

# ANNUAL REPORT

2004 – 2005

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*The West Bengal Pollution Control Board reaffirms its commitment to contributing towards a clean and sustainable environment and continually enhancing the environmental performance as part of its endeavour for a clean and green West Bengal*



**West Bengal Pollution Control Board**

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## **About the Annual Report**

The Annual Report of the West Bengal Pollution Control Board during the financial year 2004-2005 has two sections: the first part describes the statutory mandates of the Board, its composition, organisational structure and the present infrastructure of the Board, while the second part encompasses an array of the environmental issues and activities of the Board, thus presenting a clear picture of the state of environment of West Bengal during the time period in question.



## 2004-2005: AT A GLANCE

- The Hon'ble Chief Minister of West Bengal, Shri Buddhadeb Bhattacharjee, launched the Board's first-ever online environmental clearance site for the 'Green category of Industries' on October 3, 2004 in presence of Shri Manabendra Mukhopadhyay, Hon'ble Minister of Environment and Information Technology. With this launch, the Board entered into an era of **second generation e-governance**.
- The 'Environmental Excellence Award' instituted by the West Bengal Cleaner Production Centre, a collaborative effort of the WBPCB, Indian Chamber of Commerce and National Cleaner Production Centre, New Delhi was conferred to industries, local bodies and service sector organisations. On October 3, 2004, Shri Buddhadeb Bhattacharjee, the Hon'ble Chief Minister conferred the prestigious Award to three industries for the Industry Category, two industries for sustained environmental performance as well to four service sector organisations (including NGOs). Three local bodies were felicitated with the Environmental Appreciation Certificate in recognition of their efforts to protect the environment.
- The WBPCB has issued 3705 applications for 'Consent to Establish' and 6125 applications for 'Consent to Operate' to red, orange and green categories of industries during 2004-2005.
- A **Common Hazardous Waste Treatment Storage & Disposal Facility at Haldia** is being set up jointly by the Haldia Development Authority, WBPCB and the Environmental Protection Department. The facility named **Common Hazardous Waste Management Facility** has been set up and land has been allocated to cater to the entire state.
- In association with the State Department of Transport, the West Bengal Pollution Control Board has facilitated the setting up of **148 computerised and upgraded Auto Emission Testing Centres (AETCs) and Pollution-under-Check (PUC) centres** in West Bengal.
- Like every year, the Board conducted **noise level** monitoring on Kali Puja, Kali Puja and during Kali Puja/Idol immersion. The Board received 148 complaints during Kali Puja/Idol immersion.
- The Board launched the **WBPCB Environmental Campaign** on June 5, 2003. Under the Campaign, 93 events under seven themes were conducted during the year 2004-2005.
- Under the **ICEF Project**, out of a total of 204 units having small boilers within KMC, 180 (88%) have completed fuel change conversion, 12 (6%) under various stages of conversion and 12 (6%) are closed. Out of total 23 units having ceramic



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kilns within KMA, 23 (78%) have completed fuel change conversion and 5 (22%) having no ceramic kilns.



of hazardous waste in West Bengal, management of wetlands of the state and a partial assistance to the Board's "Environment Management Information System" Development Project.

- During the financial year 2004-2005, the total **financial receipts** of the WBPCB (except Cess reimbursement from Government of India) was Rs.1,033.66 lakhs and the **total expenditure** of the Board was Rs.1005.80 lakhs.

Apart from its regular publications, the Board has published five publications on account of World Environment Day 2004 and Paribesh Mela 2005 (**ANNEXURE I**)

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# **PART I**

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- I. Role of the Board
- II. Composition of the Board
- III. Organisational Structure
- IV. Infrastructure Development
- V. E-governance



## CHAPTER I

# ROLE OF THE BOARD

The 'West Bengal Prevention and Control of Water Pollution Board' was constituted immediately after the enactment of the first major environmental legislation of the country, the Water (Prevention and Control of Pollution) Act in 1974. The Board was renamed as the West Bengal Pollution Control Board (WBPCB) on February 7, 1983. During its long span of more than thirty years, the Board has tried to ensure proper implementation of the statutes, judicial and legislative pronouncements and to meet the public demands. Although the Board was initially set up to implement the provisions of the Water (Prevention and Control of Pollution) Act, 1974, it was subsequently given the responsibility of implementing a series of other environmental Acts and Rules, as indicated below:

- ☞ The Water (Prevention and Control of Pollution) Act, 1974, as amended and Rules made thereunder;
- ☞ The Water (Prevention and Control of Pollution) Cess Act, 1977, as amended and Rules made thereunder;
- ☞ The Air (Prevention and Control of Pollution) Act, 1981, as amended and Rules made thereunder;
- ☞ The Public Liability Insurance Act, 1991, as amended and Rules made thereunder.

☞ The Environment (Protection) Act, 1986 and Rules made thereunder:

- The Hazardous Wastes (Management and Handling) Rules, 1989, as amended
- The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- The Bio-medical Wastes (Management and Handling) Rules, 1998, as amended
- The Recycled Plastics Manufacture and Usage Rules, 1999, as amended
- The Municipal Solid Wastes (Management and Handling) Rules, 2000
- The Noise Pollution (Regulation and Control) Rules, 2000
- The Batteries (Management and Handling) Rules, 2001
- The Ozone Depleting Substances (Regulation and Control) Rules, 2001

### Objectives of the WBPCB

- To plan comprehensive programme for prevention and control of environmental pollution;

- To advise and suggest the State Government in formulating environmental improvement programmes;
  - To lay down, modify or annual standards for liquid effluents or gaseous emissions from different sources;
  - To ensure functioning of proper treatment system for treatment of liquid, gaseous or solid wastes generated from point sources;
  - To provide leadership and guidance for protecting and preserving the environment;
  - To encourage and conduct research activities on environmental issues;
  - To educate, train and aware the people at large on environmental problems and remedies; and
  - To collect and disseminate information on environmental issues.
- e. To collaborate with the Central Board in organising the training of persons engaged or to be engaged in programmes relating to prevention, control or abatement of water pollution and to organise mass education programmes relating thereto;
  - f. To inspect sewage or trade effluents, works and plants for the treatment or sewage and trade effluents and to review plans, specifications or other data relating to plants set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this Act;
  - g. To lay down, modify or annul effluent standards for the sewage and trade effluents and for the quality of receiving waters (not being water in an inter-state stream) resulting from the discharge of effluents and to classify waters of the State;

### Functions of the WBPCB

The statutory and other functions of the WBPCB are :

- a. To plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof;
- b. To advise the State Government on any matter concerning the prevention, control or abatement of water pollution;
- c. To collect and disseminate information relating to water pollution and the prevention, control or abatement thereof;
- d. To encourage, conduct and participate in investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;
- h. To evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar conditions of soils, climate and water resources of different regions and more specially the prevailing flow characteristics of water in streams and wells which render it impossible to attain even the minimum degree of dilution;
- i. To evolve methods of utilisation of sewage and suitable trade effluents in agriculture;
- j. To evolve efficient methods of disposal of sewage and trade effluents on land, as are necessary on account of the predominant conditions of scant stream flows that do not provide for major part of the year the minimum degree of dilution;

- k. To lay down standards of treatment of sewage and trade effluents to be discharged into any particular stream taking into account the minimum fair weather dilution available in that stream and the tolerance limits of pollution permissible in the water of the stream, after the discharge of such effluents;

- l. To make, vary or revoke any order:

- i) For the prevention, control or abatement of discharge of waste into streams or wells;
- ii) Requiring any person concerned to construct new systems for the disposal of sewage and trade effluents or to modify, alter or extend any such existing system or to adopt such remedial measures as are necessary to prevent control or abate water pollution;
- iii) To lay down effluent standards to be complied with by persons while causing discharge of sewage or sullage or both, and to lay down, modify or annul effluent standards for the sewage and trade effluents;
- iv) To advice the State Government with respect to the location of any industry the carrying on of which is likely to pollute a stream or well;
- v) To perform such other functions as may be prescribed or as may, from time to time be entrusted to it by the Central Board or the State Government.

The Board may establish or recognise a laboratory or laboratories to enable the Board

to perform its functions efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

**Role of the Board**

The Board has adopted several innovative approaches to achieve quick and effective results for protecting and preserving the environment of the state, which encompass:

- Issuance of various environmental permits, which include :
  - ☞ Consent to Establish;
  - ☞ Consent to Operate;
  - ☞ Authorisation for hazardous waste management;
  - ☞ Authorisation for bio-medical waste management; and
  - ☞ Permission for import and storage of hazardous chemicals.
- Ensuring control of pollution through such instruments;
- Generation and dissemination of data related to environmental quality through regular monitoring and surveillance;
- Conducting research & development activities on environmental matters;
- Encouraging & promoting environmental research by academicians and institutions;
- Imparting training on environment;
- Building environmental awareness for the community; and
- Addressing public grievances through redressal of environmental problems.

## CHAPTER II

# COMPOSITION OF THE BOARD

The West Bengal Pollution Control Board comprises of the Chairman, the Member Secretary and 15 other members nominated by the State Government. The eminent members of the Board include the representatives from all sectors of the society with experience in environmental protection, forestry, law, environmental science and technology and local government. During the time period under review, the members of the West Bengal Pollution Control Board were as follows:

### Chairman

- ☞ Shri Manabendra Mukherjee, Minister-in-charge, Departments of Environment & Information Technology, Government of West Bengal (from 25th March, 2004 to July 2004) ; and
- ☞ Prof. (Dr.) Sudip K. Banerjee (02.08.04 till date).

### Representatives of the State Government

- ☞ The Secretary, Department of Environment ;
- ☞ The Secretary, Department of Cottage & Small-Scale Industries ;
- ☞ The Secretary, Department of Commerce & Industries ;
- ☞ The Secretary, Department of Science & Technology; and
- ☞ The Secretary, Department of Transport.

### Representatives of the Local Authorities

- ☞ The Mayor, Kolkata Municipal Corporation ;
- ☞ The Mayor, Howrah Municipal Corporation ;
- ☞ The Mayor, Durgapur Municipality Corporation ;

- ☞ The Chairperson, Bhadreswar Municipality; and
- ☞ The Chairperson, Haldia Municipality.

**Representatives of the State-controlled Co-operatives**

- ☞ The Managing Director, West Bengal Forest Development Corporation ; and
- ☞ The Managing Director, West Bengal Industrial Development Corporation

**Representatives of the Technical & Scientific Community**

- ☞ Dr Abirlal Mukherjee, Ex-Head of Dept., ENT, Calcutta Medical College;
- ☞ Prof S K Sanyal, Dept. of Chemical Engineering, Jadavpur University; and
- ☞ Prof. M K Banerjee, Head, Dept. of Metallurgy, B E College.

**Member Secretary**

- ☞ Dr. S. K. Sarkar, IAS (02.07.03).

## CHAPTER III

# ORGANISATIONAL STRUCTURE OF THE WBPCB

The Board functions through its Head Office at Kolkata, three Circle Offices headed by three Senior Environmental Engineers, nine Regional Offices and one Sub-Regional Office. The specific functions of the different cells located at the Head Office of the Board are illustrated below.

**Planning Cell:** The main functions of the Planning Cell include consent and cess administration, planning and coordination with other offices and government departments, environmental monitoring, collection and analysis of pollution related data, activities related to automobile pollution, processing of audit queries and introduction of economic instruments for abatement of industrial pollution. The office of the Sr Environmental Engineer (Planning) performs specific functions like inspection and supervision of two regional offices, preparation of SoE and technical reports, updation of air and water quality data for the Board's website etc.

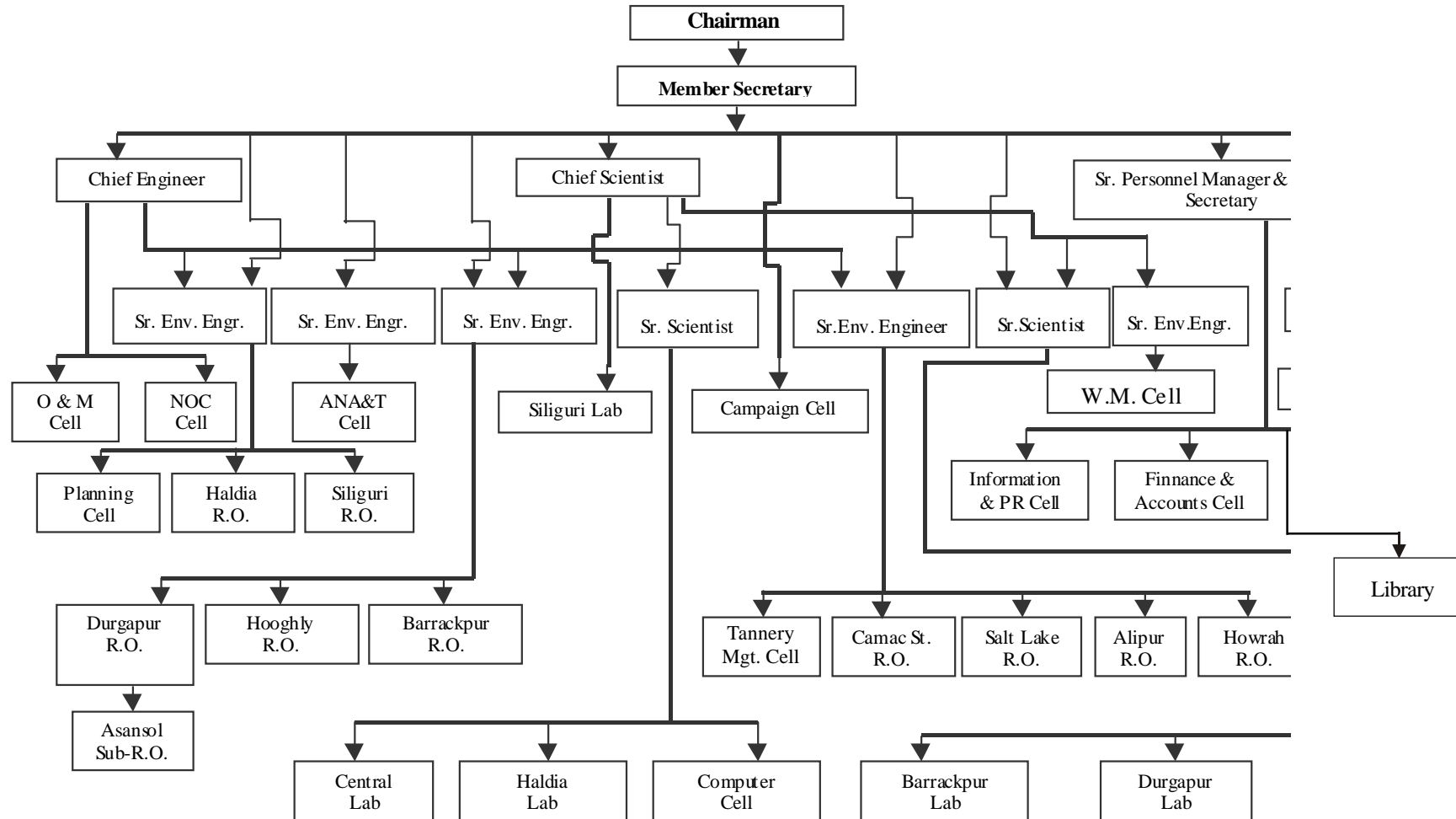
**NOC Cell:** Under the provisions of the Water Act and the Air Act, any entrepreneur

contemplating for new development within the state including the setting up of new industries must obtain 'Consent to Establish' and all operating units or units about to commence operation must obtain 'Consent to Operate' from the WBPCB. The functions of the Cell include processing of related files for large/medium scale industries and also industries attracting EIA notification, activities related to public hearing and technical hearing of the grossly polluting industries (GPIs).

**Waste Management Cell:** The Cell implements the Rules related to major wastes (like hazardous waste, bio-medical waste, municipal solid waste, plastic waste etc) notified by the MoEF, GoI, under the provisions of the Environment (Protection) Act, 1986. The Cell is also responsible for the implementation of provisions of the environmental legislations such as the PLI Act. The other functions include hazardous waste authorisation, import license of hazardous chemicals, site selection for hazardous waste disposal etc.



## Organisational Structure of the West Bengal Pollution Control Board



**Notes :** W. M. Cell : Waste Management Cell ; P R Cell ; Public Relation Cell ; R. O. : Regional Office ; Lab : Laboratory ; O & M : Operation & Maintenance ; NOC Cell : No-Objection Certificate Cell ; ANA & T Cell : Air, Noise, Automobile & Training Cell ; Admin. : Administration ; Mgt. : Management

**Cess Administration Cell:** This Cell deals with matters related to technical scrutiny of water consumption, assessment of water cess and works related to Cess Appellate Authority.

**Operation & Maintenance Cell:** The maintenance of the buildings of the head office and regional offices of the Board as well as dealing with matters related to Committees of the Legislative Assembly are the main functions of the Cell.

**Air, Noise, Automobile & Training Cell:** The major functions of this Cell include survey on noise pollution and the use of plastics and fire crackers, monitoring of noise level during festivals, automobile pollution survey and survey of Pollution-Under-Control (PUC) centres and Ambient Air Quality Monitoring (AAQM) stations under the JBIC project. The other functions include conducting training programmes related to environmental pollution for the government authorities, local bodies, school children and NGOs. It also deals with matters related to the National Green Corps (NGC) programme in West Bengal, a programme introduced by the Ministry of Environment & Forest (MoEF), Government of India (GoI), for spreading environmental awareness among school children.

**Tannery Management Cell:** This Cell looks after the consent administration of the tannery units within the Calcutta Leather Complex, monitors the implementation of pollution control / waste management facilities of the individual units and the common effluent treatment plant and waste management facilities of the leather complex as a whole.

**ICEF Project Cell:** This Cell deals with matters related to the implementation of the India-Canada Environment Facility (ICEF) Project.

**Legal Cell & Public Grievance Cell:** The main function of the Legal Cell is to supervise the legal matters of the Board. To take appropriate actions against various complaints, these are received in the public grievance

cell are acknowledged, enquired into, inspected and redressed in a hearing in the presence of complainant and the industry concerned. Every Saturday, a public hearing is organised at Paribesh Bhawan where the aggrieved complainant and the industry concerned are asked to appear before the hearing authority. Everyone is given an equal opportunity of being heard.

**Campaign Cell:** The main functions of this Cell are to coordinate programmes with government departments and non-governmental organisations (NGOs), and to implement various awareness-generation programmes for the protection of environment, forest and wildlife in West Bengal. This Cell also looks after the effective implementation of the National Green Corps (NGC) programme in the state.

**Computer Cell:** The prime function of this cell is to provide a communication backbone and infrastructure in an e-friendly environment within the WBPCB. The other functions include purchase and maintenance of computer hardware and software, development of programmes, perform activities related to networking, impart training on computer essentials to the Board personnel, and maintenance and updating of the Board's website.

**Personnel & Administration Cell:** This Cell deals with administrative matters dealing with the employees of the Board such as recruitment, promotion, transfer, all kinds of leaves, annual increment and training matters. It also deals with custodian and other matters related to the declaration of assets, matters related to Board meetings, issue of work orders related to operation & maintenance and also matters related to personnel and office management.

**Finance & Accounts Cell:** The Board has a centralised accounting system located at the head office of the Board. The functions of this Cell include looking into the entire audit, financial and accounting matters of the Board.

**Library:** The WBPCB Library keeps an inventory of the comprehensive resource of books, documents, reports, journals, newsletters, newspapers and newsmagazines related to environment. The Library maintains a record of the users (internal and external) borrowing and using the library facilities, and maintains a regular account of updation of the status of documents in the library by means of Koha - an Integrated Library Management System.

**Laboratory:** The facilities in the laboratories of the WBPCB are capable of performing all

possible analytical works in the field of environment science. A detailed account of the laboratory of the Board is documented in the subsequent part of the present volume.

**Information & PR Cell:** The Cell deals with all the activities related to fairs, preparation and distribution of static communication tools, such as like posters and handouts for the purpose of generating awareness on environmental pollution. The Cell also interacts with NGOs located in various districts for dealing with pollution related matters of the state.

**WBPCB Offices located in Kolkata and other districts of West Bengal**

<b>Head Office</b> Paribesh Bhawan 10 - A, Block - LA, Sector - III, Salt Lake, Kolkata - 700 098 Ph : +91 33 2335 7428, 2335 9088, 2335 8211, 2335 8212, 2335 0261, 2335 3913 Fax : +91 33 2335 8213, 2335 2813, 2335 6730, 2335 8073 Email : <a href="mailto:wbpccnet@wbpcb.gov.in">wbpcbnet@wbpcb.gov.in</a> Website : <a href="http://www.wbpcb.gov.in">www.wbpcb.gov.in</a>		
<b>Office of the Senior Environmental Engineer (Camac Street)</b> Industry House 2 <sup>nd</sup> Floor, 10, Camac Street Kolkata - 700 017 T/F: +91 33 2282 1449	<b>Office of Senior the Environmental Engineer (Planning)</b> Paribesh Bhawan 10 - A, Block - LA, Sector - III Salt Lake, Kolkata - 700 098 T/F: +91 33 2335 6730	<b>Office of the Senior Environmental Engineer (Kakinara)</b> Panpur More, Kalyani Expressway, Vill. Panpur, P.O.- Narayanpur - 743126, Dt. 24 Parganas (North) T/F: +91 33 2580 3408 T : +91 33 2502 1188
<b>Regional Office- Camac Street</b> Industry House 2 <sup>nd</sup> Floor, 10, Camac Street Kolkata - 700 017 T/F: +91 33 2282 3402	<b>Regional Office - Haldia</b> Super Market Building 3 <sup>rd</sup> Floor, PO & PS - Durgachak Haldia-721602, Purba Midnapore T/F: +91 3224 274 190	<b>Regional Office - Hooghly</b> Himalay Bhawan Dankuni Coal Complex Delhi Road Dankuni - 711224, Dt. Hooghly T/F: +91 33 2659 0957
<b>Regional Office - Salt Lake</b> Paribesh Bhawan 1 <sup>st</sup> Floor 10 A, Block - LA, Sector - III Salt Lake, Kolkata - 700 098 T/F: +91 33 2335 0663	<b>Regional Office - Siliguri</b> Paribesh Bhawan Paribahan Nagar Matigara, Siliguri, Dt. Darjeeling T/F: +91 353 257 1113	<b>Regional Office - Kakinara</b> Kalyani Express Way, Panpur More, Vill Panpur, Narayanpur - 743126, Dt. 24 Parganas (North) T/F: +91 33 2580 0573 T : +91 33 2502 1189
<b>Regional Office - Alipore</b> Bhawani Bhawan 2 <sup>nd</sup> Floor, 31, Belvedere Road Kolkata - 700 027 T/F: +91 33 2479 0298		<b>Regional Office - Durgapur</b> Sahid Khudiram Sarani City Centre, Durgapur City, Dt. Burdwan 713 216 T/F: +91 343 254 6708
<b>Regional Office - Howrah</b> 7, Haradeb Bhattacharjee Lane Mandirtala (Near Second Hooghly Bridge Toll Tax Office) Shibpore, Howrah T : +91 33 2678 4677 T/F : +91 33 2678 6355		<b>Sub Regional Office - Asansol</b> Ghanty Mansion 2 <sup>nd</sup> Floor, 60 G.T.Road Asansol - 713301, T/F: +91 341 220 5407

## CHAPTER IV

# INFRASTRUCTURE DEVELOPMENT

The Board started functioning in a very humble way with skeletal infrastructure in a rented building in 1974. However, with the state government's continued emphasis in improving its infrastructure for efficient environmental management in the state, the Board is now headquartered in the stylish and environment friendly, Paribesh Bhawan, at Salt Lake, Kolkata.

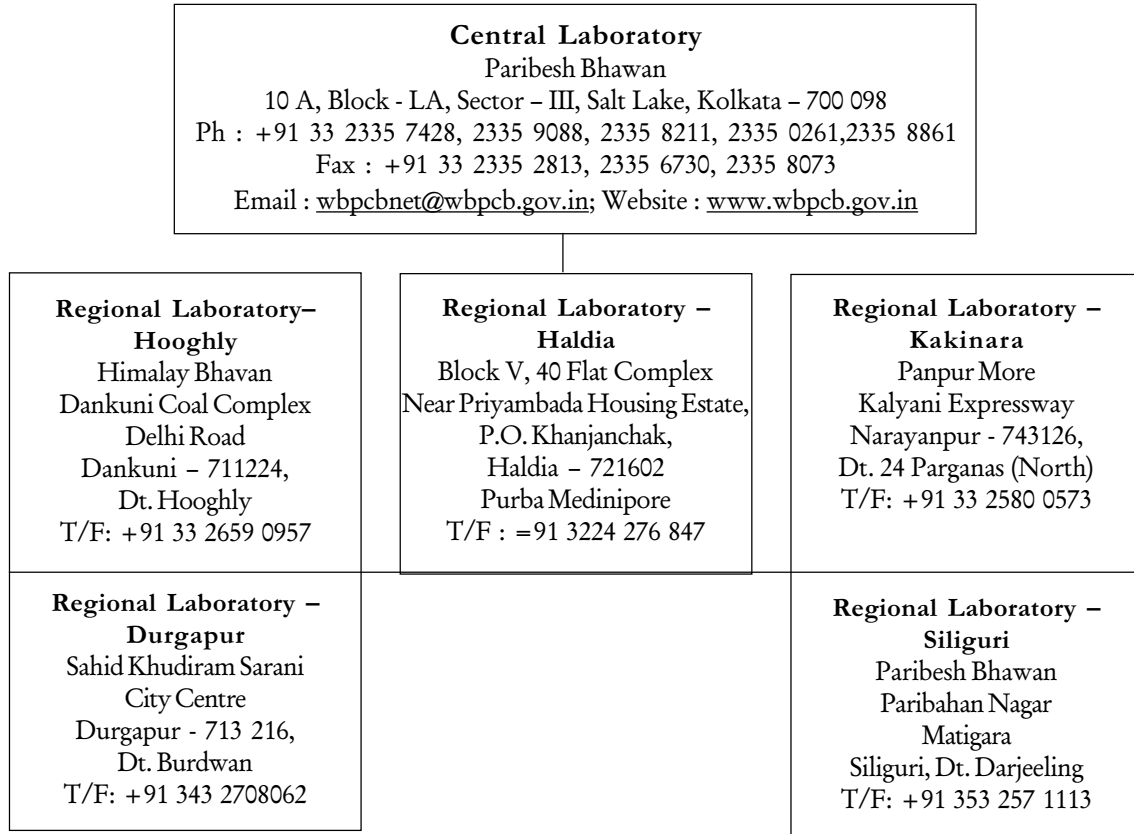
### Laboratory Facilities

The Board has a Central Laboratory at Kolkata and five other Regional Laboratories at Kakinara, Durgapur, Hooghly, Haldia and Siliguri. The quantum improvement of the infrastructural facilities of the laboratories has been made possible through a financial loan assistance programme from the Japan Bank for International Cooperation (JBIC) 1995. The state-of-the-art analytical laboratories of the Board, especially the one in its head office in Kolkata, can be compared with the best in the world. They are equipped with the most sophisticated instruments, such as, the Atomic Absorption Spectrophotometer (AAS) with furnace and flow injection system, Anodic Stripping Voltmeter (ASV), Ion

Chromatograph, Gas Chromatograph with Mass Spectrophotometer (GC-MS) including Head-space Sampler, Gas Chromatograph with thermal desorption, High Performance Liquid Chromatograph (HPLC), Milipore Filtration Technique (MFT) etc. These laboratories are also equipped with various types of water and air samplers including Continuous Water Sampler, Cascade Impactor (fractionator for air particulates), Solid Phase Toxic Gas Sampler, Depth Sampler, Sediment sampler etc. In addition to monitoring basic environmental pollutants, these laboratories are capable of monitoring and analysing traceable quantities of inorganic and organic pollutants.

The Board has five other Regional laboratories in Kakinara, Durgapur, Hooghly, Haldia and Siliguri, which are also equipped with sophisticated instruments to analyse various types of air and water samples. The analytical capability of the Board can cater to the need of any environmental analysis required for implementation of various environmental statutes currently in force within the country.

The Board has extended the analytical laboratory facilities of its central laboratory and different regional laboratories, for a prescribed fee, to any organizations or individuals intending to analyse water and wastewater for pollution control. The details of the laboratory setup of the Board are illustrated below.



# E-GOVERNANCE

The statutory activities of the Board include issuance of environmental clearances, evaluation of environmental reports, estimation of pollution load from different sources, control of emission from point and non-point sources etc. These activities of the Board require continuous interaction with all the stakeholders like common people, different government agencies, NGOs, industrial business houses etc. As such, hard scientific, legal and managerial capacity, along with huge and diverse information and data processing skills is required to facilitate quick decision-making. The computerisation of the whole system and electronic transfer of data/ information along with its online processing was thought to be the solution for better performance of the Board and its transparent governance.

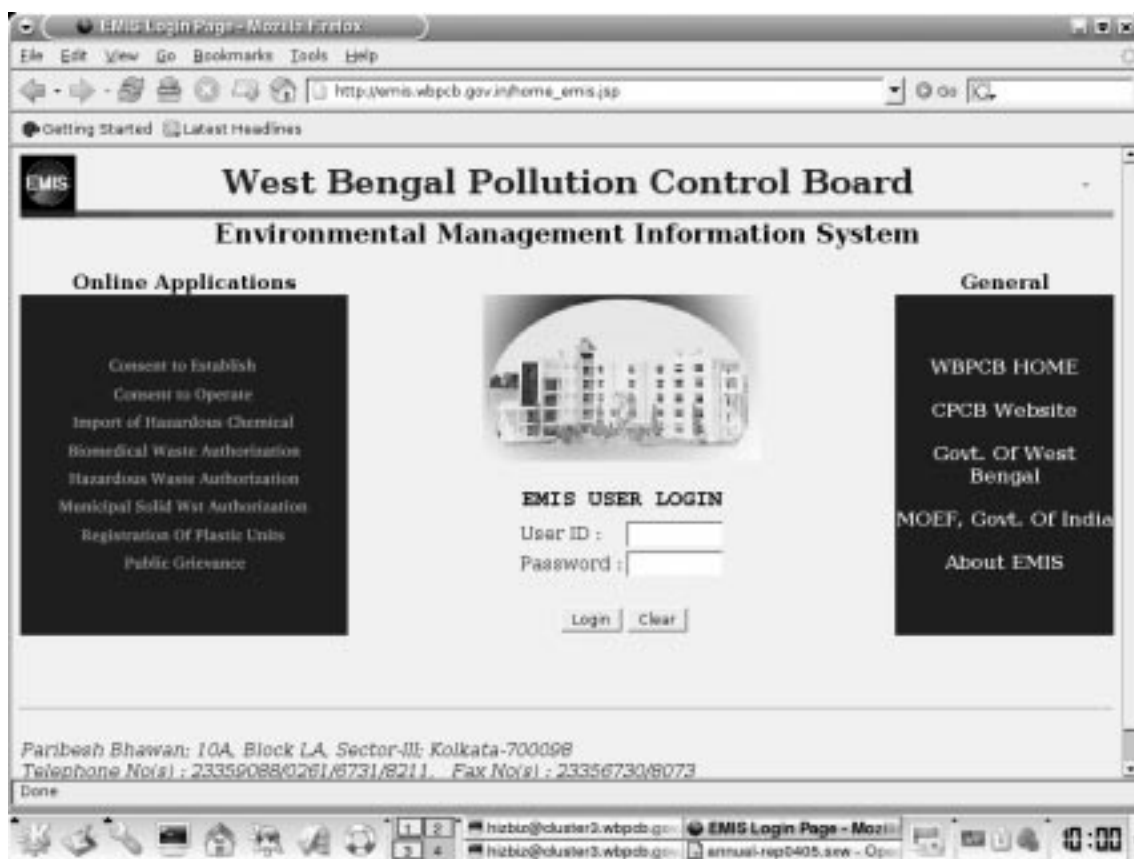
## **Launching of EMIS - Implementation of true e-governance**

The Hon'ble Chief Minister of West Bengal, Shri Buddhadeb Bhattacharjee, launched the Board's first-ever online environmental clearance site for the 'Green category of Industries' on October 3, 2004 in presence of Shri Manabendra Mukhopadhyay, Hon'ble Minister of Environment and Information Technology. With this launch, the Board entered into an era of second generation e-governance.

The "Environment Management Information System" EMIS is a web based application, which electronically represents the whole gamut of the Board's activities to the citizens. It enables the entrepreneurs to put up their environmental clearance applications through the Internet and also monitor the status of such applications. This will ensure transparency to the process. The system offers online regulatory processing and report creation with a strong database getting automatically updated at the backend with each user action. At its crux, lie smooth electronic clearances of applications under the jurisdiction of environmental laws.

The success of an e-governance application depends heavily on, among others, its sustainability model and replicability. It has to depend on hostile external network conditions where the citizens reside. The design of EMIS has been made to take care of all these issues. The software components used in this application were taken from the Free/Open source Software pool developed by the international community to avoid proprietary software procurement and upgrade cost. The application does not have any intellectual property and vendor lock in, which ensures its easy replicability.

The beneficiaries of this unique application software are listed below.



The Board's Website displaying the EMIS

### Industry

- On-line guidance and filling up of application forms for environmental clearances ; and
- Information on the status of processing of the application(s) and the decision of the Board.

### General Public

- On-line lodging of environmental complaints and information on status of processing of the complaint ;
- Information on environmental status of sensitive areas, streams and lakes, air quality ; and
- Administrative information and orders in relation to environmental governance.

### Academics

- Scientific data and information collected and created by the Board ; and
- Reports on project work in relation to environment and health.

This software will also decrease processing time for environmental clearances and increase the Board's operational transparency. The beneficiaries' matrix is given below.

*How many people will benefit from the program?*

All stakeholders whose activity falls under the environmental acts :

- ✓ More than 19,000 industrial units ;
- ✓ 600 odd complainants per month ;
- ✓ All public representatives ; and
- ✓ All staff members of the Board.



*How and where will it operate ? For how long?*

The whole system is operating in the server computers at Paribesh Bhawan. Regional offices of the Board will access the system through Internet for which the networking already exists at eleven offices of the Board.

*Who will staff it ?*

The Board through M/S CMC LTD has developed the EMIS software. After full implementation, it would be run and maintained by the in-house staff of the Board.

**ADB Funded Project to Monitor and Perform backlog Data Population in EMIS**

Any large database driven application takes its own time to grow to a position from where meaningful reports can be made. Realising the need of getting immediate decision support from the existing data trapped into environmental clearance applications, the Board planned to populate old data into EMIS. The Asian Development Bank through its Technical Assistance project on "Strengthening Environmental Management at State Level" extended its help to the Board for population of the backlog data. The project was launched by Shri Manabendra Mukhopadhyay, Hon'ble Minister of Environment and Information Technology, on October 1, 2004 in presence of the representatives from Govt. of India, Asian Development Bank, Govt. of West Bengal and WBPCB. M/s Intercontinental Consultants and Technocrats Pvt. Ltd has started the work of EMIS population and monitoring on behalf of the WBPCB and the ADB.

**Local Area Networking of more Regional Offices**

In March 2004, the Board had local area networks in three sites covering six of its

offices namely, Head Office, Central Laboratory, Office of Senior Environmental Engineer (SEE) Kankinara, Salt Lake Regional Office (RO), Kankinara RO and Durgapur RO. During 2004-2005, five more offices of the Board were networked. The Office of EE (Camac St.), Camac St RO, Howrah RO, Alipore RO and Dankuni RO were brought under the hood of local area networking during this period. The employees and officers were trained to work in networked environment to optimise usage of computing resources including judicious use of printers.

**Wide Area Network through High Speed Internet at Regional Offices**

The Regional offices of the Board were connected to the Head Office through dial-up Remote Access Server and dial-up Internet connections till March 2004. Since high-speed inter-office connectivity is the key implementation factor for e-governance, the Board analysed available options for wide area networking of its offices. Considering several issues, the Board decided to use the DIAS (Direct Internet Access System) service offered by the Government ISP BSNL for connecting the regional offices with the Head Office at Paribesh Bhawan. The decision of not entering into dedicated point-to-point leased lines was taken based on the sustainability factors of successful e-governance implementation. Nine regional offices, namely, Asansol Sub RO, Durgapur RO, Alipore RO, Howrah RO, Camac St RO, Office of SEE (Camac), Kankinara RO, Office of SEE (Kankinara) and Hooghly RO are presently connected to the Head office through the use of this 128 Kbps high speed Internet. Exchanges of documents, mails, mailing list notices, have now become as simple as starting a PC at the regional office and clicking the browser towards the Board's intranet server.

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## **PART II**

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- I. Industrial Pollution Control**
- II. Environmental Monitoring**
- III. Waste Management**
- IV. Noise Pollution Control**
- V. Automobile Pollution Control**
- VI. Research & Development**
- VII. Legal Matters**
- VIII. Public Grievance**
- IX. WBPCB Initiatives to promote awareness**
- X. Externally-assisted Programme**
- XI. Board Meetings/Policy Decisions**
- XII. Human Resource Development at the WBPCB**
- XIII. Financial Summary**



## CHAPTER I

# INDUSTRIAL POLLUTION CONTROL

**U**nder the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981, any industry, operation or process or an extension and addition thereto, which is likely to discharge sewerage or trade effluent into the environment or likely to emit any air pollution into the atmosphere will have to obtain consent of the State Pollution Control Board. There are different types of consent issued under the provisions of Water (P &CP) Act 1974 and Air (P&CP) Act, 1981.

- a) **Consent to Establish:** All the industries and activities needing consent must obtain consent to establish before actual commencement of the works for establishing the industry/activity.
- b) **Consent to Operate:** This consent needs to be taken before actual commencement of production. This consent is valid for certain duration.
- c) **Renewal of Consent to Operate:** The consent to operate is renewed after certain period.

Depending upon the pollution potential of different industries, the West Bengal Pollution Control Board (WBPCB) has classified the industrial units into three different categories: 'Red', 'Orange' and 'Green'. The Red category units have maximum pollution potential, the Orange category units have moderate pollution potential and the Green units have the least pollution potential. Further, considering the degree of pollution among the Red units, these are classified into 'Special Red' and 'Ordinary Red' categories. Also a few units under the Green category with

no pollution potential are classified as 'Exempted' category units. ANNEXURE II shows the different categories of industries.

The WBPCB ensures that compliance to environmental standards is attained through negotiated agreements and technical guidance. Under the siting policy of the Board, the red industries are not permitted in Kolkata Metropolitan Area (KMA) areas, and orange industries are not permitted in Kolkata Municipal Corporation (KMC) and Howrah Municipal Corporation (HMC) areas, except the industrial estates of KMC and HMC. This policy does not permit a few water-intensive and highly polluting industrial units having high water consumption within 10-km radius of the Calcutta Leather Complex at Bantala. ANNEXURE III represents the transparent industrial siting policy of the Board for combating industrial pollution in West Bengal.

### Consent to Establish

The category-wise number of 'Consent to Establish', commonly known as 'No-Objection Certificates' (NOC) applications received and processed by the Board during the year 2004-2005 is tabulated below.

**TABLE: 2.1.1**  
**MONTH-WISE AND CATEGORY-WISE 'CONSENT TO ESTABLISH'**  
**APPLICATIONS RECEIVED AND ISSUED DURING 2004-2005**

Months	NOC applications received			NOC issued		
	Red	Orange	Green	Red	Orange	Green
April '04	111	67	75	117	71	77
May	109	50	79	118	77	93
June	100	83	103	101	61	84
July	122	120	100	122	97	102
August	147	110	100	140	117	81
September	163	130	106	122	86	93
October	109	71	117	103	57	98
November	137	54	149	139	90	175
December	144	100	138	99	60	89
January	153	80	125	144	78	102
February	145	100	124	143	85	119
March '05	134	127	110	146	106	113
<b>Total</b>	<b>1574</b>	<b>1092</b>	<b>1326</b>	<b>1494</b>	<b>985</b>	<b>1226</b>

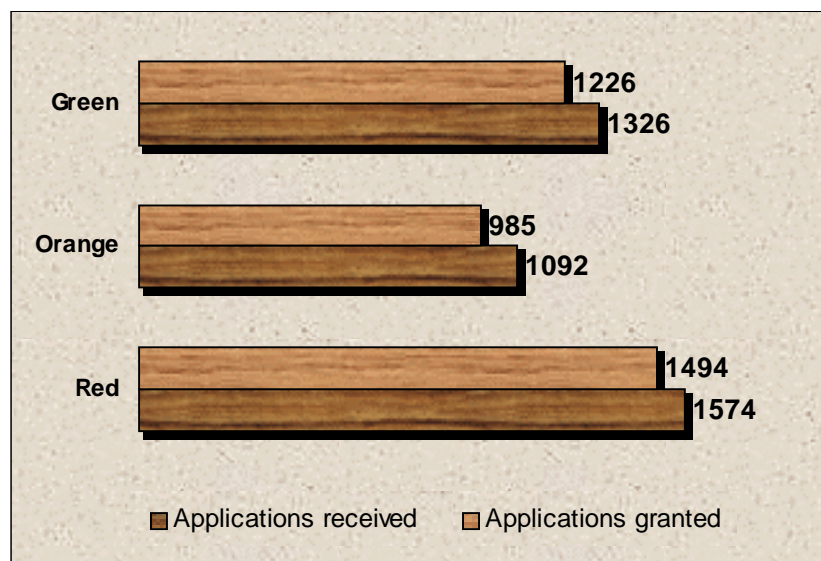
TABLE: 2.1.2

## 'CONSENT TO ESTABLISH' APPLICATIONS RECEIVED AND ISSUED DURING 2004-2005

Issues	Red	Orange	Green	Total
No. of NOC applications pending as on 01.04.2004	110	88	55	253
No. of NOC applications received during this period	1574	1092	1326	3992
<b>Total no. of NOC applications available for processing</b>	<b>1684</b>	<b>1180</b>	<b>1381</b>	<b>4245</b>
No. of NOC applications granted during this period	1494	985	1226	3705
No. of NOC applications denied during this period	20	5	1	26
No. of NOC files closed during this period	49	37	21	107
No. of NOC files reopened during this period	22	0	1	23
<b>No. of NOC applications disposed off during this period</b>	<b>1541</b>	<b>1027</b>	<b>1247</b>	<b>3815</b>
<b>No. of NOC applications pending as on 31.03.2005</b>	<b>145</b>	<b>152</b>	<b>133</b>	<b>430</b>
No. of NOC applications pending for > 4 months	12	12	3	27
No. of NOC applications pending for > 2 months & < 4 months	37	28	20	85
No. of NOC applications pending for > 1 months & < 2 months	40	28	42	110
No. of NOC applications pending for < 1 months	56	84	68	208

\* One application received as Orange category and one application received as Green category later considered as Red category.

FIGURE 2.1.1  
NO. OF 'CONSENT TO ESTABLISH' APPLICATIONS RECEIVED  
AND ISSUED DURING 2004-2005



## Consent to Operate

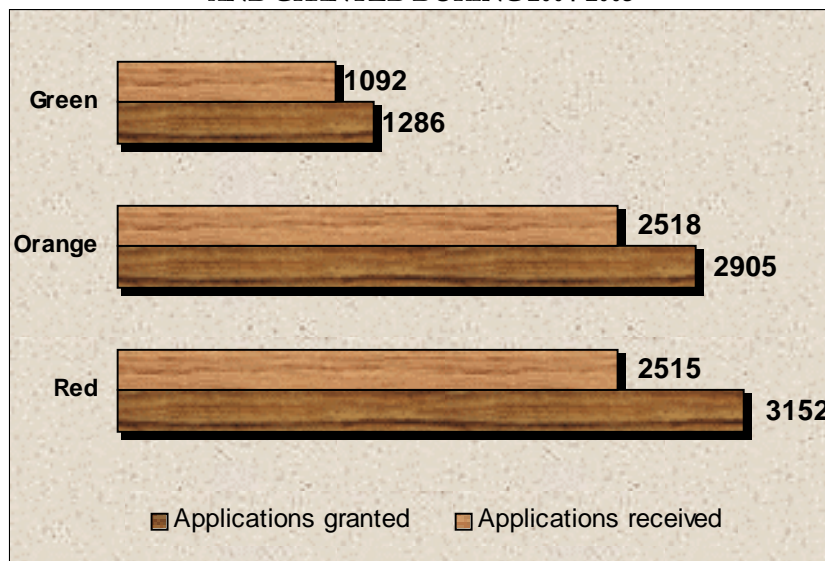
The category-wise number of 'Consent to Operate' applications received and processed by the Board during the year 2004-2005 is tabulated below.

**TABLE: 2.1.3**  
**'CONSENT TO OPERATE' APPLICATIONS RECEIVED AND ISSUED DURING 2004-2005**

Issues	Red	Orange	Green	Total
No. of consent applications pending as on 01.04.2004	247	262	67	576
No. of consent applications received during this period	2905	2643	1219	6767
<b>Total no. of consent applications available for processing</b>	<b>3152</b>	<b>2905</b>	<b>1286</b>	<b>7343</b>
No. of consent applications granted during this period	2515	2518	1092	6125
No. of consent applications denied during this period	45	22	0	67
No. of consent applications closed during this period	119	64	21	204
No. of consent applications reopened during this period	0	0	0	0
<b>Total no. of applications disposed off during this period</b>	<b>2679</b>	<b>2604</b>	<b>1113</b>	<b>6396</b>
<b>No. of consent applications pending as on 31.03.2005</b>	<b>473</b>	<b>297</b>	<b>177</b>	<b>947</b>
No. of consent applications pending for > 4 months	114	6	5	125
No. of consent applications pending for > 2 months & < 4 months	120	69	54	243
No. of consent applications pending for > 1 months & < 2 months	76	74	50	200
No. of consent applications pending for < 1 months	163	148	68	379

\* 4 applications received as Orange category later considered as Green category.

**FIGURE 2.1.2**  
**NO. OF 'CONSENT TO OPERATE' APPLICATIONS RECEIVED AND GRANTED DURING 2004-2005**



### Surveillance on Industries

Given the constraints of resource and manpower, the Board prioritises its surveillance over the grossly polluting units instead of monitoring all the units under its consent administration. These units are inspected and monitored in a fixed schedule either monthly or bimonthly or thrice-a-year, or on a quarterly or half-yearly or yearly basis. The Board has identified 333 grossly polluting units under its regular surveillance. The list of 333 grossly polluting units is given in ANNEXURE IV. These grossly polluting units are the industries identified under the National River Conservation Plan (NRCP), 17 category units, major air polluting units and major water polluting industries, as mentioned below:

- Industries identified under National River Conservation Plan (NRCP);
- Industries discharging effluent into the rivers and lakes directly or indirectly and effluent having BOD load of 100 Kg/day or more before treatment;
- Industries under the 17 categories of polluting industries as notified by Ministry of Environment & Forests, New Delhi;
- Major air polluting industries; and
- Major water polluting industries.

