml (Absent)	A	4.5	170	<1.8	<1.8	<1.8	<1.8	170	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	240	<1.8
	O	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	350	<1.8	<1.8	1600	<1.8	<1.8	<1.8	<1.8

A : April

O : October

5.7.2 Air Quality Status

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

For assessing ambient air quality status of the State, the Board monitors ambient air quality at 34 stations in sixteen areas of the State, under the CPCB assisted National Ambient Air Quality Monitoring programme (NAMP) and State Ambient Air Quality Monitoring programme (SAMP) of the Board. Details of air quality monitoring stations, station type and parameters monitored are listed in Table-5.33. 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 these, Ammonia, Ozone, Lead are monitored at eight stations in Bhubaneswar, Puri and Konark. The monitoring is carried out for 24 hours (24-hourly 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 in a week not in a conjugative day, to have a minimum of 104 observations in a year.

Table-5.33 Ambient Air Quality Monitoring Stations

Sl. No.	Name of the areas	Monitoring stations	Station type	Parameters monitored	
1.	Angul	(i) RO, SPCB office building, 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
		(x) I.R.C. Village, Nayapalli	Residential		
		(xi) Capital Police Station, Unit-I	Residential		
		(xii) Chandrasekharpur	Residential		
		(xiii) Patrapada	Residential		
6.	Cuttack	(xiv) Palasuni water works			
		(xv) Traffic Tower, Badambadi	Residential		
		(xvi) RO, SPCB office building, Surya Vihar	Residential		
7.	Jharsuguda	(xvii) PHED Office, Barabati	Residential	PM_{10} , $PM_{2.5}$, SO_2 , NO_x	
		(xviii) RO, SPCB office building, Babubagicha,	Residential		
8	Kalinga Nagar	(xix) TATA Guest House	Industrial		
		(xx) NINL Guest House	Industrial		
		(xxi) RO, SPCB Office building, Kalinganagar	Industrial		
9	Keonjhar	(xxii) RO, SPCB Office building, Baniapat	Residential		
10	Konark	(xxiii) Konark Police Station	Residential		PM_{10} , $PM_{2.5}$, NO_x , NH_3 , O_3 , Pb

11	Paradeep	(xxiv) PPL Guest House	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		(xxv) IFFCO STP	Industrial	
		(xxvi) PPT Colony	Residential	
12	Puri	(xxvii) Sadar Police Station	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , NH ₃ , O ₃ , Pb
		(xxviii) Town Police Station	Residential	
13	Rayagada	(xxix) RO, SPCB Office building, Indiranagar	Residential	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		(xxx) Jakaypur	Industrial	
14	Rajgangpur	(xxxi) DISR, Rajgangpur	Residential	
15	Rourkela	(xxxii) RO, SPCB Office building, Sector-5	Residential	
		(xxxiii) IDL Outpost, Sonaparbat	Residential	
16	Sambalpur	(xxxiv) PHED Office, Modipara	Residential	

Ambient air quality status with respect to the four criteria parameters at these 34 stations in addition to three parameters like ammonia (NH₃), Ozone (O₃) and Lead (Pb) at Bhubaneswar, Puri & Konark during the year 2016 are given in Table-5.34. The air quality of different cities/ towns has been compared with the national ambient 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 limit. Concentration of ammonia (NH₃), ozone (O₃) and Lead (Pb) at Bhubaneswar, Puri & Konark also remained within the prescribed limit.

The 24-hrly average concentration of Respirable Suspended Particulate Matter (RSPM or PM₁₀) remained within the prescribed limit only at both the locations of Rayagada area and one location at Sambalpur area. The 24-hrly average concentration of PM₁₀ exceeded the prescribed limit of 100 µg/m³ within 10 % of total observation at two locations of Balasore area, all the six locations of Bhubaneswar and one location of Berhampur area. Percentage of violation of 24-hrly average of PM₁₀ values from the prescribed limit has exceeded 75% of total observations at MCL, Talcher and at Tata Guest House and NINL Guest House of Kalinganagar area. At rest other 22 locations, frequent violations of PM₁₀ values from the prescribed limit has been observed. Whereas, the annual average concentration of PM₁₀ has been exceeded the prescribed standard limit at all stations except at Brahmanagar of Berhampur town & Indiranagar of Rayagada town.

The annual average concentration for PM_{2.5} exceeded the prescribed standard limit at 21 locations, whereas at remaining 13 locations it remained within the limit.

5.7.2.2. AIR QUALITY INDEX (AQI)

AQI of 16 areas during the year 2016 with prominent pollutant and categorization are given in Table-5.35. The range of AQI values, categorization and health impact are presented in Table-5.36. From the Table-5.35, it is observed that out of 16 areas, five areas are falling under Moderate category & 11 areas are falling under Satisfactory category. The prominent pollutant is either PM₁₀ or PM_{2.5}. The highest AQI value i.e., 122 w.r.t PM₁₀ has been observed at Rajgangpur area.

Table-5.34 Ambient Air Quality Status of different cities & towns of Odisha during -2016

Sl. No.	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24-hourly 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)								
Angul											
1	1. RO, SPCB office building, Industrial Estate, Angul	105	94 (37-171)	50 (21-106)	7.6 (BDL-13.0)	24.3 (14.9-31.2)	-	-	-	43.8%	25.7%
	2. NALCO Nagar, Angul	105	100 (46-197)	50 (26-83)	8.8 (5.7-13.5)	22.2 (17.0-27.7)	-	-	-	56.2%	9.7%
Talcher											
2	3. TTPS , Talcher	106	94 (32-232)	46 (15-117)	9.4 (4.9-12.8)	23.6 (17.2-27.3)	-	-	-	38.7%	27.3%
	4. MCL, Talcher	106	115 (77-168)	55 (35-94)	9.4 (5.1-12.2)	24.2 (17.8-28.7)	-	-	-	82.1%	27.3%
Balasore											
3	5. RO, SPCB office building, Sahadevkhunta	106	79 (62-121)	46 (20-80)	BDL (BDL-BDL)	11.6 (9.8-14.5)	-	-	-	10.4%	16.0%
	6. DIC office, Angaragadia	73	78 (60-104)	43 (20-68)	BDL (BDL- BDL)	11.0 (10.0-13.5)	-	-	-	4.1%	4.1%
	7. Rasalpur Industrial Estate	79	93 (75-114)	54 (26-88)	8.4 (6.3-11.0)	12.3 (7.8-14.6)	-	-	-	26.6%	35.4%
Berhampur											
4	8. RO, SPCB office building, Brahamanagar	105	58 (30-108)	36 (18-55)	BDL (BDL- BDL)	19.2 (14.1-27.6)	-	-	-	2.8%	NIL
Bhubaneswar											
5	9. SPCB Office Building, Unit-VIII	99	101 (36-211)	40 (15-107)	BDL (BDL-14.5)	27.6 (19.3-35.0)	61.0 (40.6-72.9)	23.6 (21.2-30.9)	0.035 (0.009-0.088)	5.05%	1.01%
	10. I.R.C. Village, Nayapalli	102	90 (31-324)	36 (13-189)	BDL (BDL-27.3)	25.2 (16.5-33.8)	57.7 (22.5-72.4)	29.6 (21.0-115.0)	0.033 (0.004-0.068)	4.9%	0.98%
	11. Capital Police Station, Unit-I	86	107 (57-175)	32 (15-103)	BDL (BDL-18.0)	16.9 (11.4-37.5)	77.4 (61.8-125.1)	22.7 (20.1-26.4)	0.060 (BDL-0.1)	8.1%	1.16%
	12. Chandrasekharpur	89	100 (37-314)	32 (15-85)	BDL (BDL-7.9)	14.5 (10.5-21.5)	45.3 (37.2-71.2)	22.7 (21.0-58.0)	0.045 (0.01-0.09)	3.4%	5.0%
	13. Patrapada	95	101 (43-240)	37 (12-151)	BDL (BDL-20.6)	15.1 (10.8-28.8)	83.6 (26.5-71.0)	31.9 (10.0-37.0)	0.034 (0.004-0.107)	6.3%	1.05%
	14. Palasuni water works	49	113 (29-254)	43 (11-142)	BDL (BDL-8.4)	16.9 (10.4-35.1)	44.6 (29.0-79.4)	22.1 (13.6-29.6)	0.065 (0.012-0.189)	6.1%	4.08%

Sl. No.	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24-hourly 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)								
Cuttack											
6	15. Traffic Tower Badambadi,	105	92 (47-257)	46 (25-167)	BDL (BDL-6.5)	33.0 (28.3-38.0)	-	-	-	30.7%	5.7%
	16. R.O.SPCB Office Building, Surya Vihar	106	74 (43-176)	41 (21-140)	BDL (BDL-5.4)	28.4 (24.8-35.7)	-	-	-	16.8%	1.9%
	17. PHED office , Barabati	106	76 (49-157)	41 (22-113)	BDL (BDL-BDL)	28.9 (25.9-36.8)	-	-	-	14.0%	5.6%
Jharsuguda											
7	18. RO SPCB Office Building, Babubagicha,	102	87 (58-117)	48 (24-73)	12.6 (9.0-21.0)	19.9 (16.0-30.0)	-	-	-	30.4%	21.6%
Kalinga Nagar											
8	19. TATA Guest House	103	116 (74-212)	49 (35-116)	BDL (BDL- BDL)	10.6 (9.2-14.6)	-	-	-	80.6%	15.5%
	20. NINL Guest House	101	111 (71-290)	47 (32-100)	BDL (BDL- BDL)	9.7 (BDL-12.9)	-	-	-	76.2%	14.8%
	21. R.O. SPCB Office Building, Kalinganagar	93	112 (68-295)	45 (13-92)	BDL (BDL- BDL)	BDL (BDL-11.6)	-	-	-	52.7%	16.1%
Keonjhar											
9	22. R.O. SPCB Office Building, Baniapat	94	82 (15-187)	45 (7-111)	BDL (BDL- BDL)	14.2 (10.8-21.1)	-	-	-	45.7%	25.5%
Konark											
10	23. Konark Police station	100	94 (32-226)	40 (14-121)	BDL (BDL- BDL)	13.2 (BDL-22.3)	47.7 (25.0-78.5)	25.5 (21.2-76.0)	0.031 (0.007-0.067)	30.0%	22.0%
Paradeep											
11	24. PPL Guest House	87	97 (49-193)	34 (16-69)	22.7 (12.7-34.3)	12.9 (10.9-17.0)	-	-	-	37.3%	8.75%
	25. IFFCO STP	88	117 (64-250)	41 (19-86)	21.9 (11.1-32.1)	12.7 (10.6-19.5)	-	-	-	56.8%	17.0%
	26. PPT Colony	91	114 (53-248)	42 (18-120)	22.5 (13.0-43.1)	13.9 (10.9-21.8)	-	-	-	45.0%	21.3%

Sl. No.	Area / Stations	No. of Obs. (24 hrs)	Annual Average Value (24-hourly 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)								
Puri											
12	27. Sadar police Station	99	88 (31-192)	26 (6-110)	BDL (BDL- BDL)	14.3 (10.0-28.1)	41.8 (34.6-68.2)	24.8 (22.8-28.4)	0.054 (0.01-0.183)	20.2%	8.1%
	28. Town police Station	93	100 (33-715)	27 (9-442)	BDL (BDL-10.1)	14.5 (10.1-31)	45.7 (34.6-134.2)	27.5 (21.0-70.0)	0.086 (0.01-0.2)	22.6%	2.1%
Rayagada											
13	29. R.O.SPCB Office Building, Indiranagar	103	57 (36-85)	33 (14-48)	BDL (BDL- 4.6)	20.3 (13.1-25.0)	-	-	-	Nil	Nil
	30. Jaykaypur	102	62 (34-86)	38 (16-58)	BDL (BDL- 5.3)	21.0 (14.6-26.4)	-	-	-	Nil	Nil
Rajgangpur											
14	31. DISR, Rajgangpur	104	133 (47-250)	58 (11-152)	12.2 (4.9-29.6)	14.8 (9.0-34.6)	-	-	-	69.2%	38.5%
Rourkela											
15	32. R.O.SPCB Office building, Sector-5	103	91 (48-128)	38 (24-55)	BDL (BDL- 10.4)	13.6 (9.0-18.7)	-	-	-	13.6%	Nil
	33. IDL Outpost, Sonaparbat	105	88 (43-217)	46 (20-77)	5.9 (5.1-17.1)	10.6 (7.7-21.4)	-	-	-	19.0%	8.6%
Sambalpur											
16	34. PHED Office, Modipara	108	78 (70-92)	51 (40-64)	BDL (BDL- 4.6)	16.8 (13.3-19.3)	-	-	-	Nil	3.7%
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, PM₁₀ – Particulate Matter ≤ 10 μ size, PM_{2.5} – Particulate Matter ≤ 2.5 μ size SO₂ – Sulphur Dioxide, NO_x – Oxides of Nitrogen, NH₃ - Ammonia, O₃ – Ozone & Pb-Lead