TABLE: 2.1.4

#### INSPECTION SCHEDULE OF GROSSLY POLLUTING INDUSTRIES DURING 2004-2005

Regional Office	No. of industries						
	Monthly	Bimonthly	Quarterly	Thrice-a-year	Half yearly	Yearly	TOTAL
Camac St.	3	2	3	0	12	0	20
Salt Lake	1	3	1	1	15	1	22
Alipore	2	2	1	0	6	0	11
Howrah	0	5	3	1	62	0	71
Hooghly	6	9	2	6	10	0	33
Kankinara	6	14	13	2	13	2	50
Haldia	8	4	0	2	9	0	23
Durgapur	15	2	3	11	12	5	48
Asansol	0	1	0	3	5	2	11 + 1*
Siliguri	1	2	0	0	1	0	4
<b>TOTAL</b>	<b>42</b>	<b>44</b>	<b>26</b>	<b>26</b>	<b>145</b>	<b>10</b>	<b>294</b>

\* No inspection schedule for one industry which is at present closed.



## Public Hearing

Some specific categories of industries require carrying out Environmental Impact Assessment (EIA) and also require clearance from Government of India after obtaining 'Consent to Establish' from the State Pollution Control Board. This environmental clearance involves Environmental Public Hearing as per the notification of Ministry of Environment and Forests, Government of India. During the Environmental Public Hearing process, the public who are likely to be affected by the proposed developmental project have the right to comment on the proposed project. The Board conducted the following Environmental Public Hearing during the year 2004-2005.

**TABLE: 2.1.5**

**PUBLIC HEARING CONDUCTED DURING THE YEAR 2004-2005**

Sl. No.	Name of Industry	Nature of Industry	Date of Public Hearing	Location of Public Hearing
1.	M/s. Gas Transportation & Infrastructure Co. Ltd.	Laying of Hydrocarbon Pipeline from Haldia to Ranchi	20.04.2004	Contai, Purba Medinipur
			22.04.2004	Midnapur, Paschim Medinipur
2.	M/s. The Durgapur Projects Ltd.	1 x 250 MW Thermal Power Plant	12.05.2004	Durgapur, Bardhaman
3.	M/s. Kauntia Castings Ltd.	Foundry	06.07.2004	Uluberia, Howrah
4.	M/s. West Bengal Waste Management Ltd.	Integrated Waste Management Facility at Haldia	30.07.2004	Haldia, Purba Medinipur
5.	M/s. National Hydroelectric Power Corporation Ltd.	Hydel Power Plant (Teesta Low Dam Project Stage - IV)	08.09.2004	Kalijhora, Darjeeling
6.	M/s. Electrosteel Castings Ltd.	Balason Hydroelectric Project	29.09.2004	Sukhiapokhari, Darjeeling
7.	M/s. Haldia Petrochemicals Ltd.	Expansion of Ethylene Manufacturing	29.12.2004	Haldia, Purba Medinipur
8.	M/s. Oil India Ltd.	Pipeline for transportation of Hydrocarbon (MS, HSD, SKO) from Galaghat, Assam to Siliguri passing through Coochbehar	16.03.2005	Phansidewa, Darjeeling
			16.03.2005	Madarihat, Jalpaiguri
			16.03.2005	Coochbehar
9.	M/s. Swaraj Asbestos Pvt. Ltd.	Asbestos Cement Pressure Pipe Manufacturing	17.03.2005	Madarihat, Jalpaiguri

### Regulatory actions by the Board

All the industries defaulting marginally compared to the prescribed standard set by the Ministry of Environment & Forests, Government of India or Central Pollution Control Board or the WBPCB are allowed reasonable time to comply with the standards. On repetitive non-compliance, the defaulting units are served with show-cause notices, followed by technical hearing and imposition of bank guarantee for ensuring time-bound compliance and imposition of pollution fines. Consistent non-compliance leads to disconnection of electricity and water supply, and also closure of the units under extreme situations. After adoption of adequate pollution control measures, the closure orders are suspended and the unit is allowed to operate again.

### Promotional role of the Board

The concept of environmental control has undergone a paradigm shift during last few decades. It has now been accepted that legally binding enforcement alone cannot always ensure improved environment management *per se* and fails to inculcate a sense of social commitment within the polluters in general. Moreover, this regulatory approach does not provide enough impetus and encouragement to those who preach and practise the green discipline to the core, often more than what is required by the regulatory bodies, through its commitment to environmental causes.

The Environment Excellence Award was instituted to recognise such proactive institutional efforts, implemented through a structured policy, dedication to the cause, self monitoring of compliance and gradually moving forward on the pathway to 'beyond compliance'. This is also expected to encourage others to take similar proactive initiatives for improving environmental performance.

The advent of the Award dates back to 2002 when the West Bengal Cleaner Production Centre (WBCPC), a collaborative effort between the WBPCB and the Indian Chamber of Commerce (ICC), instituted the award for the industries. The main purpose was to promote cleaner production practices within industries and encourage them to go beyond the regulatory compliance through improved environmental management resulting in fulfilling their social and environmental commitments.

In 2004, the Environment Excellence Award was considered for three distinct categories: a) Industry sector, b) Local bodies, and c) Service sector including non-governmental organisations



*The Hon'ble Chief Minister addresses the gathering on the occasion*

(NGO). The proposed award for all the above categories was announced on February 12, 2004 through newspaper notification inviting applications. The details regarding the application procedure as well as the application forms were made available at the WBPCB website: [www.wbpcb.gov.in](http://www.wbpcb.gov.in) and the ICC website: [www.indianchamber.org/environment](http://www.indianchamber.org/environment). The last date of submission of application was April 15, 2004.

Three separate Jury Committees, comprising luminaries in the field of environment, shortlisted the applications based on well-developed qualifying criteria. After primary screening, the environment performance of the applicants were assessed through extensive site visits and interactions with various stakeholders. For the industrial sector, emphasis was also given on the management of various environmental information related to the particular industry in a systematic manner. The applicant industries who had received Environment Excellence Award previously, were grouped under a separate category and was judged for their sustained and improved environmental performance.

The Award programme was convened at the Taj Bengal Hotel on October 3, 2004 where Shri Buddhadeb Bhattacharjee, Chief Minister of West Bengal in presence of Shri Manabendra Mukherjee, Minister-in-Charge, Environment & Information Technology, Government of West Bengal felicitated the awardees. The list of the category-wise recipients of the Environment Excellence Award and Environment Appreciation Certificates for the year 2004 is given below.

#### **Environment Excellence Award 2004 for Industry sector**

- ☞ M/s. MCC PTA India Corp. Private Ltd., Haldia, Purba Medinipur- *First*
- ☞ M/s. Budge Budge Generating Station, CESC Ltd., Budge Budge, 24 Parganas (S)- *Second*
- ☞ M/s. Electrosteel Castings Ltd., Khardah Works, Khardah, 24 Parganas (North)- *Third*

#### **Environment Excellence Award 2004 for sustained environment performance**

- ☞ M/s. Bakreswar Thermal Power Project of WBPDC, Bakreswar, Birbhum - *First*
- ☞ M/s. Haldia Petrochemicals Ltd., Haldia, Purba Medinipur- *Second*

#### **Environment Excellence Award 2004 for Service sector including NGOs**

- ☞ M/s. Gontra Samabaya Krishi Unnayan Samity Ltd., Ghetugachi, Nadia - *Joint First*
- ☞ M/s. Lokamata Rani Rashmoni Mission, Nimpith, 24 Parganas (South) - *Joint First*
- ☞ M/s. Madhyamgram Green March, Basunagar, 24 Parganas (North) - *Second*
- ☞ M/s. Loka Seva Parishad at Khripai, Paschim Medinipur- *Third*

#### **Environment Appreciation Certificate 2004 for Local Bodies**

- ☞ Durgapur Municipal Corporation, Bardhaman
- ☞ English Bazar Municipality, Malda
- ☞ Kalyani Municipality, Nadia

## CHAPTER II

# ENVIRONMENTAL MONITORING

### **Ambient Air Quality Monitoring**

With a view to assess the overall environmental status of the state, the West Bengal Pollution Control Board monitors the air quality of different areas of the state. This includes the Kolkata metropolitan and industrial hubs of the state like Howrah, Haldia, Durgapur and Asansol. Besides, the Board also monitors the air quality at major district towns and other industrial areas of the state during the winter season when the air quality of these areas is worse.

Presently, the Board is monitoring the air quality through a large network of air monitoring stations as shown below:

- ☞ 17 stations in Kolkata [monitoring throughout the year]
- ☞ 3 stations in Durgapur [monitoring throughout the year]
- ☞ 1 station in Asansol [monitoring throughout the year]
- ☞ 2 stations in Haldia [monitoring throughout the year]
- ☞ 4 stations in Howrah [monitoring throughout the year]
- ☞ 22 stations in different urban towns and industrial areas [monitoring during winter months]

Besides, the Board also monitors air quality round-the-clock through its five automatic air quality monitoring stations, which are installed at Victoria Memorial Hall premises and Rabindra Bharati University at Kolkata, Howrah, Haldia and Durgapur. These automatic air quality monitoring stations continuously monitors the parameters like RPM, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, HC and meteorological parameters like wind speed, wind direction, relative humidity, temperature etc.

### **National Air Monitoring Programme**

The WBPCB under the National Air Monitoring Programme (NAMP) has been monitoring ambient air quality at ten stations in major industrial areas of the state at the instance of the Central Pollution Control Board. These areas are Durgapur, Asansol, Haldia and Howrah.

### **Ambient Air Quality at Durgapur and Asansol**

The WBPCB started monitoring air quality at three stations in Durgapur in May 2004 under the NAMP. The air quality data and graphs corresponding to its annual average concentration in Durgapur and Asansol are given hereafter.

Table: 2.2.1

## AMBIENT AIR QUALITY AT DURGAPUR DURING 2004-2005

[SPM Standard: 200 mg/m<sup>3</sup>; RPM Standard: 100 mg/m<sup>3</sup>; SO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>;  
NO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>, Pb Standard: 1.0 mg/m<sup>3</sup>]

Months	SPM (mg/m <sup>3</sup> )			RPM (mg/m <sup>3</sup> )			SO <sub>2</sub> (mg/m <sup>3</sup> )			NO <sub>2</sub> (mg/m <sup>3</sup> )		
	DIL	KR	PC	DIL	KR	PC	DIL	KR	PC	DIL	KR	PC
May 2004	296	240	172	116	89	63	20.0	11.1	7.1	44.4	46.2	33.1
Jun 2004	193	184	100	86	75	44	9.9	7.4	6.1	42.1	43.3	37.8
Jul 2004	136	120	65	69	52	29	12.1	6.2	5.5	44.9	41.7	39.7
Aug 2004	140	113	58	71	48	26	20.2	5.0	4.7	42.0	34.2	31.0
Sep 2004	139	162	65	56	65	29	9.1	4.7	4.4	35.1	34.6	30.8
Oct 2004	263	230	113	125	112	56	8.4	5.0	4.7	39.5	39.6	33.4
Nov 2004	572	431	227	264	223	116	12.1	5.2	4.9	53.4	52.5	47.6
Dec 2004	584	473	231	281	269	128	15.9	5.6	4.9	63.6	51.6	45.8
Jan 2005	559	387	215	264	204	113	19.6	5.3	4.6	70.9	62	51.9
Feb 2005	434	288	153	188	147	79	9.5	6.2	4.8	60.1	61.2	51.3
Mar 2005	434	346	159	165	146	70	10.6	6.5	5.6	55.8	60.3	48.8

Dil: Dew India Limited PBCL More; KR: Quality Hotel, Benachiti, Durgapur; PC: PBCL Club, Bidhannagar, Durgapur

Table: 2.2.2

## AMBIENT AIR QUALITY AT ASANSOL DURING 2004-2005

[SPM Standard: 200 µg/m<sup>3</sup>; RPM Standard: 100 µg/m<sup>3</sup>;  
SO<sub>2</sub> Standard: 80 µg/m<sup>3</sup>; NO<sub>2</sub> Standard: 80 µg/m<sup>3</sup>]

Months	SPM (µg/m <sup>3</sup> )	RPM (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )
May 2004	294	108	10.6	51.7
Jun 2004	176	69	7.1	46.0
Jul 2004	131	55	6.1	43.6
Aug 2004	117	55	5.0	35.0
Sep 2004	153	61	4.6	34.4
Oct 2004	251	122	4.9	41.8
Nov 2004	447	225	5.1	55.8
Dec 2004	473	263	5.7	56.7
Jan 2005	440	239	5.5	68.1
Feb 2005	349	185	6.2	67.6
Mar 2005	302	139	6.2	60.7

### Ambient Air Quality at Haldia

The WBPCB has been monitoring air quality at two stations (Supermarket & WBIIDC) in Haldia regularly under the NAMP. The air quality data and the graphs corresponding to its annual average concentrations at two stations in Haldia are given hereafter.

Table: 2.2.3

#### AMBIENT AIR QUALITY AT HALDIA DURING 2004-2005

[SPM Standard: 200 mg/m<sup>3</sup>; RPM Standard: 100 mg/m<sup>3</sup>; SO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>; NO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>]

Months	SPM (mg/m <sup>3</sup> )		RPM (mg/m <sup>3</sup> )		SO <sub>2</sub> (mg/m <sup>3</sup> )		NO <sub>2</sub> (mg/m <sup>3</sup> )	
	Super market	WBIIDC	Super market	WBIIDC	Super market	WBIIDC	Super market	WBIIDC
Apr 2004	105.0	73.0	42.0	35.0	9.2	6.3	20.9	16.8
May 2004	115.0	69.0	41.0	33.0	9.9	7.8	23.9	19.1
Jun 2004	114.0	84.0	48.0	37.0	8.7	7.5	22.8	15.9
Jul 2004	57.0	69.0	32.0	33.0	4.1	5.0	24.9	25.2
Aug 2004	51.0	57.0	31.0	33.0	3.0	4.0	21.0	23.0
Sep 2004	53.0	58.0	28.0	27.0	5.0	8.0	22.0	24.0
Oct 2004	84.0	92.0	40.0	40.0	6.0	7.0	27.0	28.0
Nov 2004	249.0	258.0	125.0	135.0	6.0	7.0	37.0	41.0
Dec 2004	312.0	374.0	152.0	157.0	6.0	7.0	50.0	51.0
Jan 2005	293.0	240.0	159.0	130.0	7.0	9.0	51.0	60.0
Feb 2005	259.0	288.0	115.0	128.0	7.0	9.0	55.0	60.0
Mar 2005	193.0	291.0	65.0	104.0	9.0	11.0	48.0	53.0

### Ambient Air Quality at Howrah

The WBPCB has been monitoring air quality at four stations in Howrah regularly under the NAMP. The ambient air quality data of the four stations (Howrah Municipal Corporation, Bator, Bandhaghat and Ghusuri) in Howrah, and the graphs corresponding to its annual average concentrations are given hereafter.

Table: 2.2.4

#### AMBIENT AIR QUALITY AT HOWRAH DURING 2004-2005

[SPM Standard: 200 mg/m<sup>3</sup>; RPM Standard: 100 mg/m<sup>3</sup>; SO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>; NO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>]

Para-meters	Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
SPM (mg/m <sup>3</sup> )	HMC	188	212	155	139	135	111	328	456	599	530	477	201
	BAT	120	134	127	105	148	83	145	247	363	342	245	127
	BAN	96	83	94	97	79	61	123	223	307	252	216	164
	GHU	—	—	—	—	—	81	222	377	403	418	375	181

Table 2.1.4 conted...

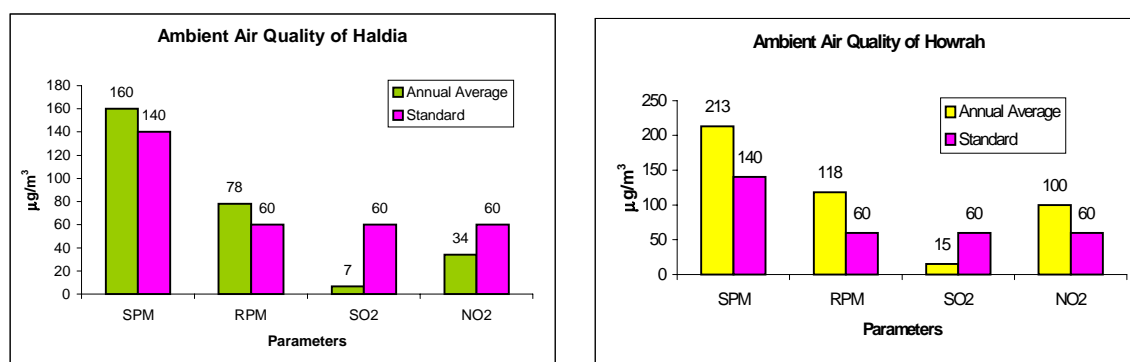
Para- meters	Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
<i>RPM</i> ( $g/m^3$ )	HMC	83	87	57	46	49	64	209	261	361	327	236	79
	BAT	43	56	45	30	62	41	104	173	212	231	159	72
	BAN	46	41	38	33	28	30	83	142	195	178	112	71
	GHU	—	—	—	—	—	46	153	251	271	288	211	103
<i>SO<sub>2</sub></i> ( $g/m^3$ )	HMC	7.3	10.6	10.7	6.9	7.7	5.4	10.5	18.4	36.5	42.2	31.1	18.0
	BAT	5.9	5.4	8.1	6.6	6.4	<4	5.5	8.3	11.8	13.6	9.2	10.4
	BAN	9.9	6.4	11.2	8.1	5.5	4.5	7.1	11.3	37.1	24.7	15.7	11.2
	GHU	—	—	—	—	—	9.8	21.8	42.4	30.4	67.0	48.6	26.5
<i>NO<sub>2</sub></i> ( $g/m^3$ )	HMC	51.9	77.3	79.4	104.0	134.3	66.5	74.0	94.2	131.1	141.0	122.6	101.9
	BAT	68.9	65.8	102.6	89.8	76.5	49.1	66.5	87.9	110.6	123.5	137.5	124.3
	BAN	53.9	68.8	108.4	85.1	112.8	85.0	90.9	134.7	131.6	150.3	128.7	96.3
	GHU	—	—	—	—	—	89.1	98.5	159.7	143.6	135.5	107.1	105.1

HMC : Howrah Municipal Corporation ; BAT : Bator ; BAN : Bandhaghat ; GHU : Ghusuri

FIGURE: 2.2.1

### ANNUAL AVERAGE CONCENTRATIONS OF AMBIENT AIR QUALITY OF HALDIA & HOWRAH DURING 2004-2005

[SPM Standard:  $140 \mu g/m^3$ ; RPM Standard:  $60 \mu g/m^3$ ;  $SO_2$  Standard:  $60 \mu g/m^3$ ;  $NO_2$  Standard:  $60 \mu g/m^3$ ]



### Air Quality Monitoring at Kolkata

The WBPCB is monitoring air quality at Kolkata at 17 stations throughout the year. The parameters monitored are SPM, RPM,  $SO_2$ ,  $NO_2$  and Pb. These stations are distributed evenly throughout the city area representing major areas of the metropolitan city. The monthly average values for SPM, RPM,  $SO_2$ ,  $NO_2$  and Pb, and the graphs corresponding to its monthly average and annual average concentrations during the year 2004-2005 are shown hereafter.

**TABLE: 2.2.5**  
**AMBIENT AIR QUALITY OF KOLKATA DURING 2004-2005**  
 SPM (mg/m<sup>3</sup>) [Standard: 200 mg/m<sup>3</sup>]

Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Dunlop Bridge	259.13	221.04	168.16	139.52	116.16	111.44	144.75	270.28	400.52	390.98	390.14	292.76
Tollygunge	227.45	185.54	147.74	122.54	100.53	88.85	126.11	231.78	358.61	342.05	345.57	264.15
Ultadanga	221.64	214.97	152.10	140.74	117.15	118.47	143.28	259.26	403.44	356.60	364.77	300.29
Picnic Garden	204.05	165.73	136.29	109.24	99.01	91.28	123.14	214.68	364.02	343.95	332.36	240.55
Minto Park	193.75	182.79	131.70	125.05	109.80	95.15	129.36	218.79	379.46	334.17	340.41	282.25
Shya bazar	243.37	198.95	147.74	132.28	115.66	112.54	133.12	276.56	408.69	392.80	365.89	328.06
Beliaghata	223.19	173.66	56.68	121.16	101.96	96.28	121.11	222.49	351.60	326.21	324.57	296.69
Mominpur	225.35	200.86	155.27	132.74	125.22	111.23	135.36	238.56	357.87	332.54	337.10	274.41
Baishnabghata	172.65	163.38	119.20	106.86	94.70	85.12	115.27	186.51	295.19	243.03	276.57	226.65
Tapsia	242.14	207.84	154.78	128.85	120.14	112.90	142.22	258.34	375.81	372.17	377.23	318.36
Salt Lake	200.92	176.09	130.78	112.77	94.99	86.37	116.33	218.21	310.80	310.21	314.38	280.34
Moulali	245.95	214.89	154.67	136.64	122.86	114.92	144.89	279.25	395.95	389.91	378.24	325.46
Behala Chowrasta	251.38	206.19	145.38	134.77	114.97	106.01	139.49	258.42	376.69	361.23	355.53	299.13
Hyde Road	210.50	175.14	143.30	128.53	110.63	108.34	130.27	237.17	341.34	319.93	344.18	272.01
Gariahat	231.80	194.65	144.37	124.14	110.86	106.24	124.75	254.51	374.61	347.93	351.82	297.56
Paribesh Bahwan	82.76	99.02	89.72	62.56	62.53	68.46	98.66	270.55	286.67	216.40	240.64	110.45
Rajbhawan	128.03	129.07	96.61	78.64	60.94	62.91	95.25	290.33	276.21	223.78	143.09	142.86



**TABLE: 2.2.6**  
**AMBIENT AIR QUALITY OF KOLKATA DURING 2004-2005**  
 RPM (mg/m<sup>3</sup>) [Standard: 100 mg/m<sup>3</sup>]

Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Dunlop Bridge	115.26	89.28	76.80	63.96	54.66	56.93	66.42	139.88	245.87	238.08	223.70	150.88
Tollygunge	100.25	71.09	64.28	56.05	48.98	44.60	56.84	118.60	214.91	202.29	201.12	133.14
Ultadanga	95.06	80.64	65.28	59.49	53.67	58.80	65.79	143.05	256.41	223.15	210.19	154.87
Picnic Garden	89.17	61.81	58.58	52.13	42.26	44.20	55.82	110.34	227.73	214.46	185.27	117.55
Minto Park	80.49	67.77	57.76	55.27	49.24	47.63	57.53	112.23	241.20	203.22	195.98	140.83
Shyam bazar	105.95	71.24	64.84	57.94	55.66	54.04	67.21	136.78	265.61	238.69	216.64	175.35
Beliaghata	91.91	61.46	56.68	53.01	46.59	44.64	61.11	121.93	212.07	195.71	190.17	155.39
Mominpur	94.52	77.74	65.86	58.70	54.91	55.39	61.96	129.71	223.81	200.76	193.72	133.61
Baishnabghata	68.87	58.38	50.01	44.55	41.38	43.40	50.78	92.53	172.92	146.02	157.07	108.25
Tapsia	102.21	79.24	69.64	58.33	56.19	55.80	68.28	146.89	245.18	231.31	222.99	157.34
Salt Lake	81.09	60.96	56.45	49.62	43.92	43.56	52.11	120.30	190.82	179.61	182.14	129.97
Moulali	107.32	78.14	70.31	60.77	59.33	58.30	66.34	157.91	255.46	242.00	236.57	159.72
Behala Chowrasta	103.87	77.82	65.80	57.54	57.11	52.18	63.09	142.36	238.69	224.14	212.37	140.55
Hyde Road	83.12	64.63	64.36	55.63	49.66	54.86	63.19	121.84	229.43	189.30	205.59	141.53
Gariahat	97.23	76.46	64.88	56.61	50.15	48.09	59.68	135.75	240.90	211.50	211.70	155.04
Paribesh Bahwan	38.70	41.54	51.58	42.36	33.93	39.25	63.29	168.41	186.04	145.98	127.25	57.05
Rajbhawan	45.88	44.20	42.72	36.72	31.94	33.40	50.42	185.09	214.43	170.95	105.52	55.10

**TABLE: 2.2.7**  
**AMBIENT AIR QUALITY OF KOLKATA DURING 2004-2005**  
 SO<sub>2</sub> (mg/m<sup>3</sup>) [Standard: 80 mg/m<sup>3</sup>]

Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Dunlop Bridge	10.68	11.94	10.19	10.40	6.40	6.55	8.18	18.02	27.75	27.12	24.32	10.76
Tollygunge	4.39	4.50	5.70	4.28	3.01	2.44	4.13	8.86	13.26	10.66	10.13	5.36
Ultadanga	6.85	5.79	5.19	5.73	4.14	4.16	6.59	13.06	19.14	16.51	17.14	6.41
Picnic Garden	4.38	5.52	5.24	4.25	2.99	3.26	4.64	11.45	18.89	14.51	15.82	6.25
Minto Park	4.37	3.85	3.64	3.64	3.09	3.07	4.24	8.01	14.20	14.40	13.18	5.02
Shyam bazar	6.07	4.58	6.22	5.51	3.80	3.46	5.23	12.97	22.20	21.92	17.05	8.84
Beliaghata	4.48	3.47	4.55	4.80	2.95	2.68	5.20	13.46	23.25	19.68	18.66	9.28
Mominpur	4.49	5.05	5.95	5.16	3.75	3.71	5.40	9.85	18.32	15.09	14.64	6.97
Baishnab- ghata	3.73	3.90	3.33	2.98	2.37	2.55	3.15	6.55	10.04	8.58	8.14	3.94
Tapsia	9.82	10.29	7.08	7.49	5.74	5.60	10.04	19.46	29.29	29.21	23.45	12.25
Salt Lake	5.27	4.31	3.90	3.10	2.50	2.52	4.30	8.87	11.96	11.44	10.61	5.68
Moulali	6.46	5.55	4.61	6.85	3.86	4.02	6.37	15.41	25.15	20.59	18.86	9.51
Behala Chowrasta	5.88	4.77	4.98	4.92	3.26	3.89	4.76	11.37	18.68	16.35	15.56	7.77
Hyde Road	4.66	5.45	4.63	5.07	3.69	3.72	5.54	9.71	18.49	15.73	15.05	6.65
Gariahat	3.83	4.30	4.74	4.38	3.17	3.63	4.78	9.59	14.17	13.58	11.63	6.32
Paribesh Bahwan	1.28	0.66	0.66	0.50	2.39	0.87	2.22	16.76	15.47	10.58	15.25	5.00
Rajbhawan	0.41	0.62	0.75	0.10	0.83	0.39	6.20	5.96	16.87	7.69	1.46	1.76

**TABLE: 2.2.8**  
**AMBIENT AIR QUALITY OF KOLKATA DURING 2004-2005**  
 NO<sub>2</sub> (mg/m<sup>3</sup>) [Standard: 80 mg/m<sup>3</sup>]

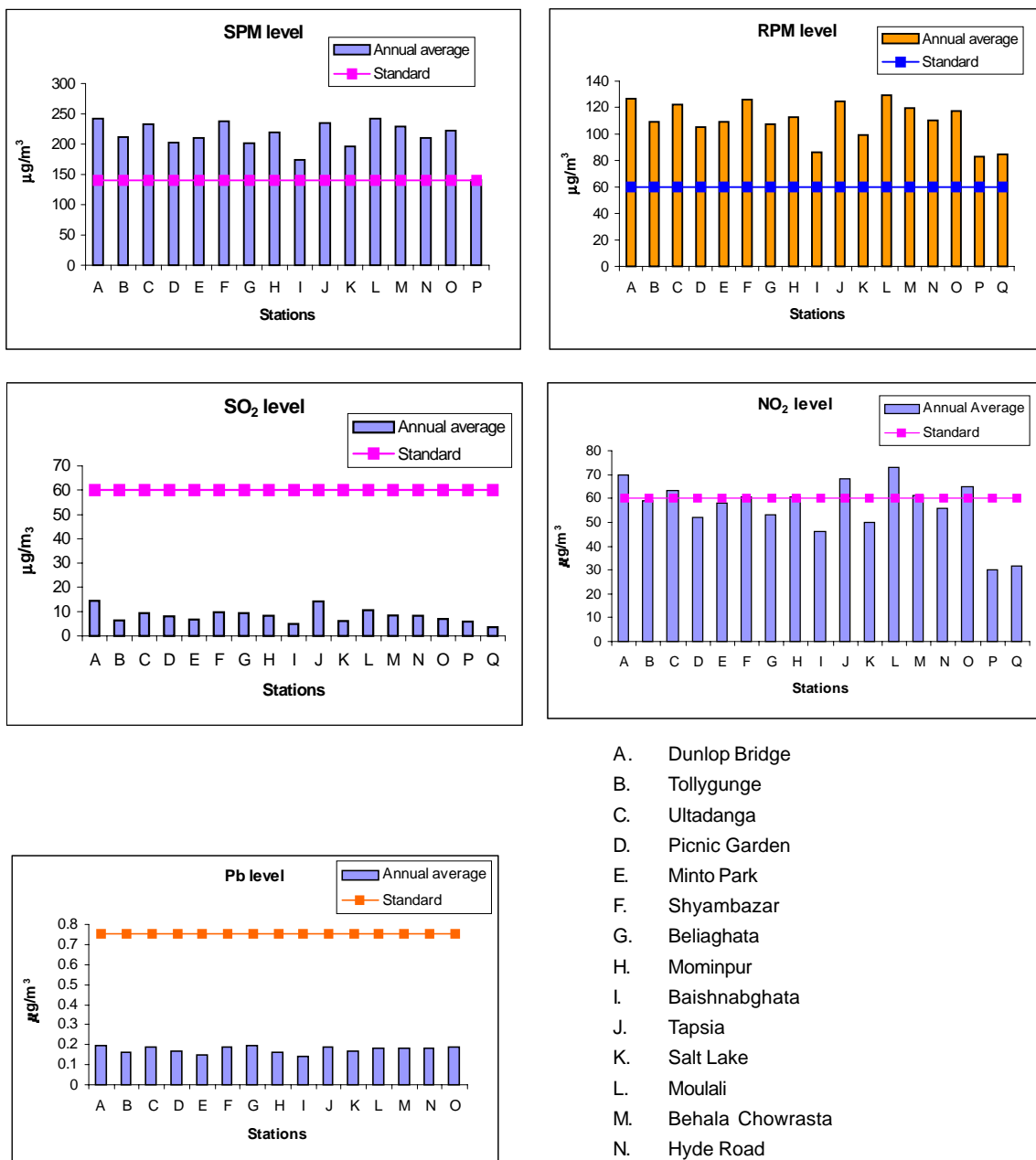
Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Dunlop Bridge	51.39	55.33	56.79	47.38	37.11	37.25	58.96	86.20	117.13	105.89	110.58	71.22
Tollygunge	49.04	57.46	50.39	44.43	29.21	27.96	43.37	73.73	95.59	86.10	88.39	59.84
Ultadanga	57.72	55.16	53.71	46.74	35.38	37.50	47.76	79.19	101.15	92.96	94.97	59.98
Picnic Garden	34.88	33.08	43.19	35.10	25.01	26.96	40.08	72.13	94.40	84.26	82.19	53.16
Minto Park	41.03	47.38	59.55	41.93	32.18	33.28	44.65	68.28	93.82	87.35	88.00	55.38
Shyam- bazar	45.25	46.45	50.99	44.37	30.05	30.67	44.11	76.54	102.16	98.34	93.24	64.44
Beliaghata	39.45	41.25	43.17	34.39	22.44	24.09	39.32	69.94	94.50	85.58	83.49	57.12
Mominpur	44.59	46.04	64.58	44.36	33.93	33.42	48.89	71.65	99.67	94.56	88.67	57.52
Baishnab- ghata	33.79	33.04	41.76	32.17	25.55	25.06	35.53	61.64	72.03	72.75	73.46	47.93
Tapsia	53.82	64.86	54.67	38.16	30.94	36.31	52.18	94.08	112.47	105.00	101.55	71.28
Salt Lake	34.54	37.48	41.57	28.61	23.62	23.84	41.71	74.63	84.48	76.26	75.92	55.93
Moulali	50.71	63.11	63.18	47.77	34.85	39.99	64.12	94.24	118.21	110.57	112.72	75.47
Behala Chowrasta	54.51	54.63	48.17	42.81	30.42	22.59	50.67	79.11	98.06	96.31	88.17	66.61
Hyde Road	34.00	31.64	38.09	43.34	33.18	32.78	44.75	67.50	96.27	91.40	93.46	60.87
Gariahat	42.80	48.11	52.65	43.19	28.92	36.09	51.46	84.52	112.74	102.17	103.62	70.17
Paribesh Bhawan	1.57	1.13	2.22	13.50	18.95	14.26	29.23	55.88	64.85	50.24	79.98	31.23
Rajbhawan	2.88	2.78	4.00	30.03	33.92	26.56	31.58	42.34	57.84	68.41	47.19	30.73

**TABLE: 2.2.9**  
**AMBIENT AIR QUALITY OF KOLKATA DURING 2004-2005**  
Pb (mg/m<sup>3</sup>) [Standard: 1.0 mg/m<sup>3</sup>]

Stations	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Dunlop Bridge	0.22	0.17	0.19	0.13	0.19	0.11	0.17	0.23	0.25	0.25	0.20	0.19
Tollygunge	0.14	0.16	0.17	0.10	0.11	0.11	0.19	0.18	0.19	0.21	0.20	0.19
Ultadanga	0.22	0.12	0.17	0.15	0.15	0.17	0.22	0.23	0.24	0.24	0.18	0.16
Picnic Garden	0.19	0.14	0.17	0.14	0.12	0.12	0.13	0.19	0.21	0.23	0.18	0.18
Minto Park	0.10	0.08	0.08	0.11	0.10	0.09	0.16	0.22	0.22	0.22	0.21	0.19
Shyam-bazar	0.21	0.19	0.20	0.17	0.16	0.15	0.16	0.23	0.24	0.24	0.17	0.16
Beliaghata	0.16	0.19	0.19	0.19	0.15	0.17	0.14	0.21	0.24	0.27	0.21	0.19
Mominpur	0.19	0.12	0.15	0.14	0.11	0.11	0.18	0.19	0.20	0.20	0.18	0.15
Baishnab-ghata	0.12	0.10	0.09	0.07	0.07	0.14	0.16	0.20	0.20	0.21	0.19	0.16
Tapsia	0.18	0.18	0.19	0.16	0.18	0.19	0.11	0.22	0.25	0.24	0.20	0.19
Salt Lake	0.12	0.21	0.18	0.13	0.11	0.12	0.11	0.22	0.23	0.22	0.17	0.17
Moulali	0.19	0.17	0.18	0.11	0.15	0.15	0.15	0.23	0.23	0.25	0.20	0.20
Behala Chowrasta	0.16	0.14	0.21	0.13	0.15	0.15	0.18	0.22	0.24	0.22	0.17	0.18
Hyde Road	0.12	0.13	0.17	0.16	0.14	0.10	0.18	0.20	0.26	0.26	0.22	0.20
Gariahat	0.18	0.19	0.17	0.14	0.13	0.20	0.16	0.23	0.24	0.25	0.22	0.18
Paribesh Bhawan	—	—	—	—	—	—	—	—	—	—	—	—
Rajbhawan	—	—	—	—	—	—	—	—	—	—	—	—

**FIGURE 2.2.2**  
**ANNUAL AVERAGE CONCENTRATIONS OF AMBIENT AIR QUALITY OF KOLKATA**  
**DURING 2004-2005**

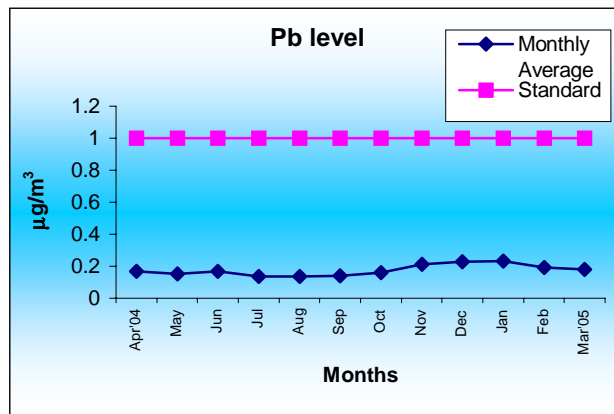
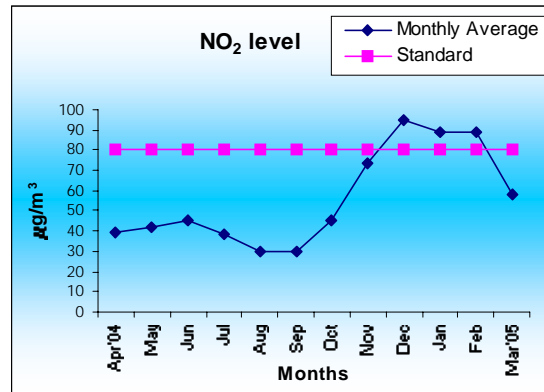
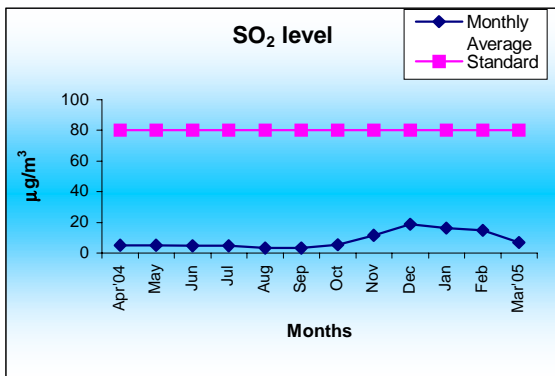
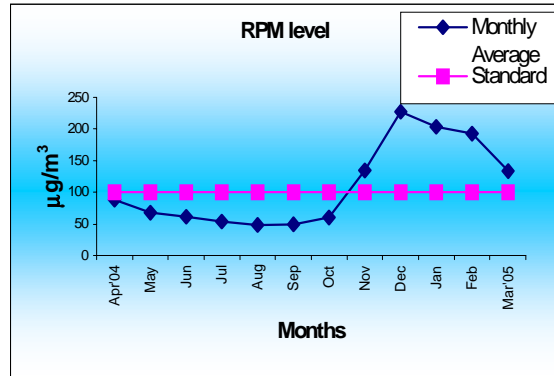
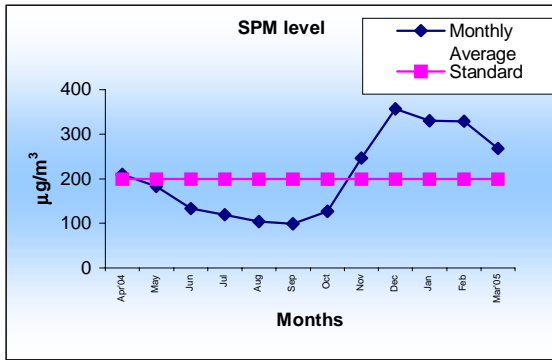
[SPM Standard: 140  $\mu\text{g}/\text{m}^3$ ; RPM Standard: 60  $\mu\text{g}/\text{m}^3$ ;  $\text{SO}_2$  Standard: 60  $\mu\text{g}/\text{m}^3$ ;  
 $\text{NO}_2$  Standard: 60  $\mu\text{g}/\text{m}^3$ , Pb Standard: 0.75  $\mu\text{g}/\text{m}^3$ ]



- A. Dunlop Bridge
- B. Tollygunge
- C. Ultadanga
- D. Picnic Garden
- E. Minto Park
- F. Shyambazar
- G. Beliaghata
- H. Mominpur
- I. Baishnabghata
- J. Tapsia
- K. Salt Lake
- L. Moulali
- M. Behala Chowrasta
- N. Hyde Road
- O. Gariahat

**FIGURE 2.2.3**  
**MONTHLY AVERAGE CONCENTRATIONS OF AMBIENT AIR QUALITY OF KOLKATA**  
**DURING 2004-2005**

[SPM Standard: 200  $\mu\text{g}/\text{m}^3$ ; RPM Standard: 100  $\mu\text{g}/\text{m}^3$ ;  $\text{SO}_2$  Standard: 80  $\mu\text{g}/\text{m}^3$ ;  
 $\text{NO}_2$  Standard: 80  $\mu\text{g}/\text{m}^3$ , Pb Standard: 1.0  $\mu\text{g}/\text{m}^3$ ]



### Air Quality Monitoring in major towns

The WBPCB monitors air quality at major towns and industrial areas of the state during winter season every year. During the winter season in 2004-2005, the Board monitored air quality at 22 stations throughout the state. The levels of SPM, RPM, SO<sub>2</sub> and NO<sub>2</sub> during the winter season, and the graphs corresponding to its monthly average concentrations are shown below :

**TABLE: 2.2.10**

**AMBIENT AIR QUALITY OF MAJOR DISTRICT TOWNS DURING 2004-2005**  
[SPM Standard: 200 mg/m<sup>3</sup>; RPM Standard: 100 mg/m<sup>3</sup>]

Stations	SPM (mg/m <sup>3</sup> )				RPM (mg/m <sup>3</sup> )			
	Dec 2004	Jan 2005	Feb 2005	Mar 2005	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Budge Budge	297.50	232.71	123.56	96.27	177.78	130.00	67.95	50.98
Dum Dum	301.38	295.73	191.48	97.33	172.45	171.20	108.62	52.93
Belgharia	188.50	366.15	214.90	155.95	113.53	213.31	112.99	83.90
Barrackpore	240.13	251.71	176.51	152.87	144.80	141.90	98.67	87.46
Khardah	509.40	329.65	190.59	164.82	300.58	191.91	106.74	93.03
Naihati	567.55	370.98	272.54	161.85	327.55	221.11	158.21	90.81
Kalyani	379.73	272.88	168.19	106.02	220.57	154.43	93.36	63.21
Gayeshpur	195.43	253.73	172.73	137.60	113.15	146.10	95.64	76.36
Krishnanagar	239.52	229.04	163.44	110.03	133.40	129.44	91.93	59.56
Liluah	390	443	349	251	245	308	233	126
Dankuni	511	597	526	441	319	345	238	208
Tribeni	225	238	170	138	153	149	101	74
Kolaghat	271	284	363	312	187	190	309	88
Mangalpur 1	380	354.63	249	294	222	198.13	126	130
Mangalpur 2	664	569.88	632	749	335.5	280.8	286	338
Angadpur	655.5	429.3	394	448	325	223.6	175	187
Bardhaman	432.5	387.4	270	247	214.5	182.9	108	88
Bankura	317	279.4	193	185	171.5	142.5	84	70
Purulia	206.5	266.5	169	172	108.5	134.9	77	73
Malda	414.0	480.4	514.3	435.8	176.8	200.1	155.5	160.5
Siliguri 1	204.9	243.9	332.8	271.1	96.5	114.5	110.2	101.4
Siliguri 2	452.5	396.9	515.6	682.8	234.9	221.9	242.8	300.6

**TABLE: 2.2.11**  
**AMBIENT AIR QUALITY OF MAJOR DISTRICT TOWNS DURING 2004-2005**  
 [SO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>; NO<sub>2</sub> Standard: 80 mg/m<sup>3</sup>]

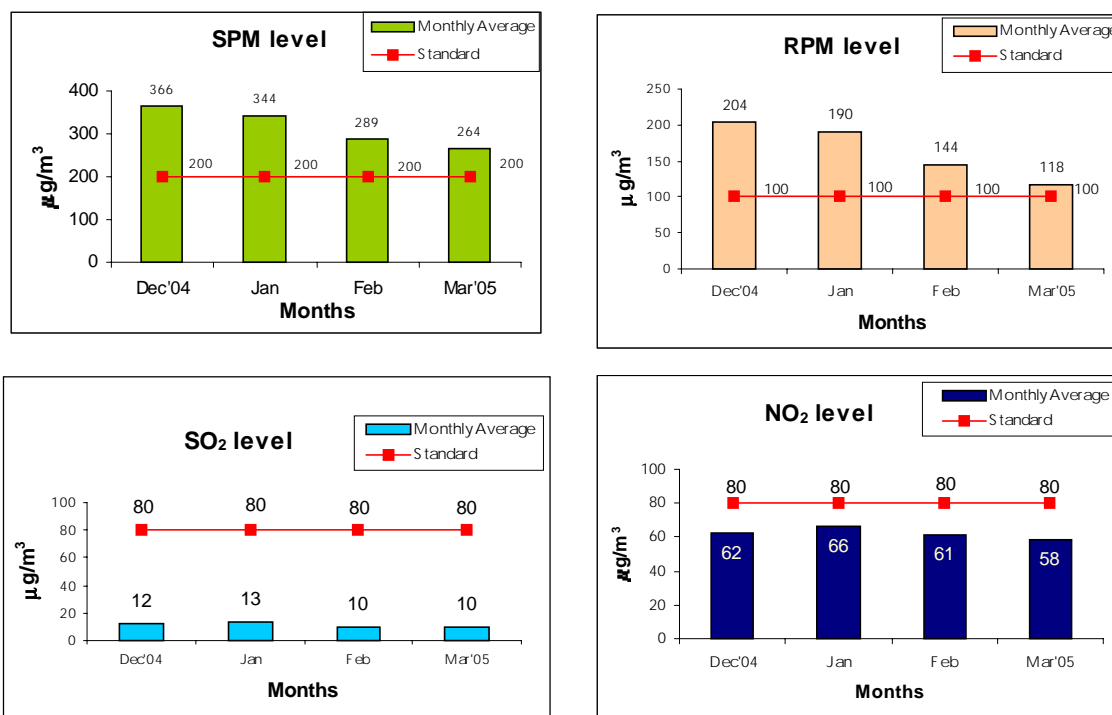
Stations	SO <sub>2</sub> (mg/m <sup>3</sup> )				NO <sub>2</sub> (mg/m <sup>3</sup> )			
	Dec 2004	Jan 2005	Feb 2005	Mar 2005	Dec 2004	Jan 2005	Feb 2005	Mar 2005
Budge Budge	6.81	6.65	7.58	9.98	51.92	46.34	43.43	36.45
Dum Dum	10.42	9.73	9.11	9.26	66.04	63.61	62.88	56.50
Belgharia	11.23	19.03	11.18	13.28	58.53	76.43	81.96	74.06
Barrackpore	10.40	7.36	7.97	9.70	73.82	58.74	67.54	78.78
Khardah	14.08	9.02	11.24	10.18	67.63	54.24	60.51	52.95
Naihati	11.73	9.55	7.81	8.47	64.58	72.12	72.39	63.59
Kalyani	7.23	8.02	6.15	6.48	57.58	60.04	48.15	43.18
Gayeshpur	12.00	8.04	6.65	6.43	48.78	55.99	50.17	41.20
Krishnanagar	5.01	5.71	4.96	5.16	32.43	34.88	30.68	33.14
Liluah	37.3	65.9	47.1	28.1	120.4	151.6	126.2	131.6
Dankuni	12.1	13.6	9.3	4.9	85.0	102.1	89.6	91.2
Tribeni	21.4	16.7	10.4	8.6	119.3	104.3	78.7	67.1
Kolaghat	17.8	20.6	10.8	9.4	94.5	116.6	85.9	80.9
Mangalpur 1	6.8	8.2	5.7	6.5	57.3	68.3	68.1	58.4
Mangalpur 2	12.7	9.9	9.2	7.7	65.4	72.5	74.2	65.8
Angadpur	15.7	11.5	11.2	12.7	63.3	66.4	50.3	49.5
Bardhaman	4.7	4.9	4.7	5.5	48.8	54.6	55.3	52.7
Bankura	4.7	4.8	4.8	5.3	49.8	56.6	51.4	52.1
Purulia	4.7	4.7	4.5	5.1	48.1	53.6	48.7	46.7
Malda	14.3	13.2	11.8	11.3	35.1	32.6	26.8	26.6
Siliguri 1	10.6	9.8	9.4	9.5	21.0	20.1	19.6	21.7
Siliguri 2	15.6	15.4	15.8	17.9	38.4	36.1	38.6	47.8



FIGURE 2.2.4

**MONTHLY AVERAGE CONCENTRATIONS OF AMBIENT AIR QUALITY  
OF MAJOR DISTRICT TOWNS DURING 2004-2005**

[SPM Standard: 200  $\mu\text{g}/\text{m}^3$ ; RPM Standard: 100  $\mu\text{g}/\text{m}^3$ ;  $\text{SO}_2$  Standard: 80  $\mu\text{g}/\text{m}^3$ ;  $\text{NO}_2$  Standard: 80  $\mu\text{g}/\text{m}^3$ ]



**Report of assessment of Air Pollution Survey in Kolkata during Kali Puja festival in 2004**

The ambient air quality monitoring for measurements of  $\text{NO}_x$ ,  $\text{SO}_2$ , SPM and RPM were conducted in specific locations in Kolkata city during the festive days for twenty-four hours. The measurements were made following the standard methodology to determine the concentration of pollutants in ambient air.