- BDL Value for SO₂ ≤ 4 μg/m³, NO_x ≤ 9 μg/m³, NH₃ ≤ 10 μg/m³, O₃ ≤ 10 μg/m³, Pb ≤ 0.0022 μg/m³, PM₁₀ ≤ 5 μg/m³, PM_{2.5} ≤ 2 μg/m³
- No percentage of violation of data from 24-hourly average has been observed for the monitored pollutants like SO₂, NO_x, NH₃, O₃ and Pb

Table-5.35 Annual Air Quality Index of Different monitored Stations in Odisha during the year, 2016

Location	Sub-index value w.r.t parameter							Overall AQI of the area w.r.t parameter	Overall Categorisation
	PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb		
1. Angul									
1. RO, SPCB office building, Industrial Estate, Angul	97	83	10	29	-	-		97(PM ₁₀)	Satisfactory
2. NALCO Nagar, Angul									
2. Talcher									
3. TTPS, Talcher	103	85	12	30	-	-	-	102(PM ₁₀)	Moderate
4. M.C.L., Talcher									
3. Balasore									
5. RO, SPCB office building, Sahadevkhunta	83	80	5	15	-	-		83 (PM ₁₀)	Satisfactory
6. DIC office, Angaragadia									
7. Rasalpur Industrial Estate									
4. Berhampur									
8. RO, SPCB office building, Brahamanagar	58	60	3	24	-	-	-	60 (PM _{2.5})	Satisfactory
5. Bhubaneswar									
9. SPCB Office Building, Unit-VIII	101	62	3	24	15	25	4.5	101 (PM ₁₀)	Moderate
10. I.R.C. Village, Nayapalli									
11. Capital Police Station, Unit-I									
12. Chandrasek-harpur									
13. Patrapada									
14. Palasuni water works									
6. Cuttack									
15. Traffic Tower, Badambadi,	81	72	3	38	-	-	-	81 (PM ₁₀)	Satisfactory
16. RO, SPCB office building, Surya Vihar									
17. PHED office, Barabati									
7. Jharsuguda									
18. RO, SPCB office building, Babubagicha	87	80	16	25	-	-	-	87 (PM ₁₀)	Satisfactory
8. Kalinganagar									
19. TATA Guest House	109	78	3	6	-	-	-	109 (PM ₁₀)	Moderate
20. NINL Guest House									
21. RO, SPCB office building, Kalinganagar									



Location	Sub index value w.r.t parameter							Overall AQI of the area w.r.t parameter	Overall Categorisation
	PM ₁₀	PM _{2.5}	SO ₂	NO _x	NH ₃	O ₃	Pb		
9. Keonjhar									
22. RO, SPCB office building, Baniapat	82	75	3	18	-	-	-	82 (PM ₁₀)	Satisfactory
10. Konark									
23. Konark Police Station	94	67	3	17	12	26	4.4	94 (PM ₁₀)	Satisfactory
11. Paradeep									
24. PPL Guest House	106	65	28	17	-	-	-	106 (PM ₁₀)	Moderate
25. IFFCO STP									
26. PPT Colony									
12. Puri									
27. Sadar police Station	94	45	3	18	11	26	7.0	94 (PM ₁₀)	Satisfactory
28. Town police Station									
13. Rayagada									
29. RO, SPCB office building, Indiranagar	60	59	3	26	-	-	-	60 (PM ₁₀)	Satisfactory
30. Jaykaypur									
14. Rajgangpur									
31. DISR, Rajgangpur	122	97	15	19	-	-	-	122 (PM ₁₀)	Moderate
15. Rourkela									
32. RO, SPCB office building, Sector-5	90	70	5	15	-	-	-	90 (PM ₁₀)	Satisfactory
33. IDL Outpost									
16. Sambalpur									
34. PHED Office, Modipara	78	85	3	21	-	-	-	85 (PM _{2.5})	Satisfactory

Table-5.36
AQI range with categorization and Health impact

AQI VALUE	CATEGORY	COLOUR CODE	IMPACT ON HUMAN HEALTH
0-50	GOOD		Minimal Impact
51-100	SATISFACTORY		Minor breathing discomfort to sensitive people
101-200	MODERATE		Breathing discomfort to the people with lung, heart disease, children and adults
201-300	POOR		Breathing discomfort to people on prolonged exposure
301-400	VERY POOR		Respiratory illness to the people on prolonged exposure
>401	SEVERE		Respiratory effects even on healthy people

5.8 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 2016-17 is given in Table-5.37.

Table - 5.37 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	
7482	2743	3458	2189	18	1251	2217	10,588	312	849

5.9 PUBLIC GRIEVANCES

The status of various public complaints received and redressed on following matters during 2016-17 is given in Table 5.38.

- 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 - 5.38 Status of Public Complaints

No. of complaint received	Disposal	Under investigation
633	472	161

5.10 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. 756 no. of requests were received under RTI during 2016-17 (Table-5.39). The total amount collected for RTI requests during 2016-17 is ₹ 36,369/- .

Table - 5.39 Status of Applications under RTI Act

SL. No.	Details of the Application	Nos.
01.	No. of Applications received during the year	756
02.	No. of Applications on which Information provided	547
03	No. of Applications on which information rejected	73
04.	No. of requests transferred to other public Authorities	86

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 310 cases and out of this 269 cases have been disposed off by the respective Courts during 2016-2017. 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	25	17
2.	Writ	146	119
C	Supreme Court		
1.	PIL	02	Nil
2.	Writ	Nil	Nil
D	Other Court		
1.	Civil Suit	Nil	Nil
2.	Consumer Dispute Cases	Nil	24
3.	Lokpal Cases	Nil	Nil
E.	N.H.R.C. / O.H.R.C.	33 (NHRC-17+ OHRC-16)	24 (NHRC-07+ OHRC-17)
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	104	85
	Total	310	269

6.2 IMPORTANT LEGAL DECISIONS

6.2.1 SUPREME COURT OF INDIA

The Hon'ble Apex Court vide their judgment dtd.22.02.2017 directed all the State Pollution Control Boards to issue notices to industrial units (which require consent to operate) to make their primary effluent treatment plant fully operational within three months. On the expiry period of three months, the SPCBs are mandated to carry out inspection to verify whether or not the industrial units have functional primary effluent treatment plant. The industrial units, which have not been able to make their primary effluent treatment plant fully operational within the statutory period shall be restrained from any further industrial activities. In the said judgment some direction has also been issued for functional common effluent treatment plants by the Urban Development and Local Bodies.

6.2.2 NATIONAL GREEN TRIBUNAL.

1. The Hon'ble NGT, EZB, Kolkata while adjudicating the brick kiln units operating in the State of Odisha vide O.A. No. 111/2015/EZ (Joydeep Mukherjee -Vrs- Odisha Pollution Control Board & Anr) vide their order dtd.07.04.2016 have categorized the defaulter brick kiln units operating in the State of Odisha without consent of this Board into two groups ,viz. Category- C i.e., those who had obtained consent to operate at some point of time, but continued to operate without renewal after expiry of its term and Category - D, i.e. those brick kilns which are operating without any consent at all times from the inception and fixed Environmental Compensation of Rupees 1 lakh upon those belonging to Category C and Rupees 1.5 lakh penalty was imposed upon those belonging to Category D and directed for depositing the said amount before the Board.
2. The Hon'ble NGT, EZB, Kolkata while adjudicating the Hotel units in the State of Odisha operating without consent of the Board in O.A. No. 53/2015/EZ (Biranchi Narayan Mohapatra -Vrs- State of Odisha & Others) vide their order dtd. 23.09.2016 have categorized the defaulter Hotels as Category 'A' & Category 'B' and fixed the environmental compensation of Rs. 1 lakh for those falling in Category 'A' and Rs. 50,000/- for Category 'B'. Category-'A' shall include those hotels which never obtained any consent from the PCB and had operated the hotel units illegally and Category-'B' shall include those hotels which had earlier possessed consent but expiry of the validity periods, it was never renewed and continued to operate even thereafter. The Environmental Compensation fixed above shall be deposited in the Board.
3. The Hon'ble NGT, PB, New Delhi while adjudicating the stone crusher cases of M/s. BVSR Construction Pvt. Ltd in the district of Ganjam in Appeal No. 97/2013-M.C.Rao -Vrs- Member Secretary, OSPCB & others have directed the Project Proponent to pay environmental compensation of Rs. 5,00,000/-(Rupees Five Lakhs) to the Collector, Gajapati district within 30 days of the order. The said amount would be used towards upgradation of the local Community Health Centre at Kashinagar with 5 additional beds will thereby increase to 21. The Collector will make a plan for health care to spend Rs. 5 Lakhs urgently and a compliance report regarding the same be filed before the Tribunal by 1st February 2017.

4. Sri Gadadhar Samal has approached the Hon'ble NGT, EZB, Kolkata in OA No.119/2016/EZ alleging pollution caused by M/s. Talcher Thermal Power Station (NTPC) at Talcher mainly with a prayer to direct the SPCB not to renew the consent to operate order and direct constitution of an independent fact finding committee to assess the impact of pollution caused by the above unit. The Hon'ble NGT, EZB, Kolkata vide their order dtd.01.09.2016 while issuing notice to the Respondents have directed this Board to inspect the area in question and verify the allegations stated in the application and submit a report in this regard etc.. In compliance to the said order, the Regional Office at Angul has carried out inspection of the unit and the report has been submitted to the Hon'ble Tribunal. Finally the Hon'ble Tribunal in their judgment dtd.29.03.2017 has dismissed the OA observing that the allegations contained in the OA are evidently not based on correct facts and also observed that "we do not find any reason as to why we should doubt the correctness of the report of the State PCB which is an independent statutory authority".
5. Sri Biswaranjan Paramguru, Advocate, Supreme Court of India has filed OA No.225/2014 before the Hon'ble NGT, PB, New Delhi regarding alleged pollution caused by M/s. Hindalco Industries Ltd., Hirakud, Sambalpur. Pursuant to direction of Hon'ble NGT, joint inspection was carried out by the Board along with the Zonal Office, CPCB and the said report was submitted before the Hon'ble NGT, PB, New Delhi. During course of hearing, the applicant has raised question regarding veracity of the joint inspection report and prayed for fresh inspection, but the Hon'ble NGT has accepted the submission and vide their order dtd.23.01.2017 directed the applicant to deposit Rs.5,000/- as cost before the Board. In compliance to the said direction, the applicant has submitted the Bank Draft. The said matter is still pending for hearing.
6. The Hon'ble NGT, EZB, Kolkata while adjudicating OA No.124/2015/EZ – Biranchi Narayan Mahapatra vs. State of Odisha & Others vide their order dtd.02.08.2016 have directed this Board to take necessary steps to ensure that all distilleries and fermentation units, including country liquor manufacturing units, in the State of Odisha are brought within its consent management as provided under law. In compliance to the said direction the Board have brought the fermentation industry including manufacturer of yeast, beer, distillation of alcohol (Extra Neutral Alcohol) with wastewater discharge up to 100 KLD, under Orange Category industry.
7. The Hon'ble NGT, EZB, Kolkata while adjudicating the alleged pollution caused by stone quarries in Soro area of Balasore district vide their order dtd.01.02.2016 have observed the Resolution No.13266 dtd.11.08.2010 of the Board exempting the minor minerals having lease area of less than 5.0 ha. from obtaining consent of the Board under Water (PCP) Act, 1974 and Air (PCP) Act, 1981 contrary to law and set aside and quash the same with a direction to the Board to bring all the minor minerals irrespective of lease hold area under consent administration of the Board. The matter was placed before the Board in its 113rd meeting held on 11.03.2016 and a Resolution No.5803 dtd.30.03.2016 has been issued bringing all the minor mineral mines irrespective of the lease hold area under consent administration of the Board.

8. The Hon'ble NGT, PB, New Delhi while adjudicating OA No.24/2011 – Samir Mehta Vs. Union of India & Others vide their order dtd.7.2.17 have directed all the SPCBs which have received environmental compensation, penalty or any other charges in furtherance to the orders of the Tribunal shall file complete and comprehensive plan with regard to how they proposed to utilize the amount so received for the purpose of prevention and control of pollution and improvement in the environment of the respective states. In the said order direction have also been issued to all Boards who have received the amount of environmental compensation / penalty to remit / pay to the CPCB 25% of the amount received by them. Accordingly, the Board has deposited Rs.59, 67,500.00 (Rupees fifty nine lakh sixty seven thousand and five hundred only) i.e. 25% of the total amount of Rs.2,38,70,000.00 (Rupees two crore thirty eight lakhs and seventy thousand only) and submitted the same through affidavit dtd.23.02.2017 before the Hon'ble NGT.

6.2.3 Notification:

The State Government in the F&E Deptt. vide their notification No.21224 dtd.17.11.2016 and No.21218 dtd.17.11.2016 have been pleased to constitute the Appellate Authority under the Chairmanship of Shri Justice C.R.Dash, sitting Judge of Orissa High Court under the provisions of Section 31 of the Air (PCP) Act, 1981 and Section 28 of the Water (PCP) Act, 1974 to hear appeals preferred against the order made by the SPC Board, Odisha.

6.2.4 Other activities / information

In compliance to the direction dtd.19.08.2016 in WPC No.12216/2016 – Manabhanjan Champatiray vs. State of Odisha & Others, the Personal Hearing has been taken by the Member Secretary on dtd.20.02.2017 at 05.30 PM involving the petitioners as well as quarries owners of the stone quarry situated at village Jariput and Jayamangalpur in Khordha district and disposed off the matter by a reasoned order vide Office Order No.2719 dtd.25.02.17.