The results of air pollution survey are as follows:

- The levels of nitrogen and sulphur found to be within the permissible limits.
- The total suspended particulate matter (SPM) and respirable particulate matter (RPM) exceeded the permissible limit on Kali Puja in 2004 and 2003. However, these levels sharply increased in Diwali 2004 as compared to 2003.

TABLE 2.2.12

Ambient Average Air Quality of Kolkata during 2003 & 2004

Parameter ( $\mu\text{g}/\text{m}^3$ )	Diwali		Kali Puja		Residential Standard
	2003	2004	2003	2004	
SPM	144	233	246	243	200
RPM	74	125	133	129	100
$\text{SO}_2$	11	16	15	19	80
$\text{NO}_x$	46	74	50	77	80

## WATER QUALITY MONITORING

### National Water Quality Monitoring Programme

The Board is presently monitoring the water quality of River Ganga and its tributaries at 15 locations under the Monitoring of Indian National Aquatic Resources (MINARS)/Global Environment Monitoring System (GEMS) projects. Out of these 15 stations, nine stations were on River Ganga, four on River Damodar and one station each on River Barakar and River Rupnarayan. Besides, the Board also monitored the water quality of National Lake, Rabindra Sarobar.

### Water pollution monitoring of important rivers of West Bengal

Water pollution monitoring is done to assess the water quality of rivers and other water bodies, which is being continuously polluted as a result of developmental activities. The data collected by water pollution monitoring may also be used as reference data to examine the cause of pollution.

The WBPCB regularly monitors water quality of rivers, such as Hooghly, Damodar, Barakar

TABLE: 2.2.13

#### RIVER WATER QUALITY MONITORING DURING 2004-2005 – RIVER HOOGLY

Biochemical Oxygen Demand (mg/l) [Standard: BOD: 3 mg/l]

Stations		Biochemical Oxygen Demand ( in mg/l )											
		Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
Berhampore	SA	1.30	1.2	1.3	2.3	1.6	1.6	1.6	1.8	1.5	1.2	1.4	1.85
	SB	1.20	1.3	1.5	1.7	1.7	1.5	2.05	1.85	2.05	1.7	1.8	2.2
Palta	HT	1.90	2.25	1.75	1.9	2.05	2.1	1.7	1.9	1.95	1.3	3.2	2.2
	LT	2.10	2.35	2.35	2.45	2.15	2.35	2.1	2.4	2.35	2.3	2.2	2.45
Srirampore	HT	3.45	-	-	5.45	-	-	1.50	-	-	2.60	-	-
	LT	2.45	-	-	2.65	-	-	2.20	-	-	2.30	-	-
Howrah (Shibpur)	HT	2.90	-	-	1.00	-	-	2.15	-	-	4.00	-	-
	LT	2.70	-	-	1.90	-	-	2.20	-	-	2.88	-	-
Gardenrich	HT	3.10	-	-	2.50	-	-	2.90	-	-	2.80	-	-
	LT	4.20	-	-	2.85	-	-	1.95	-	-	3.05	-	-
Dakshineswar	HT	4.25	4.60	4.50	2.80	3.90	2.55	4.70	3.30	3.30	6.43	4.00	1.85
	LT	3.15	5.00	3.00	1.50	3.30	2.80	3.25	3.33	3.23	3.75	2.85	2.90
Uluberia	HT	19.87	3.95	1.05	2.88	1.80	4.15	2.60	5.45	2.70	3.10	4.80	3.55
	LT	4.95	1.50	4.60	2.08	1.35	3.60	3.30	5.25	1.20	2.63	5.60	2.25
Diamond Harbour	HT	0.70	-	-	1.55	-	-	1.65	-	-	2.00	-	-
	LT	3.30	-	-	1.15	-	-	1.60	-	-	1.60	-	-

SA = Side A, SB = Side B, HT = High Tide, LT = Low Tide

and Rupnarayan by analysing the physico-chemical, bacteriological and biological parameters. Under the Ganga Action Plan (GAP), the Board monitors the water quality of river Hooghly and under the Monitoring of Indian National Aquatic Resources (MINARS) programme, the Board monitors the water quality of the rivers Damodar, Barakar and Rupnarayan. The river water samples are collected every month from eight stations of river Hooghly, four stations of river Damodar, one station of river Barakar and one station of river Rupnarayan.

### River Hooghly

In West Bengal, the Hooghly River is the major river for monitoring the impact of pollution caused by various domestic and industrial activities. The water quality of river Hooghly is being monitored starting from Berhampore (upstream) to the end point Diamond Harbour (downstream). The other six locations are Palta, Sreerampore, Dakshineswar, Howrah (Shibpur), Garden Reach and Uluberia. The monitoring is done both during high tide and low tide. The levels of Biochemical Oxygen Demand (BOD),

TABLE: 2.2.14

#### RIVER WATER QUALITY MONITORING DURING 2004-2005 – RIVER HOOGLY

Dissolved Oxygen (mg/l) [Standard: DO: 4 mg/l]

Stations		Dissolved Oxygen ( ni mg/l )											
		Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
Berhampore	SA	6.80	6.9	6.5	6.7	6.9	6.8	6.0	7.3	6.8	8.2	7.0	8.0
	SB	6.70	6.8	6.7	6.6	6.7	6.9	6.6	7.7	7.0	8.1	7.4	8.1
Palta	HT	7.00	6.1	6.3	6.5	5.8	5.8	6.3	5.9	7.9	8.7	8.7	7.4
	LT	7.30	6.0	6.5	6.6	5.6	5.7	5.7	6.4	7.8	8.8	8.4	6.8
Srirampore	HT	8.00	-	-	6.50	-	-	6.00	-	8.60	-	-	-
	LT	7.70	-	-	6.60	-	-	5.50	-	8.40	-	-	-
Howrah ( Shibpur )	HT	5.20	-	-	4.90	-	-	5.75	-	8.70	-	-	-
	LT	5.60	-	-	4.70	-	-	5.70	-	8.05	-	-	-
Gardenrich	HT	5.40	-	-	4.80	-	-	6.20	-	8.35	-	-	-
	LT	5.50	-	-	5.30	-	-	5.90	-	8.70	-	-	-
Dakshineswar	HT	6.30	4.90	5.50	4.20	4.50	4.8	4.95	7.00	5.50	8.05	7.55	7.80
	LT	6.60	5.00	5.50	5.20	5.10	5.0	5.80	7.10	6.25	8.70	8.15	7.25
Uluberia	HT	6.40	5.05	4.50	5.70	4.50	4.85	5.20	6.45	6.00	6.55	7.35	6.75
	LT	6.35	4.85	4.60	5.60	4.50	4.60	4.30	6.00	6.30	7.60	7.35	6.25
Diamond Harbour	HT	6.30	-	-	6.50	-	-	5.00	-	6.90	-	-	-
	LT	6.50	-	-	6.50	-	-	5.00	-	6.80	-	-	-

SA = Side A, SB = Side B, HT = Tide, LT = Low Tide

TABLE: 2.2.15

**RIVER WATER QUALITY MONITORING DURING 2004-2005 – RIVER HOOGHLY**  
Total Coliform (in MPN) [Standard: TC: 5000 Most Probable Number (MPN)/100 ml]

Stations		Total Coliform (in 100 MPN ( Most probable Number ) /100 ml )											
		Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
Berhampore	SA	11000	11000	22000	17000	28000	17000	50000	30000	13000	22000	17000	23000
	SB	9000	17000	13000	22000	35000	24000	30000	24000	14000	24000	21000	30000
Palta	HT	33000	140000	170000	110000	110000	130000	130000	130000	70000	90000	150000	130000
	LT	50000	170000	220000	170000	130000	110000	170000	140000	90000	110000	115000	170000
Srirampore	HT	135000	-	-	150000	-	-	85000	-	-	85000	-	-
	LT	250000	-	-	110000	-	-	1100000	-	-	110000	-	-
Howrah (Shibpur)	HT	450000	-	-	70000	-	-	250000	-	-	350000	-	-
	LT	400000	-	-	400000	-	-	350000	-	-	150000	-	-
Gardenrich	HT	550000	-	-	250000	-	-	250000	-	-	400000	-	-
	LT	700000	-	-	130000	-	-	700000	-	-	250000	-	-
Dakshineswar	HT	850000	235000	850000	165000	850000	85000	1750000	135000	4500000	850000	85000	85000
	LT	550000	85000	350000	1400000	650000	400000	150000	700000	170000	650000	35000	2500000
Uluberia	HT	350000	39000	14000	900000	110000	220000	500000	11000	170000	70000	110000	11000
	LT	700000	33000	170000	140000	30000	900000	900000	22000	110000	50000	11000	50000
Diamond Harbour	HT	110000	-	-	17000	-	-	14000	-	-	7000	-	-
	LT	80000	-	-	80000	-	-	26000	-	-	17000	-	-

SA = Side A, SB = Side B, HT = High Tide, LT = Low Tide;

**TABLE: 2.2.16**  
**RIVER WATER QUALITY MONITORING DURING 2004-2005 –**  
**RIVER HOOGLHY**  
 Faecal Coliform (in MPN) [Standard: FC: 500 MPN (Most Probable Number) /100 ml]

Stations		Fecal Coliform (in 100 MPN ( Most probable Number ) /100 ml )											
		Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
Berhampore	SA	6000	7000	9000	9000	13000	5000	11000	13000	8000	11000	8000	8000
	SB	4000	8000	8000	6000	17000	7000	14000	17000	7000	14000	11000	11000
Palta	HT	13000	80000	50000	50000	50000	50000	80000	50000	22000	50000	65000	50000
	LT	17000	110000	60000	70000	60000	70000	90000	70000	30000	60000	40000	80000
Srirampore	HT	85000	-	-	55000	-	-	70000	-	-	55000	-	-
	LT	150000	-	-	65000	-	-	65000	-	-	55000	-	-
Howrah (Shibpur)	HT	25000	-	-	45000	-	-	105000	-	-	55000	-	-
	LT	350000	-	-	55000	-	-	110000	-	-	40000	-	-
Gardenrich	HT	350000	-	-	55000	-	-	115000	-	-	110000	-	-
	LT	450000	-	-	110000	-	-	350000	-	-	85000	-	-
Dakshineswar	HT	550000	85000	170000	55000	165000	55000	550000	85000	850000	170000	55000	40000
	LT	400000	55000	85000	550000	135000	150000	650000	350000	110000	165000	20000	165000
uluberia	HT	250000	21000	9000	110000	26000	80000	110000	8000	27000	21000	22000	4000
	LT	130000	24000	50000	33000	23000	110000	54000	17000	33000	22000	7000	17000
Diamond Harbour	HT	23000	-	-	11000	-	-	7000	-	-	4000	-	-
	LT	50000	-	-	22000	-	-	14000	-	-	7000	-	-

SA = Side A, SB = Side B, HT = High Tide, LT = Low Tide;

**FIGURE 2.2.5**  
**MONTHLY AVERAGE CONCENTRATIONS OF BIOCHEMICAL OXYGEN DEMAND**  
 DURING 2004-2005- HOOGHLY [Standard: BOD: 3 mg/l]

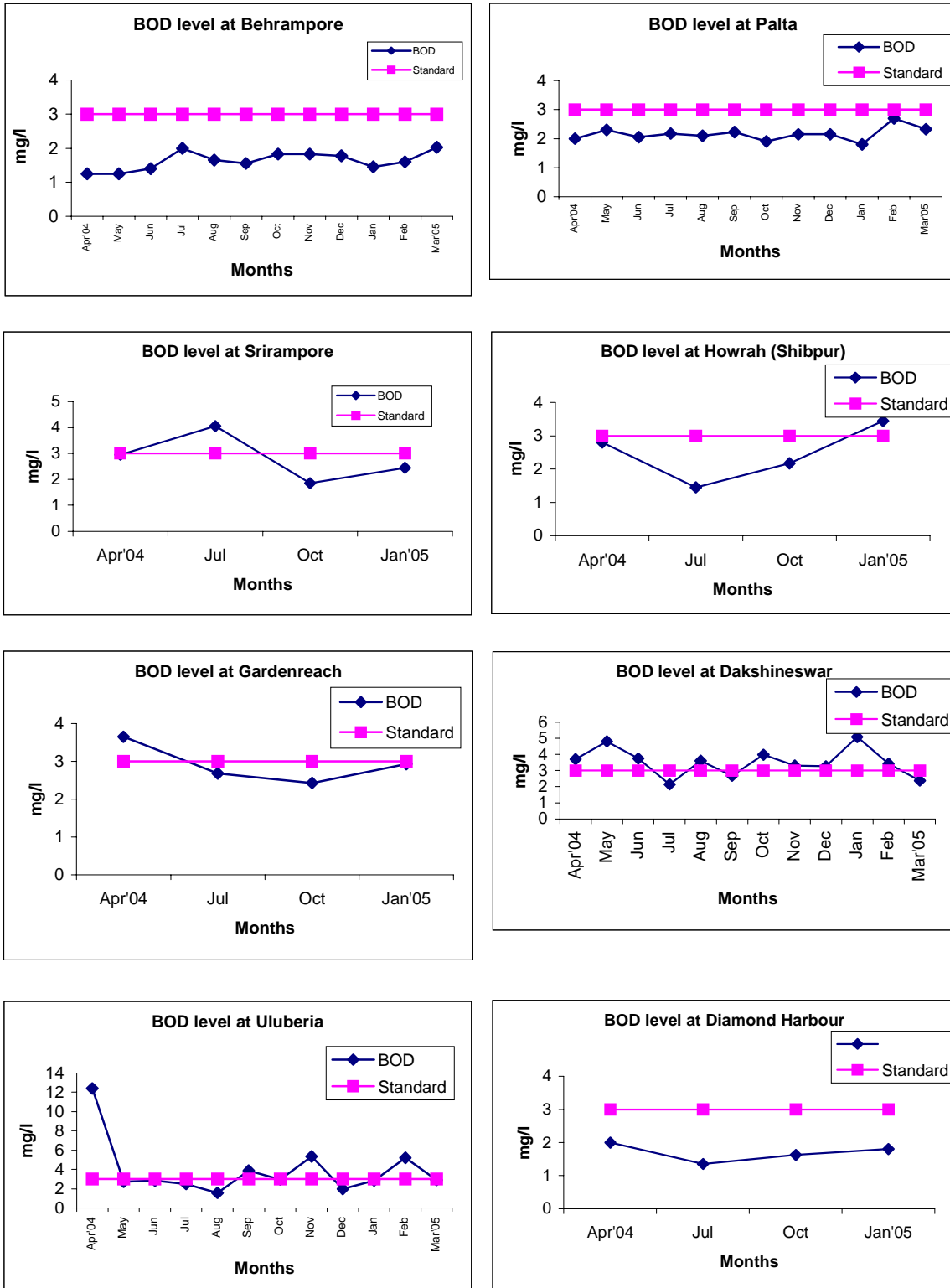
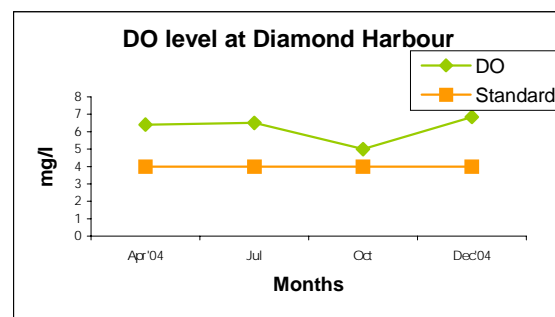
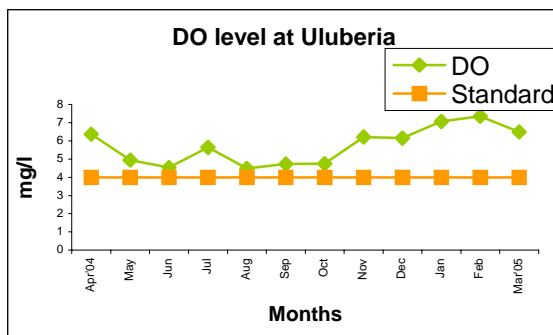
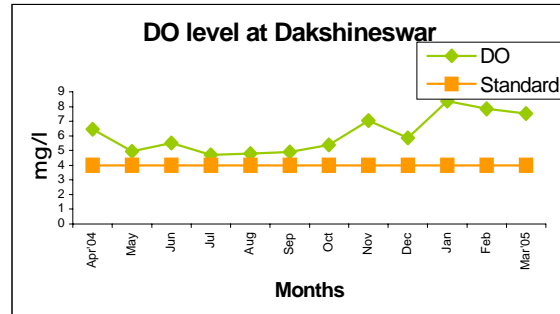
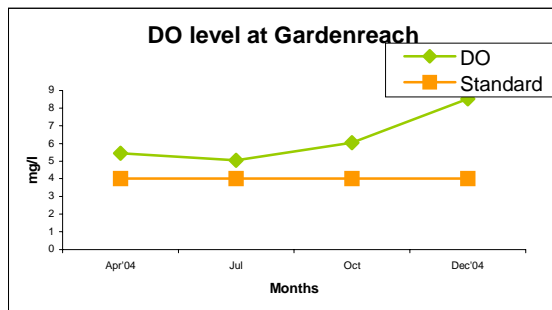
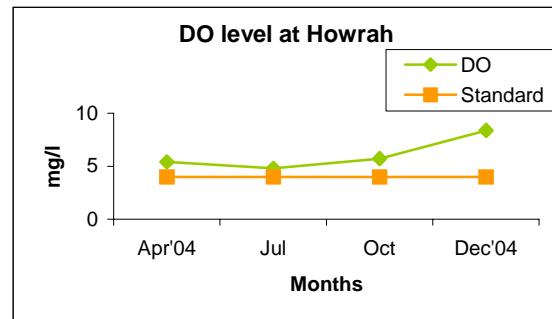
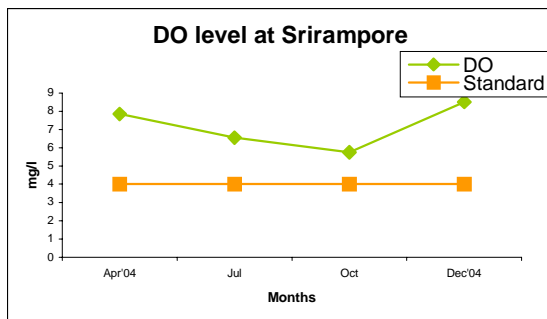
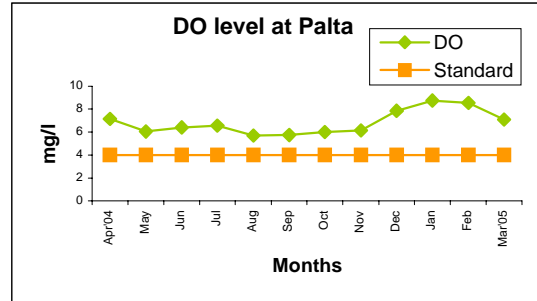
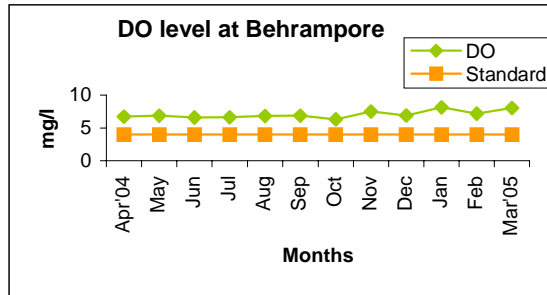
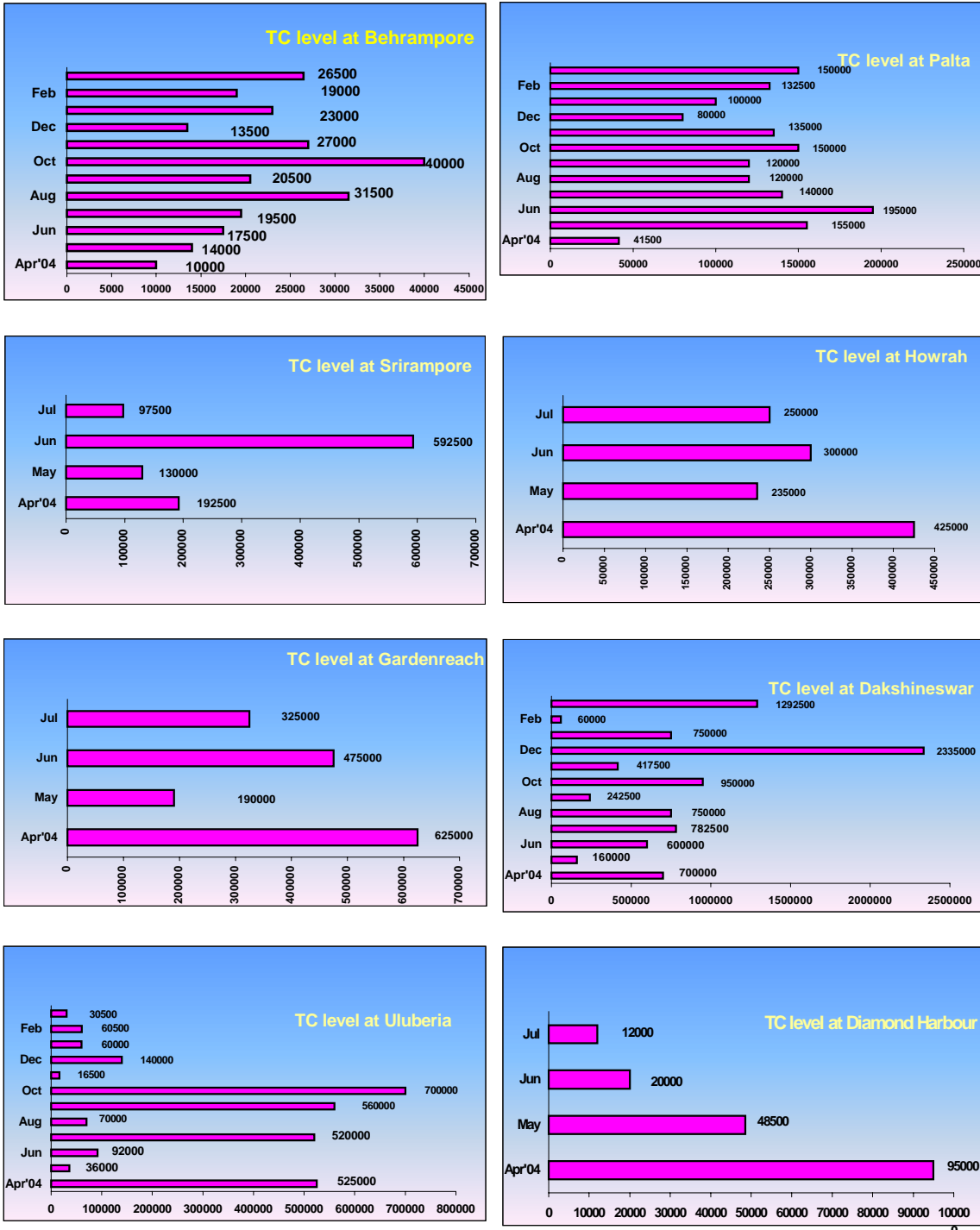


FIGURE 2.2.6  
MONTHLY AVERAGE CONCENTRATIONS OF DISSOLVED OXYGEN  
DURING 2004-2005- HOOGHLY [DO Standard: 4 mg/l]

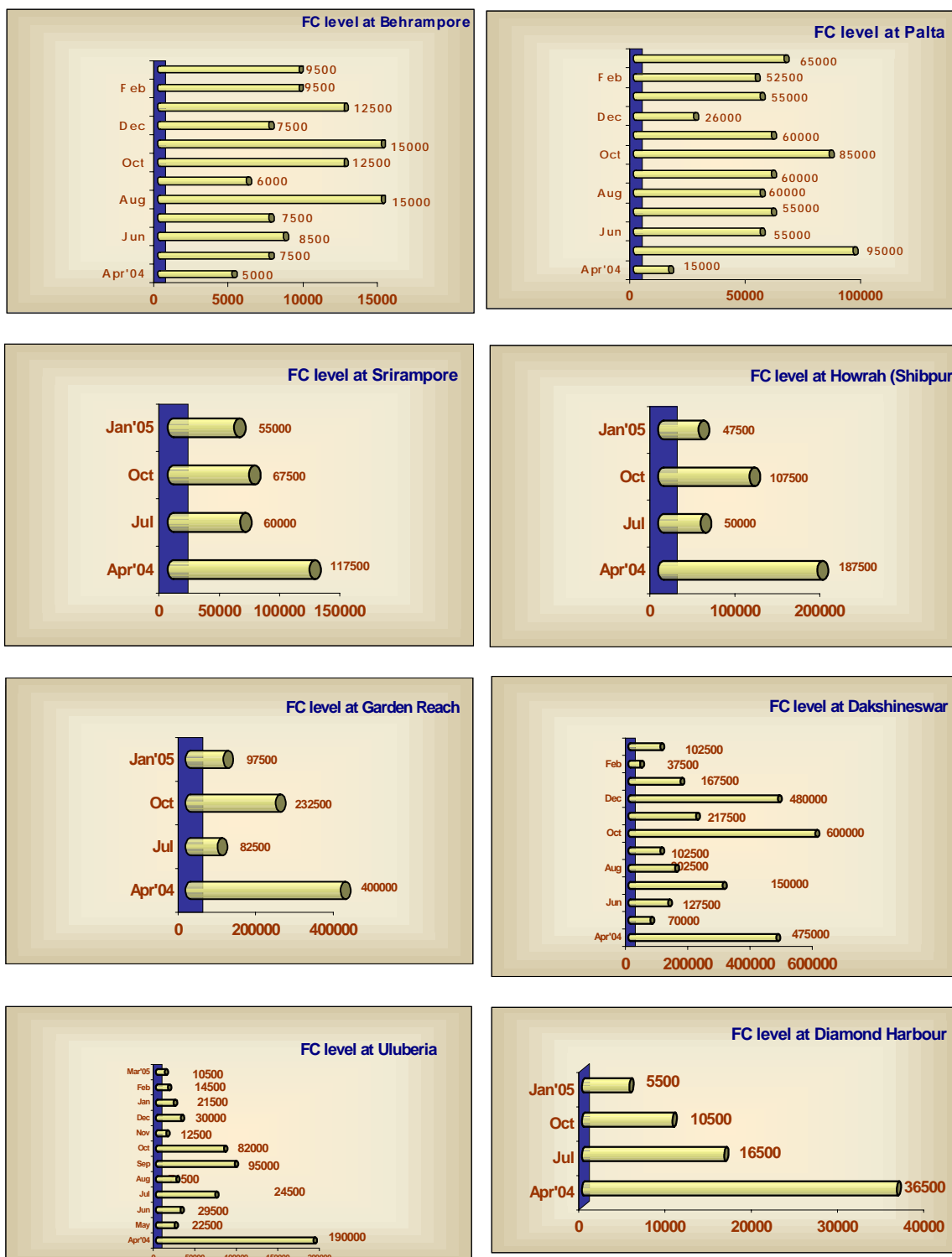


**FIGURE 2.2.7**  
**MONTHLY AVERAGE COUNT OF TOTAL COLIFORM**  
 DURING 2004-2005- HOOGHLY [Standard TC: 5000 MPN (Most Probable Number) per 100 ml]





**FIGURE 2.2.8**  
**MONTHLY AVERAGE COUNT OF FAECAL COLIFORM**  
 DURING 2004-2005- HOOGHLY [Standard FC: 500 MPN per 100 ml]



Dissolved Oxygen (DO), Total Coliform bacteria (TC) and Faecal Coliform bacteria (FC), as found during the monitoring of the Hooghly river water in the year 2004-2005, are illustrated in the given tables. In the year 2004-2005, the average concentrations of BOD at most of the locations in the river were found to be below the maximum permissible limit of 3 mg/l and the level of DO was always found to be above the minimum permissible limit of 4 mg/l. This indicates that the quality of the river water is

suitable for aquatic life. However, the water quality in terms of the bacteriological parameters was found to be unsafe for human consumption.

The river water quality data of the different monitoring stations of river Hooghly, and the graphs corresponding to its annual average and monthly average concentrations are given below.

### River Damodar

The river Damodar is being monitored at four locations, namely Dishergarh, downstream

**TABLE: 2.2.17**  
**RIVER WATER QUALITY MONITORING DURING 2004-2005**  
**RIVER DAMODAR**

[Standards: BOD: 3 mg/l; DO: 4 mg/l; TC: 5000 MPN/100 ml; FC: 500 MPN/100 ml]

Para - meters	Stations	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
BOD (mg/l)	Dishergarh	0.30	0.4	0.6	0.7	0.8	0.9	0.7	0.6	0.7	0.6	0.8	0.4
	Downstream of IISCO	0.30	0.5	0.5	0.6	0.6	0.8	0.9	0.7	0.8	0.7	1.2	1.0
	Narainpur	0.40	0.3	0.6	0.8	0.7	0.7	0.8	0.6	0.6	1.0	0.9	1.1
	Mujher Mana village	1.10	1.3	1.2	1.0	1.2	1.1	1.3	1.4	1.1	1.5	1.7	3.3
DO (mg/l)	Dishergarh	7.60	7.5	7.9	8.1	7.6	7.6	8.3	8.2	8.7	8.7	7.8	8.4
	Downstream of IISCO	7.70	7.8	7.8	8.0	7.6	7.9	8.1	8.0	7.7	8.5	8.2	8.5
	Narainpur	7.50	7.3	7.8	7.9	7.5	7.8	8.0	7.9	8.8	8.8	8.0	8.0
	Mujher Mana village	3.90	3.6	3.6	4.1	5.2	5.0	5.3	5.6	6.1	6.3	6.7	6.2
TC (in 100 MPN/100ml)	Dishergarh	3300	13000	11000	22000	90000	2200	13000	8000	17000	1300	8000	2300
	Downstream of IISCO	3300	13000	7000	11000	17000	3000	13000	14000	17000	1300	1300	1300
	Narainpur	50000	17000	11000	11000	22000	3000	3300	5000	8000	8000	2200	1300
	Mujher Mana village	10000	16000	44000	44000	30000	26000	34000	100000	28000	17000	13000	35000
FC (in 100 MPN/100ml)	Dishergarh	800	1700	700	8000	30000	1300	2700	800	1300	200	2300	400
	Downstream of IISCO	700	2700	1100	2200	8000	800	8000	2100	400	400	200	200
	Narainpur	13000	2200	2300	1400	8000	1700	2200	700	800	1400	700	3000
	Mujher Mana village	34000	6000	16000	6600	26000	16000	5400	3400	3300	1400	800	28000

of IISCO, Narainpur and Mujher Mana village. The levels of BOD, DO, TC and FC as found during the monitoring of the Damodar river water in the year 2004-2005 are illustrated below.

During the year in question, the average concentrations of BOD monitored at four locations in the river Damodar were found to be below the maximum permissible limit of 3 mg/l and the level of DO was found to be above the minimum permissible limit of 4 mg/l.

The water quality data of the different monitoring stations of river Damodar are tabulated below.

#### River Barakar

The levels of BOD, DO, TC and FC, as found during the monitoring of the Barakar river water in the year 2004-2005 are illustrated below. In the year under review, the BOD and DO concentrations at the water intake point near Asansol for river Barakar were found to be well within the permissible limit.

**TABLE: 2.2.18**

**RIVER WATER QUALITY MONITORING DURING 2004-2005 – RIVER BARAKAR**

[Standards: BOD: 3 mg/l; DO: 4 mg/l; TC: 5000 MPN/100 ml; FC: 500 MPN/100 ml]

Parameters	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
BOD (mg/l)	0.6	-	-	0.6	-	-	0.9	-	-	0.7	-	-
DO (mg/l)	7.1	-	-	7.3	-	-	7.9	-	-	8.0	-	-
TC (in 100 MPN/ml)	26000	-	-	100000	-	-	180000	-	-	16000	-	-
FC (in 100 MPN/ml)	1400	-	-	14000	-	-	16000	-	-	3400	-	-

#### River Rupnarayan

The levels of BOD, DO, TC and FC, as found during the monitoring of the Rupnarayan river water in the year 2004-2005 are illustrated below. In the year under review, the BOD and DO concentrations at Geonkhali, the point before confluence of river Rupnarayan & river Hooghly, was found to be well within the permissible limit.

**TABLE: 2.2.19**

**RIVER WATER QUALITY MONITORING DURING 2004-2005 – RIVER RUPNARAYAN**

[Standards: BOD: 3 mg/l; DO: 4 mg/l; TC: 5000 MPN/100 ml; FC: 500 MPN/100 ml]

Parameters	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05
BOD (in mg/l)	0.80	-	-	1.60	-	-	0.50	-	-	1.80	-	-
DO (in mg/l)	6.35	-	-	6.20	-	-	5.70	-	-	7.40	-	-
TC (in 100 MPN/100ml)	110000	-	-	23000	-	-	26000	-	-	4000	-	-
FC (in 100 MPN/100ml)	50000	-	-	17000	-	-	17000	-	-	2000	-	-

## GROUND WATER QUALITY MONITORING

The analysis of ground water resources plays an important role to understand the quality of water, which we use for drinking, domestic, irrigation and industrial purposes. The quality of ground water depends on the composition of the recharge water, the interaction between the water and soil, soil-gas and rocks, with which it comes into contact. Ground water is essentially a closed system and once contaminated, takes years to decontaminate it.

Considering this situation, the Board conducted an initial survey at different locations of Kolkata Municipal Corporation (KMC) & Howrah Municipal Corporation (HMC) areas. This project ended in the month February of 2004. Subsequently, the Board undertook a continuous groundwater monitoring program by following a specific monitoring schedule at selected stations like Durgapur, Asansol, Haldia, Kalyani, Barasat, Dankuni, Rishra, Howrah (Domjur) & Kolkata (Tangra, Topsia, Dhapa & Behala). This sampling is carried out twice a year. The general as well as the bacteriological parameters are being checked two times a year and all parameters like trace metals, pesticide etc. are checked once a year.

**TABLE: 2.2.20**

### GROUND WATER QUALITY MONITORING DURING 2004-2005

[Standards: BOD: 3 mg/l; DO: 4 mg/l; TC: 5000 MPN/100 ml; FC: 500 MPN/100 ml]

Name & Code of Station	Parameters							
	April 2004				October 2004			
	DO (mg/l)	BOD (mg/l)	FC (MPN)	TC (MPN)	DO (mg/l)	BOD (mg/l)	FC (MPN)	TC (MPN)
Rishra(1525)	1.8	1.45	4	7	1.40	1.20	NIL	4
Dankuni(1779)	1.0	0.75	4	9	1.30	0.95	NIL	13
Asansol (1766)	6.3	0.3	50	110	8.2	0.2	27	130
Durgapur(1767)	2.8	0.4	240	900	2.0	0.3	27	280
Durgapur( 1768)	2.1	0.3	NIL	NIL	1.7	0.2	NIL	2
Haldia(1769)	0.70	0.20	21	26	0.80	2.90	140	350
Haldia (1770)	3.40	0.70	17	22	6.20	0.30	110	280
Kalyani (1771)	2.0	0.70	NIL	NIL	2.9	0.9	NIL	2
Barasat (1772)	1.80	1.75	NIL	NIL	1.3	0.7	NIL	6
Tangra (1773)	0.80	0.20	2	2	0.85	0.40	NIL	14
Topsia (1774)	0.20	0.20	NIL	NIL	NIL	0.65	22	300
Dhapa (1775)	NIL	0.30	NIL	NIL	0.35	0.20	8	13
Garia (1776)	0.20	0.40	2	2	1.00	0.60	NIL	2
Behala (1777)	0.45	0.25	NIL	NIL	1.10	0.85	NIL	NIL
Domjur (1778)	0.55	0.20	NIL	NIL	0.20	0.50	NIL	NIL

## CHAPTER III

# WASTE MANAGEMENT

In order to develop a proper management and disposal system for the major wastes like hazardous waste, bio-medical waste, municipal solid waste and plastic waste, the Union Ministry of Environment and Forest (MoEF) has notified the following Rules under the provisions of the Environment (Protection) Act, 1986:

- *The Hazardous Waste (Management & Handling) Rules, 1989, as amended in 2000 & 2003;*
- *The Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989;*
- *The Bio-Medical Waste (Management & Handling) Rules, 1998, as amended in 2003;*
- *The Recycled Plastics Manufacture and Usage Rules, 1999, as amended in 2003;*

- *The Municipal Solid Waste (Management & Handling) Rules, 2000;*
- *The Batteries (Management & Handling) Rules, 2002; and*
- *The Public Liability Insurance Act, 1991, as amended in 1999 & Rules made thereunder.*

The responsibility of implementing the provisions of these Rules in West Bengal lies with the West Bengal Pollution Control Board (WBPCB). In order to handle the huge quantum of waste generated, the Board has adopted a most scientific procedure – the common treatment facility system. This system of treatment not only helps neutralise the waste; it also recovers energy or material resources from the waste at a low cost, renders the waste less hazardous, and makes it safer to transport, store, or dispose of.

### MUNICIPAL SOLID WASTE (MSW) MANAGEMENT

With rising urbanisation and change in lifestyle and food habits, the amount of municipal solid waste has been increasing rapidly and its composition changing. Studies have shown that with every Rs.1000 increase in income the generation of solid waste goes up by a kilogram

per month. The Kolkata Metropolitan Area (KMA) is one of the largest and most densely populated areas in India. There has been about 140 per cent increase in the municipal population in KMA during the last decade.

Under the provisions of the Municipal Solid Waste (Management and Handling) Rules, 2000, the Department of Urban Development, Government of West Bengal and the District Magistrates of the concerned districts have the responsibility of the management of municipal

development of processing and disposal facilities is being delayed, as the clearance from the Airport Authority of India has not yet been obtained. Till date, the cost incurred is Rs.1,62,26,275/- of which Rs.71,73,750/- has been granted by the CPCB.

TABLE 2.3.1

## STATUS OF COMPLIANCE OF CORPORATIONS / MUNICIPALITIES DURING 2004-2005

KMA/ Non-KMA	No. of Corporations/ Municipalities	Total	Applied for authorisation	Authorisation granted
KMA	No. of Corporations	3	2	1
	No. of Municipalities	38	29	15
Non-KMA	No. of Corporations	3	2	2
	No. of municipalities	82	34	5
Total		126	67	23

\*KMA: Kolkata Metropolitan Area; Non-KMA: Outside Kolkata Metropolitan Area

solid waste in West Bengal. The WBPCB has impressed upon the municipalities and the district authorities to comply with the provisions of the Rules from time to time. During 2004-2005, the status of compliance of municipal corporations/municipalities in West Bengal is tabulated below.

#### Model MSW Management Facility of North Dum Dum & New Barrackpore Municipalities

With financial help from the Central Pollution Control Board and the Kolkata Metropolitan Development Authority (KMDA), a model facility is being developed at Mouza-Fatuulapur, P.S.Nimta, 24 Parganas (N) jointly by North Dum Dum and New Barrackpore Municipalities. The first phase of the project has been successfully completed. Both the municipalities have started house-to-house collection of segregated municipal solid waste. All equipments required for collection and transport of waste have been purchased. The second phase of the project that includes

#### MSW Management by Siliguri Jalpaiguri Development Authority (SJDA)

The SJDA has prepared a Detailed Project Report for setting up compost plant and landfill at Binnaguri to be jointly used by the Siliguri Municipal Corporation and Jalpaiguri Municipality area. The West Bengal Pollution Control Board has approved the project and has sanctioned a grant of Rs 25 lakhs in this regard, of which Rs 10 lakhs has been released so far.



*Door-to-door collection of household waste*

### MSW Management by other Municipal Authorities

- Both Bhadreswar and Kanchrapara municipalities have set up compost plants that are operating satisfactorily. Bhadreswar Municipality is also running a bio-gas plant and has also identified a land for development of landfill facility. In addition, both the municipalities have started house-to-house collection of municipal solid waste.
- Chandernagore Municipal Corporation, Panihati Municipality and Maheshtala Municipality have identified land for development of compost plant and landfill facility. The Detailed Project Reports are ready and development is due to start soon.
- An 'Integrated Solid Waste Management Project' has been undertaken by the Japan Bank of International Cooperation (JBIC) for six municipalities, namely Serampore, Rishra, Konnagar, Uttarpara-Kotrang, Baidyabati and Champdani located in Hooghly District. An area of 51 acres of land at Dirghangi, District-Hooghly has also been identified and it is under process of acquisition. The JBIC has submitted the pre-feasibility report for the project to the KMDA.
- Common Facility for North Barrackpore and Garulia Municipalities
- Common Facility for Dum Dum, South Dum Dum and Baranagore Municipalities.

## BIOMEDICAL WASTE (BMW) MANAGEMENT

In recent times, there is an increasing concern about the harmful effects of biomedical waste generated by health care facilities. Biomedical waste means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities etc. The Union Ministry of Environment & Forest issued a notification for the Biomedical Waste (Management & Handling) Rules 1998 in exercise of powers conferred by Section 6, 8 & 25 of the Environment (Protection) Act, 1986. It regulates the disposal of biomedical wastes and lays down the procedures for collection, treatment and

disposal and standards to be complied with. These Rules apply to all persons, who generate, collect, receive, store, transport, and treat or handle biomedical wastes in any form. The mode of disposal specified is dependent on the type of waste, and various methods of disposal are used such as incineration, microwaving, autoclaving, disinfecting and deep burial. This, therefore, makes biomedical waste treatment different from other types of pollution, as each establishment requires different expertise and resources to handle the waste generated.

The WBPCB, being the 'Prescribed Authority' for implementation of the Bio-medical Wastes (Management and Handling) Rules, 1998, facilitates by setting of common treatment systems and is constantly pursuing the private and public sector health care establishments to develop adequate bio-medical waste treatment facilities. The status of the applications received and disposed by the Board as well as the status of compliance of the healthcare units in West Bengal during the year 2004-2005 are tabulated hereafter.



*Intermediate storage of biomedical waste inside the hospital premises*

**TABLE 2.3.2**  
**STATUS OF APPLICATIONS RECEIVED AND**  
**DISPOSED BY THE BOARD IN 2004-05**

No. of authorised applications received	59
No. of authorised applications disposed	53
No. of consent applications received	51
No. of consent applications disposed	48

**Common Bio-medical Waste Treatment Storage and Disposal Facility at Howrah**

The facility, set up by M/s Medicare Incin Pvt. Ltd., is operating successfully. Segregated bio-medical wastes are being collected from Kolkata, Howrah and the adjoining areas. Till

date, 442 health care units have joined the facility. The total amount of waste collected in the year 2004-2005 was 1030 MT. Of this, 200.2 MT was autoclaved and 829.80 MT was incinerated.

**Common Bio-medical Waste Treatment Storage and Disposal Facility (BMWTSDF) at Kalyani**

M/s Medicare Incin Pvt. Ltd. is also setting up a Common BMWTSDF at Kalyani. The installation is in progress. This facility will also have autoclaving and incineration arrangements and will collect waste from units located in KMA area other than those being catered to by the Howrah Facility.

**TABLE 2.3.3**  
**PRESENT STATUS OF COMPLIANCE OF HEALTH CARE UNITS IN**  
**WEST BENGAL IN 2004-2005**

Sl. No.	Healthcare Facilities	Total no. of units	Total no. of beds	Total amount of biomedical waste generated (kg/day)	Total amount of biomedical waste treated (kg/day)	Total no. of units that have obtained auth.
A	Health care units in towns having population = 30lakhs	337	24745	6186	6111	329
B	Health care units in towns having population < 30lakhs					
	i) with beds = 500	15	11532	2883	1518	17
	ii) with 200 = beds < 500	55	15097	3774	560	44
	iii) with 50 = beds < 200	160	13160	3290	536	93
	iv) with beds < 50	2757	28513	7128	343	786
C	Healthcare units generating biomedical waste but not included in A or B	2096*	-	-	-	36*

\* Inventorisation in progress; most of the units have been exempted from applying for authorisation



### Common Bio-medical Waste Treatment Storage and Disposal Facility (BMWTSDF) at Mangalpur, Raniganj

M/s Medicare Incin Pvt. Ltd. will be setting up their third Common BMWTSDF at Mangalpur, Raniganj for the Asansol Durgapur Development Authority (ADDA) area. The land for the said project has already been allotted by ADDA. Installation will start only after obtaining consent from the Board.

### Other common BMW treatment facilities in West Bengal

Two other common treatment facilities are functioning at JNM Hospital, Kalyani and Sub Divisional Hospital, Diamond Harbour. At JNM Hospital an autoclave is used for waste treatment

and in S.D.Hospital, Diamond Harbour, a microwave is in use. The status of the wastes collected and treated in 2004-05 is tabulated below.

Healthcare Facilities	Wastes treated
JNM Hospital, Kalyani	90 MT
S.D.Hospital, Diamond Harbour	18 MT

Other than these two hospitals, autoclaves have been installed at 13 district hospitals and microwave has been installed at one district hospital under the West Bengal Health Systems Development Project. These are being used by the individual hospitals for waste treatment.

## HAZARDOUS WASTE MANAGEMENT

Industrial operations generate considerable quantities of hazardous waste and in rapidly industrialising countries such as India, the contribution to hazardous waste from industries is the largest. The MoEF promulgated the Hazardous Wastes (Management and Handling) Rules in 1989 and amendments in 2000 and 2002, and efforts to draw up inventories of hazardous waste generated in the country were initiated.

**TABLE 2.3.4**  
**STATUS OF UNITS IDENTIFIED UNDER THE HAZARDOUS WASTE (MANAGEMENT & HANDLING) RULES, 1989 AND AMENDMENTS THEREOF**

No. of authorised applications received	54
No. of authorised applications disposed	77
No. of units authorised till 31.03.2005	453
Units having approved on-site waste storage facilities	154

### Common Hazardous Waste Treatment Storage & Disposal Facility at Haldia

This facility is being set up jointly by the Haldia Development Authority (HDA) and M/s Ramky Enviro Engineers Ltd., who have formed a joint venture company named M/s West Bengal Waste Management Ltd. The HDA is contributing 11 crores towards the project as grant. The WBPCB has sanctioned a grant of Rs 2 crores and a matching grant is expected from the MoEF. The facility will have waste stabilisation, incineration and landfill arrangements and will cater to the entire state. The Board granted 'Consent to Establish' for the project on April 28, 2004. A public hearing was held on July 30, 2004 and the State Government issued environmental clearance on October 18, 2004.

The construction work is yet to start. The approach road is presently being laid. Construction will start only when the road is ready.

The Board has decided to form a Committee for fixing the treatment and disposal costs that will comprise of representatives from various chambers of commerce, the HDA, the

Environment Department and Jadavpur University.

### **Identification and remediation of Illegal Dumpsites**

A project has been awarded to the National Productivity Council (NPC) on June 7, 2004 for identification of illegal dumpsites and suggestion of remedial measures. The final report is expected

shortly. As per the interim report, the project team has identified eight illegal dumpsites of chrome bearing waste, and analysis of soil and water samples have been carried out. Of the eight sites one is in Nibra village, Howrah and the others are located along Delhi Road in Hooghly district. The total cost of the project is Rs 5,83,800/-. Remediation of the sites will be taken up on receiving the report from NPC.

## **PLASTIC WASTE MANAGEMENT**

Discarded plastics pose a threat to human health and environment. Due to its non-biodegradable nature, littering of plastics causes irreversible damage to the environment. Plastic wastes hinder the natural aeration process of the surface water bodies, choke municipal sewer lines and storm water drains and clog the bar-screens of sewage treatment plants. They interfere with various agricultural operations, prevent natural recharge of underground water and contribute to visual pollution. Consuming food wrapped in coloured plastic has adverse effects on health. Municipalities routinely receive reports of death of cows and other animals from ingesting plastic bags.

The Ministry of Environment and Forest (MoEF) have issued the 'Recycled Plastics Manufacture and Usage Rules, 1999' and 'Recycled Plastics Manufacture and Usage (Amendment) Rules, 2003'. These Rules ban the manufacture, storage, sale and use of plastic carry bags having less than 20-micron (20-m equivalent to 0.2 mm) thickness as well as whose dimensions are less than 8 inches X 12 inches (20 X 30 cms).

### **Previous legal restrictions on plastic carry bags**

The West Bengal Pollution Control Board (WBPCB), in exercise of the powers conferred by section 33A of the Water (Prevention and Control of Pollution) Act, 1974 and by section 31A of the Air (Prevention and Control of Pollution) Act, 1981, on September 15, 2001, imposed a

blanket ban on the manufacture, sale and use of plastic carry bags in the ecologically sensitive areas of the state. The WBPCB has issued another direction, in exercise of the above powers, on May 7, 2003, imposing the blanket ban on the entry, use and sale of plastic carry bags to ten heritage/tourist sites of the state. Also, the use of plastic carry bags, cups and containers less than four inches in height and 40 microns in thickness have been banned in all government buildings in West Bengal including Writers' Building, Kolkata. This order came into force on March 4, 2004 and has been circulated to all the Secretaries, District Magistrates, Superintendents of Police and administrative heads of all departments for action.

### **Legal restrictions on plastic carry bags imposed during 2004-2005**

The Board issued another direction, in exercise of the Water and Air Acts, on **August 24, 2004**, extending the blanket ban on the entry, use and sale of plastic carry bags to the following 13 heritage/tourist sites of the state:

- Science City Complex, Kolkata ;
- Nicco Park, Kolkata ;
- Nalban Boating Complex, Kolkata ;
- Swabhumi, Kolkata ;
- Indian Museum, Kolkata ;
- Birla Planetarium, Kolkata ;
- Eden Garden, Kolkata ;
- Nehru Children Museum, Kolkata ;
- Birla Industrial and Technological



Banner displaying message in a  
"No Plastic Carry Bag" zone

Museum, Kolkata ;

- Barrackpore Gandhi Ghat, Barrackpore;
- New Digha Paryatan Kendra, Hooghly;
- Soakhal Energy Park, Hooghly ; and
- Energy Education Park, Kolkata.

The Board, on **March 24, 2005**, imposed another ban order on the entry, use and sale of plastic carry bags in four heritage/tourist sites:

- Strand Road (including Church Road, Chandannagar, Hooghly) ;
- Chhuti Amusement Park (Chandannagar, Hooghly) ;
- KMDA Park (Chandannagar, Hooghly); and
- Banabitan (Salt Lake).

In case of any violation of the direction, the administrators of these tourist/heritage sites are free lodge a complaint with the police against the violator under section 188 of the Indian Penal Code.

### WBPCB Awareness Programmes on the ban on plastic carry bags

**Enforcement of the ban orders in tourist/heritage sites:** As evident, the Board has imposed blanket ban on the use of plastic carry bags in the heritage/tourist sites of West Bengal. In order to enforce the ban order in these sites, the Board made a series of routine and surprise on-site visits to these places. During the visits, the WBPCB officers, the concerned

authorities, representatives of NGOs, and in some cases, the officers-in-charge of the local police stations, discussed various site-specific problems in the enforcement of the ban order. NGOs and school children voluntarily participated in several awareness programmes held within these sites and these programmes were found to have positive impact on the masses. Various mechanisms were adopted to make the public aware of such ban orders. Such methodologies includes displaying notice boards carrying the message of the ban, arrange for checks at the entry points of the sites and make provisions for proper waste management within the site.

**Enforcement of the ban orders in ecologically sensitive areas:** In order to enforce the blanket ban on the use of plastic carry bags in ecologically fragile areas of the state, the Board has conducted various awareness programmes in such areas. These events are generally conducted by involving school students belonging to these ecologically sensitive areas like Sundarbans, Siliguri, Digha or the hilly areas of North Bengal.

**Workshops on manufacture of alternatives to plastic bags:** As part of its campaign strategy, the Board organised several workshops in order to promote the use and manufacture of viable substitutes to plastic carry bags in the state. Hands-on training was imparted to individuals/organisations interested to take up projects for manufacturing carry bags made of eco-friendly materials like paper, grass, cloth and jute. These workshops encouraged the use of biodegradable carry bags considerably.

**Raids conducted by the WBPCB:** In addition, the WBPCB has been conducting raids in units manufacturing plastic carry bags as well as wholesalers' premises, shops and establishments.

#### Status of Hearing on Plastic Carry Bags during 2004-2005

Total no. of units heard	191
Total no. of units found guilty	131
Total pollution cost imposed	Rs.4,23,750/-

## CHAPTER IV

# NOISE POLLUTION

**N**oise is among the most pervasive pollutants today. Noise negatively affects human health and its wellbeing. Problems related to noise include hearing loss, stress, high blood pressure, sleep loss, distraction and lost productivity, and a general reduction in the quality of life and opportunities for tranquillity. The West Bengal Pollution Control Board has taken several measures to combat noise pollution. A brief description of the current aspects of noise pollution and the corresponding actions taken by the Board to combat the same are given below.

### **Steps taken to control noise from loudspeakers**

The use of loudspeakers is regulated in terms of the Rules under the Environment Protection Act (1986) as well as the orders of the Supreme Court and the Calcutta High Court. The Police Department is empowered to enforce these rules and orders. The specific steps adopted by the Board to restrict noise pollution produced from loud speakers are:

1. The WBPCB has made it mandatory to use loudspeakers only when amplifier(s) are attached to sound limiter (s). Time and again, it is brought to public notice

that sound limiters are available at Webel Mediatronics Ltd., P-1 Taratolla Road, Kolkata - 700 088.

2. In order to provide a quiet environment for students during exams, the Board has imposed restrictions on noise pollution during the Secondary/Higher Secondary examination period. The WBPCB, on January 17, 2005, has directed all concerned (including District Magistrates, Superintendents of Police, Deputy Commissioners of Police, Kolkata) to refrain from issuing permission for use of microphones/loudspeakers for open-air functions before three days of the commencement of these examinations until they get over. Use of sound boxes/amplifiers were not allowed within 100 metres of the examination centres.

### **Noise generated from the Diesel Generator sets**

The Ministry of Environment & Forests (MoEF), Government of India published the 'Standards/Guidelines for control of noise pollution from stationary Diesel generator sets' vide GSR 7 dated 22.12.1998. Subsequently, the MoEF notified the 'Noise limits for Generator sets run

with petrol or kerosene' vide GSR 742 (E) dated 25.09.2000 and GSR 628 (E) dated 30.08.2001. Following the provisions of these notifications, the Board directed that for use of diesel generator set (s) (of capacity 15 KVA & above) for non-industrial purpose, the obtainment of 'Consent to Establish' and 'Consent to Operate' from the Board is mandatory. The non-industrial purpose includes residential buildings, commercial buildings, office complex, cinema halls, bank, educational institutions etc under its purview. The order is effective from January 1, 2002.

According to another landmark notification of the MoEF, all diesel generator sets with up to 1000 KVA capacity and manufactured on or after July 1, 2003 should be provided with integral acoustic enclosure at the manufacturing stage itself. It further states that all other DG sets should be controlled by providing an acoustic enclosure individually or by treating the room acoustically at the users' end.

### **WBPCB activities to combat noise pollution**

As evident, legal instruments to combat noise pollution are many. However, the need to popularise these legal directions in order to facilitate its enforcement is also important. With this view, the Board has initiated a drive to restrict noise pollution in the state. As part of its campaign strategy, the Board has brought into notice some important messages that are of interest to the general public:

- To avoid honking around educational institutions, hospitals and courts;
- To shun use of loudspeakers after 10 at night and before 6 in the morning;
- To follow the legal ban on the use and sale of air horns;
- To maintain tranquillity in the forest areas by not using microphones or loudspeakers in Sundarbans or other forest areas of West Bengal;
- To use loudspeakers only when amplifier(s) are attached to sound limiter(s); and

- To bring to public notice that sound limiters are available at Webel Mediatronics Ltd.



### **Noise level restrictions during festive occasions**

Festive occasions demand special vigilance over noise pollution. The Government of India has enacted noise standards for fire-crackers vide G.S.R.682 (E), dated October 5, 1999, in an effort to control noise pollution due to fire crackers. The WBPCB, like other State Pollution Control Boards, have initiated steps to control sale of fire-crackers exceeding the notified limits, in consultation with their respective local administrations.

The Board conducted special vigilance during festivals such as the Durga Puja, Kali Puja, Diwali, Jagaddhatri Puja and New Year's Eve. Bursting of crackers is a major nuisance during this time of the year. To check the level of pollution produced from firecrackers, the Board has banned the use or sale of noisy fireworks (such as Chocolate Bomb, Chain Crackers (Kali Patka), Loose Crackers, Kali Patka, Dhani Patka, Dodoma, Seven Shots, Rocket Bombs etc) that generate noise more than 90 dB (AI) at a distance of 5 metres from the point of bursting.

Moreover, to have a clear idea about the increase of ambient noise level in residential areas in the city of Kolkata and other district town during festivals, the Board undertook a noise monitoring survey. Monitoring teams surveyed the streets and crowded spots for monitoring the noise level. Also, in order to aid the general public, a Central Control Room located

at the head office and other control rooms located at the Regional Offices (at Haldia, Hooghly, Barrackpore, Durgapur, Asansol and Siliguri) remained operational from afternoon to midnight on all festive days. All complaints received at the control rooms of the Board were immediately communicated to the Police authorities for taking necessary action.

### **Report of assessment of Noise Pollution survey in Kolkata during Kali Puja Festival in 2004**

#### *Noise Pollution Survey procedure*

Fire crackers generate instantaneous impulsive noise, which when measured in free field condition in impulsive mode, gives peak sound pressure level. It is quite obvious that a number of crackers when bursting serially can easily form a band of continuous noise in the presence of reflecting surfaces. The reverberation of sound wave due to repeated reflection in the surfaces prolongs the time interval of prevailing sound intensity. The continuous band of noise, thus formed, definitely affects the ambient level in close proximity.

The monitoring was conducted at eleven selected locations such as Salt Lake, Lake Town, Kankurgachi, Beliaghta, Behala, Minto Park, Burrabazar, Jadavpur, Rabindra Sarani, Talapark and Howrah Maidan, on a normal working day, between 6:00 p.m. and 10:00 p.m. The microphone of the Sound Level Meter fitted with windscreen was placed 1.5m above the ground, and at least 1m from the façade of the building at each location. Data recorded at each location were used to compute the one-hour equivalent continuous noise level  $L_{eq}$ . At the same locations, the above procedure was repeated on the Kali puja day (11.11.04).

#### *Results of noise pollution survey*

The noise survey results in 2004 reveal moderate increase in the ambient noise level

in various residential areas in the city of Kolkata and Howrah on the Kali Puja/ Deepavali day in comparison to any normal day. The main cause of increase in ambient noise level on festival days is bursting of crackers, whereas in normal days, the main contributions to the ambient noise level of any residential area are from trade activities, transport system and various domestic activities. The main observations are summarised below.

- i. The increase of the noise level at the selected locations on the day of Kali Puja compared to a normal day in 2004 varies from 4 to 14 per cent. This is higher compared to the noise level of 2003, but much lower in some locations compared to 2002.
- ii. Compared to 2003, there is an increase in the noise level in 50 per cent of the sample locations, which varied from 5 to 10 per cent (at the locations in northern parts of Kolkata), where as in the remaining sample locations, there was reduction of noise level varying from 2 to 11 per cent (in the southern part of the city). The increase of noise level in Howrah during 2004 as compared to 2003 was observed to be 3 per cent only.
- iii. A more or less similar trend as indicated at (ii) is observed during 2004 when compared to the 2002 data.

#### **Awareness campaign and specific measures**

The WBPCB has given wide publicity to the Supreme Court's direction on the use of fireworks only between 6.00 a.m. and 10.00 p.m. through Electronic and Print Media. In addition, requests were made to the cellular operators for sending an awareness message 'Say NO to CRACKERS: Celebrate Deepavali

**TABLE 2.4.1**  
**COMPARISON OF NOISE LEVEL IN A NORMAL DAY WITH KALIPUJA DAY**

Location	Noise Level in $dB_{L_{Aeq}}$								
	2002			2003			2004		
	Normal Day (before Kali puja)	Kali Puja Day	Percentage increase	Normal Day (before Kali puja)	Kali Puja Day	Percentage increase	Normal Day (before Kali puja)	Kali Puja Day	Percentage increase
Salt Lake-Sector-III	65	70	7	65	67	3	67	74	10
Lake Town-B Block	67	75	11	69	72	4	69	79	14
Kankurgachi-Scheme VIIIM	68	74	8	67	71	5	67	75	12
Beliaghata CIT Building	67	78	13	70	75	7	73	79	8
Behala- Biren Roy Road	68	80	17	73	78	6	70	74	6
Minto Park-Sarat Bose Road	74	85	14	77	82	6	70	73	4
Kalakar Street-Burrabazer	73	76	4	74	75	1	76	79	4
Jadavpur 8B Bus Terminus	71	79	11	72	74	2	67	70	4
Rabindra Sarani-Ganesh Takie	72	81	12	74	77	4	69	75	9
Talapark-Belgachia	67	76	13	68	72	5	65	70	8
Howrah Maidan	73	78	6	74	76	2	74	78	5

**TABLE 2.4.2**  
**COMPARISON OF NOISE LEVEL IN KALIPUJA DAY DURING 2003 & 2004**

Location	Noise Level in $dB_{L_{Aeq}}$		
	2003	2004	Percentage Increase
Salt Lake- Sector-III	67	74	10
Lake Town- B Block	72	79	10
Kankurgachi-Scheme VIIIM	71	75	6
Beliaghata CIT Building	75	79	5
Behala- Biren Roy Road	78	74	-5

TABLE 2.4.2 Contd.....

Location	Noise Level in $dB_{Leq}$		
	2003	2004	Percentage Increase
Minto Park- Sarat Bose Road	82	73	-11
Kalakar Street- Burrabazer	75	79	5
Jadavpur 8B Bus Terminus	74	70	-5
Rabindra Sarani- Ganesh Takie	77	75	-2
Talapark- Belgachia	72	70	-3
Howrah Maidan	76	78	3

TABLE 2.4.3

## COMPARISON OF NOISE LEVEL IN KALIPUJA DAY DURING 2002 &amp; 2004

Location	Noise Level in $dB_{Leq}$		
	2002	2004	Percentage Increase
Salt Lake- Sector-III	70	74	6
Lake Town- B Block	75	79	5
Kankurgachi-Scheme VIIM	74	75	1
Beliaghata CIT Building	78	79	1
Behala- Biren Roy Road	80	74	-7
Minto Park- Sarat Bose Road	85	73	-14
Kalakar Street- Burrabazer	76	79	4
Jadavpur 8B Bus Terminus	79	70	-11
Rabindra Sarani- Ganesh Takie	81	75	-7
Talapark- Belgachia	76	70	-8
Howrah Maidan	78	78	0

with lamps, candles and fireworks.' to their customers. The WBPCB had also arranged to display 100 festoons in 100 places as well as distributed leaflets (related to various legal restrictions) at crowded spots in Kolkata for public awareness.

In 2004, the WBPCB conducted a large number of inspections during October and November at the various fireworks manufacturing units in association with the District Police Authority, and seized more than 500 Kgs and 5

lac pieces of prohibited fireworks. About 13 persons were arrested during the operation. Similarly, a large number of prohibited fire works were seized on Kali Puja and Diwali.

#### Analysis of Complaints

A central Control Room was set up at the Head Office of WBPCB at Paribesh Bhawan, Salt Lake, Kolkata on the days of Kali Puja and Diwali, from evening to late night to receive complaints. In addition, control rooms were set



up in the Regional Offices of the Board at Haldia, Hooghly, Barrackpore, Durgapur, Asansol and Siliguri.

**TABLE: 2.4.4**  
**COMPLAINTS RECEIVED IN THE 2003 & 2004 IN THE CONTROL ROOM OF PARIBESH BHAWAN**

Year	Kali Puja Day	Following day (Diwali)	Total no. of complaints received in two days
2003	40	20 (till 9.45 p.m.)	60
2004	71	78 (till 12.45 a.m.)	149

The following observations were made from the nature of complaints received.

1. Compared to 2003, the Board received a higher number of complaints on both the Kali Puja and Diwali. These may be due to increased awareness among the public about the Board's direction and/or higher violation of noise pollution norms.
2. On Kali Puja, the maximum numbers of complaints were received from the West Bengal Police areas, while on the day of Diwali, the maximum number of complaints were received from the Kolkata Police area.

**TABLE: 2.4.5**  
**NATURE OF COMPLAINTS RECEIVED IN 2004**

Festival Days in 2004	Kolkata Police area	West Bengal Police area	Complaints against bursting of crackers	Complaints against playing of loudspeakers
Kali Puja Day (11.11.04)	21 (Cossipur, Kalighat, Bhawanipur, Gariahat, Manicktola, Beliaghata, Burtolla etc.)	50 (Thakurpukur, Purba Jadavpur, Baguihati/Rajarhat, Sibpur, Kasba, Dum Dum, Barasat, Khardha, Baranagar, Bidhannagar, Uttarpura, Uluberia, Lake Town, Chandannagar, Sonarpur etc.)	62 (33)*	09 (07)*
Diwali Day (12.11.04)	40 (New Market, Alipore, Bhawanipur, Gariahat, Burtolla, Ballygunge, Kalighat, Chitpur, Shyampukur, Watgunge, Narkeldanga, Manicktala, Cossipur, New Alipore, Kareya, Beniapur, Beliaghata, Burrabazar, Phulbagan, Entally etc.)	38 (Shibpur, Jadavpur, Titagarh, Batra, Dasnagar, Belghoria, Golabari, Bidhannagar, Regeant park, Jagatdal, Bally, Dum Dum, Bizpur, Lake Town etc.)	68 (14)*	10 (06)*

\* Figures in brackets indicate the number of complaints received in 2003

### **Brief report on Status of Road Traffic Noise Levels during summer and winter of 2004 in Kolkata**

In the year 2004-2005, a study was undertaken to assess the impact of road traffic noise on the ambient noise level in the city during summer (May-August 2004) and winter (December 2004-February 2005).

#### **Results**

1. The temperatures of the monitoring locations varied between 24-39 degree celsius during summer and 12-33 degree celsius during winter, whereas humidity levels varied between 46-100 per cent and 24-96 per cent in the respective seasons.
2. The total traffic count in pre-selected 30 monitoring locations was 7,75,068 in summer and 7,52,287 in winter. The highest and lowest total traffic count in both the seasons were observed in JLN Nehru Road-AJC Bose Road Crossing and Nagerbazer. Car and taxi were the dominant traffic components in almost all the monitoring locations except in Esplanade where bus was dominant.
3. The total traffic volume in the Central Business District (CBD) was much more than that in North and South Kolkata. Traffic volume in the north was lower than that in the south.
4. The total honking events in the CBD were much more than in the north and south. The honking events in the north were lower than that in the south.

#### **Summer season (May-August 2004) monitoring**

1. During 2004, the 24 hour equivalent continuous noise level ( $L_{eq,24}$ ) are slightly less in comparison to 1999 summer value with some exception at monitoring locations such as Howrah Bridge

Approach, Moulali and Hazra. The trend at these three locations may be due to increase in the vehicular traffic along with the increase in honking in those areas compared to 1999.

2. During 2004, the 24 hour equivalent continuous noise levels ( $L_{eq,24}$ ) are considerably less in comparison to 1993 summer values.
3. During 2004, the day time equivalent continuous noise level ( $L_D$ ) values are less compared to 1999 and 1993 values except in two locations, namely Howrah Bridge Approach and Moulali.
4. During 2004, the night time equivalent continuous noise level ( $L_N$ ) values are less compared to 1999 and 1993 values except in two locations, Howrah Bridge Approach and Hazra.

#### **Winter season (December 2004-February 2005) monitoring**

During 2004, the 24 hour equivalent continuous noise levels ( $L_{eq,24}$ ) are considerably less in all the monitoring locations in comparison to 1994 winter value.

1. During 2004, the day time equivalent continuous noise level ( $L_D$ ) values are less compared to 1994 winter values.
2. During 2004, the night time equivalent continuous noise level ( $L_N$ ) values are less compare to 1994 winter values.

The number of honking during 2004 summer and winter studies have increased at particular traffic intersections such as J.N. Rd.-A.J.C. Bose Rd. Crossing, Chowranghee-Park St. Crossing, B.B.D. Bag, Ultadanga, Gariahat, Howrah Bridge Approach etc. The highest number of honking recorded is 22168 in 24 hours during summer, and 19268 during winter at J.N. Rd.-A.J.C. Bose Road traffic intersection. This contributed to the increase in ambient noise level of Kolkata, apart from creating annoyance to the public.

**TABLE 2.4.6**  
**COMPARISON OF NOISE LEVELS DURING SUMMER**

Monitoring Location	L <sub>eq</sub> 24			L <sub>D</sub>			L <sub>N</sub>		
	1993	1999	2004	1993	1999	2004	1993	1999	2004
Dunlop	92.0	67.0	67.5	93.7	77.0	67.9	84.3	73.1	65.1
Chiria More	90.3	67.6	66.3	91.8	78.0	66.9	85.2	71.1	62.6
Nagerbazar	92.1	70.3	67.3	93.5	79.7	68.5	87.4	77.7	56.4
Shyambazar	91.1	69.0	68.4	92.8	78.8	69.1	83.7	75.8	64.0
Ultadanga	88.5	68.2	69.2	90.4	78.6	70.2	79.3	72.0	60.9
Manicktola	87.5	71.0	68.8	89.0	81.0	69.6	82.3	77.2	62.7
Howrah Bridge Approach	85.1	72.9	95.7	86.7	83.1	96.9	79.3	78.3	76.4
Sealdah	86.8	70.1	71.5	88.5	79.9	72.2	80.4	76.7	66.7
Bowbazar	86.8	70.3	70.3	88.4	80.9	70.6	80.4	72.6	68.0
B.B.D.Bag	84.4	70.3	71.1	86.1	80.3	71.8	77.5	74.2	66.8
Esplanade	85.5	80.3	68.1	87.2	80.8	68.9	77.8	73.3	62.8
Moulali	86.3	71.4	93.2	87.9	81.7	94.4	80.7	76.1	71.1
Hazra	84.0	68.1	77.6	89.6	78.7	78.7	77.8	69.7	68.1
Jadavpur	82.2	89.5	76.8	83.8	80.4	77.9	76.0	77.1	67.1
Garia	83.0	69.2	70.9	84.6	79.9	71.6	77.1	70.4	66.7

**TABLE 2.4.7**  
**COMPARISON OF NOISE LEVEL DURING WINTER**

Monitoring Location	L <sub>eq</sub> 24		L <sub>D</sub>		L <sub>N</sub>	
	1994	2004	1994	2004	1994	2004
Dunlop	86.0	69.4	87.7	70.3	80.0	63.1
Chiria More	84.8	66.8	86.3	67.1	79.9	64.7
Nagerbazar	85.3	69.1	87.1	70.0	75.5	62.0
Shyambazar	82.5	70.8	83.4	71.6	80.1	66.1
Ultadanga	81.8	70.5	83.5	71.6	75.6	61.5
Manicktola	84.5	68.1	86.1	68.1	78.4	66.7
Ganesh Talkie	84.8	68.3	86.5	69.0	78.1	63.6
Howrah Bridge Approach	87.6	80.2	89.0	81.2	83.3	72.8

TABLE 2.4.7 Contd....

Monitoring Location	$L_{eq} 24$		$L_D$		$L_N$	
	1994	2004	1994	2004	1994	2004
Sealdah	84.8	66.2	86.2	67.2	80.5	57.7
Bowbazar	81.7	69.6	83.3	70.7	75.8	59.4
B.B.D.Bag	81.3	72.9	82.5	73.9	78.2	65.9
Esplanade	80.7	69.6	82.3	70.2	74.3	65.6
Moulali	85.2	78.8	86.7	79.9	79.7	68.6
Chowringhee	82.8	75.6	84.4	76.5	77.4	69.4
Park Circus	82.8	74.8	84.6	75.6	75.3	68.5
J.N.Road-AJC Bose Road Crossing	83.1	80.3	83.5	81.3	77.0	71.4
Khidirpur	81.1	68.8	82.2	69.7	78.0	62.8
Hazra	83.6	74.2	85.4	75.2	76.1	66.5
Gariahat	79.7	78.1	80.9	79.2	75.2	67.3
Rashbehari	79.5	68.7	80.1	69.7	74.6	61.7
Taratola	84.7	71.9	86.2	73.0	79.5	63.3
Jadavpur	83.0	74.5	84.1	75.7	79.9	61.7
Behala 14 No. Bus Stand	81.9	75.0	82.6	76.1	77.8	64.8
Garia	82.6	68.0	83.7	68.7	75.2	63.4

$L_{eq} 24$  = 24hours equivalent continuous noise level in dB(A),  $L_D$  = day time equivalent noise level i.e.  $LA_{16h}$   
 $L_N$  = night time equivalent noise level i.e.  $LA_{8h}$

### Training Programmes on noise pollution organised by the WBPCB

For effective control of noise pollution, the Board conducted seven training programmes on noise pollution monitoring and control techniques. A total of 159 participants, who attended training programmes included the officials of the West Bengal Police, Kolkata Police and Motor Vehicles Inspectors (Annexure V). These training-cum-Awareness Programmes on Environment included features like lectures, audio-visual shows and technical sessions.



Training Programme on Noise Pollution

# AUTOMOBILE POLLUTION

## Canada-India Environmental Institutional Strengthening Project on Autorickshaw LPG conversion Demonstration

The Environment Canada is implementing a project funded by CIDA (Canada-India Environmental Institutional Strengthening Project on Autorickshaw LPG conversion Demonstration)



in association with the Ministry of Environment & Forests (MoEF), Government of India (GoI) and the Central Pollution Control Board (CPCB). The project includes transfer of Canadian technical expertise for conversion of existing petrol driven autorickshaws of Bangalore and Kolkata to LPG. M/s. Yugo-Tech Conversion Gas Systems Inc., Ontario, Canada is the Canadian counterpart in this project. The objectives of the project are as follows:

- To develop a prototype LPG kit for retrofitment in the existing fleet of old autorickshaws of Kolkata and Bangalore, and
- To ensure the compliance of the retrofitted autorickshaws to respect to the Bharat Stage II mass emission norms for 3-wheelers.

As part of a pilot project, 25 kits would be retrofitted in selected autorickshaws, each in Kolkata and Bangalore. The mechanics and operators in the two cities will also be trained with knowledge of all aspects of conversion, refueling, engine operation and maintenance of the LPG-operated autorickshaws. Moreover, strategic options will also be developed to facilitate

broader uptake of LPG conversion technology for autorickshaws including transfer of technology of the LPG kit development from Canada to India.

The CPCB constituted a 12-member Technical Advisory Committee (TAC) in order to monitor the progress of the project and evaluate the recommendations of the final report. Dr. H. B. Mathur of IIT, Delhi is the Chairman of the Committee. The other members of the Committee include the following:

- Member Secretary, CPCB ;
- Member Secretary, West Bengal State Pollution Control Board ;
- Member Secretary, Karnataka State Pollution Control Board ;
- Advisor, MoEF, GoI ;
- Joint Secretary, MoRTH, GoI ;
- Director, ARAI ;
- Director, IIP ;
- Executive Director, SIAM ; and
- Representatives from CPCB, M/s. Baja Auto Ltd. and IOCL.

During the year 2004-2005, two new autorickshaws (one 4-stroke petrol model and one CNG 4-stroke model) and one post-1996 in-use autorickshaw from Kolkata fleet were sent to Canada for development of LPG kit. M/s Yugo Tech has developed the LPG conversion kit for the old in-use petrol driven autorickshaw. They have also conducted a test run by retrofitting the developed kit in one autorickshaw in Kolkata and one in Bangalore. A workshop for emission testing laboratory of autorickshaws within the premises of Paribesh Bhawan has already been constructed by the Board. After the test run, M/s. Yugo Tech have applied for approval of the kit including LPG tank from the Automotive Research Association of India, Government of India. After receipt of the



*Autorickshaw LPG conversion demonstration*

approval from the Government of India, an Expert Team from M/s. Yugo-Tech would retrofit 25 autorickshaws with the new LPG kit in the on-road autorickshaws in Kolkata.

### **Upgraded AETCs in West Bengal**

In association with the State Department of Transport, the West Bengal Pollution Control Board has facilitated the setting up of 148 computerised and upgraded Emission Testing Centres (AETCs) and Pollution-under-Check (PUC) centres in West Bengal. The AETCs have upgraded their testing facilities with opacimeters, gas analysers, web-camera, compatible software and provisions for networking with the AETCs and the Regional Transport Authorities (RTAs). Each AETC has one set of opacity meter (for smoke density testing) with engine revolution per minute (RPM) sensor for diesel engine, engine oil temperature sensor, computer, web-camera, software (for measured data transfer) and colour printer. For Petrol / LPG / CNG engines, four or five gases analysers with facility for testing exhaust gases like CO, CO<sub>2</sub>, O<sub>2</sub> and HC are being installed at the AETC premises. The emission standards for the in-use vehicles under Sub-Rule 2 of Rule 115 of the Central Motor Vehicles Rules, 1989 has been amended vide GSR 111 (E) dated 10-02-2004. The

Districts	No. of upgraded AETCs
Kolkata	54
Howrah	23
Jalpaiguri	2
Hooghly	16
Malda	2
Murshidabad	2
Nadia	3
24 Pgns (N)	23
24 Pgns (S)	8
Pashchim Medinipore	2
Purba Medinipore	2
Coochbehar	7
Darjeeling	3
Uttar Dinajpur	1
<b>Total</b>	<b>148</b>

amended features include computer printout of PUC certificates as well as Hydrocarbon (HC) for petrol-driven vehicles, reactive HC for LPG-

driven vehicles and non-methane HC for CNG-driven vehicles has been included along with CO for vehicular emission monitoring.

### **Open burning of leaves around VMH banned**

The State Department of Environment has recently prohibited the open burning of leaves in and around the premises of Victoria Memorial Hall (VMH), Kolkata. This notification, dated July 20, 2004, issued by the Governor of West Bengal, is based on one of the recommendations of an expert committee appointed for the purpose of providing an action plan for improving the environment in and around VMH.

Dry leaves were often burnt in heaps in the vicinity of the VMH compound, which generated profuse smoke and air pollutants like particulate matter, carbon dioxide, carbon monoxide, sulphur dioxide, nitrogen oxides etc. This restriction would, in all likelihood, save the monumental structure of VMH and its surrounding environment off the toxic fumes emitted from open burning of leaves.

# RESEARCH AND DEVELOPMENT

## **Characterisation of PM<sub>10</sub> and PM<sub>2.5</sub> at Traffic Intersection in Kolkata and Assessment of their Impact on Human Health**

### **Background**

Polycyclic Aromatic Hydrocarbons (PAH) are potent carcinogens. Several PAHs have been shown to cause tumours in laboratory animals. The PAHs constitute an important class of organic aerosol components generated in a variety of combustion processes and are emitted into the atmosphere. Although there are natural sources of PAHs (volcanic activity and biosynthesis) but anthropogenic sources are predominant and most important to air pollution. Human exposure to PAH occurs principally by direct inhalation, ingestion or dermal contact due to widespread presence and persistence of PAH in the urban environment. Several PAHs such as benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene and indeno (1,2,3 cd) pyrene have been implicated in tumorigenesis in experimental animals.

Human exposure to ambient PAH generally occurs in combination with other carcinogenic substances such as nickel, chromium, silica, soot,

asbestos and benzene. PAHs, while being direct carcinogens, can also act by elevating risk of various cancers and respiratory problems. The PAH contain significant level of reactive oxygen species (ROS) causing deleterious effect on human normal cells. Micronuclear structural alterations that occur due to the toxic effects include chromosomal aberrations giving rise to broken pieces of chromosomes that lie close to the nucleus. This toxicological hazard further depend on the association of PAH and metals with the size of particles because particles less than 10 micron and less than 2.5 micron are defined as inhalable particles and respirable particles respectively. Particles and their composition are the most important criteria in predicting the toxicological hazard of the environment to human health.

Inhaled PAH are absorbed mainly through the bronchial epithelium with a slower clearance of those absorbed on particles compared to PAH in pure crystal. After absorption PAH distributed to tissues are biotransformed by Phase-I metabolic enzymes to chemically reactive intermediates that may bind covalently to DNA (DNA adducts) leading to tumor initiation. But reaction with other biological macro molecules may also occur. PAH metabolites are mostly



conjugated with glucuronic acid by Phase II enzymes and excreted as hydroxylated metabolites or in a small portion as sulphate. Unconjugated PAH are excreted through the faeces and only about 10 per cent are excreted in the urine. Therefore metabolites of PAH particularly 1-hydroxypyrene is the most important biomarker because it is the principal product representing 90 percent of its metabolites. Measurement of this metabolite is thought to reflect exposure to PAH during the previous few days. The toxicological hazard with respect to prevailing PAH concentration may also be evaluated through cytological assay as the first step towards quantification of adverse human health effect. Among all the cytogenic biomarkers, chromosomal aberrations (CA) serve as the method to measure carcinogenesis in human being. Chromosomal alteration in stimulated peripheral lymphocytes helps in evaluating the genotoxic effect on human exposed to PAH. Micronuclei (MN) assay is an effective cytogenetic technique, which measures the chromosomal alteration in assessing health hazard. In many countries, cytogenic analysis has been recognized and utilised to set the safety and hygiene standards of industries to prevent genetic injury in workers and consequently minimise the development of cancer and malformation in children.

Considering the above fact, CPCB (Central Pollution Control Board) Zonal Laboratory, Kolkata in collaboration with West Bengal Pollution Control Board conducted a study to assess the ambient air quality in terms of aerosol concentration of different sizes (2.5 and 10  $\mu$ ), PAH, organic carbon, metals and different ions etc. and their adverse impact on human health in terms of metabolites in urine, chromosomal aberration, micronuclei (MN) etc. of the people exposed to the studied area. The six major traffic intersections in Kolkata were covered and traffic police prone to get exposed and few patients admitted in SSKM hospital already suffering from respiratory problems were subject in this study. The study was conducted and will be continued with active support from the Indian Institute of

Chemical Biology, Kolkata and the Institute of Post Graduate Medical Education and Research, Kolkata. These institutes and many other individuals extended their expertise and laboratory facilities in course of this study. In this study, Anderson sampler available with the WBPCB were used for collecting samples of  $PM_{10}$  and  $PM_{2.5}$  during winter because concentration of PM is significantly increased as winter approaches. RDS (Respirable Dust Samples) of Envirotech were also employed to compare the results of Anderson  $PM_{10}$ . The samples were analysed for measurement of ions by Ion Chromatograph, metal by AAS (Atomic Absorption Spectrophotometer), PAH by GC (Gas Chromatograph) and HPLC (High Performance Liquid Chromatograph), metabolites in urine by HPLC.

The analytical results shown in Table 2.6.1 indicate that  $PM_{2.5}$  and  $PM_{10}$  were varying from 164 to 370  $\mu\text{g}/\text{m}^3$  and 256 to 553  $\mu\text{g}/\text{m}^3$  respectively. The ratio of  $PM_{2.5}$  and  $PM_{10}$  was varying from 0.62 to 0.76. The average ratio of  $PM_{2.5}$  and  $PM_{10}$  is 0.69 with coefficient of variation of 6.7 percent. Study conducted earlier by the WBPCB reported the average ratio of  $PM_{2.5}$  and  $PM_{10}$  was 0.73 with standard deviation of 0.035. Both the studies carried out separately at different locations (close to school and traffic intersections) during winter in Kolkata indicate the consistency in average ratio of  $PM_{2.5}$  and  $PM_{10}$  with marginal difference of 6.7 percent. With these findings, it may be mentioned that about 70 per cent of  $PM_{10}$  are the particles that may be deposited in the lower portion of lung sac, the pleura and bronchioles. Most of the NAAQM (National Ambient Air Quality Monitoring Station) stations are operated using RDS samplers which provides aerosol concentration of  $PM_{10}$ .

To have an idea about percentage of  $PM_{2.5}$ , both samplers were operated simultaneously and the results are shown in Table 2.6.2. Difference observed was varying from -13.45 to 9.35 percent. Finer particles are the more dangerous ones. The problems will be further aggravated if such particles are associated with toxic and carcinogenic compounds. Therefore

**TABLE 2.6.1**  
**CONCENTRATION AND RATIO OF PM<sub>2.5</sub> WITH PM<sub>10</sub>**  
 (averaging 12 hrs. value)

STATION	PM 2.5 mg/m <sup>3</sup>	PM 10 mg/m <sup>3</sup>	RATIO
Hazra	179	256	0.76
Park Circus	370.5	553.5	0.67
Science City	221.5	342.5	0.65
Shyam Bazar	201.5	271	0.75
Cossipur	219	322.5	0.68
Rabindra Sadan	164	268.5	0.62
Average	225.9	335.7	0.69
SD	74.3	112	0.06
CV	32.9	33.4	8.1

**TABLE 2.6.2**  
**COMPARISON BETWEEN ANDERSON**  
**AND ENVIROTECH SAMPLER**

STATION	PM <sub>10</sub> mg/m <sup>3</sup>	PM <sub>10</sub> mg/m <sup>3</sup>	% Difference
	Andersen	Envirotech	
Hazra	223	246	9.35
Rabindrasadan	278	245	-13.47
Tollygunge	518	552	6.16
Shyambazar	351	334	-5.09
COSSIPUR	327	333	1.80

**TABLE 2.6.3**  
**DISTRIBUTION OF TOTAL PAHS COMPOUNDS IN PM<sub>10</sub> AND IN PM<sub>2.5</sub>**

Stations	mg/m <sup>3</sup> of PM <sub>2.5</sub>	mg/m <sup>3</sup> of PM <sub>10</sub>	ng/mg of PM <sub>2.5</sub>	ng/mg of PM <sub>10</sub>	(%) Difference
Hazra	8.90	9.44	0.0497	0.0369	25.85
Park Circus	16.37	17.53	0.0442	0.0317	28.32
Science City	10.56	11.79	0.0477	0.0344	27.77
Shyam Bazar	9.78	9.84	0.0485	0.0363	25.13
Cossipur	10.46	11.25	0.0478	0.0349	26.99
Rabindra Sadan	8.31	9.78	0.0507	0.0364	28.17
Average	10.73	11.60	0.05	0.04	27.04
SD	2.90	3.05	0.009	0.007	1.31
CV	27.02	26.26	4.66	5.50	4.83

SD: Standard Deviation; CV: Coefficient of Variation

distribution of 16 PAH compounds in both the sizes of particulate matter were quantified. These compounds are Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(ah)anthracene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene.

Concentrations of total PAH (sum of 16 compounds) was varying from 8.9 to 16.37 ng/m<sup>3</sup> of 10 μ size with average of 10.73 ng /m<sup>3</sup> and CV (Coefficient of Variation) of 27.02 percent and from 9.44 to 17.53ng / m<sup>3</sup> of 2.5 μ size with average of 11.6 ng /m<sup>3</sup> and CV of 26.26 percent. Such uniform variation of coefficients indicate marginal increase of about 10 percent in ng /m<sup>3</sup>. While total PAH values were normalised with respect to values of PM<sub>10</sub> and at PM<sub>2.5</sub>, the average values in ng/μg were 0.05 with CV of 4.7 per cent and 0.04 with CV of 5.5 per cent in PM<sub>2.5</sub> and PM<sub>10</sub> respectively. The results reveal that PAH compounds in finer

particles i.e respirable particles are 27 per cent more than that of coarse particles after normalisation considering negligible variation among the values of different stations. Such distribution of PAH compounds is really a cause of concern particularly during the winter. Normalisation was done considering significant (at 99 per cent level of significance) correlation of PAH ( $r=0.66, n=25$ ) and organic carbon ( $r=0.95, n=25$ ) with particulate matter. Therefore normalised values of PAH clearly indicate that the adherence of such hazardous compounds

is significantly higher to 2.5  $\mu$  size particles. Similar distribution pattern was observed in case of organic carbon. In case of metals, presently quantification was done only collected by RDS sampler. But it may be assumed based on the distribution of organic carbon in both the sizes that probability of higher association of metals is to  $PM_{2.5}$ . Though the average concentration of metals ( $\mu\text{g}/\text{m}^3$ ) shown in Table 2.6.4 are not significantly high but wide variation among the stations as reflected from CV and poor correlation of few metals with PM as shown in Table 2.6.5

TABLE 2.6.4

CONCENTRATION OF METALS ( $\text{mg}/\text{m}^3$ ) IN  $PM_{10}$  AND RELEVANT STATISTICAL PARAMETERS

Stations	Ba	Cu	Mn	Fe	Zn	Cd	Pb	Al	$PM_{10}$
Howrah	0.40	0.04	0.63	0.44	0.56	0.02	1.33	3.22	519.73
Esplanade	0.34	0.06	0.83	0.65	0.71	0.02	1.57	5.01	511.83
Shyambazar	0.21	0.07	1.04	1.21	0.65	0.01	0.46	5.56	517.93
Rabindra Sadan	0.27	0.06	1.06	1.33	0.56	0.01	0.72	5.57	511.07
Moulali	0.24	0.09	1.85	2.60	0.86	0.02	1.28	5.53	539.43
Hazra	0.15	0.08	1.76	2.55	0.82	0.02	1.30	4.86	509.87
Cossipore	0.17	0.08	1.73	2.58	0.85	0.02	0.97	4.88	433.13
Average	0.25	0.07	1.27	1.62	0.72	0.02	1.09	4.95	506.14
SD	0.09	0.02	0.50	0.94	0.13	0.01	0.39	0.83	33.75
CV	36.5	26.0	39.1	58.0	18.3	41.1	35.9	16.7	6.7

TABLE 2.6.5

CO-RELATIONSHIP AMONG THE METALS AN PM

Metals	Cu	Mn	Fe	Zn	Cd	Pb	Al	$PM_{10}$
Ba	NS	NS	NS	NS	NS	NS	NS	NS
Cu		SIG	SIG	SIG	SIG	SIG	SIG	SIG
Mn			SIG	SIG	SIG	NS	SIG	NS
Fe				SIG	SIG	NS	SIG	NS
Zn					SIG	NS	SIG	NS
Cd						NS	SIG	SIG
Pb							NS	NS
Al								SIG

SIG : Significant NS : Not significant

indicate independent behavior of some metals. But significant correlation among few metals marked as 'SIG' in Table 2.6.5 reveal their well

association. Almost the same trend was found with normalised values of metals shown in Table 2.6.6.