CHAPTER - VII

FINANCE AND ACCOUNTS

The estimated and the actual receipts during 2016-17 are given in Table-7.1.

Table-7.2 reflects the details of budget provision and actual expenditure incurred during the year 2016-17.

Table - 7.1 Receipt of the Financial Year 2016-17

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)	2200.00	3207.85
2.	Consent to Establish	700.00	758.41
3.	Public Hearing	10.00	14.00
4.	Haz. Waste Authorisation	15.00	26.27
5.	Bio Medical Waste Authorisation	12.00	24.76
6.	Misc. Receipt	5.00	6.91
7.	Analysis Charges	1.00	0.70
8.	Pollution Charges	20.00	50.42
9.	Forfeiture of B.G.	305.00	303.90
10.	Recovery of Loan & Others	45.00	47.38
11.	Interest on Savings/ Advances	1000.00	2180.84
12.	Environmental Penalty	-	191.82
	Sub Total	4313.00	6813.26
B.	Cess (Reimbursement)	700.00	524.28
C.	Receipt from Schemes	78.80	206.27
	Sub-Total	778.80	730.55
	Grand Total	5091.80	7543.81

Table - 7.2 Expenditure during the Financial Year 2016-17

Sl. No.	Source of Funding	Head of Account	Budget	Actual Expenditure
			(₹ in lakhs)	
1.	Board's own fund	i. Salary	1184.00	1165.57
		ii. Recurring Expenditure	421.00	330.72
		iii. Loans & Advances	33.85	23.66
		iv. Non Recurring Expenditure	587.00	245.38
		Total	2225.85	1765.33
2.	Cess Fund	i. Salary of Scientific & Technical Personnel	140.00	140.00
		ii. Establishment Cost & Office Operation	116.00	76.75
		iii. E-Governance & IT Operations	18.00	6.60
		iv. Monitoring of Air, Water, Noise Quality	89.00	65.86
		v. Other Project Activities	259.50	233.51
		Total	622.50	522.72
3.	Sponsored Schemes		210.00	106.63
		Grand Total	3058.35	2394.68

CHAPTER - VIII

OTHER IMPORTANT ACTIVITIES

8.1 INTEGRATED COASTAL ZONE MANAGEMENT PROJECT (ICZMP)

- Office of the Pilot Executing Agency (PEA) for ICZMP has performed several activities for shoreline coastal monitoring of the coastal water over a stretch of about 80 KM from Paradeep to Dhamra.
- Office of Centre for Management of Coastal Ecosystem (CMCE) at Paradeep has already been started functioning since 16th May, 2016.



CMCE Building in Paradeep

8.1.1 COASTAL WATER MONITORING AND ANALYSIS

The assigned monitoring area is from Paradeep (20010'02.67N; 86031'22.63E) to Dhamra coast (20051'58.96N; 86058'12.27E); covering nearly 80 KM in the sea. Total seventy three (73) sampling locations have been selected for the entire monitoring area, out of which 32 are along Mahanadi transect, 17 in Dhamara transect and 24 in Bhitarkanika-Gahirmatha transect.

Coastal Water Monitoring and Analysis has been done by the PEA(Pilot Executing Agency) regularly since April 2014 on quarterly/seasonal basis. Till date only on-shore and few off-shore sampling points could have been covered with the help of trawlers. The details of monitoring conducted during 2016-17 by the PEA are given in Table 8.1.

Table 8.1 Details of coastal water monitoring.

Year/ Monitoring Quarter	Period	Duration of sampling	Name of Stretch/Zone	No. of water samples collected
2016-17/Q1	March -June	June-2016	Paradeep(Z-1)	167
2016-17/Q2	July-September	Sept-2016	Dhamara(Z-3)	174
2016-17/Q3	October-November	Oct-2016	Bhitarakanika(Z-2)	142
2016-17/Q4	December-February	Dec-2016	Paradeep(Z-1)	203
2016-17/Q1	March -June	Mar-2017	Bhitarakanika	182
2016-17/Q1	March -June	Mar-2017	Paradeep	246
Total no.of sample				1114

Parameters those are analysed for the water samples include pH, Conductivity, Total Suspended Solids, Total Dissolved solids, Turbidity, Fluoride, Dissolved Oxygen, Biochemical Oxygen Demand, Alkalinity, Salinity, Nitrite, Nitrate, Ammonia, Silicate, Ortho-phosphate, TOC, TIC , Heavy metals(V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Mo, Pb, Cd, Hg), Total Coliform, Fecal Coliform, Chlorophyll-a, Chlorophyll-b, Chlorophyll-c, Total Chlorophyll, Phaeophytin pigment, Carotenoid, Phytoplankton and Zooplankton.



Sample collection by ICZMP Team at Paradeep

Seven no. of water samples have been collected in connection with oil spillage at Paradeep.



Oil spillage from pipe line of M/s. IOCL at Paradeep and water sample collection

Samples have been collected on 07.06.2016 from 6 different points which include 3nos. from affected Bata creek, 2nos. on opposite side of the affected side and 1no. from the SKOL discharge point in connection with fish mortality in a confined stream of Bata Creek at Paradeep.



Fish mortality in a confined stream of Bata Creek at Paradeep

Sample collection by ICZMP team headed by the Nodal Officer

8.1.2 INSTALLATION OF INSTRUMENT AT COASTAL LABORATORY, PATIA, BHUBANESWAR AND CMCE BUILDING AT PARADEEP:

- Volatile Organic Compound (VOC) & Benzene Toluene & Xylene (BTEX) analyser were installed at CMCE Building, Paradeep during April-2016.
- Fourier Transform Infrared Spectrophotometer was installed in the Coastal Laboratory, Patia during June-2016.

8.1.3 LAUNCHING OF SEA-WORTHY POLLUTION MONITORING VESSEL (PMV):

The Sea Worthy vessel which was launched into sea at Bhimulipatnam, AP on 14.12.2016 and reached Paradeep Port on 24.01.2017 through sea-voyage from Vizag port. After launching at Paradeep, 4th stage inspection has been carried out on 09.02.2017 in the presence of Dr. V.A. Subramanian, Prof. Dept. of Ocean Eng., Madras IIT, Chennai (Technical Specialist - cum - Consultant). The committee expressed its satisfaction on the overall progress of the vessel launching at Paradeep Port . The vessel is already registered with MMD (Mercantile Marine Department of DG Shipping, Govt. of India) with all assigned numbers for registration and the validity of the registration is renewed upto 19.10.2017. The plying of the vessel would be taken up after the final clearance from IRS (Indian Registrar of Shipping). The IRS has undertaken inspections during 20th to 21st March 2017 and again during 29th March to 1st April 2017 for sea trail and ratification of navigational as well as radio equipments affixed in the vessel in presence of radio equipment contractor (Marks Marine Radio Pvt. Ltd, Mumbai).



8.1.4 ACTIVITY AT CMCE BUILDING AT PARADEEP:

Additional Secretary & FA, MoEF & CC, Govt. of India being accompanied with the Member Secretary and the Nodal Officer, ICZMP visited the CMCE building at Paradeep on 9.4.2016 in connection with the implementation of project work.



Visit of CMCE building at Paradeep by Additional Secretary & FA, MoEF & CC, Govt. of India

CMCE building is functional since 16th May 2016. Green building implementation has been accomplished and documentation for certification has been submitted at USGBC.

8.1.5 OTHER ACTIVITIES OF ICZMP, SPCB, ODISHA:

- Thematic Audit by the Principal Accountant General (Economic & Revenue Sector Audit) Odisha, Bhubaneswar was made from 30th April to 3rd May, 2016. The Audit team has visited the CMCE building, Paradeep on 2nd May 2016.



Thematic Audit by the Principal Accountant General (Economic & Revenue Sector Audit) Odisha, Bhubaneswar

- An interaction meeting on “Environmental Management & Pollution Control in Paradeep Area” under the chairmanship of Collector & District Magistrate, Jagatsinghpur was held on 15th March, 2017 at CMCE Building, SPCB, Paradeep.

8.1.6 PUBLICATION BY ICZMP, SPCB, ODISHA:

1. Environmental Status Report of Paradeep, Gahirmatha-Bhitarakanika and Dhamara coastal stretches of Odisha in Bay of Bengal, India from May-2013 to March-2015 was released on 33rd Foundation Day of State Pollution Control Board, Odisha on dt. 14.09.2016.

2. One research paper entitled “Spatial variation of Phytoplankton in relation to physicochemical parameters along Mahanadi estuary and inshore area of Paradeep coast, North East coast of India in Bay of Bengal.” submitted for publication to the “Indian Journal of Geo-Marine Sciences” by ICZMP, SPCB, Odisha.
3. Report Card of “Estuarine-Sea ecosystem of Paradeep-2015” by ICZMP, SPCB, Odisha has been published during December 2016 by SPCB, Odisha.

8.1.7 TRAINING / WORKSHOP/ SEMINAR ATTENDED BY ICZMP,SPCB STAFFS INSIDE INDIA

1. Dr. S. S. Pati, Project Scientist and Dr. S.N. Nanda, Project Scientist attended a seminar on “Air Quality and Continues Emission Monitoring Systems” on 12th April, 2016 at Hotel Swosti Premium, Bhubaneswar by Thermo Fisher Scientific.
2. Dr. Sangeeta Mishra, Project Scientist and Mrs. Sumitra Nayak, Project Scientist attended seminar on “Advancement in Ion Chromatograph and Water Purification System” on 12th April, 2016 at Hotel Mayfair, Bhubaneswar organized by Thermo Fisher Scientific.
3. Mr. Anupam Behera, Nodal Officer cum Project Coordinator, ICZMP, SPCB, Odisha and Dr. S.N. Nanda, Project Scientist attended workshop on “Coastal & Marine Ecosystem, People & Biodiversity: Shaping the Future with Business to enhance Conservation in Odisha” on 22nd July, 2016 at Hotel New Marrion, Bhunaneswar; jointly organized by IUCN, New Delhi, SPMU, ICZMP & SPCB, Odisha.
4. Dr. S. S. Pati, Project Scientist has attended training programme on “Hands-on-Training on Sophisticated Instruments and GC/GC-MS Operation” from 23rd-25th November, 2016 at NGRI, Hyderabad.
5. Dr. S.N. Nanda, Project Scientist has attended training programme on “Advanced Instrumentation Techniques-Hands-on-Training” from 19th-21st December, 2016 at NIH, Roorkee.
6. Nodal Officer cum Project Coordinator attended 3 days residential training programme on “Environmental Pollution and its Health Impacts-Practical Aspects” from 1-3, February-2017 at TERI Retreat, Gual Pahari Campus, Gurgaon, Haryana.

8.2 FLY ASH 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 2016-17 about 32,560,377 MT of fly ash has been generated, of which the utilisation of fly ash is about 22,083,824 MT i.e 67.82%.

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.

8.4 OBSERVATIONS DURING DIFERENT FESTIVALS

8.4.1. Impact of Festive Activities during Dashera and Deepawali on Noise level and Ambient Air Quality (AAQ) of selected towns and cities of Odisha.

A. AMBIENT NOISE LEVELS DURING DASHERA – 2016

State Pollution Control Board, Odisha has conducted ambient noise level monitoring at 49 locations in thirteen cities i.e., Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela and Sambalpur covering Industrial, Commercial, Residential and Silence zone during day and night time to assess the impact of noise during celebration of Dashera and comparison with the value obtained during 2015.

The normal day noise level varied from 42.0 to 81.7 Leq dB (A) in the year 2015, and from 44.7 to 75.2 Leq. dB (A) in the year 2016. While same on the festival day varied between 51.5 and 83.0 Leq dB(A) in the year 2015 and between 52.0 to 85.7 Leq. dB(A) in the year 2016. During Dashera the maximum noise level value of 83.3 Leq dB(A) was reported at Bisra Chhak, Rourkela in the year 2015 and 85.7 Leq dB(A) was reported at Jhanda Chhak, Jharsuguda in the year 2016. Noise level for both the years during normal and festival day are compared and were indicated in Table-8.2.