**TABLE 2.6.6**  
**CONCENTRATION OF METALS (MASS FRACTION) IN mg/mg**  
**AND RELEVANT STATISTICAL PARAMETERS**

Stations	Ba	Ca	Cu	Mn	Fe	Zn	Cd	Pb	Al
Howrah	0.0008	0.0057	0.0001	0.0012	0.0009	0.0011	0.0000	0.0026	0.0062
Esplanade	0.0007	0.0080	0.0001	0.0016	0.0013	0.0014	0.0000	0.0031	0.0098
Shyambazar	0.0004	0.0080	0.0001	0.0020	0.0023	0.0013	0.0000	0.0009	0.0107
Rabindra Sadan	0.0005	0.0076	0.0001	0.0021	0.0026	0.0011	0.0000	0.0014	0.0109
Moulali	0.0004	0.0095	0.0002	0.0034	0.0048	0.0016	0.0000	0.0024	0.0102
Hazra	0.0003	0.0101	0.0002	0.0034	0.0050	0.0016	0.0000	0.0025	0.0095
Cossipore	0.0004	0.0116	0.0002	0.0040	0.0060	0.0020	0.0001	0.0022	0.0113
Average	0.0005	0.0086	0.0001	0.0025	0.0033	0.0014	0.0000	0.0022	0.0098
SD	0.0002	0.0019	0.0000	0.0011	0.0020	0.0003	0.0000	0.0008	0.0017
CV	34.4	22.2	28.9	42.0	60.9	22.3	43.2	34.8	17.4

Further characterisation of PM in terms of inorganic ions were carried out. The average concentration ( $\mu\text{g}/\text{m}^3$ ) along with values of

each stations are shown in Table 2.6.7 to assess the prevalence of different inorganic ions in PM of studied area. Poor correlation among

**TABLE 2.6.7**  
**CONCENTRATION OF IONS ( $\text{mg}/\text{m}^3$ ) IN  $\text{PM}_{2.5}$  AND  $\text{PM}_{10}$  IN DIFFERENT STATIONS**

Station	Size	RSPM	Na	K	Ca	Mg	$\text{NH}_4$	F	Cl	$\text{NO}_2$	$\text{NO}_3$	$\text{SO}_4$
Hazra	10 m	255.9	12.68	2.36	5.65	0.58	2.08	1.05	2.21	0.04	6.27	25.87
	2.5 m	178.7	11.45	1.135	4.835	0.72	2.325	1.285	3.605	0.055	8.285	27.065
Park Circus	10 m	553.5	11.915	3.095	7.51	0.785	9.62	NA	NA	NA	NA	NA
	2.5 m	370.5	13.95	2.7	11.655	1.055	6.995	NA	NA	NA	NA	NA
Shyam Bazar	10 m	270.9	11.23	1.65	9.47	1.17	2.76	NA	NA	NA	NA	NA
	2.5 m	201.2	6.61	5.31	3.675	0.615	1.875	0.625	1.365	0.035	5.69	18.57
Cossipur	10 m	322.5	13.57	2.625	5.72	0.455	11.055	1.13	4.555	0.06	17.33	42.2
	2.5 m	219	13.275	1.83	3.675	0.25	6.995	1.015	3.02	0.035	11.055	34.19
Science City	10 m	342.5	13.27	2.51	7.64	0.46	8.14	1.35	8.08	0.06	35.44	54.98
	2.5 m	221.5	14.66	2.915	5.375	0.5	14.165	0.81	7.985	0.04	28.725	42.065
Ultadanga	10 m	292.5	10.375	1.715	4.8	0.34	6.115	0.96	6.38	0.06	23.075	38.16
	2.5 m	328.5	12.04	3.01	5.84	0.59	10.67	1.42	6.64	0.02	13.24	38.14
Rabindra Sadan	10 m	268.4	7.16	2.44	6.095	0.56	4.325	0.9	3.12	0.04	15.535	31.975
	2.5 m	164.35	10.575	1.255	4.275	0.415	2.29	0.96	2.865	0.035	6.12	29.33
Average	10 m	329.46	11.46	2.34	6.70	0.62	6.30	0.90	4.06	0.04	16.28	32.20
Average	2.5 m	240.54	11.79	2.59	5.62	0.59	6.47	1.02	4.25	0.04	12.19	31.56

**TABLE 2.6.8**  
**CO-RELATIONSHIP AMONG THE IONS**

	Cl	NO <sub>2</sub>	NO <sub>3</sub>	SO <sub>4</sub>	Na	NH <sub>3</sub>	K	Mg
F	NS	SIG	NS	SIG	SIG	NS	NS	NS
Cl		NS	SIG	NS	NS	NS	NS	NS
NO <sub>2</sub>			NS	NS	NS	NS	NS	NS
NO <sub>3</sub>				SIG	SIG	SIG	NS	NS
SO <sub>4</sub>					SIG	SIG	NS	NS
Na						SIG	NS	NS
NH <sub>3</sub>							NS	NS
K								NS

Sig : Significant ; NS : Not significant

the ions except few (NH<sub>3</sub>-SO<sub>4</sub>-Na, NO<sub>3</sub>-NO<sub>2</sub>, F-NO<sub>2</sub>-SO<sub>4</sub>, Na-NO<sub>2</sub>) as shown in Table 2.6.8 also indicate independent behavior of the ions present in PM. Based on significant correlation, prevalence of salt in PM may be evaluated. Also normalised values shown in Table 2.6.9 reflect mass fraction in fine and coarse particles with indication of more ions in PM<sub>2.5</sub> in the range of 8 per cent to 53 per cent than that of PM<sub>10</sub>. Further evaluation may be made with these data through factorisation to

**TABLE 2.6.9**  
**INORGANIC ION CONCENTRATION (MASS FRACTION) IN mg/mg**  
**AND ASSOCIATED STATISTICAL PARAMETERS**

Station Name	Size	Na	K	Ca	Mg	NH <sub>4</sub>	F	Cl	NO <sub>2</sub>	NO <sub>3</sub>	SO <sub>4</sub>
Hazra	10 m	0.0496	0.0092	0.0221	0.0023	0.0081	0.0041	0.0086	0.0002	0.0364	0.1848
	2.5 m	0.0641	0.0064	0.0271	0.0040	0.0130	0.0072	0.0202	0.0003	0.0452	0.2321
Park Circus	10 m	0.0215	0.0056	0.0136	0.0014	0.0174	0.0000	0.0000	0.0000	0.0319	0.0959
	2.5 m	0.0377	0.0073	0.0315	0.0028	0.0189	0.0000	0.0000	0.0000	0.0440	0.1252
Shyam Bazar	10 m	0.0415	0.0061	0.0350	0.0043	0.0102	0.0000	0.0000	0.0000	0.0232	0.1225
	2.5 m	0.0329	0.0264	0.0183	0.0031	0.0093	0.0031	0.0068	0.0002	0.0292	0.1372
Cossipur	10 m	0.0421	0.0081	0.0177	0.0014	0.0343	0.0035	0.0141	0.0002	0.0498	0.1665
	2.5 m	0.0606	0.0084	0.0168	0.0011	0.0319	0.0046	0.0138	0.0002	0.0562	0.2284
Science City	10 m	0.0387	0.0073	0.0223	0.0013	0.0238	0.0039	0.0236	0.0002	0.1158	0.2124
	2.5 m	0.0662	0.0132	0.0243	0.0023	0.0640	0.0037	0.0360	0.0002	0.1325	0.2747
Ultadanga	10 m	0.0355	0.0059	0.0164	0.0012	0.0209	0.0033	0.0218	0.0002	0.0840	0.1807
	2.5 m	0.0367	0.0092	0.0178	0.0018	0.0325	0.0043	0.0202	0.0001	0.0900	0.1785
Rabindra Sadan	10 m	0.0267	0.0091	0.0227	0.0021	0.0161	0.0034	0.0116	0.0001	0.0409	0.2171
	2.5 m	0.0643	0.0076	0.0260	0.0025	0.0139	0.0058	0.0174	0.0002	0.0392	0.2576
Average	10 m	0.0365	0.0073	0.0214	0.0020	0.0187	0.0036	0.0159	0.0002	0.0546	0.1686
	2.5 m	0.0518	0.0112	0.0231	0.0025	0.0262	0.0048	0.0191	0.0002	0.0623	0.2048
Standard Deviation	10 m	0.0077	0.0013	0.0069	0.0011	0.0075	0.0002	0.0051	0.0000	0.0323	0.0443
	2.5 m	0.0142	0.0067	0.0053	0.0007	0.0181	0.0009	0.0097	0.0000	0.0357	0.0573
Coefficient of Variation	10 m	21.2	17.4	32.3	54.5	40.2	6.4	32.1	24.1	59.3	26.3
	2.5 m	27.3	60.0	23.0	26.5	69.1	19.5	50.8	20.4	57.3	28.0
Difference(%)		41.8	53.0	8.0	25.7	40.3	31.4	19.6	11.1	14.2	21.5

apportion the sources but with one set of observation accuracy can not be maintained.

The above findings clearly indicate that people exposed to this ambient air are prone to get effected not only with the particulate matter of 2.5  $\mu\text{m}$  but also toxic and carcinogenic chemicals. The people working in this ambient are always at risk. Considering this aspect, a cytogenetic assay, which play important role in toxicological hazard evaluation was carried out. Genetic damages at the chromosomal level in chromosome structure are accurately assessed in somatic cells in comparison to numerical change in chromosomes. In this study each participant was first administered a structured questionnaire that elicited information on socio-demographic characteristics, life-style, occupation, diet, addiction, medical and residential histories and evaluated potential confounding factors.

The questionnaire was similar to that published by the International Commission for the Protection against Environmental Mutagens and Carcinogens (Carrano and Natarajan, 1988). Initially only a total of 30 exposed individuals were recruited for this study. Out of 30 subjects, a total of ten biological samples have been completed for their analysis of micronuclei formation in urinary transitional epithelial cells, buccal mucosa cells

and lymphocytes. Chromosomal aberration studies were also carried out from these ten subjects. Ten subjects from East Midnapur district were also recruited for this study, which will serve as control. The results are shown in Table 2.6.10. In these preliminary studies, a significant increase in both MN in three cell types and CA were observed in lymphocytes of exposed population when compared with the control population. 1-hydroxypyrene in urine (metabolites of PAH) was measured as an indicator of uptake of PAH. The presence of 1-HP in urine and significant increase of MN and CA indicates the influence of PAH on human health. But the level of exposure and its actual impact on human health cannot be assessed with the limited number of samples. Therefore the same work will be continued with satisfactory significant number of samples in the coming year.

The above study revealed that percentage of respiratory particles (i.e.  $<2.5\mu$ ) are significantly high, particularly during the winter. Also it is established that fine particles are more prone to get enriched with toxic and carcinogenic substances than the coarse particles. Concentration of ions indicates the elemental imposition of particles. Further, study in the same line may help to assess the detailed composition of the particles and their actual impact on human health.

**TABLE 2.6.10**  
**CHROMOSOMAL ABERRATIONS (CA) AND MICRONUCLEI (MN) FORMATION**  
**IN THREE CELL TYPES INDUCED BY 1-HYDROXYPYRENE (1-HP)**

Sl. No	Code	1-HP nano mol/lit	Lymphocytes	Buccal mucosa cells	Urothelial cells	CA in lymphocytes (%) (CA)
1	SSKM-34	2.7	7.01	4.92	6.4	13.12
2	SSKM-33	18.8	7.67	4.51	7.66	12
3	SSKM-31	1.8	7.24	4.3	8.07	10.52
4	TPES-26	0.3	6.49	3.33	4.58	14.4
5	TPRS-3	0.4	9	3.12	3.67	13.4
6	TPH-16	0.5	9.42	4.07	3.89	13.5
7	TPRS-6	1.8	8.01	4.13	4.49	9.78
8	TPH-20	0.5	7.18	4.07	3.64	13.11
9	TPES-24	0.5	9.13	3.89	3.12	7.6

# LEGAL MATTERS

One of the prime responsibilities of the West Bengal Pollution Control Board (WBPCB) is to ensure proper implementation of several statues, judicial and legislative pronouncements to improve and protect the state of environment of West Bengal. Being the pollution-related statutory authority of the state, the Board has taken necessary legal steps during the time period 2004-2005, some of which are given below.

**Meetings with polluters:** The Board arranged several meetings with polluters to apprise them of the necessity to take pollution control measures, to erect pollution control systems and to perform their duties towards social obligations in compliance with the existing environmental statutes.

**Public Hearings:** The Board has arranged public hearings involving the aggrieved complainants and the polluting units for redressal of their grievances. Thereafter, the Board compelled the polluting units to take feasible measures for erection of pollution control systems. Complying units were encouraged but the non-complying units ones were not spared. Regulatory orders such as restriction on operating time, closures, disconnection of electricity, imposition and forfeiture of bank guarantee are issued to recalcitrant units. A summary of such regulatory orders is given below.

a) **Closure Orders:** The Board issued closure orders against 249 industries

during 2004-2005. Before issuing such orders, the polluting units were given adequate time to submit replies against show cause notices issued by the Board for erection of pollution control systems in consonance with provisions of the relevant Acts and Rules. After erection of suitable pollution control systems by some of the units, the Board has suspended closure order against 187 units, imposing certain conditions.

b) **Disconnection of Electricity:** The Board also issued orders for disconnection of electricity against 238 units during 2004-2005. In most of the cases, the Board was compelled to issue such orders due to non-compliance of the closure orders on the part of the industries. However, after implementation of proper pollution control system, the Board has issued orders for restoration of electrical connection against 190 units during the year under review.

c) **Imposition of Bank Guarantee:** The Board has imposed Bank Guarantee upon the 84 polluting units who failed to comply with the statutory directions issued by the Board during the period. Such Bank Guarantee totals to an amount of Rs. /-, out of which an amount of Rs. /- was forfeited from four units who failed to comply with the directions of the Board for erection of pollution control systems within the stipulated timeframe.

**TABLE 2.7.1**  
**REGULATORY ACTION OF THE BOARD DURING 2004-2005**

Issues	Apr '04	May '04	Jun '04	July '04	Aug '04	Sep '04	Oct '04	Nov '04	Dec '04	Jan '05	Feb '05	Mar' '05	Total
Imposing Bank Guarantee	4	3	5	22	13	5	4	3	6	4	7	8	84
Forfeiture of Bank Guarantee	Nil	Nil	1	1	1	Nil	Nil	Nil	Nil	Nil	1	Nil	4
Issuance of Closure	13	42	57	23	13	25	5	3	22	21	8	17	249
Suspension of Closure	20	9	19	20	33	13	25	9	11	9	11	8	187
Disconnection of Electricity	13	42	57	18	13	23	5	1	22	20	8	16	238
Restoration of Electricity	21	9	19	19	30	13	25	11	12	11	11	9	190
Imposition of pollution fine	96	26	35	28	18	39	13	20	36	7	8	8	334

### IMPORTANT LEGAL DECISIONS IN THE YEAR 2004-2005

#### A. Supreme Court Matter

##### 1. Writ Petition (Civil) No. 309/2003

[Laxmi Narain Modi, Petitioner, Versus Union of India & Ors., Respondents.]

*Order Dated 26.07.2004*

The matter relates with disposal of solid wastes generated from the slaughterhouses.

Upon hearing on 26.07.2004, the Hon'ble Supreme Court of India directed the Central Pollution Control Board to collect information from various State Pollution Control Boards/Committees as to the mode adopted in the respective areas for disposal of slaughter house wastes. The State Pollution Control Boards/Committees were directed to cooperate with the Central Pollution Control Board (CPCB) and supply the requisite information to the CPCB within the stipulated time. On receipt of such information, the CPCB directed to file affidavit compiling the aforementioned information in a chart.

##### 2. Writ Petition (Civil) No. 888/1996

[Almitra H. Patel & Another, Petitioners Versus Union of India & Others., Respondents]

*Order Dated 26.07.2004*

The matter relates to the disposal of municipal solid wastes in terms of the Municipal Solid Wastes (Management and Handling) Rules, 2000.

Upon hearing on 26.07.2004, the Hon'ble Supreme Court of India observed that the Central Government had also not responded to the matters related to the order dated 03.02.2004 passed earlier by the Hon'ble Court. It was also learnt that some of the states have sought 80 per cent central assistance for implementation of the project. The state of West Bengal had made an affidavit dated 18.06.2004 in this regard.

The Hon'ble Court observed large scale non-compliance of the provisions of the Municipal Solid Wastes Rules in the annual report (2002-2003) filed by the Central Pollution Control Board.



Considering these facts and circumstances, the Hon'ble Court directed that the Chief Secretaries of states need to direct their State Pollution Control Boards to send their Regional Officers and Environment Officers to pro-actively interact with the officials of local bodies. An average of 5-6 local bodies should be dealt with and each should jointly fill in and submit the local bodies' annual report before the next hearing and report compliance.

The Hon'ble Court also directed that all Chief Secretaries need to direct the State Pollution Control Board to file affidavit stating the reasons why applications already applied for have not been approved within the stipulated time.

**3. Writ Petition (Civil) No. 460 of 2004**

**[Goa Foundation, Petitioner Versus Union of India & Ors., Respondents.]**

*Order Dated 21.02.2005*

Pursuant to the above mentioned matter, the Hon'ble Supreme Court of India, on perusal of affidavit filed by Joint Secretary, Ministry of Environment & Forests, Government of India directed the Government of India to issue requisite order within a period of ten days directing the defaulting units to close down.

The Hon'ble Court further directed the State Governments to comply with the statutory directions issued by the Government of India. The Respondent Government of India was further directed to file a compliance report within six weeks giving details of units that may be closed as a result of the concerned order.

**4. Special Leave to Appeal (Civil) No. 23803/2004 arising out of the order dated 20.08.2004 in Writ Petition No. 1943 of 2003 in CAN No. 4327 of 2004 of the Hon'ble High Court, Calcutta.**

**[Susanta Tagore & Ors., Petitioners Vs Union of India & Ors., Respondents.]**

*Date of Order: 03.03.2005*

The matter relates with the construction of Housing Projects in Sriniketan-Shantiniketan

Development Authority (SSDA) area in Birbhum District.

The Board constituted a Committee that was mainly entrusted to consider the issues regarding development of housing projects in the Sriniketan-Shantiniketan area and other matters relating thereto. The report of the said Committee containing few recommendations was submitted to the Hon'ble High Court, Calcutta. The Hon'ble Court disposed of the matter on 20.08.2004 observing that the deities are not proper parties to this Public Interest Litigation and their prayer was rejected. The Hon'ble Court, however, preserved their rights.

The Hon'ble High Court, Calcutta further made it clear that the rights and claims for filing the requisite forms in time before the appropriate authorities, and all other matters in regard to their right of ownership or of immediate possession of the land in question, have not been entered by Hon'ble Court in any way. The Hon'ble Court preserved their rights, if any, to be enforced by them in appropriately constituted or already continuing legal proceedings.

The Hon'ble High Court, Calcutta also noted that under a century old lease from the State of West Bengal, the SSDA has granted leases to the Bengal Ambuja Group, and received payment of Rupees one crore thirty one lakhs from Bengal Ambuja.

Except for the private rights of the deities which were not pronounced upon, the Hon'ble Court was of the opinion that, the Bengal Ambuja Project can go ahead with the project and the points raised in the Public Interest Litigation have no substance. Thus Hon'ble Court dismissed the application.

The petitioners moved before the Hon'ble Supreme Court of India and upon hearing, the Hon'ble Supreme Court upheld the report of the Committee and also observed that the environmental impact assessment made by the Board cannot be ignored. The Hon'ble Court observed that the SSDA may permit small construction to be made by the owners of the

land or additions or allow alterations to the existing building for residential purposes. However, it would not consider the effect of the changes which may be brought about by turning Santiniketan into a commercial and industrial hub. The Hon'ble Court was pleased to pass an order on 03.03.2005 with the following observations:

*"The West Bengal Pollution Control Board is a statutory body. The environmental impact assessment in terms of the provisions of the laws governing ecology of the area is imperative. The Pollution Control Board, which has statutory duties to perform, had issued certain directions for preservation and conservation for cultural, historical, archaeological, environmental and ecological purposes. Such directions are binding on the state as well as the SSDA. If any construction is carried on the Kaolai, the same indisputably will destroy its unique natural and cultural heritage, as opined by the Board, and thus all constructional activities must abide by the same."*

## B. High Court Matter

### 1. Writ Petition No. 5431 (W) of 2004

**[Debrupayan Housing Finance Limited, Petitioner Vs State of West Bengal & Ors., Respondents]**

*Date of Order: 18.06.2004*

The matter relates with the construction of a huge township by filling up of wetland by flyash in the district of North 24-Parganas without obtaining any statutory permission from the competent authorities.

The said writ petition was moved against the order passed by the Hon'ble Appellate Authority on 09.09.2003 and also refusal of the application for 'No Objection Certificate' by the West Bengal Pollution Control Board.

The Hon'ble Appellate Authority observed that without obtaining permission from any statutory authority including the WBPCB, the

Appellant unit had started filling the wetland. They had also published advertisements in newspapers and fixed up hoardings inviting members of the public to be associated and participate in the said project for purchasing of properties.

The Hon'ble Court considered the records and reports of the Board and dismissed the application observing that the application was too premature as various matters still remained to be decided and the Writ Court had nothing to do with this public interest litigation.

The Hon'ble Court also observed that there are serious doubts whether the litigation was of a public interest nature or not, since the Housing Society was seeking to protect its own interests only.

### 2. Writ Petition No. 7669 (W) of 2004

**[W. B. Nursing Homes Association & Ors., Petitioners Vs State of West Bengal & Ors., Respondents]**

*Date of Order: 26.06.2004*

The West Bengal Nursing Homes Association moved before the Hon'ble High Court, Calcutta against the direction of the WBPCB on the health-care units. The order was to ensure that treatment of bio-medical wastes is done with the units either joining a common bio-medical waste treatment facility or setting up their own immediately and also against realization of charges for collection of bio-medical waste on the basis of number of beds.

The Hon'ble Environmental Bench, High Court, Calcutta after hearing the parties and considering the affidavit of the Board was pleased to dismiss the writ petition summarily upholding order of the Board.

### 3. Writ Petition No. 31110 (W) of 1997

**[M. C. Mehta, Petitioner Versus Union of India & Ors., Respondents.]**

*Order Dated 30.09.2004*

The issue relates with the discharge of municipal sewage in the river Ganga. In

compliance of the order of the Hon'ble Court, the Board submitted report of sewage discharge in the river Ganga by the municipalities situated at the banks of river Ganga. Considering the fact that out of 42 municipalities a considerable number have not yet applied for consent, the Hon'ble Court directed such defaulting municipalities to be present in the court on the next date of hearing (through competent officers or advocates) to make submissions regarding non-compliance of the statutory norms. The Matter will come up for hearing after Puja vacation of the Hon'ble Court.

#### 4. Writ Petition No. 1048 (W) of 2005

**South Sundarban Matsyajibi and Matsya Karmachari Union and Others, Petitioners**

*Versus*

**The State of West Bengal & Ors., Respondents.**

*Order Dated 04.02.2005*

The matter relates with the encroachment of Hukaharania River for construction of a reservoir in Sunderban area under the guidance of Kultali Panchayet Samity.

Upon hearing on 04.02.2005, the Hon'ble Environmental Bench, High Court, Calcutta stayed further work on the scheme as complained of for a period of two weeks or until further orders, whichever is earlier. As per order of the Hon'ble Court dated 28.01.2005, the Board conducted an inspection in the area concerned and submitted report before the Hon'ble Court.

Upon hearing on 15.02.2005, the Hon'ble Court further directed the Irrigation and Waterways Department, Fisheries Department and West Bengal Pollution Control Board to conduct a joint inspection made in the writ application.

On subsequent hearing on 18.03.2005 and on perusal of reports, the Hon'ble Court apparently observed that the proposed construction, which has been undertaken by the Sunderban Development Board jointly with

the local Panchayet will benefit the local public by construction of a permanent bridge over the existing waterbody called Hukaharania Canal.

From the submission of the parties, the Hon'ble Court observed that the proposed scheme will lead to the construction of a reservoir for sweet-water, which will help in increasing the agricultural activities in the area and the proposed bridge will benefit the members of the public.

The Hon'ble Court directed that in the meantime the proposed construction may continue. But the Hon'ble Court also made it clear that such construction may go on strictly subject to further order that may be passed by the Hon'ble Court. If it is ultimately found that the project is against the public interest or will add pollution to the area, the Hon'ble Court has reserved the right to pass necessary order for stopping the project and restoring the area to its previous position.

#### 5. Writ Petition No. 7987 (W) of 2002 Howrah Ganatantrik Nagarik Samity & Others, Petitioners

*Versus*

**Union of India & Ors., Respondents.**

*Order Dated 23.02.2005*

The matter related with different issues for maintaining environmental equilibrium of the Victoria Memorial Hall, Kolkata.

Upon hearing on 23.02.2005, the Hon'ble Division Bench, High Court, Calcutta observed that there has been some improvement in the air quality though the desired level of improvement has not yet been reached. The Hon'ble Court expected that further improvement in the air quality will be recorded the garden is formed on both sides of the Victoria Memorial Hall.

In accordance with the order of the Hon'ble Court dated 03.02.2005, the Board submitted a report of continuous ambient air quality monitoring at the Victoria Memorial Hall premises, Kolkata before the Hon'ble Court.

## C. Pollution Control Appellate Authority (W.B.) Matters

### 1. Appeal No. A-20/2003

[M/s. United Novelties & Gas Supply Company, Appellant Vs W. B. Pollution Control Board & Ors., Respondents]

*Date of Order: 06.04.2004*

The matter relates to a particular shifting order (passed by the WBPCB) for operation of a LPG godown in a thickly populated area.

The report of the Board as well as the guideline of the Department of Explosive, Government of India, observed that it is highly undesirable that the appellant unit should continue to operate the LPG godown at its present location. This is because the present location abuts a public thoroughfare as unloading spot of LPG Cylinders in a densely populated residential area.

The Hon'ble Appellate Authority on 06.04.2004 dismissed the appeal directing the appellant unit to shift their godown to a suitable place within four months from the date of hearing, failing which the Board will be at liberty to take necessary action in the matter in accordance with law.

### 2. Appeal No. A-17/2004

[M/s. Dimple Vincom Private Limited, Appellant Versus W. B. Pollution Control Board & Ors., Respondents.]

*Order Dated: 10.08.2004*

The matter relates to the establishment of a water park in wetland area of East Kolkata, which has been declared as a Ramsar Site. The Board denied 'No Objection Certificate' to the unit..

Upon hearing on 10.08.2004, the Hon'ble Appellate Authority observed that the matter has a checkered background travelling from the Board to the Appellate Authority and even

to the Hon'ble Supreme Court and also to the Hon'ble High Court, Calcutta on many occasions.

The Hon'ble Appellate Authority observed that the matter could be better examined by an Expert Committee appointed by the Authority. The Committee will go into the details of the project and the situation in the ground level in the concerned area and will make their observations and recommendations in the matter so that the same may be considered by the Appellate Authority for a proper decision.

The Hon'ble Appellate Authority consists the Committee with the following members:

- i) Professor P. N. Roy, Chairman, Environmental Impact Assessment Committee of the Government of West Bengal;
- ii) Head, Department of Architecture, Bengal Engineering College (Deemed University), Shibpur, Howrah;
- iii) Professor S.K. Sanyal, Pro Vice-Chancellor, Jadavpur University, Kolkata;
- iv) Chief Environment Officer, Department of Environment, Government of West Bengal; and
- v) One member of Institute of Wetland Management and Ecological Design to be nominated by the Director of the Institute.

### 3. Appeal No. A-31/2004

[M/s. Govinda Impex Pvt. Ltd., Appellant Versus W. B. Pollution Control Board, Respondent.]

*Order Dated: 04.01.2005*

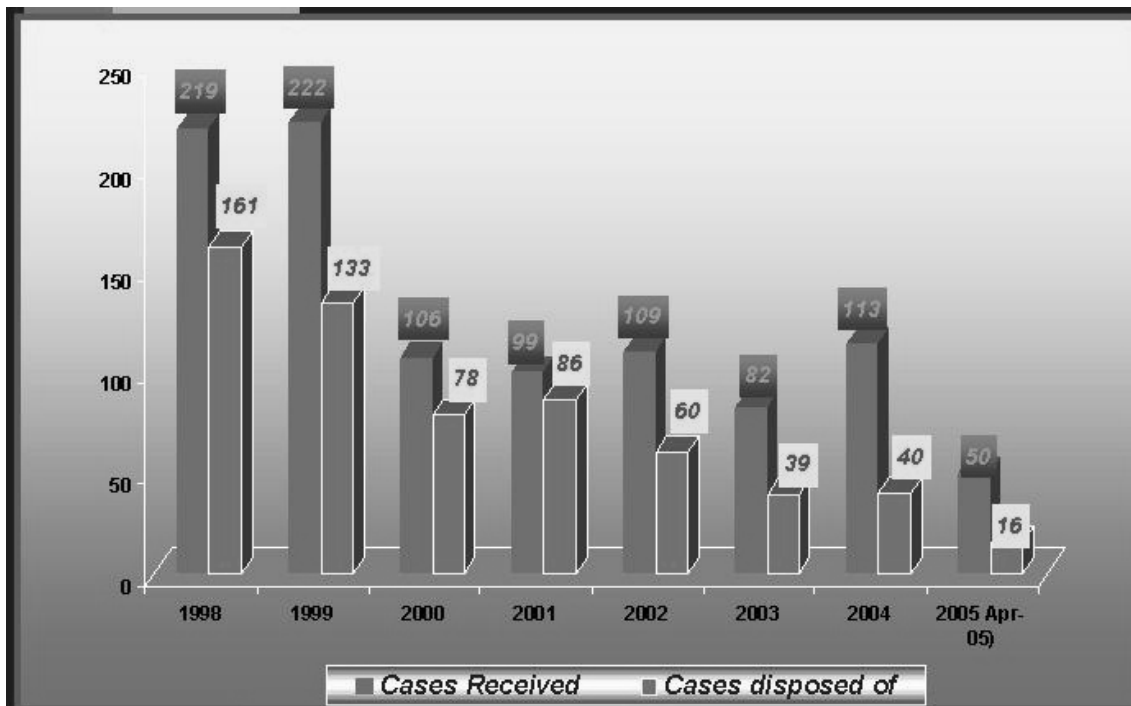
The matter relates to the issuance of closure order against M/s. Govinda Impex Pvt. Ltd., a sponge iron unit in Barjora, Bankura, causing environmental pollution including air pollution.

Upon hearing on 04.01.2005, the Hon'ble Appellate Authority upheld the order of the

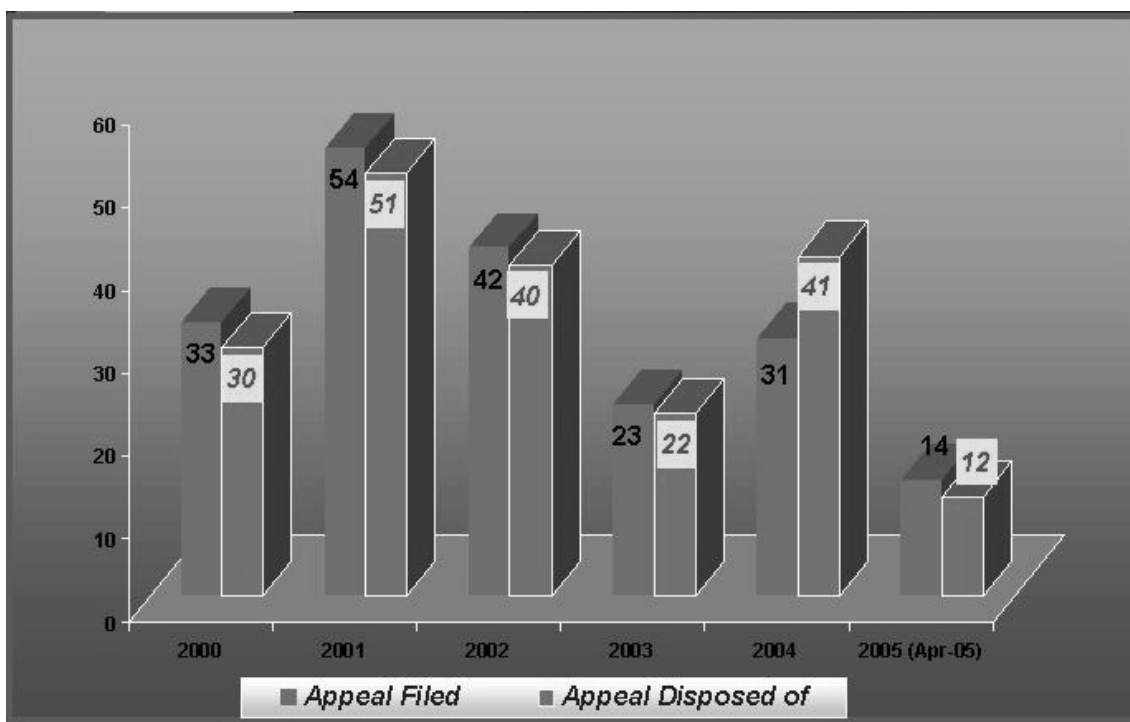
Board and constituted an Expert Committee. The Committee was asked to submit a report stating the details of the problem of working of sponge iron units in the locality. The Committee was also asked to suggest some norms regarding pollution costs, which will be necessary to impose for violation of environmental norms in future by such units: The Committee consists of the following members:

- i) Professor P. N. Roy, Chairman, West Bengal Financial Corporation, Government of West Bengal
- ii) Professor Sabooj Bhowal, Retired Professor, Department of Chemistry, Jadavpur University; and
- iii) Professor Arunava Majumder, Director-Professor & Head, Department of Sanitary Engineering, All India Institute of Hygiene and Public Health, Government of India.
- iv) Professor Gautam Gupta, Professor, Department of Economics, Jadavpur University
- v) Shri Biswajit Mukherjee, Senior Law Officer, West Bengal Pollution Control Board – Member Convenor of the Committee
- vi) Shri Subrata Ghosh, Senior Environmental Engineer, West Bengal Pollution Control Board

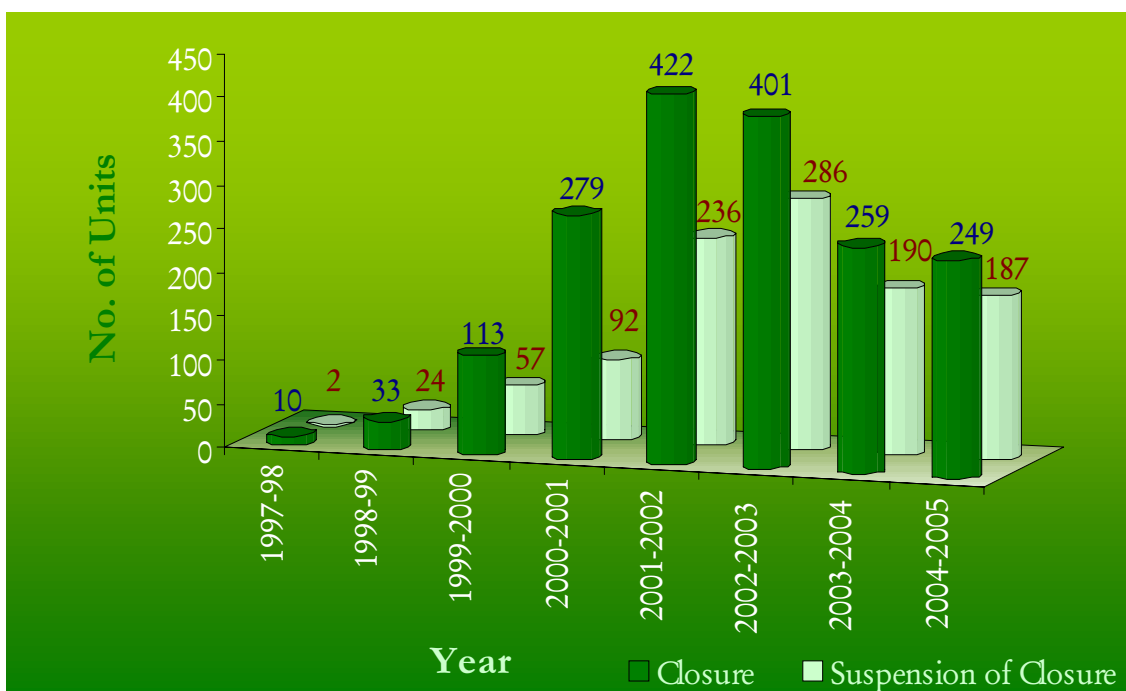
**FIGURE 2.7.1**  
**STATUS OF HIGH COURT CASES FOR LAST EIGHT YEARS**



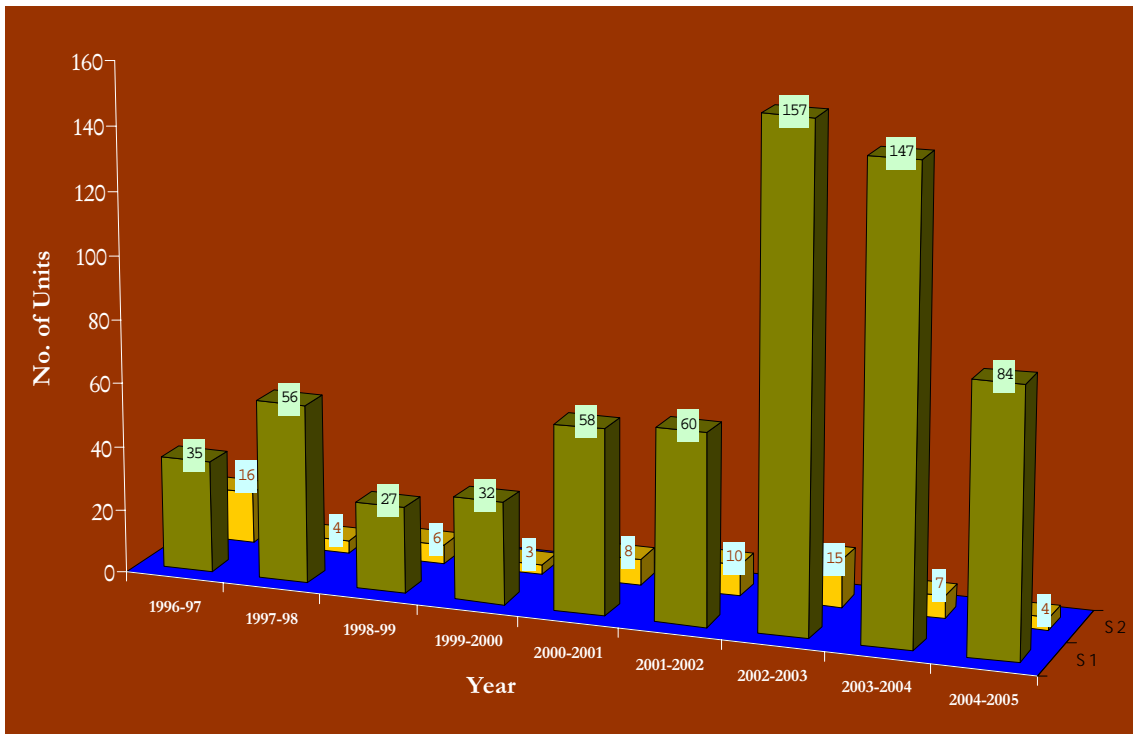
**FIGURE 2.7.2**  
**STATUS OF APPEAL CASES SINCE LAST SIX YEARS**



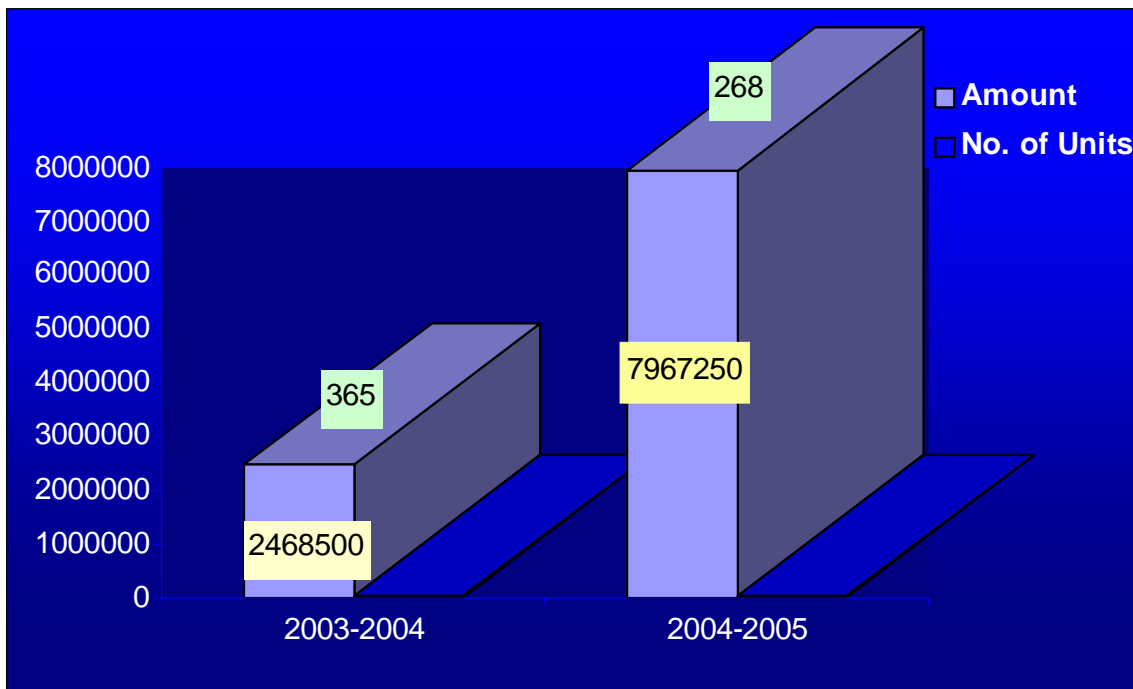
**FIGURE 2.7.3**  
**STATUS OF CLOSURE SINCE 1997**



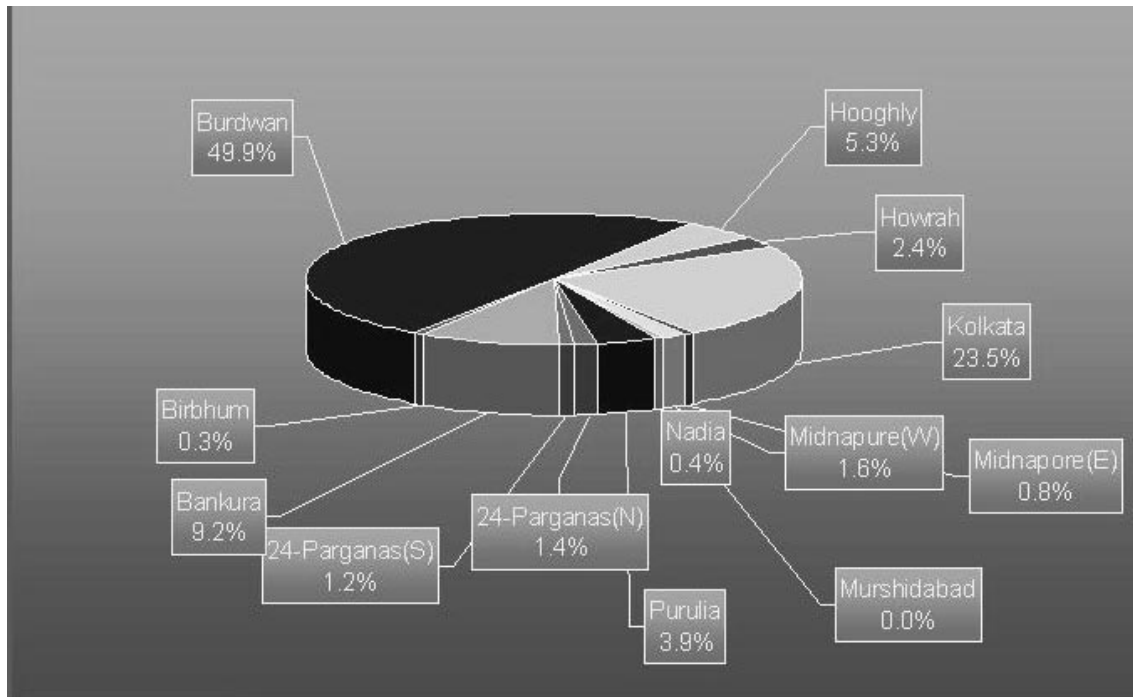
**FIGURE 2.7.4**  
**STATUS OF OF BANK GUARANTEE**



**FIGURE 2.7.5**  
**STATUS OF POLLUTION COST**



**FIGURE 2.7.6**  
**DISTRICT WISE BREAKUP OF POLLUTION COST DURING 2004-05**



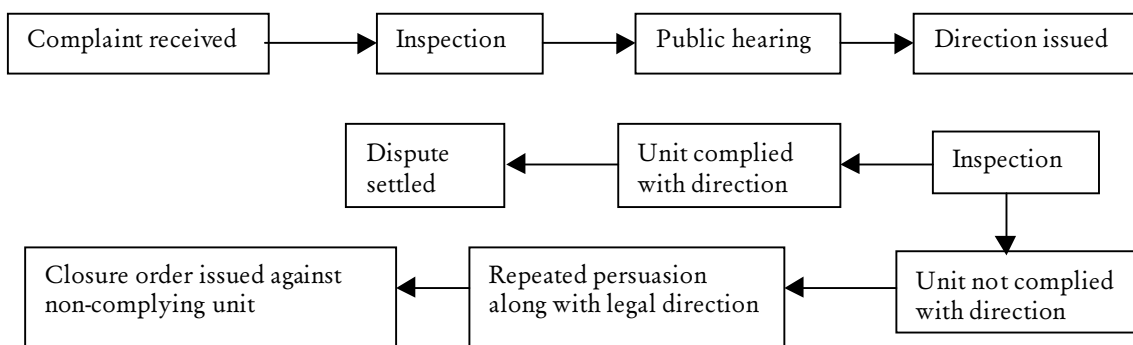


# PUBLIC GRIEVANCE

Public hearing is a transparent method adopted by the West Bengal Pollution Control Board for resolving the public problems related to environmental issues. The WBPCB hearing authority is composed of a retired Judicial Officer and other legal and technical officers of the Board. After careful consideration of the representations from both the complainant and the aggrieved, necessary directions are issued. If the directions are complied with within a time schedule, the case is disposed off. Otherwise, legal actions are taken against the errant unit during subsequent hearings. In the ultimate case, closure order is issued until the unit adopts an adequate precautionary arrangement for control of pollution. In case the complaint is found to be beyond the legal jurisdiction of the Board, necessary suggestion letter or letter of direction are

immediately sent to the concerned authorities. This process is diagrammatically represented below.

Following the general practice, the public lodges pollution-related complaints by directly approaching the office of the Board. Recently, the process of lodging a complaint at the WBPCB was made simple. One can now lodge a complaint by just clicking [www.emis.wbpcb.gov.in](http://www.emis.wbpcb.gov.in) and submitting the necessary information related to the complaint. Almost immediately, the complaints are acknowledged, inquired, inspected and subsequently redressed during a hearing in presence of both the parties involved. The Board punishes the defaulters with bank guarantees as well as with notices of disconnection of electricity and closure.



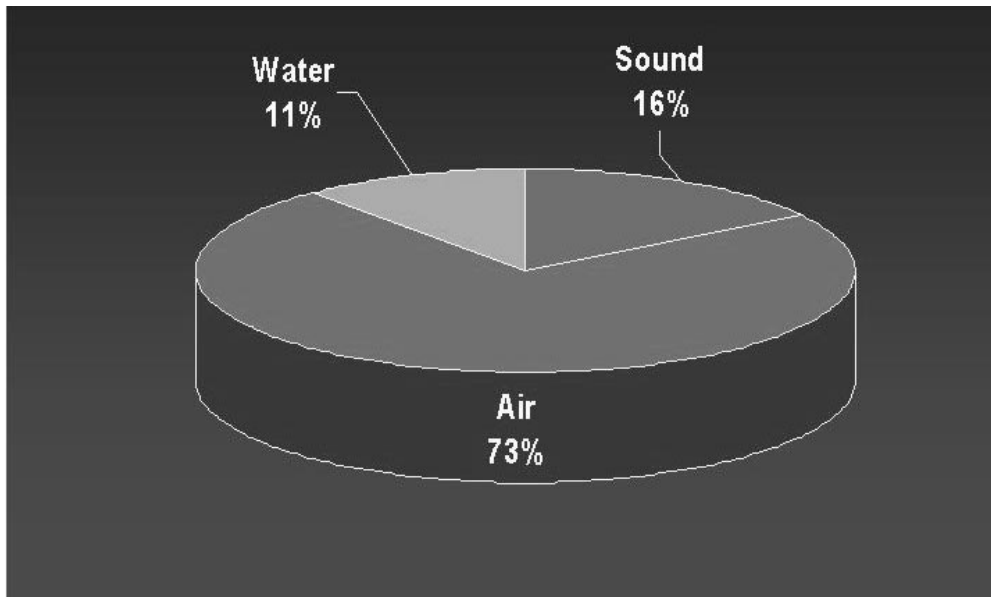
**Table: 2.8.1**  
**ACTIVITIES OF THE PUBLIC GRIEVANCE CELL DURING**  
**THE TIME PERIOD 01-04-2004 TO 31-03-2005**

Issues	Apr '04	May '04	Jun '04	July '04	Aug '04	Sep '04	Oct '04	Nov '04	Dec '04	Jan '05	Feb '05	Mar' 05	Total	Total complaints received
Brought forwarded from previous period													118	1548
Complainant received during the period.	87	82	100	77	89	103	48	86	89	105	77	90	1033	<b>Total complaints disposed of</b>
Suggestion letter issued.	26	27	25	17	21	24	9	17	15	32	20	14	247	1432
Letter of Direction issued to other authorities of redressal of grievance.	3	6	6	3	8	5	6	9	2	6	1	5	60	
Public hearing arranged and specific direction issued for complaint received during the period.	62	74	84	57	55	46	34	36	71	64	44	101	728	
Under process.	114	89	74	74	79	107	106	130	131	134	146	116	116	
Public hearing arranged for the review of old cases.	39	28	28	45	34	29	25	32	22	44	24	47	397	

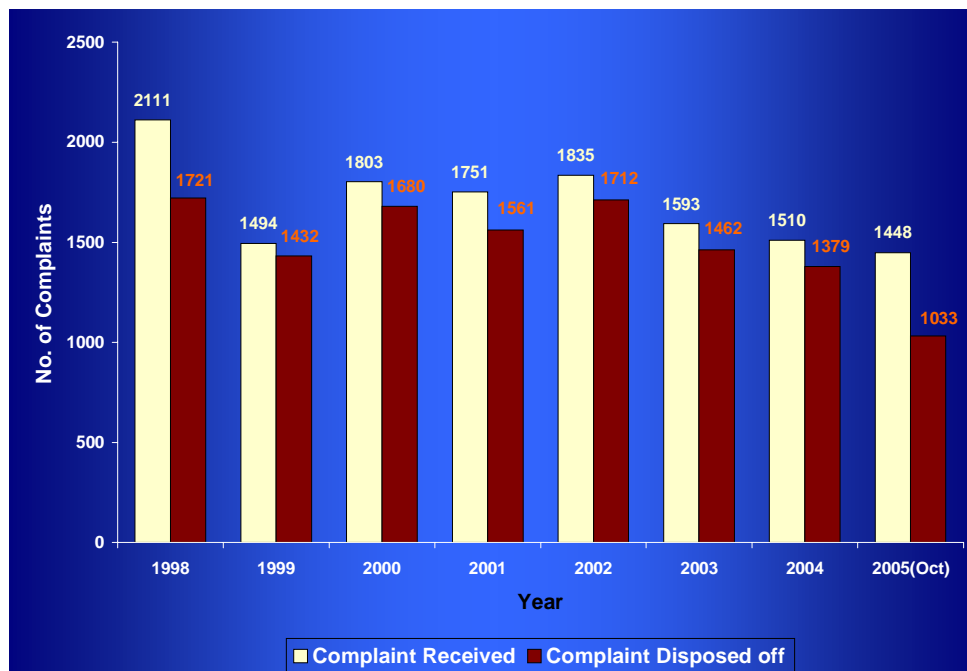
The basic essence of the WBPCB Public Grievance System is to provide 'solutions' to the public who lodges complaints on pollution problems faced by them. The number and nature of the complaints received by the WBPCB acts as an indicator and speak volumes about the environmental scenario of the state. The

growing number of public grievances is indicative of how people are getting increasingly aware about the environmental challenges we all face. People now realise that industrial units and other pollution sources that are responsible for water, air and noise pollution also pose danger to their well being due to negligence and irresponsible functioning.