Sl. No	Cities	Locations	2015	2016	2015	2016
			Normal Day	Normal Day	Dashera Day	Dashera Day
1	Angul	Amalapada(R)	56.7	57.6↑	62.6	61.2↓
2		Bazar chhak	70.2	58.4↓	74.5	64.6↓
3		District Head Quarter Hospital	58.1	61.2↑	62.6	75.8↑

4		Hakimpada	59.6	54.4↓	66.7	59.1↓
5	Balasore	Sahadevkhunta(R)	56.1	56.4↑	62.2	64.0↑
6		Motiganj Bazar	65.7	63.5↓	79.7	76.7↓
7		District Head Quarter Hospital	49.3	47.4↓	56.0	53.0↓
8		Balasore Industrial Estate	60.0	57.4↓	65.2	62.0↓
9	Berhampur	Brahmanagar(R)	55.1	58.4↑	60.3	60.8↑
10		Girija market square	75.3	75.1↓	78.7	80.6↑
11		MKCG Medical & Hospital	55.2	60.6↑	60.1	64.1↑
12		Ankuli	60.2	61.7↑	75.4	79.8↑
13	Bhubaneswar	Lingaraj(R)	61.1	-	69.0	-
14		Nayapalli(R)	60.7	53.3↓	67.5	72.8↑
15		Sahidnagar	66.2	59.4↓	72.1	75.9↑
16		Capital Hospital	55.6	51.2↓	58.9	57.1↓
17		Rasulgarh	69.6	63.5↓	72.1	78.8↑
18	Cuttack	Suryavihar(R)	62.4	65.2↑	67.1	70.1↑
19		Badambadi	76.0	75.2↓	80.2	82.0↑
20		SCB Medical College & Hospital	65.8	-	71.7	-
21		Sishu Bhawan	-	65.0	-	69.0
22		Khapuria	69.7	70.1↑	70.8	65.4↓
23	Jharsuguda	Puruna Basti(R)	60.5	58.5↓	80.0	79.7↓
24		Jhanda Chowk	65.4	66.1↑	80.9	85.7↑
25		District Head Quarter Hospital	50.7	53.4↑	57.2	76.7↑
26		Bombay Chowk	73.4	64.7↓	76.3	72.1↓
27	Kalinganagar	Umapada	52.7	-	56.6	-
28		Sapagadia	-	54.0	-	59.8
29		Gopabandhu Chowk	69.2	68.8↓	77.4	74.6↓
30		CHC Hospital, Jajpur Road	51.8	53.4↑	57.5	56.4↓
31		Kalinganagar Industrial Estate	58.8	62.7↑	63.4	68.7↑
32	Keonjhar	Baniapat Chowk	63.2	64.8↑	51.5	74.0↑
33		Punjabi Chowk	63.9	70.7↑	66.7	73.9↑
34		Govt. Hospital	55.9	58.3↑	57.0	61.1↑
35	Paradeep	PPT Colony	52.1	58.9↑	65.3	65.0↓
36		LIC Building Jagatsinghpur	68.4	68.8↑	81.2	82.9↑
37		District Head Quarter Hospital	61.2	62.8↑	65.6	69.7↑
38	Puri	Kumutisahi, Old Sadar lane	63.4	64.2↑	70.1	70.5↑
39		Sri Mandir	66.2	67.9↑	70.1	77.5↑
40		District Head Quarter Hospital	60.1	58.5↓	63.6	63.5↓
41	Rayagada	Indiranagar	-	57.4	-	64.8↑
42		Main market	-	61.6	-	69.4↑
43		District Head Quarter Hospital	-	55.1	--	62.5↑
44		Tumbigida	-	63.0	-	71.9↑
45	Rourkela	Sector-4	62.5	46.9↓	63.9	52.0↓
46		Bisra Chowk	81.7	73.6↓	83.3	74.4↓
47		IGH steel Township	55.2	46.2↓	57.6	50.0↓
48		RSPL Sail	80.7	63.0↓	82.2	65.3↓
49	Sambalpur	Ainthapali	56.0	44.7↓	65.3	56.7↓
50		Golebazar	69.7	53.3↓	76.2	62.0↓
51		District Head Quarter Hospital	42.0	46.7↑	54.4	58.4↑

Ambient Noise Standard (In Leq dB(A))		
Category of area zone	Day Time	Night Time
Industrial area(I)	75	70
Commercial area	65	55
Residential area	55	45
Siience area	50	40
↑: the value is higher compared to the last year	↓: the value is lower compared to the last year	

B. AMBIENT AIR QUALITY AND NOISE LEVEL DURING DEEPAWALI - 2016

The State Pollution Control Board, Odisha has conducted ambient air as well as ambient noise monitoring at 13 cities in the year, 2016 during normal day & on the day of Deepawali to assess the impact of Deepawali on ambient air quality. Further the results obtained were compared with previous year results to assess the impact of measures taken for restriction on bursting of fire crackers. The ambient air quality monitoring carried out at 41 locations in 13 cities and ambient noise monitoring was carried out at 50 locations in 13 cities.

Ambient Air Quality

- The ambient air quality was carried out with respect to SO₂, NO₂, & PM₁₀. In normal day, PM₁₀ value varies between 28 to 155 µg/m³ in the year 2015 and between 70 to 203 µg/m³ in the year 2016. The maximum PM₁₀ value i.e., 155 µg/m³ was reported at DISIR, Rajgangpur in the year, 2015 and maximum PM₁₀ value, 203 µg/m³ was reported at Guest house, PPL, Paradeep in the year, 2016. Whereas PM₁₀ on the festival day ranged between 71 to 700 µg/m³ in the year 2015 and from 77 to 367 µg/m³ in the year 2016. The maximum PM₁₀ value was 700 µg/m³ at IRC village Nayapalli in the year 2015 and 367 µg/m³ at Sadar Police station, Puri in the year 2016.
- In normal day SO₂ values are well within the limit. Maximum value 12.5 µg /m³ was reported at DISIR, Rajgangpur in the year 2015 and maximum SO₂ value 23.8 µg /m³ was reported at PPL guest house, Paradeep in the year, 2016. While in festival day maximum SO₂ value 32.1 µg /m³ in the year, 2015 and maximum SO₂ value 36.5 µg /m³ was reported at Girija market square, Berhampur in the year, 2016.
- In normal day maximum NO₂ value 29.2 µg/m³ was reported at Bazar chhak, Angul in the year, 2015 and maximum NO₂ value 33.5 µg /m³ was reported at Girija market square, Berhampur in the year, 2016. While in festival day maximum NO₂ value 56.1 µg/m³ at Industrial Estate Ankuli, Berhampur in the year, 2015 and maximum NO₂ value 47.2 µg/m³ was reported at Girija market square, Berhampur in the year, 2016. The increase & decrease PM₁₀ value on the day of Deepawali for the year 2015 & 2016 are shown in arrow mark. The ambient air quality value of measured parameter for the year 2015 to 2016 is shown in Table - 8.3 & Table - 8.4.

Table-8.3 Ambient Air Quality Levels in ($\mu\text{g}/\text{m}^3$) on Normal Day 2015 - 2016 in Odisha								
Sl. No	Cities	Locations	2015			2016		
			SO ₂	NO ₂	PM ₁₀	SO ₂	NO ₂	PM ₁₀
1	Angul	Industrial Estate Hakimpada	9.5	24.6	91	6.8	24.2	83↓
2		Amalapada	10.4	26.4	91	7.2	25.0	75↓
3		2Bazar chhak	9.2	29.2	96	10.1↑	24.7	76↓
4		District Head Quarter Hospital	11.2	26.1	78	9.6	22.7	98↑
5	Balasore	Sahadevkhunta	BDL	11.2	77	BDL	10.9	77
6		Motiganj Bazar	BDL	14.4	92	BDL	13.5	92
7		District Head Quarter Hospital	BDL	9.9	68	BDL	9.8	66↓
8	Berhampur	Brahmanagar	BDL	17.7	95	BDL	22.5↑	68↓
9		Girija market square	BDL	24.7	117	BDL	33.5↑	80↓
10		MKCG Medical & Hospital	BDL	15.0	96	BDL	25.3↑	71↓
11		Industrial Estate Ankuli	BDL	19.6	144	BDL	34.2↑	85↓
12	Bhubaneswar	Office Building, Unit-8	BDL	20.1	147	BDL	27.5↑	76↓
13		IRC Village	BDL	17.3	94	BDL	26.7↑	88↓
14		Capital Police Station, Unit-1	BDL	18.9	59	BDL	17.0	129↑
15		Patrapada	BDL	13.3	79	BDL	16.2↑	108↑
16		Chandrasekharpur	BDL	16.2	93	BDL	13.7	96↑
17		Palasuni water works	-	-	-	BDL	10.5	135
18	Cuttack	On the roof of PHD office near Barabati	BDL	30.0	55	BDL	29.3	74↑
19		On the Roof of Regional Office Building, Suryavihar	BDL	28.0	63	BDL	28.7↑	70↑
20		On The Roof of Traffic Tower Badambadi	4.4	35.4	92	BDL	33.5	79↓
21	Jharsuguda	On the roof of Regional Office, SPCB Jharsuguda	12.2	21.7	75	13.3↑	24.0↑	72↓
22	Kalinganagar	Roof of Tata steel officers' mess, Duburi	BDL	9.9	152	BDL	11.6↑	92↓
23		Roof of NINL Guest House	-	-	-	BDL	9.2	97
24		Regional Office Building, Common Facility Centre,	-	-	-	BDL	9.4	91
25		Sapagadia	BDL	9.6	78	-	-	-
26		Near Bus Stand by pass	BDL	9.7	105	-	-	-
27		Inside premises of CHC	BDL	9.3	58	-	-	-
28	Keonjhar	Regional Office Building	BDL	14.0	70	BDL	14.0	65↓
29		Punjabi Chowk	BDL	17.0	91	BDL	23.0↑	176↑
30	Paradeep	On the roof of STP Building, IFFCO,	-	-	-	21.7	12.0	184
31		On the roof PPL Guest House, PPL	-	-	-	23.8	12.6	123
32		On the roof PPT	-	-	-	22.4	13.2	203

		Staff Quarters						
33	Puri	Sadar Police Station	BDL	16.6	52	BDL	17.1↑	199↑
34		Town Police Station	BDL	17.1	61	BDL	13.6	181↑
35	Rayagada	On the roof of Regional office Building	4.7	23.8	28	BDL	18.3	85↑
36	Rourkela	Regional Office Building	8.2	14.5	103	6.2	12.8	90↓
37		IDL Outpost	11.4	21.7	111	6.8	12.2	95↓
38		DISIR Rajgangpur	12.5	14.1	155	15.3↑	16.0↑	111↓
39	Sambalpur	Ainthapali	4.3	20.8	75	4.3	17.8	75
40		Golebazar	4.8	18.0	83	5.2↑	21.8↑	90↑
41		District Head Quarter Hospital	4.6	17.0	68	4.8↑	18.7↑	71↑

AAQM Standard (24hourly)		
Parameters	Standard($\mu\text{g}/\text{m}^3$)	
SO ₂	80	
NO ₂	80	
PM ₁₀	100	
BDL:- SO ₂ ≤4	BDL- :NO ₂ ≤9	
↑: the value is higher compared to the last year	↓: the value is lower compared to the last year	(-):Data not available

Table-8.4 Ambient Air Quality Levels in ($\mu\text{g}/\text{m}^3$) on Deepawali 2015-16 in Odisha								
Sl.No	Cities	Locations	2015			2016		
			SO ₂	NO ₂	PM ₁₀	SO ₂	NO ₂	PM ₁₀
1	Angul	Industrial Estate Hakimpada	11.1	27.8	175	8.1	29.3	140↓
2		Amalapada	14.1	30.0	137	10.2	27.7	197↑
3		Bazar chhak	13.8	31.6	123	11.4	26.9	150↑
4		District Head Quarter Hospital	14.0	29.4	158	12.2	28.7	168↓
5	Balasore	Sahadevkhunta	BDL	13.8	119	BDL	14.5	121↑
6		Motiganj Bazar	4.9	18.5	137	5.3	17.4	146↑
7		District Head Quarter Hospital	BDL	10.5	81	BDL	10.6	77↓
8	Berhampur	Brahmanagar	16.1	31.9	274	20.1	35.2	264↓
9		Girija market square	32.1	45.9	332	36.5	47.2	320↓
10		MKCG Medical & Hospital	16.6	28.6	236	12.5	22.5	205↓
11		Industrial Estate Ankuli	27.5	56.1	313	22.5	32.6	335↑
12	Bhubaneswar	Office Building, Unit-8	17.7	25.8	511	18.1	28.5	190↓
13		IRC Village Nayapalli	18.2	37.5	700	27.3	26.9	324↓
14		Capital Police Station, Unit-1	19.1	34.3	328	18.0	37.5	166↓
15		Patrapada	7.6	21.5	329	20.6	19.2	240↓
16		Chandrasekharpur	9.3	24.6	274	7.9	17.8	100↓
17		Palasuni water works	-	-	-	8.4	13.0	221
18	Cuttack	On the roof of PHD office near Barabati	6.0	32.3	186	6.0	36.8	152↓
19		On the Roof of Regional Office Building, Suryavihar	5.7	33.1	236	5.4	33.3	177↓
20		On The Roof of Traffic Tower Badambadi	10.5	43.8	335	6.5	37.6	256↓
21	Jharsuguda	On the roof of Regional Office, SPCB Jharsuguda	26.7	35.5	118	26.2	34.0	107↓
22	Kalinganagar	Roof of Tata steel officers' mess, Duburi	BDL	9.9	152	BDL	14.6	149↓
23		Roof of NINL Guest House	-	-	-	BDL	12.9	137
24		Regional Office Building, Common Facility Centre,	-	-	-	BDL	11.6	114