**FIGURE 2.8.1**  
**STATUS OF NATURE OF COMPLAINTS DURING 2004-2005**



**FIGURE 2.8.2**  
**STATUS OF COMPLAINTS RECEIVED AND DISPOSED FOR LAST EIGHT YEARS**



## CHAPTER IX

# WBPCB INITIATIVES TO PROMOTE AWARENESS

### SECTION I

#### WBPCB ENVIRONMENTAL CAMPAIGN 2004-2005

The West Bengal Pollution Control Board (WBPCB) has been consistently focussing on implementing the various environmental Acts and Rules, in order to protect the overall environment of the state of West Bengal. However, the Board realised that it is not possible to protect the environment without public awareness and participation. With this view, it launched the Environmental Campaign on environment, forest and wildlife on June 5, 2003. The campaign, broadly divided into two categories, awareness-raising and operational, addresses target groups as diverse as school and college students, government officials, research institutions and the general public. Since then, by means of several awareness programmes, the Board has been instrumental in information dissemination, awareness building

and mobilising public support on environmental issues.

Ever since the launch of the campaign, the Board has conducted more than 200 programmes awareness programmes, which serve as a forum for awareness building, devising strategies to combat pollution and to assess the impact of the campaign. During the time period 01.04.2004 to 31.03.2005, the Board has conducted 93 programmes on seven themes, namely:

- a) Campaign against plastic waste;
- b) The Biodiversity Campaign;
- c) Quieting Noise Pollution;
- d) Fostering Knowledge on Forests & Wild Life
- e) Studying Environment

- f) Nature, natural resource, environment and society;
- g) Personal Hygiene and public health.

These programmes were highly publicised and were attended by people from all quarters. The key collaborators of the Campaign included government departments, non-governmental organisations, educational institutions, research bodies and many others. However, the main target group of the campaign was the students: our future torchbearers.

As tabulated below, a total number of 93 events were conducted under the Environmental Campaign and Operational Programme of the WBPCB during the year 2004-2005.

**TABLE 2.9.1**  
**NO. OF EVENTS CONDUCTED UNDER THE**  
**WBPCB ENVIRONMENTAL CAMPAIGN**  
**DURING 2004-2005**

Sl. No.	Themes	No of programmes
1.	Campaign against plastic waste	26
2.	Bio-diversity	04
3.	Noise Pollution	07
4.	Forest and wildlife	07
5.	Learning about our environment	17
6.	Nature, natural resources, environment & society	21
7.	Personal Hygiene & Public Health	11
	<b>Total</b>	<b>93</b>

A brief summary of the above-mentioned events is given in ANNEXURE V.

#### a) Campaign against plastic waste

##### ● *WBPCB Awareness Programmes on the ban on plastic carry bags*

As evident, the Board has imposed blanket

ban on the use of plastic carry bags in different **heritage/tourist sites** of West Bengal. In order to enforce the ban order in these sites, the Board made a series of routine and surprise on-site visits to these places. In order to intensify the campaign, the Board, during these visits, interacted with various people to evolve solution to the problems identified and started bringing together the people who felt strongly against the menace caused by plastic waste. During the visits, the WBPCB officers, the concerned authorities, representatives of NGOs, and in some cases, the officers-in-charge of the local police stations, discussed various site-specific problems in the enforcement of the ban order. NGOs and school children voluntarily participated in several awareness programmes held within these sites and these programmes were found to have positive impact on the masses. Various mechanisms were adopted to make the public aware of the ban order. Such methodologies include displaying notice boards carrying the message of the ban, arrange for checks at the entry points of the sites and make provisions for proper waste management within the site. Also, in order to enforce the blanket ban on the use of plastic carry bags in **ecologically fragile areas** of the state, the Board conducted three awareness programmes in such areas.

##### ● *Workshops on viable alternatives to plastic carry bags*

Carry bags made of paper, cloth, jute and other eco-friendly materials can be used as



*Orientation workshop for manufacture of biodegradable carry bags*

alternatives to non-biodegradable plastic carry bags. In order to promote the use of such biodegradable bags, various workshops were held in North Bengal (Darjeeling & Siliguri), Kolkata and Kalyani. During the training sessions of these workshops, the participants were briefed about the various aspects (such as costing of the bags, marketing strategies etc) of undertaking projects on the manufacture of paper bags. The workshops comprised of the demonstration of the method of manufacturing paper carry bags. Each participant learnt the method and prepared two/three bags on their own under the guidance of the trainers.

#### ● *Managing the PET Bottle Waste*

Indiscriminate disposal of Polyethylene terephthalate (PET) bottles used in the packaging of soft drinks and drinking water is an emerging environmental problem in Kolkata and its adjoining areas. Statistics reveal that in West Bengal, the total amount of PET bottles generated is about 350 tonnes per month, with an appalling 140 tonnes being generated from Kolkata alone.



*Discarded PET bottles being put in a crusher  
(PET flakes shown in inset)*

No proper unit for the recycling of PET bottles existed in the whole of eastern India for long. The process of recycling followed an unscientific method that ended up in unauthorised bottling by unscrupulous people. Proper disposal of used PET bottles, therefore, was thought the responsibility of the manufacturers both from an environmental and resource-saving point of view. The manufacturers have an Extended Producer Responsibility (EPR) - a concept that is now universally accepted.

Keeping this in view, a core committee was formed with the representatives of the WBPCB and the Indian Association of PET Manufacturers (IAPM), in order to work out an action plan to tackle the collection and recycling process of PET bottle waste in West Bengal. Based on an urgent need to formulate proper disposal facilities for the purpose of recycling the huge quantum of PET waste generated, this effort helped to bring the "actors" together in order to devise a 'cradle-to-cradle' solution to the indiscriminate littering of PET bottles in the state.

In June 2003, when the issue of finding a viable solution to the safe disposal of PET bottle littering was first taken up, only two PET bottle crushers, namely Zodiac Auro International and Conveyor & Ropeway Genius Pvt. Ltd. were operating in the city. These two PET bottle crushers could, however, meet only 18 per cent of the total amount of PET bottle generated in the city. While the capacity of Zodiac Auro was 20 tonnes per month, the monthly capacity of Conveyor & Ropeways was only 5 tonnes. Soon after the Core Committee was formed, two more crushing units, namely M/s Murugan Commercial Pvt. Ltd. and M/s Enviro Form Plastics Motor Industries were set up.

Arihant Traders, a Mumbai-based firm made the necessary arrangements to collect the bottles, compact and transport them to Chennai. Meanwhile, Zodiac Auro increased the production capacity considerably. Recently, Zodiac

Auro International has set up another unit for crushing at Agarpara, North 24 Parganas with a capacity of 30 tonnes. Also, Enviro-Form Plastic has increased their capacity from 5 tonnes to 30 tonnes per month.

**TABLE 2.9.2**  
**AN ACCOUNT OF THE PET BOTTLE**  
**DISPOSAL SITUATION OF WEST BENGAL**  
**AS ON MARCH 2005**

Name of the Crusher	Capacity (in Tonnes)
Zodiac Auro International 34B, Pasupati Bhattacharya Road, Behala, Kolkata-700043	30
Zodiac Auro International Agarpara unit	65
Conveyor & Ropeways Services Pvt. Ltdl 75C, Park Street, Kolkata-700 016	5
Enviro Form Plastic Garia Main Road Kolkata - 700 084	40
N-viron Polymers Howrah	30
Pratik Enterprise Delhi Road, Srirampore	12
<b>Total</b>	<b>182</b>

### b) The Biodiversity Campaign

Nature is fascinating and encompasses a variety of life forms. It is imperative for us, especially for the children and youth - who are our future - to understand and appreciate the components of nature in order to love and protect it. The understanding of biodiversity is also important for the physically and mentally challenged children who have been deprived of the vitals of life. Some unique events on biodiversity was particularly framed to develop skills amongst these special children, required for making discriminations in form, shape, sound, touch, habits and habitats, and

identification of the different species of plants and animals which they are not familiar with. In order to promote the concept of biodiversity among students, various events were conducted under the WBPCB Environmental Campaign during 2004-2005, a summary of which is given below.

#### ● *Setting up of Parasar Udyan, an Experimental-cum-Medicinal Plant Garden*

On April 13, 2004, an Experimental-cum-Medicinal Plant Garden was inaugurated at Bidhannagar College Campus, Salt Lake in collaboration with the Action for Food Production (AFPRO), a Guawahati-based NGO. A rainwater harvesting system that was set up by the WBPCB earlier is existing in the same campus. This twin project has been designed in a way that the rainwater collected from the water harvesting system could be used for the medicinal plant garden. The rainwater harvesting system was framed by constructing low-cost ferro-cement structures. Water harvesting tanks were built; the capacity of each tank being 12000 litres and the approximate cost being Rs. 22,000 per tank. These tanks hold the rainwater coming from the rooftop of these buildings. The rainwater collected in these tanks is used to grow and nourish the medicinal plants in the garden.



*A medicinal plant garden at Bidhannagar  
College campus*



- *Assorted Nature-Study Programme for children with cerebral palsy*

The WBPCB conducted this programme in association with the Birla Industrial & Technological Museum (BITM) and the Indian Institute of Cerebral Palsy (IICP). 80 participants attended the programme that was held at the IICP Campus on January 28, 2005.

The programme began with a welcome song by students of the Centre for Special Education, IICP. The programme entailed prize distribution for the participants of the similar events held last year, short skit by the students of the Centre for Special Education, IICP, and a tour of an ongoing exhibition. The main components of the programme comprised of the following contests:

- “Sense the smell of nature” for students;
- Tactile game titled “Touch and Find”;
- Painting Competition and
- Quiz on nature and environment.

- *Environmental awareness programme for the visually challenged children*

In collaboration with the BITM, 110 visually challenged children from three schools, namely, Lighthouse for the Blind, Blind Boy’s Academy (Narendrapur) and Calcutta Blind School (Behala) participated in this environmental awareness event. The programme held at the BITM campus on March 18, 2005 included the following unique features:

- Workshop on “How to identify birds with their calls only” entailing presentation of real-life experience by Shri Arup Chakraborty, an adept blind birdwatcher at the Technology Centre, BITM;
- Competitive events, such as:
  - Clay Modeling for students of classes V & below, at the Robot Room, BITM



*Visually challenged students participating at an awareness programme*

- A tactile game titled ‘Touch & Find’ for students of classes VI & VII at the Portico of Technology Centre, BITM

- “Sense the smell of nature” for students of classes VIII to X at the Portico of Technology Centre, BITM;
- Valediction and prize distribution at the Technology Centre, BITM
- Visits to the museum galleries of the BITM.

### c) Quieting Noise Pollution in West Bengal

Schoolchildren played a significant role in the noise control campaign programme of the Board. Eco-club student members belonging to the National Green Corps (a Government-of-India programme aimed to spread environmental awareness among school children) participated in various awareness programmes. By means of rallies and demonstrations, the students facilitated the process of the noise-related legal directions to reach the masses. Various seminars/talks/debates were organised to inform the student members of the eco-clubs on issues related to exposure to noise pollution, the state of the problem and further actions that could be undertaken by them to minimise or eliminate such problem.



● **Training Programmes on noise pollution organised by the WBPCB**

A total of 159 participants including the officials of the West Bengal Police, Kolkata Police and Motor Vehicles Inspectors attended training programmes on noise pollution. These training-cum-Awareness Programmes on Environment included features like lectures, audio-visual shows and technical sessions.

**d) Forest and Wildlife**

Nature trails and green scout camps enable the children to know about nature and understand the need of its conservation. To enable children belonging to all strata of the society to grasp the green basics, various events were organised under the WBPCB Environmental Campaign. The purpose of these programmes was to promote an awareness of our natural environment. As indicated below, the brief account illustrates the programmes conducted under the WBPCB Environmental Campaign during the time period in question.

● *Nature trail at Science City*

In collaboration with the Birla Industrial Technological Museum, a nature trail was organized in Science City on November 19, 2004 for school students. Dr. Sudip K. Bandyopadhyay (Chairman, WBPCB) and Dr. T.K. Ganguly (Director, Science City) were among the dignitaries present in the inauguration programme.



*Students identifying faunal species at a nature trail programme at Science City*

● *Green Scout Camp for students of North 24 Parganas*

A Green Scout Camp was organised at Salt Lake Stadium for the students of the district of North 24 Parganas on June 2 to 6, 2005. About 180 students from schools of North 24 Parganas joined the camp, which was organised in association with WWF-India.

● *Nature trails for children in collaboration with TERI*

The Energy and Resources Institute (TERI), an NGO Component of the Kolkata Environment Improvement Project (KEIP) was a key collaborator of the WBPCB Environmental Campaign. Various nature trails were organised under the theme 'Forest & Wildlife'. These creative communication events were in connection with its awareness-generation and community development programs that institutionalises the worldview of "learning from one another". Children belonging to different wards of Kolkata Municipal Corporation participated in these nature trails. The purpose was unique. The slum children, the target group of this programme did not live in the best of conditions and could reach out to little or no education facilities. The idea of environmental protection was new to these children. The event basically aimed at making the children aware of the importance of environmental protection that would automatically be conveyed to their families and kinfolk. Apart from creating community awareness, the event served to facilitate social upliftment and its development.

**e) Learning about our Environment**

Environmental learning experiences can provide an awareness of who we are and how we relate to the world around us. Studying and exploring the environment teaches our children to care for the earth's natural resources while fostering a sense of respect for living things. Outdoor learning experiences excite the students and can open doors to scientific discovery that will remain open forever. The activities of the

theme “Environmental Studies” conducted under the WBPCB Environmental Campaign thus encourage and educate both teachers and students about the importance of conserving and protecting our natural resources.

- *Debate for college students on “Development Vs Environment”*

In collaboration with the World Wildlife Fund for Nature - India (WWF-India), a debate competition for college students on “Development vs Environment” was held at Ballygunge Science College, Kolkata. Held on March 1, 2004, about 24 students attended in the programme. The National University of Juridical Sciences bagged the first prize.

- *Training Programmes for the WBPCB Registered NGOs*

The West Bengal Pollution Control Board (WBPCB) has engaged more than 150 non-government organisations (NGOs) to work on protecting the environment of the state. Chosen on the basis of an analysis of their ability to save the environment, these NGOs, located throughout the state, shoulder the responsibility of communicating the Board’s mandates to people far and wide. The NGOs facilitate addressing current environmental concerns, such as restriction on the use of plastic carry bags, controlling noise pollution, wetland conservation etc.

- *Workshops on ‘Physics and Environment’*

During May 26 to 30, 2004, a workshop on ‘Physics & Environment’ was organised in association with Jagadis Bose National Science Talent Search (JBNSTS). Held at Howrah Jogesh Chandra Girls’ High School, about 60 Students of Classes VII & VIII of schools in Howrah participated in the workshop. Another JBNSTS-collaborated workshop on the same subject was organised during October 14 to 17, 2004 at Kamalpur Netaji High School, Bankura. About 31 children (of the age-group 12-14 years) of

four schools of Bankura district participated in the workshop.

- *Workshop titled ‘Vacation Classes’*

In association with JBNSTS, another workshop titled ‘Vacation Classes’ was organised during May 30 to June 11, 2004 at Ramakrishna Mission Residential College, Narendrapur. About 55 Students of classes XI & XII of schools in Darjeeling, Jalpaiguri, Cooch Behar and Kolkata attended the workshop. The workshop highlighted on themes, such as ‘Urban Area and Environment’, ‘Atmospheric Science’, ‘Our Feathered Friends’ and ‘Joint Forest Management’.

- *Teachers’ Training Workshop at Jalpaiguri*

In association with the World Wildlife Fund for Nature-India (WWF-India), a Teachers’ Training Workshop was held at Gorumara Jungle Camp, Jalpaiguri during June 12 to 13, 2004. The theme of the workshop was ‘Medicinal Plants’. Dr. Dulal Pal, Retired Scientist, Botanical Survey of India was the resource person for the workshop. About 24 teachers from 11 schools attended the programme. Beside the teachers, members of local NGOs participated at the workshop.



*Teachers’ training workshop on Medicinal Plants*

- *Workshop on ‘Medicinal Plants and Rain Water Harvesting’*

A similar workshop titled ‘Medicinal Plants & Rainwater Harvesting’ was organised in association with WWF-India during June 14-

15, 2004 at Gymkhana Club, Darjeeling. About 35 teachers and students from 11 schools including two NGO-members participated at the workshop.



*Teachers' training workshop on Water Conservation*

### ● *Workshop on Plantation*

July is the season for plantation. The WBPCB, in association with WWF-India organised a workshop on plantation, emphasising on medicinal plants, at Kalinagar, Purba Midnapore. About 85 students and teachers from 15 participating schools of the district participated in the workshop that was held on July 16, 2004.

### ● *Teachers' Training Workshop at Kolkata*

In the month of August, a Teachers' Training Workshop was held on August 17-18, 2004 at Bible Society for the teachers of the schools of Kolkata. The theme of the workshop organised in collaboration with WWF-India was 'Water (Pollution & Conservation) and Rainwater Harvesting in Schools'. A total of 34 teachers from 15 schools participated in the workshop.

### ● *Workshop on 'Environment & Mathematics'*

During September 15 to 18, 2004, a workshop on 'Environment & Mathematics' was organised in association with Jagadis Bose National Science Talent Search at Katwa Kashiram Das Institution, Katwa, Burdwan. About 60 students of schools of Burdwan district participated in the workshop.

### ● *Study of Mangroves*

In order to introduce students to the importance of mangrove ecosystem, a two-day nature study camp was conducted on November 3 to 4, 2004 at Sunderbans. About 60 student-members and teachers from nature clubs of 12 schools, as well as two NGO members of Purba Medinipur district attended the camp.

### ● *Teachers' Training Workshop at 24 Parganas (North)*

In association with WWF-India, a Teachers' Training Workshop was held for 24 Parganas (N) at Sunderban HMTA Junior High Madrasah on September 18-19, 2004. About 44 teachers from 16 madrasahs joined the workshop. The workshop was inaugurated with a plantation programme of ten saplings in front of school premises. The teachers were introduced to Environmental Education in the school curriculum.

### ● *Teachers' Training Workshop at Coochbehar*

A WWF-India collaborative workshop on medicinal plants was held during November 8-9, 2004 at Coochbehar. The teachers of the schools of Coochbehar district were very eager to learn about the uses of medicinal plants and also wanted to identify different types of local medicinal plants. Dr. Dulal Pal, Ex-scientist, Botanical Survey of India was the resource person for the workshop. About 20 teachers from 11 schools attended the programme.

### ● *Bird Watching Programmes*

Bird watching programmes are important for small children. It is not only an interesting hobby but also explains the importance of birds in maintaining the ecological balance. As described below, three bird watching trips were organised in association with WWF-India.

#### *Rasik Beel, Coochbehar*

In the morning of November 9, 2004, about 30 students and 20 teachers went to Rasik Beel, a famous wetland located in the district of Coochbehar.

### *Rajabhatkhawa forest, Jalpaiguri*

On November 10, 2004, about 50 students and 10 teachers of six schools of Jalpaiguri district went for another bird watching trip to Rajabhatkhawa forest. After assembling at six in the morning, the participants were given some tips on bird watching. The book "Waterfowl Identification Manual" was given as field guide to the participants.

### *Santragachi Jheel, Kolkata*

On January 17, 2005, a bird watching trip was organised for 35 students and seven teachers at Santragachi Jheel for six schools of Kolkata.



*Bird watching programme for students at Santragachi Jheel*

### ● *Teacher's Training workshop at Darjeeling and Kalimpong*

In association with the United States Asia Environment Programme (USAEP), a Teacher's Training Workshop was organised at Ramakrishna Mission B.Ed. College, Darjeeling on December 3, 2004. A total of 40 teachers from various colleges of the districts of North Bengal participated in the workshop.

### ● *Workshop on Soil testing at Purulia*

About 100 students and teachers from 16 schools of Pucha block of Purulia participated in a soil testing workshop held on December 29, 2004 at the Assembly Hall of Napara High School, Pucha, Purulia. The main idea of the soil testing programme was to create awareness



*Workshop on Soil Pollution at Purulia*

among the students about the pollution generated from the use of chemical fertilizers and pesticides in agricultural fields.

### ● *Workshop on Vermiculture at Purulia*

When we talk about the demerits of chemical fertilizer and pesticides, it is imperative to suggest an alternative. With this view, a workshop on vermiculture and compost making was organised in association with WWF-India on December 30, 2004 at the Assembly Hall of Napara High School, Purulia. About 100 students and teachers from 16 schools of Purulia participated in the vermiculture workshop. The resource person of the workshop was Shri Bivas Paira, a farmer of Purba Midnapore representing JS DRWS, a non-governmental organisation. Shri Paira interacted with the students and made a model plot in Napara School to demonstrate the method of preparing vermiculture pits. The book "*Kencho Palan Ebong Compost Tairir Padhati*" was given as resource material to the participants.

### ● *Students' Workshop on Medicinal Plants at Sunderbans*

A Workshop on Medicinal Plants, a *Padayatra* to save mangrove ecosystem and a puppet show on wildlife conservation were arranged for 1000 nature club members from 22 schools of Bali island in Sunderban on January 21, 2004. These activities were conducted in association with WWF-India.



## f) Nature, Natural Resource, Environment and Society

### ● *Nature Fair for Kolkata Schools*

On Earth Day, an 'Earth Fest' was organised for the nature club members of Kolkata schools. Organised in association with WWF-India, the fair was held on April 21, 2005 at the premises of Future Foundation School and was inaugurated by Shri Ranjan Mitter, Principal of the school. Students from Future Foundation School, St. Lawrence School and Akshar presented small skits on different environment problems. Dr. Abhijit Mitra, Senior Lecturer, Department of Marine Science delivered a talk on climate change and its impact on marine biodiversity, which was very educative for the students. The theme of the event was 'Environment of Kolkata'.



*Nature club members participating at the Earth Fest*

### ● *Community Awareness programmes for children in collaboration with TERI*

Programmes on community awareness were organised in association with the Energy & Resources Institute (TERI), an NGO Component of the Kolkata Environment Improvement Project (KEIP). Various sit-and-draw competitions and wall painting programmes were organised under the theme 'Nature, Nature Resource, Environment & Society' of the Campaign.

*Sit-and-Draw Competitions* : This event not only involved local school children but also attracted their parents, to whom the scope and

objectives of the programme were explained during the prize-giving ceremony. Related issues such as community development, participatory urban development and O&M (Operant Maintenance) of physical infrastructure were also discussed during community meetings and focus group discussions with the help of static tools such as leaflets and posters.

*Wall Painting* : Paintings were done by professional artists on the walls of ICDS (Integrated Child Development Services) Centres, local youth clubs, primary schools, pay-and-use toilets and parks. The various themes included environmental pollution, sustainable development, ban on plastic carry bags, safe sanitation practices, health and hygiene, and solid waste management.

## g) Developing Personal Hygiene and Public Health

Various awareness programmes on efficient management of biomedical waste were conducted during 2004-2005. Biomedical waste, when disposed of carelessly, doesn't go away, but finds way of getting back into our system. Putting waste in appropriate bin, according to its nature, and treating it correctly, go a long way in controlling the spread of infection, decreasing occupational hazards, reducing the amount of waste that requires treatment, saving money and ensuring compliance with law. These specifications are mentioned in the Bio-Medical Waste (Management & Handling) Rules, 1998.

### *Seminars on Biomedical Waste Management in Kolkata*

In order to develop awareness on the safe waste handling procedure among the hospital staff, the WBPCB organised a series of seminars on safe disposal of biomedical waste management in government and private hospitals and nursing homes. These programmes were organised in collaboration with Medicare Incin Pvt. Ltd, a group company of Hyderabad-based Ramky Enviro Engineers Ltd that implements the common biomedical treatment plant at Howrah

for healthcare establishments located at Kolkata and Howrah.

The seminars started with presentations on the procedure of biomedical waste handling followed by interactive sessions with the staff members and the WBPCB. The method of

handling hospital waste as per the colour specifications was also demonstrated during the seminars. Various awareness-generating leaflets were distributed among the staff members and other officials of the hospitals, who attended the seminars with great enthusiasm.

## SECTION II

### MAJOR EVENTS, FAIRS & FESTIVALS

- The West Bengal Pollution Control Board celebrated the 'World Environment Day 2004' in a befitting manner. The main programme was held at the Paribesh Bhawan Auditorium, Salt Lake, Kolkata on June 5, 2004. All the Regional Offices of the Board celebrated "World Environment Day" with the help of local NGOs and other organisations. The World Environment Day theme selected by the United Nations Environment Programme for 2004 is "Wanted! Seas and Oceans - Dead or Alive?" The theme called for a choice as to how we want to treat the seas and oceans of our planet.



At the main function held at Paribesh Bhaban, Shri Buddhadeb Bhattacharjee, Hon'ble Chief Minister of West Bengal graced the occasion as the Chief Guest. Shri Manabendra Mukherjee Hon'ble Minister-in-charge, Deptts. of Information Technology & Environment, Government of West Bengal, presided over the function. In addition, invitees from industries, non-governmental

organisations and other institutions participated in the programme. The Hon'ble Chief Minister released two books and also launched a CD on the ambient air quality data of West Bengal. An electromagnetic board for display of relevant information was also inaugurated on the same day, which is displayed at Esplanade, Kolkata.

On the same day, a sit-and-draw competition and a quiz competition were organised in association with Pashim Banga Vigyan Mancha at the Yuba Bharati Krirangan (Salt Lake Stadium). The events were organised exclusively for school children and a total of about 1000 students from different parts of the state participated.

- The Board participated at the **Sukanto Mela**, organised by Runner which was held on and from October 2 to 17, 2004 at Phoolbagan, Kolkata. In order to enhance environmental awareness, the Board displayed various information related to environment protection and pollution control in the state.
- Like every year, the Board participated at the **18<sup>th</sup> Industrial India Trade Fair** held at Kolkata Maidan (near Park Street) on and from December 20 to 31, 2004. An area of 750 sq.ft. was allotted for Board's stall in the West Bengal pavilion. The WBPCB stall was arrayed with various informative display boards, alternative

fuel kits, collection of newspaper clippings related to environment, different machines like sound level meter, sound limiter etc. Information, especially daily ambient air quality monitoring data of Kolkata was also made available through the internet at the WBPCB stall (arrangements for a computer with internet connection and projection system was made).

- The State Board sanctioned a sum of Rs.15,000/- as financial assistance for organising “**Vigyan Swasthya-O-Paribesh Mela**” that was held at Haldia on and from December 25, 2004 to January 1, 2005. This fair was organised by Haldia Vigyan Parishad, an registered NGO of the Board in collaboration with Paschim Banga Vigyan Mancha, Purba Medinipur District Committee.
- The Board also participated at the **KTPP Fair-cum-Exhibition, 2005** that was held at Kolaghat, Purba Medinipur from January 2 to 10, 2005. This event was organised under the aegis of Kolaghat Thermal Power Station Recreation Club. The Board displayed various relevant information for generating environmental awareness among rural population in West Bengal.
- The Board erected a well-decorated stall at the “**Acharya Satyendranath Basu Smarak Bijnan-O-Prajukti Mela**” that was organised at Hedua, Kolkata on and from January 19 to 23, 2005. The various activities of the Board related environmental protection was displayed at the fair.
- The Board organised various **workshops and meetings** on a regular basis with the registered NGOs working at different district of West Bengal. These events were held at the head office and different regional offices to disseminate Board’s orders, environmental news and to discuss the campaign process on various issues,

such as noise pollution, problems of plastic waste, efficient waste management and many others.

### PARIBESH MELA 2005

The Board organised “**Paribesh Mela**” at the Science City, Kolkata during February 16 to 19, 2005 in collaboration with the Bengal National Chamber of Commerce & Industry and in association with Nodal Research Center and Paschim Banga Vigyan Mancha. The theme of the fair was “Towards a Sustainable Future”. The objective of the Fair was to communicate the environmental information for assisting people in understanding ways for minimising the adverse impact on the environment. Shri Manabendra Mukherjee, the Hon’ble Minister-in-Charge, Departments of Information Technology and Environment inaugurated the fair. More than 150 industry houses, industry associations, environmental laboratories and other various governmental and non-governmental organisations displayed their eco-friendly products, pollution control systems environment related books, posters etc. Besides, eminent speakers gave lectures on various environments and related issues in the seminars held at the Mini Auditorium of the Science City, Kolkata. Thousands of students, environmental activists, NGOs, academicians, researchers and general public visited the fair regularly.



*The Hon’ble Minister releases a book on the occasion*

On the occasion, the Hon’ble Minister released two WBPCB publications, namely ‘Air Quality

of Kolkata – Improvement through effective policy intervention’ and ‘Paribesh Mela Guide Book’.

Further, in order to aid the Tsunami-hit people of our country, two cheques, one of Rs ten lakhs, on behalf of the WBPCB and another of Rs 10,581, on behalf of the employees of the Board, were handed over to the Hon’ble Minister during the programme. The money went to the Chief Minister’s Relief Fund for helping the people affected by the disaster.

#### *Exhibitors’ Profile*

The main features of the Fair included displays of pollution control facilities, environment-related products, eco-friendly devices, pollution control equipment, laboratory facilities, model displays as well as environment-related posters and books. In addition, the event helped promote environmental awareness by way of organising different seminars and cultural programmes related to environmental issues.

More than 100 organisations including government departments, industries, public sector organisations, schools and colleges, research bodies, pollution control equipment manufacturing companies, pollution testing laboratories, environment management organisations, municipalities who have achieved excellence in solid waste handling, NGOs and others, participated at the Fair. An estimated 1000 people sojourned the fair everyday, and were either found visiting the stalls for some useful environmental information, or catching up with a seminar from one of many knowledgeable speakers, or attending some cultural performance.

The WBPCB Theme Pavilion at the Fair was a major crowdpuller. It had colourful displays concerning the Board’s activities, useful do’s and don’ts with regard to the current environmental scenario, and also presented conceptual information on sustainable development. Visitors bought the Board’s publications and collected free brochures/leaflets to be kept as useful references for the future. Various methods of environmental monitoring were demonstrated



*The WBPCB Theme Pavilion at “Paribesh Mela”*

at the WBPCB Pavilion, and visitors also got answers to queries related to core technical issues.

#### *Cultural Platform: ‘Prokriti Amader’*

This cultural platform, a part of Paribesh Mela, entailed songs, music, instrumentals and dance performances on environment by eminent artists, as well as by children of different age groups who were interested to perform on the occasion. Bengali contemporary popular music bands featuring *Chandrabinoo* and *Arka*, and musical groups like *Anantya* and *Gangghil* also performed. Various plays related to environment were staged, such as the one titled ‘*Aronner Kanna*’ by Gramya Hitkari Girls’ School and another by Pashchim Banga Vigyan Mancha. A puppet show by *Shailpik* parodying the concept of environmental protection was popular with the crowd.

#### *Free PUC check-up at Paribesh Mela*

On the occasion of Paribesh Mela 2005, there was a provision for free vehicular emission check-up at Parama Island, located near the fair premises. This free PUC (Pollution-Under-Check) certification camp was jointly organised by the State Department of Transport, West Bengal Pollution Control Board, Society for Indian Automobile Manufacturers and Auto Emission Testers’ Association. Out of a hundred petrol-driven vehicles tested, 74 per cent were found to have passed the test. In addition, out of the 16 diesel-driven four-wheelers that underwent the check-up, as many as 13 vehicles passed the tests.



## SECTION III

### NATIONAL GREEN CORPS PROGRAMME IN WEST BENGAL

The Ministry of Environment and Forests, Government of India had launched a 'National Green Corps' (NGC) scheme in schools all over the country to spread environmental awareness and carry out action based programmes for the protection and improvement of the environment. The NGC programme aims to provide opportunities for children to understand the environment and environmental problems, through school eco-clubs.

In order to coordinate the implementation of the NGC programme in West Bengal, a State Steering Committee was constituted. There is another committee in each district i.e. District Implementation and Monitoring Committee (DIMC) headed by the District Magistrate to oversee the implementation of the programme at the district level.

The WBPCB is the State Nodal Agency for the implementation and Paschim Banga Vigyan Mancha is the State Implementing Agency of this programme in our state. As tabulated, under the NGC programme, at present there are 2850 schools covering 19 districts of West Bengal (including Kolkata).

Different programmes are undertaken by the eco-clubs of the State NGC schools throughout the year :

**Seminars/talks/debates:** The objectives of the seminars/talks/debates is to inform the student members of the eco-clubs on issues related to exposure to various kinds of environmental pollution, the state of the problem and further actions that could be undertaken by them to minimise (or eliminate) such problem.

**Nature camp/Field Visit:** The world of nature is a living kaleidoscope of all the plants and animals that live harmoniously in a perfectly balanced system. It is imperative for the young children to understand how nature works before learning the ways to conserve and care for it.

During the nature camps and field visits, the student members of the eco-clubs are given worksheets that they have to work on. The worksheet has various aspects related to flora and fauna of the area. These programmes provide the young minds with an excellent opportunity to grow, by way of observing the relationships between plants and animals.

**Plantation programmes:** Plantation programme for school children is an important investment in environmental education. Planting trees by children is a campaign aimed to develop interest of children to save our environment. It encourages to fight against rapid loss of greenery, by the small tender hands of future planners of the earth.

**Cleanliness Drive:** With a vision that "Cleanliness begins in schools", the schoolchildren are involved in activities, such as cleaning their school premises, before starting to make efforts for a cleaner world.

**Awareness by rallies:** The student members of the eco-clubs participate in rallies to make the people in their locality aware of various environmental issues, such as plastic pollution, noise pollution, observation of important days related to environment etc.

**Survey:** Intensive nature survey works conducted by school children enable them to recognise the intricate problems and devise strategies to eliminate them. For instance, student members of the eco-clubs doing a survey of a nearby wetland would be able to identify the problem and help solve a local environmental problem easily.

**Other activities:** The other key activities undertaken by the individual schools and District Committee are eco-meets, planting medicinal plant garden, observation of important days related to environment, such as World

**TABLE 2.9.3**  
**NGC SCHOOLS OF WEST BENGAL**

Sl. No.	Name of the District	Renewed No. of Eco-clubs	No. of New Eco-clubs	Total No. of Eco-clubs
1.	Bankura	136	70	206
2.	Birbhum	87	75	162
3.	Burdwan	112	90	202
4.	Cooch Behar	100	18	118
5.	Dakshin Dinajpur	80	51	131
6.	Darjeeling	93	46	139
7.	Hooghly	97	55	152
8.	Howrah	100	63	163
9.	Jalpaiguri	92	18	110
10.	Kolkata	118	83	201
11.	Malda	75	37	112
12.	Mushidabad	102	52	154
13.	Nadia	69	27	96
14.	North 24 Parganas	102	100	202
15.	Pashchim Medinipur	101	65	166
16.	Purba Medinipur	77	99	176
17.	Purulia	100	-	100
18.	South 24 Parganas	94	77	171
19.	Uttar Dinajpur	82	07	89
	<b>Total</b>	<b>1817</b>	<b>1033</b>	<b>2850</b>

Environment Day, World Wetlands Day, National Science Day, Forest Week, etc.

The eco-club student members participate in various awareness programmes that are conducted under the theme 'Nature, Natural Resource, Environment & Society' of the WBPCB Environmental Campaign. One event that deserves special mention was a street demonstration by the NGC students of Siliguri on December 4, 2004. The eco-club student members staged placard demonstration on different environmental issues at Tenzing Norgye Bus Stand, Siliguri

on that day. People amassed in huge numbers to gather the message that the students wanted to convey.

#### **Nature Study Camps for schoolchildren**

The Board organised two nature study camps at Ayodhya Hills (Purulia) and Sukna (Mahananda Wildlife Sanctuary) in 2004-2005. These camps were designed for young children to create an understanding about our natural environment and to cultivate a protective attitude towards it.



*Eco-club student members at the Purulia Nature Study Camp*

The activities at the camps were a blend of adventure, skill training, nature study work, field surveys and outdoor experience under the leadership of experienced wilderness guides.

Under the theme “Nature, Natural Resource, Environment and Society” of the WBPCB Environmental Campaign, these nature camps were conducted as awareness programmes for the student members of classes V to XII of the eco-clubs of the schools belonging to the National Green Corps programme. The student members of the various eco-clubs of the state participated in several individual and group events, which were implemented within stipulated deadlines. The individual events included Sit-and-Draw Competition, Making Posters with a Slogan, Essay Writing Competition and Project Preparation and group events included Nature Quest, Medicinal Plant Garden, Biodiversity, Eco-club Diary, etc.

The district-level toppers of the individual events, and, the candidates securing the first, second and third positions for the individual events and the students belonging to the top group (for the group events) at the state level participated in the nature camps. The Purulia and Sukna camps were organised for the toppers of the events held in 2003-2004. The nature camps, coming as a reward for the winners of

these events, were aimed to deepen the children’s sense of wonder, and to inculcate a sense of environmental responsibility among them. These camps were a perfect platform for the students to experience the marvels and intricacies of the natural world through focused, innovative and meaningful nature study activities.

The first nature camp was held at Ayodhya Hill, Purulia on and from January 22 to January 25, 2004. A total of 50 students from 13 South Bengal districts participated in the camp. The Hon’ble Minister-in-charge, Departments of Information Technology & Environment, Government of West Bengal, Shri Manabendra Mukherjee inaugurated the nature camp at the Ayodhya Range Office Campus on January 23, 2004. Birla Industrial Technological Museum and Paschimbanga Vigyan Mancha were the key collaborators of the programme.



*Students exploring nature at the Sukna Nature Study Camp*

The second camp was held at Sukna Campus of Wildlife Division-I on and from June 6 to June 8, 2004. The Camp was inaugurated at Sukna Campus of Wildlife Division-I of Mahananda Wildlife Sanctuary, Department of Forest, Government of West Bengal, on June 6, 2004. About 36 students and 10 teachers-in-charge from six northern districts of West Bengal participated in the Sukna camp.

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## CHAPTER X

# EXTERNALLY ASSISTED PROGRAMMES

*ICEF Project on “Pollution Prevention and Waste Minimisation of Small-Scale Industrial units in Kolkata Metropolis Area”*

### Background

Air quality is an issue that continues to be one of the key environmental concerns for the community in Kolkata Metropolis Area (KMA). Research has clearly shown that air pollution can adversely affect human health, depending on the nature and concentration of the pollutants of concern. The complex operation of different industries with age-old technologies and ineffective pollution control equipment including exponentially increasing number of automobiles are all responsible for high emissions of air pollutants.

A health impact study was conducted during 1996 - 2001 to assess the degree of lung function impairment in persons exposed to Kolkata air. The report suggested that due to air pollution the lungs of average residents of city Kolkata is about seven times more burdened compared to their rural counterparts. This had served as an emergency call of air pollution in KMA since almost 47% of Kolkata population suffers from lower respiratory tract symptoms.

### Conceptual Approach

The key approach in developing air pollution abatement strategy is to identify the main environmental concerns and build a mechanism for implementation. Environmental concern over particulate matter (PM) in Kolkata air was established by systematic monitoring of ambient air over a period of time. The main source of PM emissions was the small scale industries having coal fired boilers and ceramic kilns due to combustion of coal. Though the optimization of fuel combustion reduces pollution load but complying with national emission standards of 1200 mg/Nm<sup>3</sup> for such coal fired boilers and ceramic kilns was not possible without installation of pollution control device.

### Regulatory Framework

Considering all the aspects, a framework for regulating fuel quality (use of oil or gas in place of coal as mandatory) and stricter emission standard 150 mg/Nm<sup>3</sup> for PM was enacted by

the West Bengal Pollution Control Board (WBPCB) for boilers (=2 t/hr steam generation capacity) and down draft kilns. The project was designed to increase understanding and willingness for adopting better practices with respect to use of cleaner fuel to comply with stricter emission standards. The decision was taken on the basis of scientific input, and after due consultation with stakeholders, it was considered that there is a dire necessity of financial assistance required to be provided to the stakeholders for technology change.

### **Financial Assistance under WBPCB-ICEF Project**

The conversion of coal-fired boilers and ceramic kilns to oil-fired ones was framed as a time bound action plan under WBPCB-ICEF project where the industries, WBPCB and ICEF (India-Canada Environment Facility) are the partners. Implementation of stricter emission standard with change in fuel quality was introduced as a regulatory action while the technology change for cleaner fuel was guided by financial assistance of 50% (25% each from WBPCB & ICEF) and the rest 50% by the industry of total cost involved towards installation of cleaner fuel technology. The financial assistance has been provided to the industries after successful conversion of the new installation and the compliance to the stricter emission standard followed by submission of all necessary documents regarding completion of new system.

### **Progress of the Project**

Out of total 204 units having small boilers within KMC, 180 (88%) have completed fuel change conversion, 12 (6%) under various stages of conversion and 12 (6%) are closed. Out of total 23 units having ceramic kilns within KMA, 23 (78%) have completed fuel change conversion and 5 (22%) having no ceramic kilns.

Seven Experts' Committee meetings were held during 2004-2005 for reviewing and

approving financial assistance to the industries. Financial assistance has been provided to 60 units [Rs. 1,61,60,695 during 2004-2005]. Group Counseling Meeting was organized on a regular basis apart from Project Planning Meeting to accelerate submission of documents for financial assistance.

20 units completed installations with respect to cleaner fuel and compliance to stricter standards.

A total of 264 inspections and 115 stack monitoring during 2004-2005 have been conducted. The outcome represents more than 90 per cent compliance.

Training programme for boiler operators was organized apart from interactions during monitoring and inspection towards capacity building for cleaner technology.

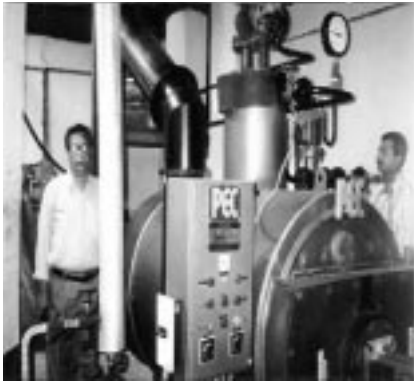
A Paper on "Air Quality Management Strategy for Kolkata City under ICEF Project - a Case Study" was presented in international workshop Better Air Quality (BAQ) 2004 at Agra in December 2004.

The study "Reduction in Coal Use in Small Scale Industries in Kolkata" was conducted by Technology Informatics Design Endeavour (TIDE). Report indicated 98% reduction in total PM and CO<sub>2</sub> emission lowered by 28,000 tons per annum which has a notional value in Clean Development Mechanism (CDM) framework of Rs. 55 Lakhs.

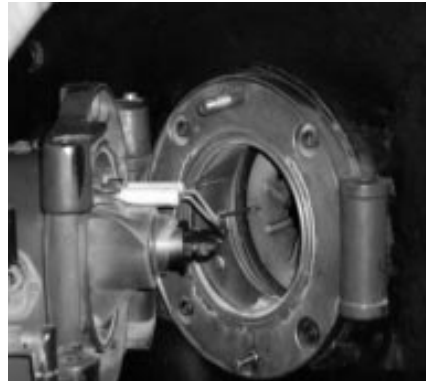
Environment Governed Integrated Organisation (EnGIO) is working on the study "Social Impact of the Project, Conversion of Coal Fired Industries to Oil Fired Ones, on the Industry, Stakeholders and Neighbourhood Populations" for assessing the socio-economic impacts of the WBPCB-ICEF Project.

### **Assessment**

The overall success of this project towards cleaner fuel technology governed by regulatory actions and financial assistance under WBPCB-ICEF Project was due to the commitment by



*New Oil Fired Boiler*



*Automatic Oil Fired Boiler*



*Oil Fired Shuttle Kiln*



*Oil Fired Tunnel Kiln*



*Stack Monitoring for PM*



*Flue Gas Analysis for CO<sub>2</sub> & O<sub>2</sub>*



*Emission from Oil Fired Boiler*



*Emission from oil fired ceramic kiln*

State Government, Stakeholders including different Stakeholders' Associations, Project Team of ICEF and WBPCB, Project Steering Committee, Experts' Committee, Industry Institute Partnership Cell of Jadavpur University and different suppliers of the installations. The main strength of this project was the openness of the approach from all corners which demonstrated the following important lessons :

- Commitment of project team management is critical
- A team based approach encourages ownership of the initiatives
- Technical and production personnel have valuable input to the initiative
- Many initiatives involve little or no capital cost
- A good monitoring process supports an effective review process.

The project has already highlighted the fact of significant environmental benefits including better quality of finished products, less rejection of materials, improved combustion efficiency, clean work-place area, better work-zone air quality with a marginal increase in fuel cost considering the over all economics and ultimately contribution towards better air quality of Kolkata. the Central Pollution Control Board, World Bank, Clean Air Initiatives for Asian Cities and representatives from Canadian Government have appreciated the opportunity involved in the project and suggested to consider this concept to other type of industries as well as in other states. This project has obviously established the desire, responsibility and mindful role of WBPCB and ICEF in protecting the environment. Clearly there is a benefit with the concept of usage of cleaner fuel for boilers and ceramic kilns by the small scale industries within KMA.