25		Sapagadia	8.5	13.5	223	-	-	-
26		Near Bus Stand by pass	11.3	15.9	293	-	-	-
27		Inside premises of CHC	10.1	14.1	245	-	-	-
28	Keonjhar	Regional Office Building	BDL	21.5	237	BDL	21.3	106↓
29		Punjabi Chowk	BDL	22.2	226	BDL	29.7	223↓
30	Paradeep	On the roof of STP Building, IFFCO	-	-	-	32.0	18.6	191
31		On the roof PPL Guest House, PPL	-	-	-	33.1	17.3	143
32		On the roof PPT Staff Quarters	-	-	-	43.0	21.8	231
33	Puri	Sadar Police Station	10.7	19.6	182	16.3	17.9	367↑
34		Town Police Station	10.0	18.9	219	10.1	17.7	246↑
35	Rayagada	On the roof of Regional office Building	12.8	29.4	71	13.6	27.0	166↑
36	Rourkela	Regional Office Building	17.1	24.3	443	10.4	18.7	128↑
37		IDL Outpost	13.3	24.2	449	18.3	25.8	212↑
38		DISIR Rajgangpur	18.6	25.6	221	29.6	34.6	143↑
39	Sambalpur	Ainthapali	8.2	24.0	92.7	7.2	24.3	103↑
40		Golebazar	8.0	25.3	96.7	8.3	29.5	109↑
41		District Head Quarter Hospital	8.3	24.7	77.0	6.8	26.2	93.0↑
AAQM Standard (24hourly)								
Parameters						Standard($\mu\text{g}/\text{m}^3$)		
SO ₂						80		
NO ₂						80		
PM ₁₀						100		
BDL:- SO ₂ ≤4						BDL:- NO ₂ ≤9		
↑: the value is higher compared to the last year			↓: the value is lower compared to the last year			(-):Data not available BDL:-Below Detection Limit		

Ambient Noise Level:

- Ambient Noise level in normal day varies between 47 to 79 Leq dB (A) in the year 2015, and between 44 to 85 Leq.dB (A) in the year 2016. On the day of Deepawali the noise level varies from 58 to 100 Leq dB (A) in the year 2015. The maximum noise level value of 100 Leq dB(A) was reported at Ainthapali Sambalpur in the year 2015. In the year 2016, the noise level varies between 46 to 91 Leq dB(A) 2016. The maximum noise level observed 91 Leq dB (A) at Girija Market square Berhampur. The increase & decrease of noise level on the day of Deepawali for the year 2015 & 2016 are indicated in the Table 8.5.

S. No	Cities	Locations	2015		2016	
			Normal Day	Deepawali Day	Normal Day	Deepawali Day
1	Angul	Amalapada(R)	53	60	65↑	78↑
2		Bazar chhak(C)	67	71	70↑	75↑
3		District Head Quarter Hospital(S)	57	62	62↑	69↑
4		Hakimpada(I)	49	67	58↑	66↓
5	Balasore	Sahadevkhunta(R)	58	65	56↑	77↑
6		Motiganj Bazar(C)	68	82	62↓	85↑
7		District Head Quarter Hospital(S)	53	59	51↓	63↑
8		Balasore Industrial Estate(I)	63	68	63	73↑
9	Berhampur	Brahmanagar(R)	56	64	71↑	78↑
10		Girija market square(C)	79	80	85↑	91↑
11		MKCG Medical & Hospital(S)	57	61	65↑	76↑

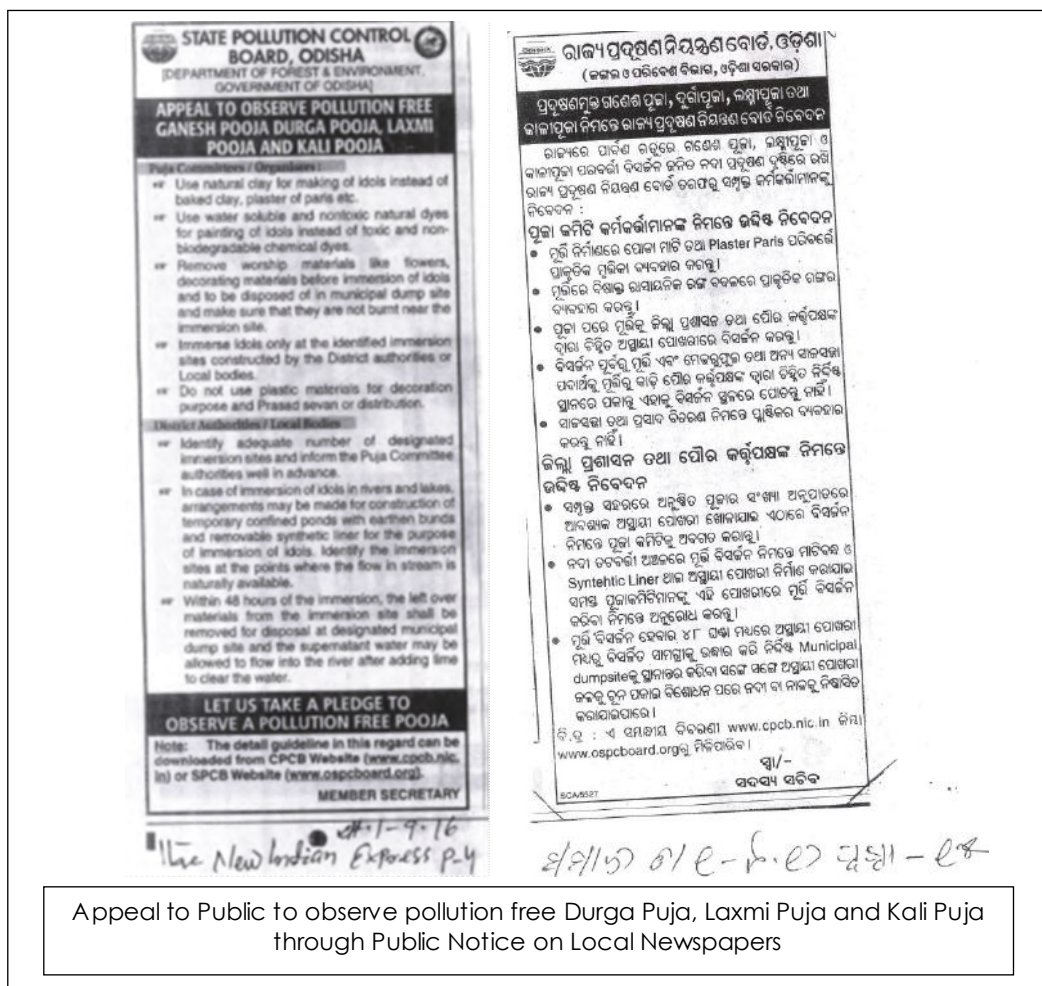
12		Ankuli(I)	63	79	74↑	82↑
13	Bhubaneswar	Lingaraj(R)	64	-		-
14		Nayapalli(R)	63	72	66↑	75↑
15		Sahidnagar(C)	68	73	72↑	75↑
16		Capital Hospital(S)	56	60	60↑	66↑
17		Rasulgarh(I)	71	73	70↓	74↑
18	Cuttack	Suryavihar(R)	67	64	71↑	76↑
19		Badambadi(C)	72	75	76↑	78↑
20		Sishubhawan(S)	61	68	69↑	75↑
21		Khapuria(I)	65	66	70↑	83↑
22	Jharsuguda	Puruna Basti(R)	64	84	63↓	85↑
23		Jhanda Chowk(C)	68	82	71↑	84↑
24		District Head Quarter Hospital(S)	52	58	51↓	61↑
25		Bombay Chowk(I)	75	77	74↓	78↑
26	Kalinganagar	Sapagadia(R)	53	60	55↑	84↑
27		Gopabandhu Chowk(C)	72	79	71↓	83↑
28		CHC Hospital(S)	52	60	59↑	79↑
29		Tata gate No.3(I)	63	72	70↑	85↑
30	Keonjhar	Baniapat Chowk	68	68	68	76↑
31		Punjabi Chowk(C)	69	72	77↑	86↑
32		Govt. Hospital(S)	61	61	66↑	75↑
33	Paradeep	PPT Colony(R)	55	78	64↑	75
34		Badapadia Market(C)	73	90	65↓	71
35		Health Centre(S)	62	67	59↓	71↑
36		IFFCO Ltd(I)	-	-	62	68
37	Puri	Kumutisahi, Old S adar lane(R)	66	71	63↓	86↑
38		Sri Mandir (C)	68	72	73↑	80↑
39		District Head Quarter Hospital(S)	62	66	59↓	73↑
40	Rayagada	Indiranagar(R)	63	-	59↓	73
41		Main market(C)	-	-	74	84
42		District Head Quarter Hospital(S)	-	-	57	71
43		Tumbigida (I)	-	-	71	79
44	Rourkela	Sector-4(R)	47	64	52↑	63↓
45		Bisra Chowk(C)	74	83	70↓	74↓
46		IGH steel Township(S)	46	58	44↓	46↓
47		RSPL Sail(I)	63	82	51↓	52↓
48	Sambalpur	Ainthapali(R)	47	100	50↑	61↓
49		Golebazar(C)	57	82	57	71↓
50		District Head Quarter Hospital(S)	51	58	57↑	67↑
Ambient Noise Standard(In Leq dB(A))						
Category of area zone			Day Time		Night Time	
Industrial area(I)			75		70	
Commercial area			65		55	
Residential area			55		45	
Silence area			50		40	
↑: the value is higher compared to the last year			↓: the value is lower compared to the last year			

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). 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 Durga Puja and other pujas to follow thereof. In compliance to the order, the Board has made 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 Durga Puja to implement the Guidelines of Immersion (PROBES/136/2010) in their areas of jurisdiction.
- Rendered necessary assistance to the District Collectors to ensure strict compliances of the Guidelines for Idol Immersion during the Durga Puja in all the urban local bodies of the State.
- Created public awareness through Public Notice on safe Idol immersion practices in Local Newspapers and in Board's website.



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

- Created public awareness through Public Notice in front of the District Collectorate Office, other important places of the cities and through public address system.



Public awareness through notice at the District Collectorate Office



Public awareness through public address system

- Conducted 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 and informed the Puja Committee Authorities and the Public regarding the location of Idol immersion sites.
- Generally idols are immersed in flowing waters which makes the rivers as the ideal places for idol immersion. In such cases, as per the recommendation in the Guideline, either temporary ponds having earthen bunds along the river bank for use as idol immersion spots had been constructed or a part of the river bed had been cordoned to mark it as idol immersion site. The bottom of the pond in either cases had been lined with removable synthetic liner well in advance of the idol immersion. The said liner along with remains of the idols were removed within 48 hours of idol immersion by the local bodies and disposed in the municipal dumpsites. The water of the temporary ponds was then treated with lime and allowed to settle prior to ultimate discharge into rivers.
- In some urban local bodies, though temporary immersion ponds were not constructed specifically for idol immersion purposes, the left-overs of idol immersion were removed by the local people within 48 hours of idol immersion and disposed at the municipal dumpsites.
- Conducted water quality assessment of the rivers along the immersion sites in three stages i.e. Pre-immersion, During immersion and Post-immersion, in

Class-I cities (having population more than one lakh) viz., Bhubaneswar, Cuttack and Puri cities where the pujas are celebrated in massive scale.

- Water quality status was assessed with respect to the physico-chemical parameters as recommended in the Guideline, such as, pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Conductivity (EC), Turbidity, Total Dissolved Solids (TDS), Total Solids (TS), and metals (cadmium, chromium, iron, lead, zinc and copper).
- Water quality status is evaluated by comparing with the tolerance limits for Class A (Drinking water source without conventional treatment but after disinfection) and Class C (Drinking water source with conventional treatment followed by disinfection) inland surface water quality. The variation in concentration of different parameters at the immersion sites are compared with the values at the upstream and downstream of immersion sites to assess the impact of idol immersion.

Observation from the Water Quality Data

- 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. As after 48 hours actions had been taken to remove the puja left-overs from the river body, BOD and COD values has been significantly reduced at the immersion sites during the post immersion period. Further, continuous high flow of water in the river rejuvenates itself the upstream water quality.
- During immersion period, increase in the conductivity and total dissolved solid at the immersion site in comparison to the upstream and downstream stations may be ascribed to the leaching of dissolved materials form 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 significantly 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 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 show 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. To assess the impact of mass bathing during Kartika Purnima on water quality of river Mahanadi and Kathajodi along the Cuttack city, State Pollution Control Board, Odisha had conducted a water quality monitoring at the major bathing ghats on Pre-, Post- & During- the day of Kartika Purnima, 2016. Water quality was assessed with respect to the physico-chemical parameters like pH, Dissolved oxygen (DO), Biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS) and bacteriological parameters e.g. total coliform (TC) and fecal coliform (FC). The water quality analysis reveals that there is no significant impact on the physico-chemical parameters due to mass bathing. However, there is 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.07.11.2016), on the day of Kartika Purnima (Dt. 15.11.2016) & Post (Dt.24.11.2016), are given in Table- 8.6.

Table-8.6 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. 07.11.16	Dt. 15.11.16	Dt.24.11.16	Dt. 07.11.16	Dt. 15.11.16	Dt. 24.11.16
(a) Mahanadi River						
Naraj	3500	4900	230	2400	3300	78
Chahata ghat	>160000	>160000	11000	>160000	>160000	4900
Gadgadia ghat	92000	>160000	13000	54000	>160000	7900
Jobra	11000	35000	35000	4900	24000	24000
Kanheipur	9200	14000	11000	700	7000	4900
(a) Kathajodi River						
Puri ghat						
Khan nagar	24000	54000	4900	7900	54000	4900
Urali	2400	3500	2200	1300	1300	1100
Tolerance limit for Class B (IS-2296-1982) / E (P) Rule, 1986 *	500			2500* (Permissible)		

* 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 content 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 2016, surface water samples 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 0.5-2.0 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 0.5- 6.6 mg/l. In creek water at Bhimbhoi colony it varies within 2.8-4.6 mg/l, near entrance gate to Paradeep Port Township varies within 3.4-6.6 mg/l, near conveyor belt of IFFCO varies within 3.0-5.8 mg/l. However, the Fluoride concentration in the creek water near fishing jetty varies within 0.82-2.4 mg/l. The test wells around M/s IFFCO exhibit fluoride concentration within 0.2-1.7 mg/l, whereas, those around M/s PPL exhibit fluoride concentration 0.34-2.4 mg/l. Fluoride content in ground water samples collected from outside of the plant area i.e. at Badapadia, varies within 1.2-2.3 mg/l, whereas in Musadiha, the fluoride concentration varies within 0.55-1.6 mg/l.

8.5.2 Studies related to Pollution Control and Planning

The Board has 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.

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. It 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 2016-17, the library has received 21 no. of books, 37 no of reports, 23 no. of journals, 08 no. of newspapers and 02 no. of magazines. 1085 news clippings on environmental issues from various sources of information have been compiled for reference users. 03 no. of scholars have been enrolled during the period. 124 no. 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 2016-17 is given in Table - 8.7.

Table - 8.7 Training Programme attended by Officials of the Board

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
1.	Er. (Mrs.) Subhadarshini Das, Dy. Env. Engineer	Data Management, Collection & Analysis of Environmental Pollution Data and Publication of Analytical Reports to Public [Rule 16(2)(f) of Water Act, 1974	Centre for Science and Environment & sponsored by CPCB	Centre for Science and Environment, New Delhi	11 th – 15 th April, 2016
2.	Dr. P. K. Prusty, Sr. Env. Scientist	Climate Change its Impact on Coastal Environment during World Earth Day	Society of Geoscientists and Allied Technologists, IRC Village, Bhubaneswar	Society of Geoscientists and Allied Technologists, IRC Village, Bhubaneswar	22 nd April, 2016
3.	Rajiv Kumar, IFS, Member Secretary	Sustainable Mining Summit	Federation of Indian Mineral Industries (FIMI), FIMI House, Okhla Industrial Area, Phase-I, New Delhi-110020	Mayfair Lagoon, Bhubaneswar	10 th – 11 th May, 2016

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
4.	Er. N. R. Sahoo, Sr. Env. Engineer	Sustainable Mining Summit	Federation of Indian Mineral Industries (FIMI), FIMI House, Okhla Industrial Area, Phase-I, New Delhi-110020	Mayfair Lagoon, Bhubaneswar	10 th – 11 th May, 2016
5.	Dr. D. K. Behera Sr. Env. Scientist	Enforcement of Environmental Law	Odisha Judicial Academy, Sector-1, CDA, Abhinav Bidanasi, Cuttack	Odisha Judicial Academy, Sector-1, CDA, Abhinav Bidanasi, Cuttack	11 th May, 2016
6.	Dr. D. K. Behera Sr. Env. Scientist	Extended Producer Responsibility in India: Opportunities, Challenges and Lessons from International Experience	MoEF&CC, OECD, CPCB and the BMUB-funded GIZ-Project 'Resource Efficiency and Management of Secondary Raw Materials' with additional financial support from the European Union	Juniper Hall, India Habitat Centre, New Delhi,	12 th – 13 th May, 2016
7.	R. K. Sarangi Section Officer	Right to Information	Madhusudan Das Regional Academy of Financial Management, Chandrasekhar Pur, Bhubaneswar-751023	Madhusudan Das Regional Academy of Financial Management, Chandrasekhar Pur, Bhubaneswar-751023	16 th – 18 th May, 2016
8.	B. K. Behera, Sr. Env. Engineer	Implementation Notification, dtd.15.01.2016 & 20.01.2016	MoEF&CC, New Delhi	Ganga Auditorium, MoEF&CC, Idira Paryavaran Bhawan, Jor Bagh Road, New Delhi	28 th June, 2016
9.	Mamata Pattnaik, Env. Engineer	Right to Information	Madhusudan Das Regional Academy of Financial Management, CS Pur, Bhubaneswar	Madhusudan Das Regional Academy of Financial Management, CS Pur, Bhubaneswar	14 th – 16 th July, 2016
10.	Ashok Kumar Nayak, Sr. Asst.	Management of Office Accounts and Compliance to Audit Objection	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar	10 th – 12 th August, 2016
11.	D. K. Dash Env. Engineer,	Training-cum-Exposure visit to	Centre for Science and Environment, New Delhi	Germany	3 rd -11 th September,

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
	Regional Office, Cuttack	Germany on Continuous Emission Monitoring System (CEMS)			2016
12.	Debabrata Sethi, Asst. Env. Engineer, Regional Office, Rayagada	Compliance, Monitoring and Enforcement	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	19 th – 30 th September, 2016
13.	Er. Simanchal Dash, Sr. Env. Engineer	Antibiotic Use and Waste Management in Aquaculture	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	21 st September, 2016
14.	Bijay Kumar Bhoi, Asst. Env. Engineer, Regional Office, Angul	Best Practices in Environmental Governance	Centre for Science and Environment, New Delhi	Gothenburg, Sweden	15 th – 28 th October, 2016
15.	U. C. Pani, Administrative Officer	Effective Office Administration & Financial Management	National Productivity Council (NPC)	Port Blair, A & N Islands	07 th – 11 th , November, 2016
16.	Er. B. K. Behera, Sr. Env. Engineer	New Development in Pollution Control Technologies (Water & Air) - Adequacy and Efficiency (with field visits)"	NSI, Kanpur & sponsored by CPCB	NSI, Kanpur	09 th – 11 th November, 2016
17.	Puskar Chandra Behera, Dy. Env. Scientist, Regional Office, Cuttack	Air and Water Quality Index with respect to all parameters - National Scenario	NEERI, Nagpur & sponsored by CPCB	NEERI, Nagpur.	14 th – 16 th , November, 2016
18.	Er. D. D. Mohanty, ASST. Env. Engineer, Regional Office, Jharsuguda	Air and Water Quality Index with respect to all parameters - National Scenario	NEERI, Nagpur & sponsored by CPCB	NEERI, Nagpur.	14 th – 16 th , November, 2016
19.	Er. Deepesh Kumar Biswal, Asst. Env. Engineer	Identification of Contaminated Sites and its Treatment Technologies, Interferences and Data Management using GIS	IIT, Roorkee & sponsored by CPCB	IIT, Roorkee	16 th - 16 th November, 2016
20.	Dr. A. K. Swar, Sr. Env. Engineer	Chemical (Industrial) Disaster	FICCI, Bhubaneswar	Hotel Mayfair Convention, Bhubaneswa	17 th November, 2016

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
		Management Conference		r	
21.	Bhabagrahi Jena, Sr. Scientific Assistant	Sampling & Analysis of coal during	CIMFR, Dhanbad & sponsored by CPCB	CIMFR, Dhanbad	18 th – 20 th November, 2016
22.	Dr. S. S. Pati, Project Scientist, ICZMP	Hands-on-Training on Sophisticated Instruments and GC/GC-MS Operation	NGRI, Hyderabad & sponsored by CPCB	NGRI, Hyderabad	23 rd – 25 th November, 2016
23.	Dr. A. K. Swar, Sr. Env. Engineer	Power Sector – Compliance and Enforcement	Centre for Science and Environment, New Delhi	India Habitat Centre, New Delhi	24 th November, 2016
24.	Dr. Anup Kumar Mallick, Regional Officer, Kalinga Nagar	Management of Municipal Solid Waste Dumpsites and Mitigation of Impact on Environment" to be held during	Andhra Pradesh Pollution Control Board & sponsored by CPCB	Tirupati	28 th – 29 th November, 2016
25.	L. D. Pal, Env. Scientist	How to prepare Water Quality Management Plan	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	5 th – 16 th December, 2016
26.	Er. H. K. Nayak, Dy. Env. Engineer	Occupational Health & Safety Management System (OHSMS) 18001: 2007/Updated Version and OHSAS	NIOH, Ahmedabad & sponsored by CPCB	NIOH, Ahmedabad	12 th – 16 th December, 2016
27.	Dr. S. N. Nanda, Project Scientist, ICZMP	Advanced Instrumentation Techniques - Hands-on-Training	NIH, Roorkee & sponsored by CPCB	NIH, Roorkee	19 th – 21 st December, 2016
28.	Dr. R. K. Mishra, Dy. Env. Scientist, Regional Office, Kalinga Nagar	Advanced Instrumentation Techniques - Hands-on-Training"	NIH, Roorkee & sponsored by CPCB	NIH, Roorkee	19 th – 21 st December, 2016
29.	Rabindra Singh Sr. Assistant	Use of Government e-Market Place (GeM) launched by DGS&D for Government Procurement	MDRAFM, Chandrasekhar Pur, Bhubaneswar-	MDRAFM, Chandrasekhar Pur, Bhubaneswar-	28 th December, 2016
30.	Dr. D. K. Behera, Sr. Env. Scientist	Environment Management for Power Plants, Use and Disposal of Fly Ash - New Avenues, Opportunities,	CIMFR, Dhanbad & sponsored by CPCB	CIMFR, Dhanbad	05 th – 07 th January, 2017

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
		Constraints and Challenges			
31.	R. N. Prusty, Env. Engineer	Preparing Consent and Inspection Checklist	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	9 th – 13 th January, 2017
32.	Soumya Ranjan Mallick, SSA, Central Lab, Bhubaneswar	Water and Air Quality Monitoring, Sampling, Analysis and Data Management Hands-on-Training	CSIR-NEERI, Nehru Marg, Nagpur & sponsored by CPCB	CSIR-NEERI, Nehru Marg, Nagpur	9 th – 13 th January, 2017
33.	Manoranjan Pradhan, Sr. Scientific Assistant, Regional Office, Angul	Water and Air Quality Monitoring, Sampling, Analysis & Data Management Hands-on-Training	CSIR-NEERI, Nehru Marg, Nagpur & sponsored by CPCB	CSIR-NEERI, Nehru Marg, Nagpur	9 th – 13 th January, 2017
34.	Dr. M. Mahaling, Regional Officer, Rourkela	Environmental Management in Tanneries (including ZLD, Chrome Recovery), Slaughter Houses, Sponge Iron Plants, Pharma and Chemical Sector	CES, Chennai & sponsored by CPCB	CES, Chennai & sponsored by CPCB	9 th – 13 th January, 2017
35.	Er. M. Murmu, Dy. Env. Engineer, Regional Office, Balasore	Environmental Management in Tanneries (including ZLD, Chrome Recovery), Slaughter Houses, Sponge Iron Plants, Pharma and Chemical Sector	CES, Chennai & sponsored by CPCB	CES, Chennai & sponsored by CPCB	9 th – 13 th January, 2017
36.	Er. P. K. Behera, Dy. Env. Engineer, Regional Office, Paradeep	Risk Management in Chemical Industries - Hands-on-Training	DMI, Bhopal & sponsored by CPCB	DMI, Bhopal	11 th – 13 th January, 2017
37.	Er. Dibya Lochan Mohapatra, Asst. Env. Engineer, Regional Office, Keonjhar	Risk Management in Chemical Industries - Hands-on-Training	DMI, Bhopal & sponsored by CPCB	DMI, Bhopal	11 th – 13 th January, 2017
38.	Er. P. C. Rauta,	Emergency	DMI, Bhopal & sponsored	DMI, Bhopal	18 th – 20 th ,

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
	Env. Engineer	Response to Spillages/Illegal Disposal/Fire of Hazardous Wastes	by CPCB		January, 2017
39.	Dr. P. K. Mohapatra, Regional Officer, Balasore	Emergency Response to Spillages/Illegal Disposal/Fire of Hazardous Wastes	DMI, Bhopal & sponsored by CPCB	DMI, Bhopal	18 th – 20 th , January, 2017
40.	Dr. D. K. Behera, Sr. Env. Scientist	Industrial and Municipal Waste Management (I&MWM)	NIT, Rourkela	NIT, Rourkela	24 th - 25 th January, 2017
41.	Dr. D. K. Behera, Sr. Env. Scientist	"Law and Management of Electronic Waste in India : Issues & Challenges	National Law School of India University (NLSIU), P.O. Bag 7201, Nagarbhavi, Bangalore	National Law School of India University (NLSIU), P.O. Bag 7201, Nagarbhavi, Bangalore	27 th January, 2017
42.	C. R. Nayak, Sr. Env. Scientist	Environmental Pollution and its Health Impacts - Practical Sessions	TERI, Delhi & sponsored by CPCB	TERI, Delhi	01 st – 03 rd February, 2017
43.	Anupam Behera, Sr. Env. Scientist	Environmental Pollution and its Health Impacts - Practical Sessions	TERI, Delhi & sponsored by CPCB	TERI, Delhi	01 st – 03 rd February, 2017
44.	Dr. D. K. Behera, Sr. Env. Scientist	State Credit Seminar 2017-18	National Bank for Agriculture and Rural Development (NABARD)	Hotel Mayfair Lagoon, Bhubaneswar	3 rd February, 2017
45.	B. P. Pattajoshi, Sr. Law Officer	Environmental Legislations, Interpretation, Enforcement, Legal and Statutory Requirements - Case Studies (Middle & Senior Level)	NLSIU, Bangalore & sponsored by CPCB	NLSIU, Bangalore	6 th - 10 th February, 2017
46.	Subhadarsini Das, Dy. Env. Engineer	Continuous Emission Monitoring System (CEMS)	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	6 th - 10 th February, 2017
47.	Debdutta Mohanty, Asst. Env. Engineer, Regional Office, Jharsuguda	Continuous Emission Monitoring System (CEMS)	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	6 th - 10 th February, 2017
48.	Biswakanta Pradhan, Asst. Env. Engineer, Regional Office, Angul	Continuous Emission Monitoring System (CEMS)	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	6 th - 10 th February, 2017
49.	Gunanidhi	Laboratory	NIOH, Ahmedabad &	NIOH,	8 th -10 th