### **ADB-funded Environmental Management Project**

The West Bengal Pollution Control Board felt the importance for in-depth studies on environmental issues of present concern. Proposals were submitted to the Asian Development Bank (ADB) who agreed to support the Board to prepare policy-oriented documents on key environmental issues under the Technical Assistance (TA) project on 'Strengthening Environmental Management at the State Level'. These include study papers on air quality management in Kolkata, management of hazardous waste in West Bengal, management of wetlands of the state and a partial assistance to the Board's "Environment Management Information System" Development Project. The ADB Project was formally launched by Shri Manabendra Mukherjee, Minister-in-Charge, Information Technology & Environment, Government of West Bengal at a programme held at Paribesh Bhaban, Kolkata on October 1, 2004 in presence of Dr. Prodipto Ghosh,

Secretary, Ministry of Environment & Forests, Government of India, Shri Albab Akanda of ADB and Shri A. K. Barman, Principal Secretary, Department of Environment, Government of West Bengal.

Out of the total cost of US \$ 9,90,000, the grant facility being extended by the ADB for the project amounts to US\$ 8,25,000 and the rest is being borne by the WBPCB as notional fund. In short, the ADB Project assists the Board to prepare policy-oriented documents as well as projects on different environmental issues:

1. Environment Management Information System (EMIS) of the WBPCB: Essentially, this TA oversees the development and the implementation of the EMIS on behalf of the Board and prepare strategies for its sustainability in a way that it positively influences the quality and efficiency of the services of the Board.

2. **Air Quality Management of Kolkata:** One of the objectives of this TA is to assist the Board to identify the contribution of air pollution from different emission sources of Kolkata. This will help ascertain the present scenario of air pollution of the city vis-à-vis the contribution from different sources, as well as the future projection in this regard. Finally, this TA also formulates a strategy to improve the air quality of Kolkata.
  3. **Hazardous Waste Management in West Bengal:** The objective of this project is to prepare an inventory of the units that generate and recycle hazardous waste within the state of West Bengal and to formulate a management action plan in this regard. This has been devised following the requirements of the Hazardous Wastes (Management & Handling) Amendment Rules, 2003.
  4. **Wetland Management in West Bengal:** The principal objective of the TA under this component is to strengthen wetland management in West Bengal by identifying the wetlands in non-urban areas and developing appropriate environmental policies and mechanisms.
- In order to carry forward the task, the ADB has appointed domestic and foreign consultants. On the ADB side, Shri Albab Akanda, Head, Infrastructure and Environment, Indian Resident Mission of the ADB is heading the project. After completion of the studies of the project, necessary policy changes will be initiated for better environmental management.



# BOARD MEETINGS / POLICY DECISIONS

The eminent members of the West Bengal Pollution Board meets on a regular basis for discussing different issues related to the activities of the Board and the adoption of important policy decisions. Four Board meetings were held during the financial year 2004-2005. The details of the meetings are listed below.

S1 No.	Meeting No.	Time Period	Date
1.	127	2004-2005	02.08.2004
2.	128	2004-2005	18.10.2004
3.	129	2004-2005	11.01.2005
4.	130	2004-2005	28.03.2005

During each of the Board meetings, the confirmation of the previous meeting and the follow-up actions on the resolutions taken during the past meetings were regular affairs. Moreover, a review on the progress on the various activities of the Board on issues related to Consent Administration, Cess, Waste Management, Public Grievance, Legal Matters, Awareness Programmes, Training and ongoing projects were an integral component of the agenda for discussion

during the meetings. The other major policy decisions taken by the Board during the aforesaid Board meetings are illustrated below.

## Key issues of the 127<sup>th</sup> Board Meeting held on 02.08.2004

- It was informed that the Transport Department has issued an order related to the upgradation of the auto emission testing centres (AETCs). It was further informed that there are 100 AETCs running in Kolkata and 300 such centres in the state, and the personnel of the testing centres have been trained in Kolkata, Durgapur and Siliguri.
- The members were informed that the Hon'ble Supreme Court Monitoring Committee on Hazardous Waste visited the state on May 26, 2004 and expressed satisfaction with the performance of the Board.
- The members discussed and approved the proposal for in-house development of phase-II of EMIS (Environment Management Information System) involving a sum of Rs.7.1 lakhs.

- A proposal for implementation of 'Automatic Mobility Scheme' devised to give benefit to the employees of the Board having minimum scope of promotion was discussed and approved.
- The members discussed and approved the proposal for revision of financial delegation necessitated by promotion of the Accounts Officer and Assistant Finance Manager.
- The new application certificate for 'Consent to Operate' for local bodies, townships, housing and shopping complex, infrastructure and development projects was discussed and approved by the Board.
- The members discussed and approved the audited accounts for the year 2000-2001 along with the management's proposed reply.
- The proposal with regard to the implementation of the Employees (Death-cum-Retirement) Benefit Regulations, 2000 was discussed and approved.
- The categorisation of a few specific types of industries was discussed and approved.
- It was informed that the EMIS of the Board was inaugurated on October 3, 2004 by the Hon'ble Chief Minister of West Bengal.
- The members discussed and decided that the Recruitment Rules and Promotion Policy would be delinked from the service regulations. The Board approved the Service regulations with the observation that the Recruitment Rules and Promotion Policy would be further examined by the Committee, which framed the Service Regulations.
- The proposal for scale protection was discussed in the meeting.
- The proposal for promotion for Environmental Analysts and Junior Environmental Engineers on completion of eight years of service was discussed during there meeting.
- The General Provident Fund (West Bengal Pollution Control Board Employees' Service) Rules have been approved and it was decided that the Rules would be sent to the government for approval.
- The members approved the audited accounts for the year 2001-2002 along with the management's proposed reply.

#### **Key issues of the 128<sup>th</sup> Board Meeting held on 18.10.2004**

- The members were informed about the Environment Excellence Award 2004 that was conferred to industries, NGOs and municipalities, by the Hon'ble Chief Minister of the state.
- The members were informed about the constitution of a Task Force for formulation of a new pollution abatement technology.
- The members were informed about the launch of the ADB (Asian Development Bank) Project comprising four sub-projects on air pollution, hazardous waste management, EMIS and wetland management.

#### **Key issues of the 129<sup>th</sup> Board Meeting held on 11.01.2005**

- As per the decision taken in the 128<sup>th</sup> Board meeting, the 'Committee for framing Service Regulations for the employees of the Board' examined the part of Recruitment Rules and the Promotion Policy. The salient features of the proposed Rules were explained to the members. It was decided that the Recruitment Rules as modified, would be sent to the government for consideration and approval.
- In view of the Tsunami disaster, it was decided that the Board would donate

an amount of Rs.10 lakhs to the Chief Minister's Relief Fund.

- The special case with regard to financial help for the ailment of an employee of the Board (of the rank of Junior Environmental Assistant) was discussed during the meeting.

**Key issues of the 130<sup>th</sup> Board Meeting held on 28.03.2005**

- The Board adopted the Revised Budget Estimate for the year 2004-2005 and approved the budget estimate for the year 2005-2006.
- The Board sanctioned a grant of Rs.2 crores in installments as financial support to the integrated hazardous waste management facility being set up at Haldia.
- The members discussed and decided that Envirotech East Private Limited will continue with the task of air quality monitoring during 2005-2006, under similar terms and conditions similar to the previous last year.
- The matter related to the filling up to of the vacant posts of the Board by promotion was discussed during the meeting.
- The members approved the expenditure as part of financial help for the ailment of Junior Environmental Assistant (as discussed in the 129<sup>th</sup> Board meeting) by considering it as a special case.
- It was decided that the Board would frame a policy on the procurement of goods and services. It was further decided that the instant case on procurement of consumables and calibration of gas for the Ambient Air Quality Monitoring equipment of the Board would be dealt with according to the Policy.
- The members were informed that a copy of the Report titled "Staff Assessment Committee of the WBPCB" has been sent to the government for consideration. Also, comments for the same were sought from the members of the Board so that it could be sent to the government.

## CHAPTER XII

# HUMAN RESOURCE DEVELOPMENT AT THE WBPCB

The West Bengal Pollution Control Board is keen to enhance the performance and growth of its workforce. One of the principal means is by encouraging their participation in various training programmes/workshops conducted by distinguished organisations. These training programmes facilitate the process of capacity building. The WBPCB workforce comprises of scientists,

engineers, legal professionals, researchers and capable support staff. The current workforce of the Board is 242. The staff strength of the Board during the year 2004-2005 is given in ANNEXURE VI. The details of the different training programmes and workshops attended by the WBPCB officials held in India during the financial year 2004-2005 is illustrated below.

TABLE 2.12.1  
TRAINING / WORKSHOPS ATTENDED BY THE OFFICIALS OF THE WBPCB  
DURING THE YEAR 2004-2005

Sl. No.	Name & Designation of the Official	Course	Organisation	Period	Venue
1	Shri R. K. Saha, Junior Scientist	Application of GIS in the management of aquatic pollution	Integrated Coastal and Marine Area Management Project Directorate (ICMAM)	12.04.2004 to 21.04.2004	Chennai

Sl. No.	Name & Designation of the Official	Course	Organisation	Period	Venue
2	Shri B.R. Das, Assistant Environmental Engineer	Environmental Strategies including Waste Minimisation, Environmental Auditing & Management System	Bharat Heavy Electrical Limited (BHEL)	26.04.2004 to 28.04.2004	Baroda, Haridwar
3	Ms. D. Maulik, Environmental Engineer (Planning)	Developing CDM Projects in India	Confederation of Indian Industries (CII)	05.05.2004	Kolkata
4	Shri Arup Kr. Dey, Assistant Environmental Engineer	Workshop on Environmental Statements for Oil Refineries	Central Pollution Control Board (CPCB)	05.05.2004 to 07.05.2004	Delhi
5	Shri Bimalendu Mal, Assistant Environmental Engineer	Environmental Statements for Petrochemical Industries	Engineers India Ltd.	17.05.2004 to 19.05.2004	New Delhi
6	Ms. Bithika Goswami, Assistant Environmental Engineer	Use of Software for of Environmental Data Bank	CPCB	20.05.2004 to 22.05.2004	Delhi
7	Shri Dibyendu Roy, Assistant Environmental Engineer	Use of Software for Creation of Environmental Data Bank	CPCB	20.05.2004 to 22.05.2004	Delhi
8	Shri Somnath Narayan, Environmental Engineer	Integrated Solid Waste Management and designing Sanitary Landfills & Disposal of Municipal Waste.	CPCB	24.05.2004 to 28.05.2004	Goa
9	i) Dr. A. Bandyopadhyay, Environmental Engineer ii) Mr. Q. Q. Hassan, Assistant Environmental Engineer	Interactive Workshop on Review of Currents Status, Policies and Legislation on POPs in India.	Industrial Toxicology Research Centre	25.06.2004	Kolkata
10	Shri D. Gupta, Scientist	Workshop on Air Quality Management	CPCB	26.07.2004 to 30.07.2004	Delhi
11	Shri P. K. Roy, Senior Environmental Engineer	Workshop on Air Quality Management	CPCB	26.07.2004 to 30.07.2004	Delhi

Sl. No.	Name & Designation of the Official	Course	Organisation	Period	Venue
12	Smt. Rita Dutta, Assistant Environmental Engineer	Industrial Solid/ Hazardous Waste - Handling Disposal Technique	Engineering Staff College of India (ESCI), Hyderabad	03.08.2004 to 05.08.2005	Hyderabad
13	i) Shri A. Dasgupta, Assistant Environmental Engineer ii) Shri K. Bhattacharjee, Junior Environmental Engineer	Workshop-Cum- Training Programme and Vehicular- Pollution for transport personnel	Automotive Research Association of India (ARAI)	09.08.2004 to 13.08.2004	Pune
14	Shri P. K. Barai, Scientist	Training & Demonstration Programme on Inventory & Management of Stockpiles	CPCB	23.08.2004 to 27.08.2004	Delhi
15	Dr. P. Bhattacharya, Scientist	Source Level Emissions Measurements	The Energy & Resources Institute (TERI)	20.09.2004	Delhi
16	i) Shri Chandan Ghosh, Environmental Engineer ii) Shri Suna Mardi, Environmental Engineer	Latest Trends in Environmental Impact Assessment EIA and Environmental Management Planning (EMP)	ESCI	13.10.2004 to 15.10.2004	Hyderabad
17	i) Dr. T. K. Gupta, Senior Environmental Engineer ii) Shri D. Gupta, Scientist	Urban Air Quality Management : Progress and Future Challenge	CPCB	18.10.2004 to 19.10.2004	Delhi
18	Smt. J. Mitra, Assistant Environmental Engineer	Eco-Industrial Estate Planning	Centre for Environmental Planning & Technology (CEPT)	25.11.2004 to 15.12.2004	Hyderabad
19	Smt. S. Guha, Assistant Environmental Engineer	Training programme on Environmental Monitoring & Assessment for Urban areas	TERI	22.11.2004 to 11.12.2004	Delhi

Sl. No.	Name & Designation of the Official	Course	Organisation	Period	Venue
20	i) Dr. D. Chakraborty, Chief Scientist ii) T. K. Gupta, Environmental Engineer (Planning)	Workshop on Better Air Quality (BAQ) 2004	Society of Indian Automobile Manufacturers (SIAM)	06.12.2004 to 08.12.2004	Agra
21	Shri Debanjan Gupta, Scientist	Ben MAP-International Software by USEPA	CPCB	29.11.2004 to 2.12.2004	New Delhi
22	Shri A. Fouzdar, Assistant Environmental Engineer	Assessment of Air Pollution – Methods to Control and Abatement Strategies	ESCI, Hyderabad	14.12.2004 to 17.12.2004	ESCI, Hyderabad

## CHAPTER XIII

# FINANCIAL SUMMARY

During the financial year 2004-2005, the total receipts of the West Bengal Pollution Control Board (except Cess reimbursement) from the Government of India was Rs.1033.66 lakhs and the total expenditure of the Board was Rs.1005.80 lakhs. The major contributor to the Board's revenue was the fee collected from industries/units of West Bengal on account of Consent Administration, Hazardous Waste and Bio-Medical Authorization, Import Clearance and Analysis Charges, which amounted to Rs.713.78 lakhs. The next main source was the State Government grants under Plan and Non-plan Heads.

Out of the total expenditure of Rs.1005.80 lakhs, Rs.424.60 lakhs was towards Pay & Allowances and Rs. 581.20 Lakhs towards Project and other contingency expenses. The Board collected Cess amounting to Rs.2663.98 lakhs during the financial year, which was transmitted to the Government of India account. In the same financial year, the Board received reimbursement of Rs. 769.80 lakhs from the Government of India on this account. An amount of Rs.226.30 lakhs has been received for the ICEF (India-Canada Environment Facility) Project and spent an amount of Rs 175.12 lakhs only towards the Project during the period.

TABLE: 2.13.1

### ANNUAL ACCOUNTS (UNAUDITED) OF THE YEAR 2004-2005

Sl.No	Head	Rs. (In lakhs)
1.	<b>RECEIPTS UNDER NON-PLAN HEADS</b>	
	a) Grant from the State Government	169.95
	b) NOC & Consent fees, Hazardous Waste and Bio-medical waste authorisation fees, Import license fees, effluent/emission sample analysis charges	713.78
	c) Sale of different application forms and books	1.83
	d) Miscellaneous	26.81
	<b>Sub Total</b>	<b>912.37</b>



TABLE: 2.13.1 contd....

Sl.No	Head	Rs. (In lakhs)
2.	<b>RECEIPTS UNDER PLAN HEADS</b>	
	a) Grants from State Govt.(State Plan)	26.50
	b) Grants, Donation etc. from other sources.	94.79
	<b>Sub Total</b>	<b>121.29</b>
3.	<b>TOTAL RECEIPTS (1+2)</b>	<b>1,033.66</b>
4.	<b>EXPENDITURE UNDER NON-PLAN HEADS INCLUDING BOARD'S FUND</b>	
	a) Pay and allowances	424.60
	b) Other contingencies	361.64
	<b>Sub Total</b>	<b>786.24</b>
5.	<b>EXPENDITURE UNDER PLAN-HEADS INCLUDING BOARD'S FUND</b>	<b>219.56</b>
6.	<b>TOTAL EXPENDITURE (4 + 5)</b>	<b>1005.80</b>
7.	<b>EXCESS RECEIPTS OVER EXPENDITURE (3-6)</b>	<b>27.86</b>
8.	<b>EXCESS EXPENDITURE OVER RECEIPTS</b>	<b>-</b>
9.	<b>RECEIPTS UNDER ICEF PROJECT</b>	<b>226.30</b>
10.	<b>EXPENDITURE UNDER ICEF PROJECT</b>	<b>175.12</b>
11.	<b>CESS ASSESSMENT</b>	<b>2253.93</b>
12.	<b>CESS COLLECTIONS</b>	<b>2663.98</b>
13.	<b>CESS REIMBURSEMENT FROM THE GOI</b>	<b>769.80</b>

FIGURE 2.13.1  
RECEIPTS DURING 2004-2005

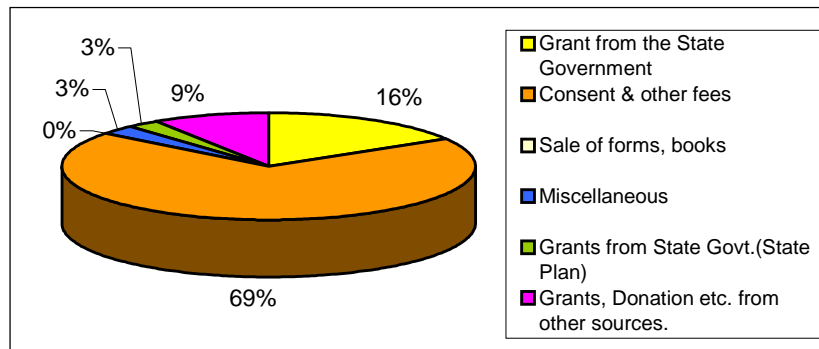
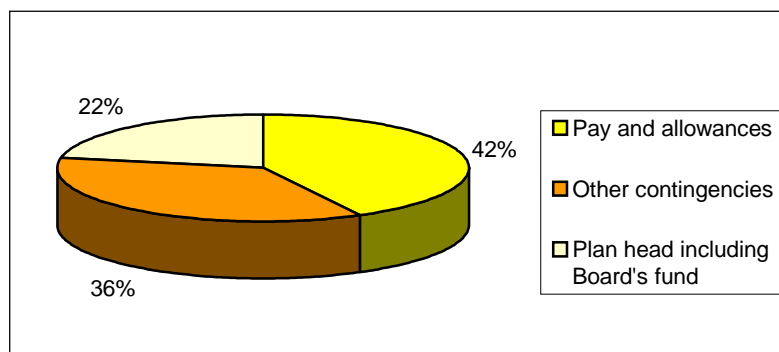


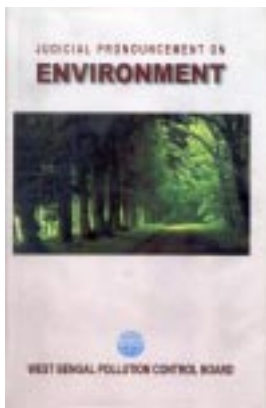
FIGURE 2.13.2  
EXPENDITURE DURING 2004-2005



## Publications of the Board

On June 5, 2005, three publications were released on the occasion of World Environment Day by Shri Buddhadeb Bhattacharjee, Hon'ble Chief Minister of West Bengal.

### *“Judicial Pronouncement on Environment”*



is a comprehensive dossier of the environmental statutes, judicial and legislative pronouncements pertaining to the state of West Bengal. It provides an insight of the important environmental rulings by the Hon'ble

Supreme Court of India, the High Courts and the Appellate Authorities, as well as various directions of the West Bengal Pollution Control Board (WBPCB) published from time to time. For a long time, these environmental guidelines that are the basis of solving pollution-related problems in West Bengal, required systematic compilation, as evident from constant demand from all quarters. This publication serves as a ready guide to the administrative and judicial community, non-governmental organisations, decision-makers and the concerned citizens of the state.

*Price: Rs.350/-*

### *“West Bengal Environmental Campaign: An Update 2003-2004”*



of the series of environmental awareness activities conducted under the WBPCB Environmental Campaign, a programme aimed to employ the tool of mass awareness to solve the existing

environmental problems. The book encompasses the awareness activities on various issues of present concern. This publication helps raise public awareness and develop an understanding of the concept of environmental responsibility among the people of the state.

*Unpriced*

### *CD on “Air Quality Data of West Bengal”*



as the title rightly suggests, is a compilation of the ambient air quality data gathered over the last one decade. The data of the annual average and the monthly average concentrations of the

different parameters that reflects air quality, as generated in these monitoring stations during

the time period 1991-2003 (approx.), have been compiled in the CD. This CD is an important tool for policy framework and is very helpful to researchers and different government authorities.

*Price Rs.500/-*

Shri Manabendra Mukherjee, Hon'ble Minister-in-charge, Information Technology & Environment, released the following two publications at the inaugural programme of Paribesh Mela 2005 held on January 16, 2005.

***“Air Quality of Kolkata – Improvement through effective policy intervention”*** is



an informative leaflet on air pollution that recounts the time-to-time achievements of the WBPCB in controlling air pollution in the city.

*Unpriced*

***“Paribesh Mela Guide Book”*** comprising of the backdrop and concept behind organising Paribesh Mela, also has a comprehensive database of the participating organisations at the Fair.



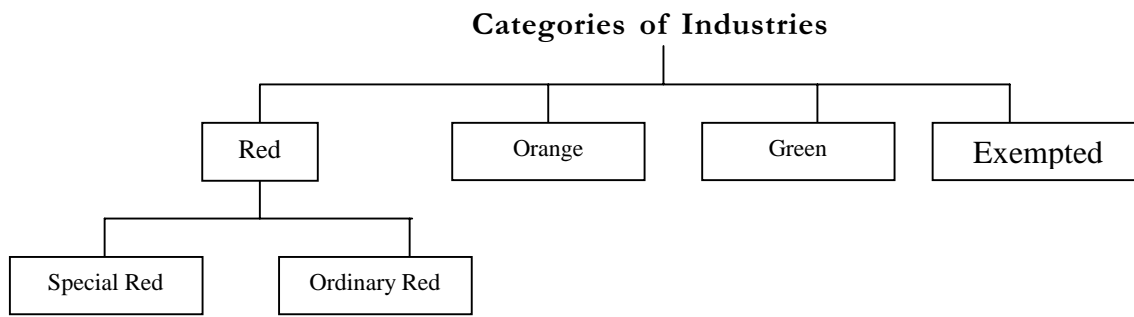
*Unpriced*

The other regular publications of the Board during 2004-2005 included the following :

- a) Annual Report 2003-2004
- b) Newsletter titled ‘Green Governance’, April 2004 (Vol. V Issue I)
- c) Newsletter titled ‘Green Governance’, August 2004 (Vol. V Issue II)
- d) Newsletter titled ‘Green Governance’, December 2004 (Vol. V Issue III)

# Categorisation of Industries

## CLASSIFICATION OF CATEGORIES OF INDUSTRIES



- The locational policies for Special Red and Ordinary Red category industries are the same.
- The classification of Special Red and Ordinary Red category have been made only for administrative convenience and power of processing of consent to Establish and Consent to Operate are given to different authorities as mentioned in page 2.
- The consent fees for Special red category and Ordinary Red category will be that of consent fees mentioned for Red category industries depending on capital investment on land, building, plant & machinery.
- The lists of Special Red, Ordinary Red, Orange, Green and Exempted category of industries are not exhaustive and these are subject to modifications under environmental consideration.
- The industry which do not fall under any of the five classes, decision with regard to their classification will be taken by a Committee at Head Office level comprising of Chief Scientist and Senior Environmental Engineers of the Board.
- The validity of Consent to Operate of different groups of industries will be as follows:
  - ✓ Green ➤ maximum 5 years
  - ✓ Orange ➤ maximum 3 years
  - ✓ Special & Ordinary Red ➤ maximum 2 years (except grossly polluting industries)
  - ✓ Grossly polluting industries ➤ maximum 1 year industries
    - No water intensive industry will be permitted within 10-km radius of proposed integrated leather complex at Bantala.

**List of Industries under “SPECIAL RED” Category**

1. Acid lead batteries including lead plate casting (more than 10 batteries per day)
2. All mining activities including queries
3. Aluminium smelter
4. Asbestos and asbestos-based industries
5. Basic drug & pharmaceutical (excluding formulation)
6. Calcium carbide manufacturing
7. Cast iron foundry
8. Cement (excluding simple grinding)
9. Chemical, petrochemical and electrochemical, manufacture (including distillation) of mineral acids such as Sulphuric acid, Nitric acid, Hydrochloric acid, Phosphoric acid etc. and their salts, manufacture of alum
10. Chlorates, perchlorates and peroxides
11. Chlorine, fluorine, bromine, iodine and their compounds
12. Chloro alkali
13. Coke making, coal liquefaction, coal tar distillation, processing of coal tar distillate or fuel gas making, coke briquetting (excluding sundrying)
14. Copper smelter
15. Dichromate and chromates & basic chrome sulfate
16. Distillery including fermentation industry (including manufacture of yeast & beer)
17. Dyes and dye-intermediates
18. Electroplating operations
19. Explosives including detonators, fuses etc. & their storage
20. Ferrous & Non-ferrous metal extraction (different furnaces & smelting), refining, casting, forging (with coal fired boilers), alloy making etc.
21. Fertiliser (Basic) (excluding granulation & formulation only)
22. Glass and ceramics (excluding tile manufacturing)
23. Hazardous waste/Bio-medical waste disposal facilities
24. Hydrocyanic acid and its derivatives
25. Incineration plants
26. Industry or process involving metal treatment or process such as pickling, surface coating (excluding spray, manual brush, paint baking, paint stripping), heat treatment (only cyaniding), phosphating, galvanising, anodising etc.
27. Integrated textile mills (processing involving scouring, bleaching, dyeing, printing or any effluent/emission generating process) and dyeing of other fabrics
28. Iron and Steel (involving processing from ore / scrap / integrated steel plants) including coke plants and steel products involving use of any of the equipment such as blast furnaces, open hearth furnace, induction furnace or arc furnace etc.
29. Isolated storage of hazardous chemicals (as per schedule of Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989), etc.
30. Lead smelting, refining and manufacture of its oxides
31. Non-alcoholic beverages (soft drinks) and only bottling of alcoholic products (capital investment on plant & machinery > 1 crore)
32. Oil refinery (Mineral oil or Petro refineries)
33. Paints and varnishes (excluding units with only blending & mixing)
34. Pesticides (including formulation)

35. Petrochemicals (manufacture of and not merely use of as raw material)
36. Phenolic products
37. Phosphorous and its compounds
38. Pigments and intermediates
39. Power plants (including hydel power, thermal power, nuclear power etc.) (excluding Diesel Generator sets and captive power plant)
40. Power plant (captive)
41. Processes involving chlorinated hydrocarbons
42. Printing or etching of glass sheet using hydrofluoric acid (large scale)
43. Pulp & Paper (excluding paper manufacturing by hydropulping and excluding manufacture of Straw board, Gray board & Duplex board)
44. PVC granules from PVC waste
45. Radioactive elements
46. Rolling mill (hot) (coal fired)
47. Rubber chemicals
48. Ship breaking activity
49. Slaughter houses and meat processing units
50. Sugar
51. Synthetic & natural fibre including rayon, tyre cord, polyester filament yarn & raw woolen, raw silk, cellophane paper, cellulose nitrate
52. Synthetic resins
53. Synthetic rubber
54. Tanneries
55. Vegetable oils & edible oils including solvent extracted oils, hydrogenated oils
56. Waste Oil Processing (any method)
57. Zinc smelter

#### List of Industries under “ORDINARY RED” Category

1. Acid slurry (sulphonation)
2. Bitumen processing and products
3. Bone Mill
4. Composite woollen mill including dewaxing of raw wool and raw silk
5. Ceramic colour manufacturing (Using boiler)
6. Dairy and dairy products (integrated project, capital investment on plant & machinery  $\geq$  Rs. 1 crore)
7. Dry coal processing/Mineral processing industries like ore sintering, pelletization, grinding and pulverisation etc.
8. Earthen potteries & tile manufacturing (involving kiln)
9. Electric lamp (bulb) manufacturing (large scale)
10. Fibre glass and glass wool production
11. Food & food processing including fruits & vegetable processing (with capital investment on plant & machinery  $\geq$  Rs. 1 crore)
12. Glue (excluding glue from starch), gelatine and synthetic adhesives
13. Gold and Silver smithy (purification with acid, smelting operation and sulfuric acid polishing operation) (using more than 1 litre of Sulphuric Acid / Nitric Acid per month)
14. Health care establishment
15. Handicrafts works like terracota work.
16. Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black etc.
17. Industrial or inorganic gases (excluding medical oxygen)

18. Jute processing with dyeing
  19. Lime manufacturing
  20. Lubricating oils, greases or petroleum based products (excluding blending at normal temperature)
  21. Magnesium Sulphate
  22. Manufacturing & reprocessing of PVC granules and manufacturing of reprocessed PVC products
  23. Manufacturing of cilica gel with furnace
  24. Manufacturing of toothpowder, toothpaste, talcum powder and other cosmetic items (large & medium scale)
  25. Manufacturing of pasted veneers using boiler and thermic fluid heater
  26. Manufacturing of umbrella (including manufacturing of metallic handle and sticks)
  27. Manufacturing of optical lenses (using furnace other than electric furnace)
  28. Photographic films and chemicals
  29. Plyboard manufacturing (including vineer & laminate) with coal or waste wood fired boiler / thermic fluid heater (with captive resin manufacturing plant)
  30. Processing of animal hoofs, horns and other body parts
  31. Reclamation of rubber, manufacture of rubber solution containing mineral naphtha & rubber wastes, rubber based adhesives
  32. Refractories
  33. Rubber goods industry (with boiler)
  34. Shellac processing
  35. Spice grinding (> 20 HP motor)
  36. Stone crushing
  37. Straw board, gray board, duplex board and paper manufacturing by hydropulping
  38. Surgical and medical products involving prophylactics and latex
  39. Synthetic detergent (excluding formulation ) and soap (with steam boiling)
  40. Tyres and tubes vulcanization/hot retreading (using coal fired boiler)/ moulding
  41. Wood charcoal manufacturing and processing
- List of Industries under “ORANGE” Category**
1. Almirah manufacturing (not permitted in municipal areas of West Bengal)
  2. Aluminium and copper extraction from scrap using oil fired furnace
  3. Automobile servicing, repairing and painting (excluding only fuel dispensing)
  4. Ayurvedic and Homeopathic medicine (with boiler)
  5. Bakery & confectionery [(a) with production capacity < 10 tpd with coal & wood fired oven and (b) all units with production capacity <sup>3</sup> 10 tpd]
  6. Bleaching of fabrics, yarn
  7. Brickfields (excluding fly ash brick manufacturing using lime process)
  8. Cashewnut processing
  9. Cement grinding (excluding coal fired drier)
  10. Chilling plant, cold storage and Ice making
  11. Chira mill
  12. Coffee seed processing
  13. Coke briquetting (sun drying)

14. Cotton spinning and weaving (medium and large scale)
15. Dry cell battery (excluding manufacturing of electrodes)
16. Engineering and fabrication units
17. Fire works manufacturing and storage
18. Fish feed and poultry feed
19. Fish processing and packaging (excluding chilling of fish)
20. Foam manufacturing
21. Food & food processing including fruits & vegetable processing (capital investment on plant & machinery > Rs.10 lakhs but < Rs. 1 crore)
22. Forging of ferrous & non-ferrous metal (using oil or gas fired boilers)
23. Gravure printing
24. Grill manufacturing (not permitted in municipal areas of West Bengal)
25. Glass, Ceramic, Earthen potteries and tile manufacturing using oil or gas fired kiln
26. Hardware manufacturing for computer and other information technology instruments
27. Heat treatment using oil fired furnace (excluding cyniding)
28. Hotels & Restaurants (capital investment on land, building, plant & machinery > 30 lakhs)
29. Housing complexes with more than 100 flats or more than 60000 Sq. ft. super built up area
30. Husking mill
31. Ice cream
32. Infrastructure development project with capital investment more than Rs. 5 crore
33. Jute processing without dyeing
34. Manufacture of mirror from sheet glass
35. Organic nutrients (excluding simple mixing)
36. Paint blending & mixing (Ball mill)
37. Pharmaceutical formulation (capital investment plant & machinery <sup>3</sup> Rs. 10 lacs)
38. Plyboard manufacturing (including vineer & laminate) with oil fired boiler/ thermic fluid heater (without resin plant)
39. Poultry, hatchery, piggery (capital investment on land, building, plant & machinery <sup>3</sup> Rs. 10 lacs)
40. Power press
41. Pulverisation of bamboo and scrap wood
42. Printing ink manufacturing
43. Printing or etching of glass sheet using hydrofluoric acid (small scale)
44. Puffed rice (muri) (using husk or coal fired chullah or vatti)
45. Reprocessing of waste plastic (excluding PVC)
46. Rice mill & rice hullers
47. Rolling Mill (oil or gas fired) and cold Rolling mill
48. Saw mill
49. Silk screen printing
50. Spray painting, paint baking, paint stripping
51. Storage of hides and processing of tallow
52. Synthetic detergents formulation (capital investment on plant & machinery <sup>3</sup> Rs. 5 lacs)
53. Tea processing
54. Tobacco products including cigarettes and tobacco processing
55. Tyres and tubes vulcanization/hot retreading (using oil or gas fired boiler)
56. Wire drawing (cold process) and bailing straps
57. Wire netting



**List of industries under “GREEN” category**

1. Acid lead battery (up to 10 batteries per day excluding lead plate casting)
2. Aluminium utensils from aluminium circles
3. Assembly of air coolers/conditioners, repairing and servicing
4. Assembly of bicycles, baby carriage and other small non-motorised vehicles
5. Automobile fuel outlet (only dispensing)
6. Ayurvedic and Homeopathic medicine (without boiler)
7. Bakery & Confectionery (with production capacity < 10tpd with oil, gas or electrical oven)
8. Block making for printing without foundry (excluding wooden block making)
9. Brass & Bell metal utensils manufacturing from circle (without re-Rolling facility)
10. Candy
11. Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boiler)
12. Carpet weaving
13. Cement products like pipe, pillar, jafri, well ring etc. (should be done under closed covered shed to control cement dust spreading)
14. Ceramic colour manufacturing (not using boiler and waste water recycling process)
15. Chilling plant and Ice making without use of ammonia
16. Coated electrode manufacturing
17. Colour/Black & White studio
18. Compact disc, computer floppy & cassette manufacturing
19. Cotton and woolen hosiery making
20. Cotton spinning & weaving (small scale)
21. Cutting, sizing and polishing of marble stones
22. Decoration of ceramic cups & plates by electric furnace
23. Dairy and dairy products (small scale) (capital investment on plant & machinery < Rs. 1 crore)
24. Dal Mills
25. Diesel Generator sets (15 KVA and above) for residential buildings, commercial buildings and healthcare organization
26. Diesel pump repairing and servicing
27. Distilled water
28. Electric lamp (bulb) manufacturing (small scale)
29. Electrical & electronic goods manufacturing
30. Electronic equipment assembling
31. Fertiliser (granulation and formulation only)
32. Flour mills (dry process)
33. Fly ash bricks manufacturing (lime process)
34. Food & food processing including fruits & vegetable processing (capital investment on plant & machinery < Rs.10 lakhs)
35. Fountain pen manufacturing
36. Glue from starch
37. Glass, ceramic, earthen potteries and tile manufacturing using electrical kiln or not involving kiln
38. Glass putty and sealant
39. Groundnut decorticating (dry)
40. Gold and Silver smithy (purification with acid, smelting operation and sulfuric acid polishing operation) (using less than or equal to 1 litre of Sulphuric Acid / Nitric Acid per month)
41. Handloom weaving (without dyeing and bleaching operation)

42. Hotel & Restaurants (capital investment land, building, plant & machinery  $\leq$  Rs.30 lakhs) and Boarding & lodging house
43. Insulation and other coated papers (excluding paper or pulp manufacturing) manufacturing
44. Jobbing and machining
45. Laboratory-wares
46. Leather cutting and stitching (more than 10 machines and using motor)
47. Leather footwear and leather products (excluding tanning and hide processing) (except cottage scale)
48. Lubricating oils, greases or petroleum based products (only blending at normal temperature)
49. Manufacturing of ferrous and non ferrous metal product without using heat treatment (not generating any effluent or emission)
50. Manufacturing of pasted veneers without using boiler or thermic fluid heater or by sundrying
51. Manufacturing of metal caps and containers
52. manufacturing of shoe brush and wire brush
53. Manufacturing of toothpowder, toothpaste, talcum powder and other cosmetic items (small scale)
54. Manufacturing of optical lenses (using electrical furnace)
55. Medical oxygen
56. manufacturing of silica gel (without furnace)
57. Mineralized water
58. Manufacturing of coir items from coconut husk
59. Non-alcoholic beverages (soft drinks) and only bottling of alcoholic products (capital investment on plant & machinery < Rs. 1 crore)
60. Oil mill ghani & extraction (no hydrogenation/refining)
61. Organic and inorganic nutrients (by simple mixing)
62. Paints and varnishes (mixing and blending) (without ball mill)
63. Paper pins and U-clips
64. Pharmaceutical formulation (capital investment on plant & machinery < Rs.10 lakhs)
65. Phenyl manufacturing
66. Polythene & plastic processed products manufacturing (excluding manufacturing & reprocessing of PVC granules and manufacturing of reprocessed PVC products and reprocessing of waste plastic)
67. Poultry, hatchery, piggery (capital investment on land, building, plant & machinery < Rs. 10 lacs)
68. Power looms (without dyeing and bleaching)
69. Printing press
70. Puffed rice (muri) (not using boiler)
71. Rope (Cotton & Plastic)
72. Rubber goods industry (without boiler)
73. Scientific and mathematical instruments manufacturing
74. Soap manufacturing (without steam boiling)
75. Spice grinding ( $\leq$  20 HP motor)
76. Steel furniture without spray painting
77. Steeping and processing of grains
78. Supari (Betelnut) grinding
79. Surgical and medical products not involving effluent/emission generating processes
80. Sweet shop
81. Synthetic detergent formulation (capital investment on plant & machinery < Rs. 5 lakhs)

82. Tea garden only
83. Teflon based products
84. Thermocol manufacturing
85. Thermometer making
86. Toys (only electronic & mechanical) manufacturing
87. Transformer repairing/manufacturing (should not be allowed in congested areas)
88. Tyres and tubes retreading (without boiler)
89. Veneer, laminate (without boiler and thermic fluid heater)
90. Washing of used sand by hydraulic discharge
91. Washing, chilling of fish and packaging only
92. Water softening and demineralised plants
15. Diesel Generator sets (< 15 KVA) sets for residential buildings, commercial buildings and health care organisation
16. Gold and silver smithy (excluding purification/ polishing with any acid and smelting operation)
17. Handicraft products like terracotta, conchshell, coconutshell, dokra, cane and bamboo products, baluchari saree, stone carving, wood carving, batik, sola work etc.
18. Handloom weaving (without dyeing & bleaching)
19. Handmade paper
20. Hardware assembling for IT industries
21. Housing complex with 100 flats or less and 60000 Sq. ft. super built up area or less
22. Infrastructure development project with capital investment Rs. 5 crore or less

**List of industries under “EXEMPTED” category**

1. Agarbati
2. Assembly of domestic electrical appliances, servicing & repairing
3. Atta Chakkis (wheat grinding)
4. Auto emission testing centre
5. Ball Pen Refill
6. Bamboo and Cane products (only dry operation)
7. Biogas Plant
8. Black smithy (should not be allowed in congested areas)
9. Book Binding
10. Cable TV network
11. Candles manufacturing
12. Carpentry and wooden furniture making (excluding saw mill)
13. Coir manufacturing
14. Cyber café
23. Leather cutting and stitching (not more than or equal to 10 machines and without using motor)
24. Leather footwear & leather products (excluding tanning & hide processing) (cottage scale only)
25. Manual brass painting
26. Manufacture of steel trunks & suitcases
27. Mashroom Plantation and spawn
28. Manufacturing of umbrella (only assembling)
29. Musical instrument manufacturing
30. Optical frames
31. Optical lens manufacturing (without furnace)
32. Photo framing
33. Radio assembling servicing & repairing work
34. Repairing & servicing of bicycles, baby carriage and other non-motorised vehicles

- |  |   |
|--|---|
| 35. Repairing & servicing of electronic equipment              | 41. Tank calibration centre                                       |
| 36. Shoelace manufacturing                                     | 42. Tailoring & garment stitching/garment & Apparel manufacturing |
| 37. Soap (handmade)  | 43. Tea packaging   |
| 38. Soft toys, wooden toys manufacturing                       | 44. Weigh bridge (not manufacturing)                              |
| 39. Software development for information & technology industry | 45. Wooden block making for printing                              |
| 40. Sports goods manufacturing                                 | 46. Xerox & Photocopying  |
|  | 47. Zari embroidery work  |

# Industrial Siting Policy of the WBPCB

## *Special red category industries*

Industries mentioned in the list of Special Red category cannot be permitted in Municipal areas falling under Kolkata Metropolitan Area (KMA). These can, however, be set up beyond the Municipal areas of KMA with adequate pollution abatement system subject to site clearance by local bodies. However, for the categories of industries in serial number 23, 25, 29, 40 & 46 (refer Annexure II), the consideration for siting in KMA will be location-specific and will be decided by the Board.

## *Ordinary Red category industries*

Industries mentioned in the list of Ordinary Red category cannot be permitted in Municipal areas falling under Kolkata Metropolitan Area (KMA). These can, however, be set up beyond the Municipal areas of KMA with adequate pollution abatement system subject to site clearance by local bodies. However, for the category of industries in serial number 13 (refer Annexure II) the consideration for siting in KMA will be location-specific and will be decided by the Board.

## **New industries under the Orange category**

Industries mentioned in the list of Orange

category can be permitted in all municipal areas other than Kolkata Municipal Corporation (KMC) and Howrah Municipal Corporation (HMC) areas [except added areas of HMC] or within Industrial Estates in case of KMC & HMC area with adequate pollution control measures subject to the condition that the site clearance should be obtained from the Municipal authorities for siting up of new units. However, for the categories of industries in serial nos. 1, 11, 13, 14, 24, 30 & 32 (refer Annexure II), the consideration for siting outside industrial estates in KMC & HMC area will be location specific and will be decided by the Board.

## **New industries under the Green category**

The list of industries under Green category can be permitted in any area in the state with adequate pollution control measures subject to the site clearance by the local body.

## *New industries under the Exempted category*

The list of industries under Exempted category need not apply for either 'Consent to Establish' or 'Consent to Operate' and can be permitted in any area in the state subject to site clearance by the local body.