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
	Behera, Sr. Scientific Assistant, Regional Office, Rourkela	Quality Management System and Internal Audit as per ISO/IEC 17025:2005/Updated Version and NABL Requirements	sponsored by CPCB	Ahmedabad & sponsored by CPCB	February, 2017
50.	Dr. D. K. Behera, Sr. Env. Scientist	From Waste to Profit Through Reduce, Recycle, Reuse	Orissa State Productivity Council, Bhubaneswar	Hotel Hindustan International, Bhubaneswar	12 th February, 2017
51.	P. C. Rauta, Env. Engineer	Waste Management : Policies, Issues, Challenges and Way Forward	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi	13 th – 24 th February, 2017
52.	Mitrasen Majhi, Regional Officer, Berhampur	Performance Monitoring of STPs/CETPs - Practical Aspects	ESCI, Hyderabad & sponsored by CPCB	Engineering Staff College of India, Gachi Bowli, Hyderabad	14 th – 16 th February, 2017
53.	Er. A. K. Barik, Asst. Env. Engineer, Regional Office, Balasore	Performance Monitoring of STPs/CETPs - Practical Aspects	ESCI, Hyderabad & sponsored by CPCB	Engineering Staff College of India, Gachi Bowli, Hyderabad	14 th – 16 th February, 2017
54.	H. B. Panigrahi, Regional Officer, Bhubaneswar	Cleaner Production Technologies Practical Aspects	IIT, Roorkee & sponsored by CPCB	IIT, Roorkee	14 th – 16 th February, 2017
55.	Dr. D. K. Behera, Sr. Env. Scientist	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
56.	Er. Sitikantha Sahu, Env. Engineer, Head Office	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
57.	Er. M. M. Murmu, Dy. Env. Engineer, Regional Office, Balasore	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
58.	Er. Rakesh Kumar Mohanty, Asst. Env. Engineer, Regional Office, Rayagada	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
59.	Twinkle Mohanty, Asst. Env. Engineer, Regional Office, Sambalpur	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
60.	Er. Maheswar Behera, Asst. Env. Engineer,	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB,	Swosti Premum, Bhubaneswar	14 th – 15 th February,

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
	Regional Office, Berhampur		Odisha		2017
61.	Er. Bijay Kumar Bhoi, Asst. Env. Engineer, Regional Office, Angul	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
62.	Er. Narottam Behera, Dy. Env. Engineer, Head Office	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
63.	H. B. Panigrahi, Regional Officer, Bhubaneswar	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
64.	Dr. S. P. Samantray, Env. Scientist, Head Office	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
65.	Dr. J. R. Dash, Env. Scientist, Regional Office, Bhubaneswar	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
66.	Er. Ripu Kumar Sahu, Asst. Env. Engineer	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
67.	Rashmi Rekha Pradhan, Asst. Env. Engineer, Regional Office, Rourkela	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
68.	Nibedita Das Bebartha, Asst. Env. Engineer, Regional Office, Cuttack	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
69.	Er. Madan Mohan Sahoo, Asst. Env. Engineer, Regional Office, Paradeep	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
70.	Bhim Charan Marandi, Asst. Env. Scientist, Regional Office, Kalinganagar	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
71.	Er. Debdutta Mohanty, Asst. Env. Engineer, Regional Office, Jharsuguda	Biomedical Waste Management	MS Ramaiah Medical College & Hospital, Bangalore & SPCB, Odisha	Swosti Premum, Bhubaneswar	14 th – 15 th February, 2017
72.	Er. R. N. Prusty, Sr. Env. Engineer	Effective Management of Hazardous Waste including E-Waste - Co-processing and	IIWM, Bengaluru & sponsored by CPCB	IIWM, Bengaluru	

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
		Co-incineration - Hazardous Waste Rules"			
73.	Er. N. R. Sahoo, Sr. Env. Engineer	Global Warming, Climate Change and Disaster Management Future Perspective	PGIMER, Chandigarh & sponsored by CPCB	PGIMER, Chandigarh	February, 2017
74.	H. N. Nayak, Regional Officer, Sambalpur	Global Warming, Climate Change and Disaster Management Future Perspective	PGIMER, Chandigarh & sponsored by CPCB	PGIMER, Chandigarh	February, 2017
75.	Er. Soumendra Nath Mohanty, Asst. Env. Engineer, Regional Office, Kalinga Nagar	Short Term Course "Advanced Treatment and Recycling of Urban and Industrial Wastewater"	IIT Kharagpur, West Bengal	Indian Institute of Technology Kharagpur	6 th – 10 th March, 2017
76.	Dr. D. K. Behera, Sr. Env. Scientist	International Conference on "Combating Air Pollution"	Indian Medical Association (HQS), IMA House, Indraprastha Marg, New Delhi-110002	Indian Medical Association (HQS), IMA House, Indraprastha Marg, New Delhi-110002	6 th – 10 th March, 2017
77.	Anusha Ekka, AES, Regional Office, Balasore	Workshop of Water Quality and its Management	National Institute of Hydrology, Roorkee & sponsored by CPCB	National Institute of Hydrology, Roorkee	20 th – 24 th March, 2017
78.	Dr. D. K. Behera, Sr. Env. Scientist	Workshop on Solid and Hazardous Waste Management	PG Dept. of Environmental Science, Sambalpur University, Burla, Sambalpur	PG Dept. of Environmental Science, Sambalpur University, Burla, Sambalpur	23 rd March, 2017
79.	Debidutta Biswal, IFS Member Secretary	International Conference on Environment (Climate Change / Paris Agreement, Air and Water Pollution and Municipal Solid Waste)	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017
80.	Dr. P. K. Prusty, Sr. Env. Scientist	International Conference on Environment (Climate Change / Paris Agreement, Air and Water	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017

Sl. No.	Name & Designation	Title of the Training Programme	Organized by	Venue	Date
		Pollution and Municipal Solid Waste)			
81.	Dr. D. K. Behera, Sr. Env. Scientist	International Conference on Environment (Climate Change / Paris Agreement, Air and Water Pollution & Municipal Solid Waste)	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017
82.	Dr. B. N. Bhol, Sr. Env. Scientist	International Conference on Environment (Climate Change / Paris Agreement, Air and Water Pollution and Municipal Solid Waste)	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017
83.	Er. R. N. Prusty, Sr. Env. Engineer	International Conference on Environment (Climate Change / Paris Agreement, Air and Water Pollution and Municipal Solid Waste)	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017
84.	B. P. Pattajoshi, Sr. Law Officer(L-II)	International Conference on Environment (Climate Change / Paris Agreement, Air and Water Pollution and Municipal Solid Waste)	National Green Tribunal (NGT) during	Vigyan Bhawan, New Delhi	25 th – 26 th March, 2017

8.8 OTHER ACTIVITIES

8.8.1. Training on Pollution Control and Environmental Protection



Stakeholders Meet on Fly Ash Utilisation on 16.02.2017 at Bhubaneswar



Stakeholders Meet on Fly Ash Utilisation on 16.02.2017 at Bhubaneswar

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 13 no. of training programmes for different stakeholders mostly on Fly Ash utilization and Management, Water Quality & River Pollution, Environment Protection etc.

The details of the training programmes/ workshop / seminar conducted by the Board are given in Table – 8.8.

Table – 8.8 Training Programmes conducted by Centre of Excellence

Sl. No.	Title of Training / Workshop / Seminar	Duration	Venue	Organised / Sponsored by
1.	Meeting on use of fly ash in the ongoing projects	29 th April, 2016	Pal Heights, Bhubaneswar	SPC Board
2.	Conference on Climate Change & Industry	27 th May, 2016	Hotel Mayfair Convention, Bhubaneswar	SPC Board & Confederation of Indian Industry (CII), Odisha State Office, 8, Forest Park, Bhubaneswar-751009
3.	Observation of World Env. Day, 2016	5 th June, 2016	Bhubaneswar	SPC Board & AD Scale Media & Communication
4.	Workshop on Environmental Governance Through 5S System	16 th July, 2016	Hotel The New Marrion, Bhubaneswar	Skasha Consultancy Pvt. Ltd., Bhubaneswar in collaboration with SPC Board, Odisha
5.	Workshop on Fly Ash utilization in Manufacture of Construction Materials	26 th July, 2016	Nalco Mines & Refinery Complex, Damanjodi	SPC Board & Nalco, Damanjodi
6.	Workshop on Biomedical Waste Management Rules, 2016	5 th August, 2016	Lecture Theater, VIMSAR, Burla, Sambalpur	SPC Board & VIMSAR, Burla, Sambalpur
7.	Workshop on Biomedical Waste Management Rules, 2016	2 nd November, 2016	Lecture Theater of Principal, SCB Medical College & Hospital, Cuttack	SPC Board & SCB Medical College & Hospital, Cuttack
8.	Stakeholder Workshop on Environmental Hazards of Electronic Waste Under Digital India Initiative	7 th December, 2016	Hotel The New Marion, Bhubaneswar	MeitY, SPCB, Odisha, BMC, NASSCOM Foundation, MAIT & CEAMA
9.	Workshop on Biomedical Waste Management Rules, 2016	18 th January, 2017	Lecture Theater of Principal, MKCG Medical College & Hospital, Berhampur	SPC Board & MKCG Medical College & Hospital, Berhampur

Sl. No.	Title of Training / Workshop / Seminar	Duration	Venue	Organised / Sponsored by
10.	State Level Consultative Workshop on Standard Operating Procedures (SOP) and Training Materials for Health Care Waste Management-UNIDO Project	13 th February, 2017	Hotel Swosti Premium, Bhubaneswar	State Pollution Control Board, Odisha, Bhubaneswar & M. S. Ramaiah Medical College, Bangalore
11.	Training of Trainers (TOT) Workshop on Bio-Medical Waste Management-UNIDO Project	14 th – 15 th February, 2017	Hotel Swosti Premium, Bhubaneswar	State Pollution Control Board, Odisha, Bhubaneswar & M. S. Ramaiah Medical College, Bangalore
12.	Stakeholders Meet on Fly Ash Utilization	16 th February, 2017	Hotel Swosti Premium, Bhubaneswar	Fly Ash Resource Centre (FARC), State Pollution Control Board, Odisha, Bhubaneswar
13.	Two Days National Seminar on "Environmental Protection : Socio-Legal Issues and Challenges" during	25 th - 26 th March, 2017	PG Department of Law, Sambalpur University, Jyoti Vihar, Burla, Sambalpur	SPC Board, Odisha & PG Department of Law, Sambalpur University, Jyoti Vihar, Burla, Sambalpur

8.8.2 Human Resource Development

- The Board has imparted Training on "Water/Air quality parameters monitoring & analysis and impact of pollutants on Human Health" to 55 medical students of All India Institute of Medical Science, Bhubaneswar, 08 M.Sc., Forestry students of OUAT, Bhubaneswar & 05 Engineering students of KIST, Bhubaneswar in its Central Laboratory.
- 91 Police personnel from various districts of Odisha were imparted training on "Vehicular Pollution and its effect on Human Health".

8.8.3 Observation of Important Days

❖ Earth Day

The earth day is being celebrated on 22nd April, 2016 by Regional Offices in collaboration with District Level Environment Committee.

❖ World Environment Day

All Regional Offices of the Board celebrated the World Environment Day on 5th June, 2016 by conducting street rallies, meetings, painting & debate competitions and plantations. The local people, responsible citizens, college/school students and representatives from print & electronic media attended the programme. The photographs of some of the events and activities are illustrated below :



Plantation During Celebration of World Environment Day by Regional Office, Angul.



Celebration of World Environment Day by Regional Office, Cuttack



Drawing competition among school children held at TSIL recreation club and mass plantation activity at TSIL Township, Belaipada on the occasion of World Environment Day organised by Regional Office, Keonjhar



Plantation at Gandhi Academy of Tech. and Engg. by Regional Office, Berhampur on World Environment Day



Celebration of World Environment Day by Regional Office, Sambpur



Mass Rally by Regional Officer Rourkela on World Environment Day



Prize distribution by Regional Office, Rourkela on World Environment Day

❖ 33rd Foundation Day

- The 33rd Foundation Day of the Board was observed on 14th September, 2016 at Jayadev Bhawan, Bhubaneswar. The function was presided by Sri R. Balakrishnan, IAS, Addl. Chief Secretary-cum-Development Commissioner, Govt. of Odisha & Chairman, State Pollution Control Board, Odisha and Sri S.C.Mohapatra, IAS, Principal Secretary to Govt. of Odisha was the Guest of Honor. Sri D. Biswal, IAS, Spl. Secretary to Govt. of Odisha & Member Secretary, State Pollution Control Board, Odisha delivered the key note address on the occasion. The Chief Speaker, Prof. U.C. Mohanty, Emeritus Professor, School of Earth, Ocean & Climate Sciences, Indian Institute of Technology, Bhubaneswar delivered Prof. M. K. Rout Memorial Lecture Climate Change and Sustainable Development on the occasion.



- The Newsletter Paribesh Samachar (April-June 2016) , one Book & three Reports were released on the Occasion.



- The Board has instituted pollution control excellence/appreciation awards to encourage the industries/mines for adoption of adequate pollution control measures and in health care establishments for proper management of Bio-medical wastes. The list of awardees for this year is as follows:

1. Industries :

Pollution Control Excellence Award - M/s. Indian Metal & Ferro Alloys Ltd., IMFA, Choudwar

Pollution Control Appreciation Award - a. M/s. Bhushan Steel Limited, Meramandali, Dhenkanal, b. M/s. Kapilash Cement Manufacturing Works, Unit of OCL India Limited,

2. Mines:

Pollution Control Excellence Award - M/s. Balda Block Iron Mines of M/s. Serajuddin & CO., Balda, Balda-Kalimati & Nayagarh, Dist: Keonjhar.

Pollution Control Appreciation Award - (a). M/s. Joda East Iron Mines of M/s. Tata Steel Limited, Joda, Keonjhar. (b). M/s. Unchabali Iron & Manganese Mines, Smt. Indrani Patnaik, Boneikela, Dist: Keonjhar.

POLLUTION CONTROL EXCELLENCE AWARDS IN INDUSTRIES & MINES CATEGORIES



M/s. Indian Metal & Ferro Alloys Ltd., Choudwar



M/S. Balda Block Iron Mines of M/s. Serajuddin & Co., Balda, Keonjhar

POLLUTION CONTROL APPRECIATION AWARDS IN INDUSTRIES & MINES CATEGORIES



M/s. Bhushan Steel Limited, Meramandali,



M/s. Kapilash Cement Manufacturing Works, Cuttack



M/s. Joda East Iron Mines of M/s. Tata Steel Ltd., Joda



M/S. Unchabali Iron & Manganese Mines, Boneikela

3 Health Care Establishments:

Pollution Control Excellence Award - M/s. AMRI Hospital Limited, Khandagiri, Bhubaneswar. Pollution Control Appreciation Award - M/s. Community Health Centre, Junagarh, Kalahandi, Odisha.



M/S. AMRI Hospital Limited, BBSR.



M/S. Community Health Centre, Junagarh

❖ International Coastal Clean-Up Day

The International Coastal Clean-up Day was observed by the Board on the Sea Beach, Puri, Chandbali, Gopalpur & Paradeep on 17th September 2016 for creation of mass awareness on the protection and management of environment involving District Administration, different NGOs, volunteers etc.



International Coastal Clean-Up Day Celebration By SPC Board At-Paradeep & Puri Sea Beach

❖ National Pollution Prevention Day

The National Pollution Prevention Day was observed by the Board on 2nd Dec. 2016 at Bhubaneswar and Rourkela by conducting mass rally, meeting, workshop etc. for creation of mass awareness on pollution prevention and protection of environment, involving different NGOs, volunteers and so on.



Mass Rally on National Pollution Prevention Day by RO, Bhubaneswar



Workshop on Biomedical Waste Management Rules during observation on National Pollution Prevention Day at Rourkela

8.9 AWARENESS ACTIVITIES

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

During Deepawali, mobile vehicles with staff 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's 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

The Board has published the following Book & Reports during April'2016-March'2017.

- "Water Quality of Major Rivers of Odisha",
- Three volumes of Newsletters Paribesh Samachar i.e. (April-June, 2016, July - December, 2016 & January-March, 2017)
- Environmental Status Report of Paradeep, Gahirmatha - Bhitarkanika & Dhamra coastal stretches of Odisha (from May'2013 to March'2015) in Bay of Bengal
- Report card of "Estuarine- Sea Eco system of Paradeep 2015"
- Status Report on Critically Polluted Area, Ib Valley - Jharsuguda Area
- Status Report on Critically Polluted Area, Angul - Talcher Area

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 2016-March 2017, Environmental consultants empanelled under 'A' Category and 'B' category were 9 numbers & 4 numbers respectively. The details are given in Table-8.9.

Table-8.9 : List of Consultants empanelled with State Pollution Control Board, Odisha.

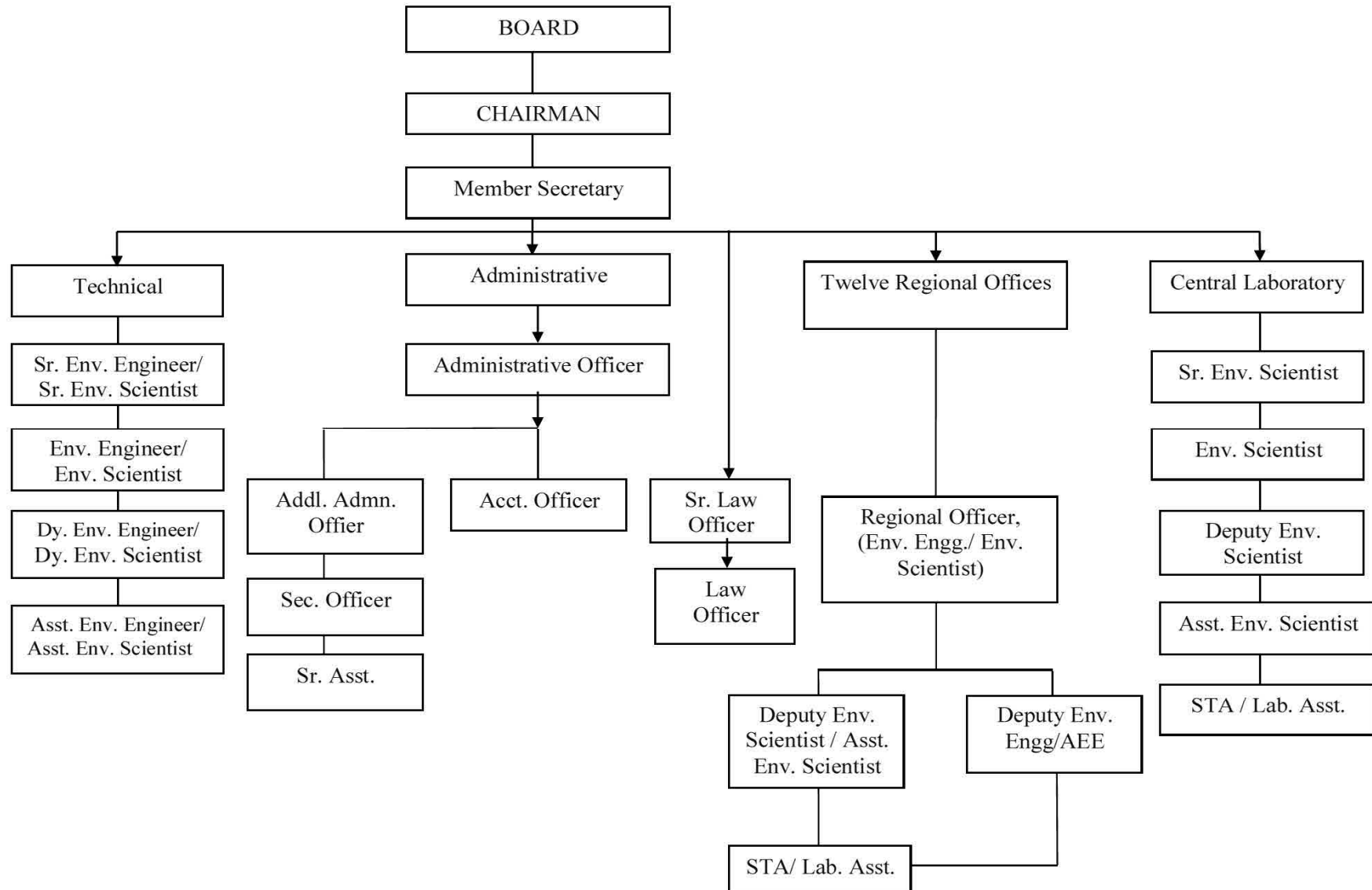
Sl. No	Name of the Consultant	Category	Validity Period
1	M/s. Kalyani Laboratory (P) Ltd., 841-A, Rasulgarh, Bhubaneswar-751010 E-mail - kalyanilab@yahoo.co.in Phone - 0674-6081992	A	11.02.2016 to 10.02.2019
2	M/s Anacon Laboratories Pvt. Ltd 60, Bajiprabhu Nagar Nagpur-440033, E-mail - ngp@anacon.in Phone - 0712-2242077	A	04.05.2016 to 03.05.2019
3	M/s R.V.Briggs Co, Pvt.Ltd,Kolkata 9,Bentinck street, 1 st Floor, Taher Mansion, Kolkata-700001 E-mail - rvbriggs.kolkata@gmail.com Phone - 2248-3661/2698/7803,2262-4153/4154	A	04.05.2016 to 03.05.2019
4	M/s Sophisticated Industrial Material Analytic Labs Pvt. Ltd. A-3/7, Mayapuri Industrial Area, Phase - II, New Dehi - 110064 E-mail : simalabs@simalab.co.in Phone - 011-43854300	A	09.08.2016 to 08.08.2019

5	M/s Ramky Enviro Engineers Limited 2 nd floor , Ramky Grandiose Ramky Tower Complex, Gochibowli Hydrabad-500032 Email:consultancy@ramky.com Phone-040-23015000	A	20.08.2016 to 19.08.2019
6	M/s TUV-SUD South Asia Pvt. Ltd G-11, First Floor, Sector-11 Dist-Gautam Budh Nagar Noida-201301, Uttar Pradesh Email-Milind.shende@tuv-sud.in Phone - 0120-4073000	A	17.10.2016 to 16.10.2019
7	M/s Superintendence Company of India (P) Ltd. Plot No-Y-23, Block-EP, Sector-V Salt Lake,Kolkata-700091 E-mail :supindkolkata@vsnl.net/supind50@yahoo.co.in Ph : (033) 2357-1492/4670/4671	A	31.10.2016 to 30.10.2019
8	M/s Ecomen Laboratories Pvt. Ltd. Flat No.- 5-8,2 nd Floor, Arif Chamber-V, Sector-H, Aliganj, Lucknow- 226024, E-mail – ravi.bhargava@ gmail.com Phone – (0522)2746282	A	25.11.2016 to 24.11.2019
9	M/s S.S.Environmentics(I)Pvt.Ltd. Plot No-361/2314, 'Sustenance Tower' At- Patrapada, P.O- Dumduma.,Dist.- Khurda Bhubaneswar- 751019 (Odisha) E-mail – emails@ssenvironics.com Phone – 0674-2471574	A	17-12-2016 to 16-12-2019
10	M/s Biosphere Scientific Research Centre VIM-808, Saileshree vihar Bhubaneswar-751012 E-mail – bsrc.research@gmail.com Phone – 0674-2742633	B	19.03.2016 to 18.03.2019
11	M/s Indicative Consultant India HPL Link Road, Basudevapur Khanjanchak, Haldia, Purba Medinipur- 721602 E-mail: indicativeconsultantindia@gmail.com Phone-03224-275765	B	04.05.2016 to 03.05.2019
12	M/s. Good Earth Enviro Care Ground Floor, "ANANYA" Building, S.D. Park, Kusumba, Po : Narendrapur P.S: Sonarpur, Kolkata – 7000103 E-mail: geec.debasish@gmail.com Phone-033-2434-1105/1106/1107, 9831326105 (M)	B	25.11.2016 to 24.11.2019
13	M/s Utkal Ecotech Pvt. Ltd. Plot No. 5F/786, Sector - 9 CDA, Cuttack - 753014, Odisha Email : utkalecotech@gmail.com Phone – 0671-2506210	B	17.12.2016 to 16.12.2019



ANNEXURE-I

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
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
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	α-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
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	α-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
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

Note: 1. Sampling charges for water and waste water samples are separate as specified in Clause A(IV), but subject to minimum of Rs.700/- irrespective of number of samples.

2. Transportation charges are separate on actual basis.

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

	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,	4000.00

	Phosphorous, Potassium, Rubidium, Rutherfordium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Tin, Titanium, Tungsten, Vanadium, Ytterbium and Zinc per sample	
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 Kjehldhal 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

ANNEXURE-III

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 Env. Scientist		03
7.	Assistant Env. Scientist		08
8.	Environmental Engineer	46	07
9.	Dputy Env. 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.	Addl. 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