## List of Grossly Polluting Industries

Sl. No.	Industry Name with Address	Type of Unit
1.	Azad Metal Works, 158B, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
2.	Britannia Industries, 15, Taratola Road, Kolkata-88	Bakery & biscuit manufacturer
3.	CESC Ltd.; Southern Generating Station, 28, Garden Reach Road, Kolkata-24	Thermal power plant
4.	Dey's Medical Stores Mfg. Ltd.; Dey-Se-Chem Division, 8, Rifle Range Road, P.O.Ballygunj, P.S.Karaya, Kolkata-19	Pharmaceuticals
5.	Diamond Beverages Ltd.; P-41, Taratola Road, P.O.Brace Bridge, P.S.Taratola, Kolkata-88	Soft drink manufacturer
6.	ESAB India Ltd.; P-41, Taratola Road, P.S.Taratola, Kolkata-88	Electro plating unit
7.	Etemit Everest, 1, Taratola Road, Kolkata	Asbestos
8.	GEC Alstom (AEI Works), 1, Taratola Road, P.O. & P.S.Garden Reach, Kolkata-24	Electro plating unit
9.	Hindustan Engineering Industries Ltd.; 38, Tiljala Road, Kolkata-39	Foundry
10.	Hindustan Lever Ltd.; 63, Garden Reach Road, South Port Police Station, Kolkata-24	Soap & detergent manufacturer
11.	Jaishambho Metal Co., 158, Picnic Garden Road, Kolkata-39	Secondary lead smelting
12.	Kashi Metal Works, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
13.	Kesoram Industries Ltd. (Textile Division), 42, Garden Reach Road, Kolkata-24	Textile unit
14.	Metal Smelting Co., 46A & B, South Tangra Road, P.O.Gobinda Khatik Road, P.S.Tiljala, Kolkata-46	Secondary lead smelting

Sl. No.	Industry Name with Address	Type of Unit
15.	Metflow Corporation Pvt. Ltd.; 158A, Picnic Garden Road, Kolkata-39	Foundry
16.	National Metal Works, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
17.	Ramdular & Brothers, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
18.	Shibshakti Metal Works, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
19.	Shibshankar Metal Works, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
20.	Shree Ganesh Metal Works, 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
21.	Singh Metal Co., 158, Picnic Garden Road, P.O. & P.S.Tiljala, Kolkata-39	Secondary lead smelting
22.	Stone India Ltd.; 16 Taratola Road, P.O.Brace Bridge, P.S.Taratola, Kolkata-88	Electroplating
23.	ASG Biochem Pvt. Ltd. [Infar (India) Ltd. / Organon (India) Ltd.], P.O.Ganganagar, P. S. Airport, Kolkata-132	Bulk drug manufacturer
24.	Bachhelal Metal Industries, 22G, Shivkrishna Daw Lane, P.S.Phulbagan, Kolkata-54	Secondary lead smelting
25.	BESCO, 8, Anil Moitra Road, P.O.Ballygunj, P.S.Gariahat, Kolkata-19	Wagon manufacturer
26.	Bijoy Metal Works, 76, Canal Circular Road, Kolkata-54	Secondary lead smelting
27.	CESC Ltd.; New Cossipore Generating Station, 28, Jheel Road, P.O. & P.S.Cossipore, Kolkata-2	Thermal power plant
28.	East India Metal Co. Pvt. Ltd.; P-85, Benaras Road, Belgachia, Dasnagar, P.O.Netajigarh, P.S.Liluah, Howrah-8	Secondary lead smelting
29.	Eastern Metal Corporation, Kolkata-54	Secondary lead smelting
30.	Eastern Metal, Khamar, Bighunpur, Rajarhat	Secondary lead smelting
31.	Eveready Industries India Ltd.; Unit-National Carbon Plant, 5, Rustomjee Parsee Road, P.O. & P.S.Cossipore, Kolkata-2	Dry cell manufacturer
32.	General Metal Products, 98, Maniktala Main Road, Kolkata-54	Zinc melting
33.	Gun & Shell Factory, Cossipore, 7, K.C.Road, P.O. & P.S.Cossipore, Kolkata-2	Engineering unit

Sl. No.	Industry Name with Address	Type of Unit
34.	Indian Lead Ltd.; Kalipark, P.O.R_Gopalpur, P. S. Alipore, Rajarhat Gopalpur Municipality, 24Pgs.(N)	Secondary lead smelting
35.	Kusum Metals, Kusumba, Narendrapur, P. S. Sonarpur, 24Pgs.(S)	Lead smelting
36.	Modern Industries	
37.	Oxochrome, Mouza-Malancha, P.S.Bhenger, 24Pgs.(S)	Chrome chemicals
38.	Panchawati Metal Works, B/8/C/H/8, Jogodyan Lane, P.O.Kankurgachi, P.S.Phoobagan, Kolkata-54	Secondary lead smelting
39.	Pepsico India Holding Pvt. Ltd.; JL-47, Barhans, P.O.Fartabad, P.S.Sonarpur, Kolkata-84	Soft drink manufacturer
40.	Ramsankar Dayasankar Metal Co., B/8C/H/17, Jogodyan Lane, P.O.Kankurgachi, P. S. Phoolbagan, Kolkata-54	Secondary lead smelting
41.	Ranjit Kumar Pal, Nimta, Kolkata-49	Asbestos cement pipe fittings manufacturer
42.	Samta Metal, 76, Canal Circular Road, Kolkata-54	Lead smelting
43.	Sarbamangala Industries, Cossipore, Kolkata-2	Asbestos products manufacturer
44.	Tarak Metal Industries, 76, Canal Circular Road, Kolkata-54	Secondary lead smelting
45.	Unister Galvanisers & Fabricators Pvt. Ltd.; P.O.Ganganagar, P.S.Alipore, 24Pgs.(N)	Galvanizing
46.	Bata India Ltd.; P.O.Batanagar, P.S.Maheshtala, 24Pgs.(S)-743 313	Tannery & leather shoe manufacturer
47.	CESC Ltd.; Budge Budge Generating Station, P.O.Pujali, P.S.Budge Budge, 24Pgs.(S)-743 319	Thermal power plant
48.	Cresmac Foundry Pvt. Ltd.; FEPZ	C. I. Foundry
49.	Delta Corporation, FEPZ	Induction furnace
50.	East India Pharmaceuticals Works, 136, Pathakpara Road, P.S.Behala, Kolkata-60	Pharmaceuticals
51.	Eastern Distillery & Chemical Ltd.; 34, B.L.Saha Road, Kolkata-53	Distillery
52.	Gontermann Peipers (India) Ltd. [Roll Foundry Division], P.O.Pailan, Diamond Harbour Road, 24Pgs.(S)-743 512	Casting of rolls & heat treatment
53.	IFB Agro Ltd.; Vill-Durgaur, P.O.Noorpur, P.S.Diamond Harbour, Gram Panchayat, 24Pgs.(S)-743 368	Distillery



Sl. No.	Industry Name with Address	Type of Unit
54.	Organic Dyes & Intermediates Manufacturing Co., Diamond Harbour Road, P.O.Joka, P.S.Thakurpukur, L.B.Joka, Gram Panchayat	Dyes & dye intermediates
55.	Rasoi Ltd.; P.O.Banganagar, P. S. Falta, 24Pgs.(S)-743 513	Vegetable products manufacturer
56.	Usha Metal Industries, 26/5B, A.M.Ghosh Road, Budge Budge, 24Pgs.(S)	Secondary lead smelting
57.	Agarwal Hardware Works Foundries Ltd.; 10, Seth Parasram Bajaj Road, P.O.Liluah, P.S.Bally, Howrah-204	C. I. Foundry
58.	Alfa Manufacturing Co., 60/3, 'O' Road, P.O.Netajigarh, P.S.Liluah, Howrah-108	C. I. Foundry
59.	Ambuja Cement Eastern Ltd.; Vill. & P.O.Dhulagori, P.S.Sankrail, Howrah-302	Cement manufacturer
60.	Bajaj Chemical Industries, 108, Dharmatola Road, Ghusuri, Howrah-7	Chemical manufacturer
61.	Beget Casting & Engineering Co., 76/8/2, Benaras Road, Howrah-1	C. I. Foundry
62.	Bengal Iron Corporation, Ashutosh Ghosh Road, P.O. & P.S.Jagacha, Howrah	C. I. Foundry
63.	Berger Paints India Ltd.; 14/15, Swarnamoyee Road, P.O.Botanical Garden, P.S.Shibpur, Howrah-103	Paints
64.	Bharat Engineering Works, NH-6, P.O.Chamrail, P.S.Bally, Howrah-323	C. I. Foundry
65.	Bharat Metal Corporation, 5, Rajkrishna Kumar Street, P.O.Belur Math, P.S.Bally, Howrah	Secondary lead smelting
66.	Bhotika Engineering Enterprise, 54/1, 'O' Road, Belgachia, P.O.Netajigarh, P.S.Liluah, Howrah-108	C. I. Foundry
67.	Binay Udyog Pvt. Ltd.; Unsani, P.O. & P.S.Jagacha, Howrah	C. I. Foundry
68.	Bowreah Cotton Mills, Bowreah, Howrah	Textile unit
69.	BSP Multiworth Pvt. Ltd.; Vivekananda Industrial Area, Baltikuri, Bakultala, P.S.Jagacha, Howrah-402	C. I. Foundry
70.	Calcutta Ferrous Ltd.; 41/1, 'A' Road, Bamungachi, P.O.Salkia, P.S.Liluah, Howrah-6	C. I. Foundry
71.	Calcutta Iron & Engineering Co. Ltd.; 77A, Benaras Road, P.O.Bamungachi, P.S.Bentra, Howrah-106	C. I. Foundry

## LIST OF GROSSLY POLLUTING INDUSTRIES

Sl. No.	Industry Name with Address	Type of Unit
72.	Calcutta Iron Foundry, 109, Rabindra Sarani, P.O.Bhattanagar, P.S.Liluah, L.B.Bally Municipality, Howrah	C. I. Foundry
73.	Calcutta Iron Udyog, P89, Benaras Road, P.O.Netajigarh, P.S.Liluah, Howrah-108	C. I. Foundry
74.	Calcutta Rolls Manufacturing Co., 81, 'F' Road, Belgachia, Howrah	C. I. Foundry
75.	Carnation Industries Ltd. (Unit-I), 10, Station Road, Liluah, Howrah-4	C. I. Foundry
76.	Carnation Industries Ltd. (Unit-II), 23, 'O' Road, Belgachia, P.O.Netajigarh, P.S.Liluah, Howrah	C. I. Foundry
77.	Crawley & Ray (Foundry & Engineers) Pvt. Ltd.; 25, Foreshore Road, Botanical Garden, Howrah	C. I. Foundry
78.	Crescent Foundry Co. Pvt. Ltd. (Unit-II), NH-6, P.O.Nibra, P.S.Domjur, L.B.Salap 2 No. Gram Panchayet, Howrah	C. I. Foundry
79.	East India Metal Co. Pvt. Ltd.; P-85, Benaras Road, Belgachia, Dasnagar, P.O.Netajigarh, P.S.Liluah, Howrah-108	Secondary lead smelting
80.	Frigerio Allana Conserva Ltd.	Meat processing
81.	Howrah Galvanizing Pvt. Ltd. (CETP), 50, Natabar Paul Road, Howrah	CETP
82.	Howrah Railway Station, Eastern Railway, Howrah	Railway station
83.	Indian Standard Casting Co. Pvt. Ltd.; 58/2, Netaji Subhas Road, Liluah, Howrah	C. I. Foundry
84.	J.D.Jones & Co. Pvt. Ltd.; 8, Danesh Sheikh Lane, P. S. Shibpur, Howrah-9	Asbestos
85.	Jagaddhatri Iron Foundry, Baltikuri, P.O.Bakultala, P.S. Jagacha, Howrah-402	C. I. Foundry
86.	Kamala Metachem, Vill-Kulia, P.O.Bikihakola, P.S.Panchla, Howrah	Secondary lead smelting & non-ferrous alloy
87.	Kiswosk Industries Ltd. [Formally, Kejriwal Iron & Steel Works] (Unit-II), Biprannapara, P.O.Begri, P.S.Domjur, Via-Begri, Begri Gram Panchayat, Howrah-411	C. I. Foundry
88.	Lords Chemicals Ltd.; Plot No.47(A) & 46, Uluberia Industrial Growth Centre, Howrah	Dichromate manufacturer
89.	Majumder Engineering Co., Belgachia, Howrah	C. I. Foundry
90.	Mangalchandi Iron Foundry, 41 & 42, 'E' Road, Belgachia, P.O.Dasnagar, P.S.Liluah, Howrah-105	C. I. Foundry

Sl. No.	Industry Name with Address	Type of Unit
91.	Nandikeshwari Iron Foundries Pvt. Ltd.; 10, 'K' Road, Belgachia, Howrah-105	C. I. Foundry
92.	Nandikeshwari Steel Industries Pvt. Ltd.; Beltala, P.O.Chamrail, P.S.Liluah, Howrah-323	C. I. Foundry
93.	National Iron Industries, P.O.Baltikuri, P.S.Jagacha, Howrah	C. I. Foundry
94.	Oriental Foundries & Engineers Pvt. Ltd.; P.O. & P.S.Dasnagar, Baltikuri, Bakultala, Howrah-402	C. I. Foundry
95.	Overseas Iron Foundry Pvt. Ltd. (Unit-i), 27, Sailen Dhar Road, P.O. & P.S.Liluah, Howrah	C. I. Foundry
96.	Overseas Iron Foundry Pvt. Ltd. (Unit-II), 12/2-3, Mirpara Road, P.S.Liluah, Howrah	C. I. Foundry
97.	Raghunath Prasad Phoolchand, 13, Belur Road, P.O.Liluah, P.S.Bally, L.B.Bally Municipality, Howrah-204	C. I. Foundry
98.	Ramnath Ispat Pvt. Ltd.; 61 & 62, 'O' Road, Belgachia, Howrah-108	C. I. Foundry
99.	Ranjan Industries, Vill-Kulin, P.O.Bikiakhola, P.S.Panchla, Howrah-322	Secondary lead smelting & non-ferrous alloy
100.	Rose Island Engineering Works, 112, 'B' Road, P.O.Bamungachi, P.S.Liluah, Howrah-106	C. I. Foundry
101.	RSI Ltd. (Unit-I), 30, Netaji Subash Road, P.O. & P.S.Liluah, Howrah-104	C. I. Foundry
102.	RSI Ltd. (Unit-II), 10, 'O' Road, Belgachia, P.O.Netajigarh, P.S.Liluah, Howrah-108	C. I. Foundry
103.	Sairam Iron Industries, 8/1 & 8/2, "L" Road, Belgachia, Liluah, Howrah	C. I. Foundry
104.	Sajta Metal Works, Chandmari Road, Danesh Shakh Lane, P.S.Shainrail, Howrah-9	Secondary lead smelting & non-ferrous alloy
105.	Sandeep Castings Pvt. Ltd.; 9B, Purnamal Behani Road, P.O.Sapuipara, P.S.Bally, Howrah	C. I. Foundry
106.	Sanjoy Casting & Engineering Co., 114, Makardah Road, P.O.Kadamtala, P.S.Bantra, Howrah-101	C. I. Foundry
107.	Seksaria Foundries Ltd.; 58, Netaji Subash Road, P.O. & P.S.Liluah, L.B.Bally Municipality, Howrah-104	C. I. Foundry
108.	Seth Chemical Works Pvt. Ltd.; 61/2, Netaji Subash Road, P.O.Bhattnagar, P.S.Liluah, Howrah	Chemicals

## LIST OF GROSSLY POLLUTING INDUSTRIES

Sl. No.	Industry Name with Address	Type of Unit
109.	Shakti Industries Pvt. Ltd.; P-51, Benaras Road, P.O.Netajigarh, P.S.Liluah, HMC, Howrah-105	C. I. Foundry
110.	Shalimar Paints Ltd.; P.O.Danesh Shaikh Lane, P.S.Sankrail, Howrah-109	Paints
111.	Shalimar Steel Works Pvt. Ltd.; 159/1, Andul Road, P.O.Botanical Garden, P.S.Shibpur, Howrah-3	C. I. Foundry
112.	Shree Bhagawati Industries, 4, Bhujangadhar Road, P.O. & P.S.Liluah, Bally Municipality, Ward No.5, Howrah-204	C. I. Foundry
113.	Shree Ganesh Industries, P.O. & P.S.Domjur, Jalan Industrial Complex, Biprannapara, Jangolpur, Howrah	C. I. Foundry
114.	Shree Hanuman Iron Works, 2, Natunpara Road, P.O. & P.S.Liluah, L.B.Bally Municipality, Howrah	C. I. Foundry
115.	Shree Jagannath Ferro Casting, 34, 35, 154, 'O' Road, Belgachia, P.O.Netajigarh, Howrah-108	C. I. Foundry
116.	Shree Jagannath Iron Foundry	C. I. Foundry
117.	Shree Rama Iron Foundry, 4, Bhujangadhar Road, P.O. & P.S.Liluah, Bally Municipality, Howrah-204	C. I. Foundry
118.	Shree Uma Foundries Pvt. Ltd.; 26, Jheel Road, Bamungachi, P.O.Salkia, P. S. Liluah, L.B. Bally Municipality, Howrah	C. I. Foundry
119.	Shree Uma Iron Foundry, 29, Kumarpara Road, P.O. & P.S.Liluah, Howrah	C. I. Foundry
120.	Shyam Iron & Steel Industries, 85, 'O' Road, P.O.Netajigarh, Belgachia, P.S.Liluah, L.B.Bally Municipality, Howrah	C. I. Foundry
121.	Singh & Sons Manufacturer, Chandmari Road, Danesh Sekh Lane, P.S.Shankrail, Howrah-9	Secondary lead smelting & non-ferrous alloy
122.	Sitaram Madhogaria & Sons Pvt. Ltd.; P-56/1, Benaras Road, P.O.Dasnagar, P.S.Liluah, L.B.HMC, Howrah	C. I. Foundry
123.	SRM Castings Pvt. Ltd.; P-56/1, Benaras Road, Belgachia, P.O.Netajigarh, P.S.Liluah, Ward No.9, L.B.HMC, Howrah-105	C. I. Foundry
124.	SSL Exports Ltd.	C. I. Foundry
125.	Star Iron Works Ltd.	C. I. Foundry
126.	The Asiatic Oxygen & Acetylene Co. Ltd.; 103, F.S.Road, Shibpur, Howrah	Chemical

Sl. No.	Industry Name with Address	Type of Unit
127.	The Salkia Industrial Works, 195/1, G.T.Road (North), Ghusuri, Howrah-107	C. I. Foundry
128.	Tirupati International Pvt. Ltd.; 58/13, Netaji Subash Road, P.O. & P.S.Liluah, Howrah-104	C. I. Foundry
129.	Upadhyay Valves Manufacturers Pvt. Ltd.; 245, 'K' Road, Belgachia, P.O.Netajigarh, Howrah-8	C. I. Foundry
130.	Victory Iron Works Ltd.; P-26, Benaras Road, Salkia, P.S.Liluah, Howrah-106	C. I. Foundry
131.	Vikas Iron & Steel, P-134,135 Beneras Road, Howrah	C. I. Foundry
132.	AB Mauri India Pvt. Ltd. [Burns Philp India Ltd.], 17, G.T.Road, P.O.Bhadrakali, P.S.Uttarpara, Hooghly	Fermentation unit
133.	Aleadco Batteries; 47/2, T.N.Mukherjee Road, Raghunathpur, Hooghly	Secondary lead smelting
134.	Arambag Paper Mills Pvt. Ltd.; Vill-Parul, P.O. & P.S.Arambag, Hooghly	Paper mill
135.	B&M Chemical Ltd.; Hooghly	Chemical
136.	Bandel Thermal Power Station, P.O.Tribeni, P.S. Mogra, Hooghly-503	Thermal power plant
137.	Bengal Beverages Ltd.; Dankuni, Hooghly	Soft drink
138.	Berger Auto & Industrial Coatings Ltd. [ICI Ltd. (Paint Division)], 103, G.T.Road, Rishra, Hooghly-248	Paints
139.	Bhushan Industries, Bangihati, Mallickpara, Hooghly	Galvanizing
140.	Birla NGK Insulators P Ltd.; Rishra Hooghly	Ceramic insulator
141.	Dankuni Coal Complex (South Eastern Coal Fields Ltd.); P.O.DCC Township, Dankuni, Hooghly-310	Coal carbonization
142.	Dunlop India Ltd.; P.O.Sahaganj, P.S.Chinsurah, Hooghly-104	Tire manufacturer
143.	Govinda Steel, Hooghly	Foundry
144.	Hindusthan Motors Ltd. (Automobile Division), P.O.Hindmotor, P.S.Uttarpara, Hooghly-233	Engineering unit
145.	Hindusthan National Glass & Industries Ltd.	Glass bottles manufacturer
146.	ICI India Ltd. (Rubber Division), P.O.Rishra-Konnagar, Hooghly-248	Rubber chemicals
147.	India Dairy Products Ltd.	Dairy & dairy products

## LIST OF GROSSLY POLLUTING INDUSTRIES

Sl. No.	Industry Name with Address	Type of Unit
148.	India Metal Industries; Santrapara, Par Dankuni, Hooghly	Secondary lead smelting
149.	Indian Rayon & Industries Ltd. (Jayshree Textiles), 5, P.B.Sarani, Rishra, Hooghly-249	Textile unit
150.	Indotan Chemicals, Gharzi, Bighati, Hooghly	Chrome chemicals
151.	IITC Ltd. (Tribeni Tissues Division), P.O.Chandrahati, P.S.Magra, Hooghly-504	Paper unit
152.	Jayshree Insulators, Rishra, Hooghly	Ceramic
153.	Kesoram Rayon, P.O.Nayasari, Hooghly-513	Viscose rayon
154.	Kesoram Spun Pipes & Foundries, Prop. Kesoram Industries Ltd.; P.O.Adeonagar, Hooghly	Foundry & spun pipes
155.	Kusum Products Ltd.; 1, Panchu Gopal Bhaduri Sarani, P.O.Rishra, P.S.Serampore, Rishra Municipality, Hooghly	Vanaspati manufacturer
156.	Lead Stone Energy Ltd.; NH-2, Delhi Road, P.O.Rajhat, P.S.Polba, Hooghly-123	Secondary lead smelting
157.	Mother Dairy Calcutta, P.O.Dankuni Coal Complex, P.S.Dankuni, Hooghly-310	Dairy unit
158.	Paceman Sales Promotion Pvt. Ltd.	Vegetable oil
159.	Raj Fenoxide, Khariyal, Dankuni, Hooghly	Lead oxide
160.	Rallis India Ltd.; 20, Howrah Road, P.O.Salkia, P.S.Golabari, Hooghly	Pesticide
161.	Standard Pharmaceuticals Ltd.; 1, D'Cruze Lane, Serampore, Hooghly	Pharmaceuticals
162.	Sunchrome Ltd.; Konnagar, Hooghly	Chrome chemicals
163.	The Phosphate Co. Ltd.; 45, Ramkrishna Road, P.O.Rishra, P.S.Serampore, Hooghly-248	Fertilizer
164.	Tirupati Trading Co., 100/1, G.T.Road, P.O. & P.S.Rishra, L.B.Rishra Municipality, Hooghly	Foundry
165.	Waldies Ltd.; Konnagar, Hooghly	Lead oxide manufacturer & lead processing
166.	Alchrome Chemical Industries, P-1, Block-D, Kalyani Industrial Estate, P.O. & P.S.Kalyani, Nadia	Chrome chemicals manufacturer
167.	Amicus Oil & Chemicals Pvt. Ltd.; Nadia	Oil mill
168.	Amit Trade Centre Pvt. Ltd.; Barasat	Vegetable oil processing
169.	Ankar Industries Pvt. Ltd.; P.O.Madhyamgram, P.S.Barasat, 24Pgs.(N), Kolkata-129	Basic pesticides

Sl. No.	Industry Name with Address	Type of Unit
170.	Aromate Pvt. Ltd.; Plot No.17, Block-D, Kalyani, Nadia	Chemicals
171.	Associated Pigments Ltd.; Mouza-Kanakpur, P.O.Naranda, P.S.Panskura, Medinipur	Red lead & litharge manufacturer
172.	B&M Chemical Ltd.; Tetultala, Badu Road, P.O.Badu, P.S.Barasat, 24Pgs.(N)	Chrome chemicals
173.	Bengal Chemicals & Pharmaceuticals Ltd.; Panihati, 24Pgs.(N)	Chemicals
174.	Bengal Waterproof Ltd.; S.M.Bose Road, Panihati, P.S.Khardah, Kolkata-114	Rubber goods
175.	Britania Engineering Ltd.	Food products
176.	CESC Ltd. (Mulajore Generating Station), 2, West Ghoshpara Road, P.O.Shyamnagar, P.S.Jagatdal, 24Pgs.(N)-743 127	Thermal power plant
177.	CESC Ltd. (Titagarh Generating Station), B.T.Road, P.O.Titagarh, P.S.Khardah, Titagarh Municipality, 24Pgs.(N)-743 165	Thermal power plant
178.	Dadur Pherma Ltd. [Pfizer India Ltd.; Dabur India], Kalyani, Nadia	Basic drugs
179.	Dunbar Mills, Shyamnagar, 24Pgs.(N)	Textile unit
180.	Eastern Spinning Mills & Industries Ltd.; Pirgachha, Kadamgachhi, P.S.Barasat, Kadamgachi Panchyat, 24Pgs.(N)	Textile unit
181.	Electrosteel Castings Ltd.; Ductile Iron Foundry, 30, B.T.Road, P.O.Sukchar, P.S.Khardah, 24Pgs.(N)-743 179	Foundry & engineering unit
182.	Electrosteel Castings Ltd.; Liquid Metal Works, 30, B.T.Road, P.O.Sukchar, P.S.Khardah, 24Pgs.(N)-743 179	Foundry & engineering unit
183.	Electrosteel Castings Ltd.; Spun Pipe Works, 30, B.T.Road, P.O.Sukchar, P.S.Khardah, 24Pgs.(N)-743 179	Foundry & engineering unit
184.	Enpee Wire Industries Pvt.Ltd., Pirgachha, Badu, Barasat, 24-Pgs (N)	Galvanising
185.	Everest Paper Mills Pvt. Ltd.; Ganganagar, 24Pgs.(N)-743 250	Paper & pulp
186.	Exide Industries Ltd.; Athpur, Shyamnagar, P.S.Jagaddal, 24Pgs.(N)-743 128	Lead acid battery
187.	Gulmohar Paper Ltd. [Emami Paper Mills Ltd.], R.N.Tagore Road, Alambazar, P.S.Belgharia, Kolkata-35	Paper & pulp

Sl. No.	Industry Name with Address	Type of Unit
188.	Harbanslal Malhotra & Sons Ltd.	Pickling, annealing etc.
189.	Hindusthan Heavy Chemicals Ltd.; 19, B.T.Road, P.O.BD Sopan, P.S.Khardah, 24Pgs.(N), Kolkata-116	Chlor-alkali
190.	Hindusthan Lever Ltd.; Athpur, Shyamnagar, 24Pgs.(N)	Chemical
191.	Hindusthan Metal Industries	Metal smelting
192.	India Paper & Pulp Ltd.; Hazinagar, Naihati, 24Pgs.(N)	Paper & pulp
193.	International Ferrites Ltd. (EPCOS Ferrites Ltd.), WBIIDC Growth Centre, Plot-F, Kulia Kanchrapara Road, P.O. N.S.Sanatorium, Kalyani, Nadia	Soft ferrite powder manufacturer
194.	Jayashree Chemicals & Fertilizers, Nanda Bose Road, Khardah, 24Pgs.(N)	Fertilizer
195.	Jensen & Nichol森 India Ltd.; Naihati Works, P.O.Garifa, 24Pgs.(N)-743 166	Paints & varnishes
196.	Kalyani Yeast, Chandmari More, Gayeshpur, Kalyani, Nadia-741 235	Fermentation
197.	Katia Steel Rolling Works, 32, B.T.Road, Panihati, Khardah, 24Pgs.(N)	Galvanizing
198.	Kolmac Chemicals Ltd.; Kulia Kanchrapara Road, WBIIDC Area, P.O.Gayeshpur, P.S.Kalyani, Gayeshpur Municipality	Chemicals (titanium dioxide)
199.	Metal & Steel Factory, Ichhapur, P.O.Nawabganj, P.S.Noapara, 24Pgs.(N)	Ordnance factory
200.	Metro Dairy Ltd.; BKP-Barasat Link Road, Barasat, 24Pgs.(N)	Dairy unit
201.	Nicco Corporation Ltd. (Steel Division) [Ramsarup Bars & Roads], 68, East Ghosh Para Road, Athpur, Shyamnagar, P.S.Jagatdal, 24Pgs.(N)	Galvanizing
202.	NTPC, Farakka Super Thermal Power Station, P.O.Nabarun, Murshidabad-742 236	Thermal power plant
203.	Papyrus Paper & Pulp Ltd.; Kalyani, Nadia	Paper mill
204.	R.B.Enterprise, Vill-Bodai, P.O.Jugberia, P.S.Ghola, Bilkanda Gram Panchayat, 24Pgs.(N)	Secondary lead smelting
205.	Ramnagar Sugar Mill [Khaitan Agro Tech]	Sugar mill
206.	Ramsarup Industrial Corporation, Plot No. 6 & 7, Block-D, Kalyani, Nadia	Galvanizing
207.	Rupnarayan Paper Mills Pvt. Ltd.; Plot 38A, D-Block, Kalyani Industrial Area, Nadia	Paper mill



Sl. No.	Industry Name with Address	Type of Unit
208.	Supreme Paper Mills Ltd.; Vill-Raninagar, P.O. & P.S.Chakdah, L.B.Chanduria II-Gram Panchayet, Nadia	Paper mill
209.	Swalka Kel Pvt. Ltd. 16 Nilganj Road, Panihati, 24Pgs.(N)	Galvanizing
210.	The Rifle Factory (Ishapore), P.O.Ishapore, Nawabganj, P.S.Noapara, 24Pgs.(N)	Engineering unit
211.	Titagarh Paper Mill (Unit-I), Titagarh, 24Pgs.(N)	Paper mill
212.	Titagarh Paper Mill (Unit-II), Titagarh, 24Pgs.(N)	Paper mill
213.	UIC Wire, Industrial Growth Centre, Phase-III, Kalyani, Nadia	Galvanizing
214.	United Breweries Ltd. (Unit-Kalyani Breweries), Block-D, 18, Vittal Mallya Road, P.O. & P. S. Kalyani, Nadia	Distillery
215.	Vegetable Products Ltd.; Old Nimta Road, P. S. Belghoria, P.O.Nandannagar, Kolkata-83	Vanaspati manufacturer
216.	Vidula Chemicals, Prop. Mukherjee Plantations Ltd.; P.O.Ganganagar, Vill-Gopalpur Chandigarh, 24Pgs.(N)	Chemicals (sulphuric acid)
217.	WIMCO Ltd.; P.O.Alambazar, Kolkata-35	Match manufacturer
218.	Abdul Salam & Co., G.T.Road, Panagarh, Burdwan	Secondary lead smelting
219.	Adhunik Corporation Pvt. Ltd.; Angadpur, Durgapur	Sponge iron
220.	Ahmedpur Sugar Mill, P.O.Ahmedpur, P.S. Santhia, Birbhum	Sugar mill
221.	Alloy Steel Plant [Steel Authority of India Ltd.], P.O.Durgapur, Burdwan-713 208	Alloy steel
222.	Amiya Steel Pvt.Ltd.; Vill.Tarapur, P.O. & P. S. Mejia, Bankura	Sponge iron
223.	Bakreswar Thermal Power Project, P.O.BKTPP, P.S.Sadaipur, Birdhum-731 104	Thermal power plant
224.	Bansal Oil Extraction Pvt. Ltd.; Village-Malkita, Katwa Road, Bankura	Vegetable oil processing
225.	Bengal Paper Mill Co. Ltd.; P.O.Ballavpur, Burdwan-713 323	Paper
226.	Bhaskar Shrachi Alloys Ltd.; Waria Road, Angadpur, Durgapur	Sponge iron
227.	Burnpur Cement Ltd.; Palasdiha Gram, P.O.Kanyapur, P.S.Asansol(N), Burdwan-713 341	Cement manufacturer

Sl. No.	Industry Name with Address	Type of Unit
228.	Corporate Ispat Alloys Ltd.; Plot No.6, S.I.Area, D.Avenue, Durgapur-12	Ferro alloys
229.	Damodar Cement & Slag Ltd.; Madhukunda, P.O.Suniri, P.S.Santuri, Purulia-732 121	Cement manufacturer
230.	Debnath Paper	Paper
231.	DTPS, DVC, P.O.Durgapur, Burdwan-713 207	Thermal power plant
232.	Durgapur Cement Works [Birla Corporation Ltd.], P.O.Durgapur, P.S.Waria, Burdwan-713 203	Cement manufacturer
233.	Durgapur Chemicals Ltd.; Durgapur, Burdwan-713 215	Chemicals
234.	Durgapur Projects Ltd.; P.O.Durgapur, Burdwan-713 201	Power plant & coke oven battery
235.	Durgapur Steel Plant (Township), Sewage Treatment Plant, East End Road, Durgapur-5	Integrated iron & steel plant
236.	East India Pharmaceutical Works Ltd.; Raturia Waria Road, P.S.Coke Oven, L.B.D.M.C., Durgapur-15, Burdwan	Bulk drug manufacturer
237.	Exodus Knitwear Pvt. Ltd.; Vill-Shyamsundarpur, P.O.Dwarika, P.S.Bishnupur, Bankura	Dyeing & bleaching
238.	Haldia Steels Ltd. (Unit-I), Angadpur, Durgapur-15	Ferro alloys
239.	Haldia Steels Ltd. (Unit-II), Angadpur, Durgapur-15	Sponge iron
240.	Hindusthan Fertilizer Corporation Ltd. [Durgapur Unit], Durgapur-12, Burdwan	Fertilizer
241.	Indian Iron & Steel Co. (IISCO), IISCO Kulti Works; Kulti, Burdwan	Integrated iron & steel plant
242.	Jagadamba Fiscal Services Pvt. Ltd.; Bidhan Commercial Complex, Mouza-Bhiringi, Plot No.757, P.S.Aurobinda, Durgapur-713 203	Cement manufacturer
243.	Jai Balaji Sponge Iron Pvt. Ltd.	Sponge iron
244.	Jawala Steel Pvt. Ltd.; 3511, Lenin Sarani, Durgapur-10	Steel ingot
245.	Kajaria Iron Castings Ltd.; Raturia, Durgapur-15	Pig iron-mini steel unit
246.	Karthik Alloys Ltd. (Unit-II), 89, Angadpur, Durgapur-713 215	Ferrow alloys
247.	Ma Chandi Durga Ispat Pvt. Ltd.; Kanjilal Avenue, Durgapur-10	Sponge iron
248.	Mark Steels Ltd.	Sponge iron

Sl. No.	Industry Name with Address	Type of Unit
249.	Mejia Thermal Power Station, DVC, P.O.MTPS, P.S.Gangajalghati, Bankura-722 183	Thermal power plant
250.	Memari Oil Extraction	Oil mill
251.	Modern India Concast Ltd.; Dwarika, Bishnupur, Bankura	Ferro alloys
252.	Monnet Ferro Alloys Ltd.; Nachan Road, Kamalpur, Durgapur, Burdwan	Ferro alloys
253.	Nayek Paper Industries Pvt. Ltd.; P.O. & P.S.Memari, Burdwan-713 416	Paper Board
254.	Phili P.S. Carbon Black Ltd.; P.O.Durgapur, P.S.Coke Oven, Burdwan-713 201	Carbon black manufacturer
255.	Pronto Commercial Pvt. Ltd.; Vill-Bongabari, P.O.Vivekananda Nagar, Purulia	
256.	Purulia Cement Pvt. Ltd.; P.O.Simulia, Purulia	Cement manufacturer
257.	Rishabh Sponge Pvt. Ltd.; Barjora, Bankura	Sponge iron
258.	Ritesh Tradefin Ltd.; Durgapur-10	Sponge iron
259.	Rohit Ferro Tech Pvt. Ltd.; WBIIDC, Dwarika, Bishnupur, Bankura	Ferro alloys
260.	Sail Power Supply Co. Ltd. (NTPC, SPSC), CPP-II (DSP), Burdwan-713 203	Thermal power plant
261.	Santaldihi Thermal Power Station, P.O. & P.S.Santaldihi, Purulia-723 146	Thermal power plant
262.	Sharda Fertilizer Ltd.; Vill-Deshbundh, P.S.Onda, Bankura	Fertilizer
263.	Sharp Ferro Alloys Ltd.	Ferro alloys
264.	Shib Sankar Sponge Iron Pvt.Ltd.	Sponge iron
265.	Shri Ram Rupai Balaji Steel Ltd.	Sponge iron
266.	Shyam Ferro Alloys Ltd.; Raturia Industrial Area, Angadpur	Ferro alloys
267.	Shyam Sel Ltd.; Palitpur Road, Dewandighi, Mirzapur, Burdwan	Sponge iron
268.	Sova Ispat Alloys Ltd.; Durgapur	Ferro alloy
269.	SPS Sponge Iron Ltd.; Dr.Zakir Hussain Avenue, Durgapur-6	Sponge iron
270.	Sri Gayatri Minerals Pvt.Ltd.	Ferro alloys

Sl. No.	Industry Name with Address	Type of Unit
271.	Sri Vasavi Industries Ltd., WBIIDC, Industrial Growth Centre, Bishnupur, Bankura	Ferro alloy
272.	Srinivasa Ferro Alloys Ltd. (Unit-II), P.O.Angadpur, Durgapur	Ferro alloys
273.	Ultra Tech Cemco Ltd. [Larsen & Toubro Ltd. / West Bengal Cement Works], Near EPIP Plot, P.O.Rajbandh, P.S.Kanksa, Burdwan-713 212	Cement manufacturer
274.	ATC International Pvt. Ltd.; Ramjibanpur Road, Satasamore, Baradhemu, Sitarampur, Burdwan	Cement
275.	BALCO	Aluminum
276.	Bhajudi Coal Washery [Bharat Coking Coal Ltd.], P.O.Santaldih, Purulia	Coal washery
277.	Bhawani Cement Pvt. Ltd.; P.D. Nagar Industrial Complex, Balanpur, P.O.Ikra	Cement
278.	Chittaranjan Lokomotive Works[CLW], P.O. & P.S.Chittaranjan, Asansol	Engineering unit
279.	Dhanbad Fuels Pvt. Ltd.; Mangalpur Industrial Estate, Ranigunj	Sponge iron
280.	Dishergarh Power Supply Co. Ltd. [Chinakuri Unit], P.O.Sundarchak, P.S.Kulti, L.B.Kulti Municipality, Burdwan	Thermal power plant
281.	Dishergarh Power Supply Co. Ltd. [Dishergarh Unit], P.O.Sundarchak, P.S.Kulti, Kulti Municipality, Burdwan	Thermal power plant
282.	Dishergarh Power Supply Co. Ltd. [Seebpur Unit], P.O.Jamuriahat, P.S.Jamuria, Jamuria Municipality, Burdwan	Thermal power plant
283.	Howrah Gases Ltd.; Dewan Dighi, P.O.Mirzapur, Burdwan-713 102	Sponge iron
284.	Impex Ferro Tech Ltd.	Ferro alloy
285.	Indian Iron & Steel Co. (IISCO), [Burnpur Works], P.O.Burnpur, P.S.Hirapur, Burdwan	Ferrous unit
286.	Jai Balaji Sponge Iron Pvt. Ltd.; Mangalpur, Industrial Complex, Ranigunj	Sponge iron
287.	KIC Metalics	Ferro alloy
288.	Ma Chinnamastika Steel & Power Ltd.; Madandi, Bartoria, Purulia	Sponge iron
289.	Maheswari Ispat Pvt. Ltd.; P.O.Choto Ramchandrapur, Burdwan	Sponge iron

Sl. No.	Industry Name with Address	Type of Unit
290.	Maithon Alloys Ltd.; P.O.Kalyaneswari, Burdwan	Ferro alloy
291.	Maithon Steel & Power, Vill-Bonra, Purulia	
292.	Sabitri Sponge Iron Pvt. Ltd.; Chatardanga, Basra	Sponge iron
293.	Satyam Iron & Steel Co. Pvt. Ltd.; Mangalpur Industrial Area, Plot-G7, Ranigunj	Sponge iron
294.	Shri Gopal Gobinda Sponge Pvt. Ltd.; Mangalpur Industrial Complex, Ranigunj, Burdwan	Sponge iron
295.	Shri Shyam Cement Works Pvt. Ltd.; Mangalpur, Ranigunj	Cement
296.	Shyam Sel Ltd. (Power Division), G6, Mangalpur Industrial Estate	Sponge iron
297.	Vikash Metal & Power Ltd.; Paradiha, Purulia	Sponge iron
298.	Acalmar Oils & Fats Ltd.; Debhog, HPL Link Road, Haldia-721 657	Vegetable oil
299.	Aryabrata Trading Pvt. Ltd.; P.O.Mohanpur, P.S.Jhargram, Paschim Medinipur-721 507	Sponge iron
300.	Associated Pigments Ltd.; Mouza-Kanakpur, P.O.Naranda, P.S.Panskura, Medinipur	Lead smelting
301.	Capiat Organics, Vill-Uttardarua, P.O.Darua, P.S.Coutai, Medinipur	Chemicals
302.	Consolidated Fibres & Chemicals Ltd.; Industrial Zone, P.O.Durgachak, Haldia, Medinipur	Synthetic fibre
303.	Dynamic Herbichem India Pvt. Ltd.; P.O.Manickpara, P.S.Jhargram, Medinipur	Pesticides
304.	East Coast Smelting & Refining Pvt. Ltd.	Metal smelting
305.	Electrosteel Castings Ltd.; Haldia	
306.	Exide Industries Ltd.; P.O. & P.S.Durgachak, Haldia, Medinipur	Battery manufacturer
307.	Haldia Petrochemicals Ltd.; P.O. & P.S.Durgachak, Medinipur-721 602	Petrochemicals
308.	Hindustan Fertilizer Corporation Ltd.	
309.	Indian Oil Corporation Ltd. [Haldia Refinery], P.O.Haldia Oil Refinery, P.S.Haldia, Medinipur-721 606	Oil refinery
310.	Kharagpur Telecom [Telecom Factory], Nimpura Industrial Growth Centre, P.O.Rakhajungle, P.S.Sadatpur, Kharagpur-721 301	Foundry

Sl. No.	Industry Name with Address	Type of Unit
311.	Khetwat Chemicals & Fertilisers	Chemicals
312.	Kolaghat Thermal Power Station, P.O.Mecheda, Medinipur-721 137	Thermal power plant
313.	M.P.Glychem Industries Ltd.; Bijoyramchak, P.O. & P.S.Durgachak, Purba Medinipur, Haldia-721 602	Vegetable products processing
314.	MCC PTA India Corporation Pvt. Ltd.; Vill & P.O.Bhuniaraichak, P.S.Haldia, Medinipur-721 635	PTA manufacturer
315.	Neelachal Natural Resource Pvt.Ltd.; P.O.Manickpara, Paschim Medinipur-712 513	Asbestos cement pipes
316.	Ramco Industries Ltd.; Vill.Dewanmaru Ayma, P.O.Hariatara, P.S.Kharagpur (Local), Paschim Medinipur	
317.	Rashmi Cement Ltd. (Unit-III), P.O. Garh Salboni, P.S.Jhargram, Paschim Medinipur-721 507	Sponge iron
318.	Rashmi Cement Ltd.; Vill-Baria, P.O.Garh Salboni, P.S. & Block-Jhargram, Medinipur	Cement manufacturer
319.	Rashmi Ispat Pvt. Ltd.; Vill.Gajasimul, P.O.Lodhasuli, P.S.Jhargram, Paschim Medinipur	Sponge iron
320.	Ruchi Soya Industries Ltd.	
321.	South Asian Petrochem Ltd.; P.O.Khanjanchak, P.S.Durgachak, Medinipur(E), Haldia-721 602	PET manufacturer
322.	SWAL Corporation Ltd. [Shaw Wallace Agrochemicals Co. Ltd.]; P.O.Durgargachak, Haldia, Midnapore-721 602	Pesticides
323.	Tata Chemicals Ltd. [Hind Lever Chemicals Ltd.], P.O. & P.S.Durgachak, Medinipur	Sulphuric acid & fertilizer manufacturer
324.	Tata Metals Ltd.; P.O.Samraipur, Kharagpur, Medinipur-721 301	Ferrous manufacturer
325.	Unitech Paper Mills Pvt. Ltd.; Balichak, P.O.Chakshyampur, P.S.Debra, Medinipur	Paper mill
326.	Universal Paper Mills Ltd.; P.O. & P.S.Jhargram, Medinipur	Paper mill
327.	Utkal Asbestos Ltd. (UAL-Bengal), Tungadhowa, P.O.Mohimnischinta, P.S.Sankrail & Kharagpur, Medinipur-721 513	Asbestos
328.	Visaka Industries Ltd.; Changsole, Paschim Medinipur-712 513	Asbestos

Sl. No.	Industry Name with Address	Type of Unit
329.	Hindustan Coca Cola Beverages Pvt. Ltd.; Raninagar Industrial Growth Centre, P.O.Mouza Patkata, P.S.Jalpaiguri, Pin-735 101	Soft drink manufacturer
330.	Mahadev Asbestos Pvt. Ltd.; Vill.Narshingpur, Via. Ethilbari, P.O.Birpara, P.S.Falakaha, Pin-735 204	Asbestos
331.	Mohindra Tubes Pvt. Ltd.; Village & P.O.Sakoajhora, NH-31, Jalpaiguri-735 212	Asbestos
332.	Prakash Distillery & Chemical Co. Ltd.; Prakashnagar, P.O.Pradhan Nagar, P.S.Matigara, Siliguri-734 403	Distillery
333.	Teesta Agro Industries Ltd.; P.O.Rajganj, Jalpaiguri	Fertilizer

## Environmental Campaign & Operational Programme of the WBPCB: Status Report of the year 2004-2005

Nature, Natural Resource, Environment & Society				
Activity	Date	Venue	Collaborating organisations	Action Status
Sit & Draw Competition	09.04.04 at 3:00 p.m.	Jagath Mukherjee Park	-do-	34 children of KMC Ward No. 8 participated in the programme.
	27.04.04 at 3:30 p.m.	Jagath Mukherjee Park	-do-	24 Nagarpalli children of KMC Ward No. 10 participated in the programme.
	03.05.04	Deshbandhu Park	The Energy and Resources Institute	32 children on KMC Ward No. 11 (Mohan Bagan Lane) participated in the programme.
	01.06.04	Deshbandhu Park	The Energy and Resources Institute	30 children on KMC Ward No. 15 (Kolkata-5) participated in the programme.
	14.06.04	Anjuman Itehadia School, KMC Ward No.39 (Kolkata-12)	The Energy and Resources Institute	49 children on KMC Ward No. 39 (Kolkata-12) participated in the programme.
	12.07.04.	Victoria Institution	The Energy and Resources Institute	About 31 children of the age-groups 9-14 years participated in the event.
	03.08.04	Netaji Vidyapith	The Energy and Resources Institute	46 children of KMC Ward No. 6 participated in the event.
	17.08.04	KMC Ward No. 41	The Energy and Resources Institute	47 Children of the KMC ward no. 41 participated in the programme



Activity	Date	Venue	Collaborating organisations	Action Status
Nature Camp for School Children	21.04.05 to 24.04.05	Manebhanjan	Pashchim Banga Vigyan Mancha	A total number of 60 eco-club student members and 19 teachers-in-charge from all 19 districts of West Bengal participated in the camp
	06.06.04 to 08.06.04 at 11 a.m.	Mahananda Wildlife Sanctuary, Wildlife Division I, Sukna	Pashchim Banga Vigyan Mancha	A total number of 36 school students and 10 teachers-in-charge from six northern districts of West Bengal participated in the Sukna camp
Wall Painting	14.06.04	KMC Ward no.33	The Energy and Resources Institute	20 children of KMC Ward No.33 participated in the event.
Prize Distribution Ceremony of a Sit-and-Draw Competition, Puppet Show, etc.	23.04.04 at 6:00 p.m.	Radhakanta Deb Lane	-do-	60-70 people including 34 children of KMC Ward No. 8 participated in the prize distribution ceremony of the Sit & Draw Competition held on 9 <sup>th</sup> April 2004.
	30.04.04 at 6:00 p.m.	Indiraji Development Centre (KMC Ward No. 12)	-do-	60 children of KMC Ward No. 12 (in addition to 2 teachers and 25 parents) participated in the prize distribution ceremony of the Sit & Draw Competition that were held on 25 <sup>th</sup> and 26 <sup>th</sup> April 2004.
	14.07.04	KMC Ward No.15	The Energy and Resources Institute	35 children of KMC Ward No.15 participated in the event.
	16.07.04	KMC Ward No.39	The Energy and Resources Institute	35 children of KMC Ward No.39 participated in the event.
	20.08.04	KMC Ward No. 37	The Energy and Resources Institute	60 Children of KMC Ward No. 37 participated in the event
	26.08.04	KMC Ward No. 6	The Energy and Resources Institute	60 Children of KMC Ward No. 6 participated in the event
	31.08.04	KMC Ward No. 41	The Energy and Resources Institute	50 Children of KMC Ward No. 41 participated in the event

Activity	Date	Venue	Collaborating organisations	Action Status
Celebration of World Environment Day 2004	05.06.04	Paribesh Bhawan, Yuba Bharati Krirangan and Rabindra Sadan premises	Pashchim Banga Vigyan Mancha	The day was celebrated with sit-and-draw competition, quiz competition and cultural programme on environment.
Paribesh Mela	16.02.2005 to 19.02.05	Science City	Bengal National Chamber of Commerce & Industry, Nodal Research Centre, Pashchim Banga Vigyan Mancha	The first-of-its-kind Environment Fair to be organised at the state level, the huge mass participation at the Fair is an indicator of a growing trend of environmental consciousness in the state.
National Green Corps (NGC) Programme: Programme on Environmental Awareness	04.12.2004 at 11:30 a.m.	Tenzing Norgye Bus Stand, Siliguri	Pashchim Banga Vigyan Mancha	Eco-club student members staged placard demonstration on different environmental issues.
<b>Forest &amp; Wildlife</b>				
Nature Trail	27.04.04 at 3:30 p.m.	Jagath Mukherjee Park	-do-	24 Nagarpalli children of KMC Ward No. 10 participated in the programme.
	03.05.04	Deshbandhu Park	The Energy and Resources Institute	32 children on KMC Ward No. 11 (Mohan Bagan Lane) participated in the programme.
	01.06.04	Deshbandhu Park	The Energy and Resources Institute	30 children on KMC Ward No. 15 (Kolkata-5) participated in the programme.
	12.07.04.	Victoria Institution	The Energy and Resources Institute	About 31 children of the age-groups 9-14 years participated in the event.
	03.08.04	Tala Children's Park	The Energy and Resources Institute	46 children of KMC Ward. no.6 participated in the event.
	19.11.04	Science City complex	Birla Industrial Technological Museum	101 students of six different schools of Kolkata including their teachers participated in the nature trail

Activity	Date	Venue	Collaborating organisations	Action Status
Green Scout camp	02.05.04 to 06.05.04	Salt Lake Stadium	WWF-India	180 students from ten schools of 24 Pgn (N) district participated in the programme.
<b>Environmental Studies</b>				
Training Programme for NGOs working in the districts of North Bengal	23.04.04 at 10.30 a.m.	Siliguri Regional Office	WBPCB officers	40 representatives of NGOs working in the districts of North Bengal participated in the training programme.
Workshop on 'Physics & Environment'	26.05.04 to 30.05.04	Howrah Jogesh Chandra Girls' High School	Jagadis Bose National Science Talent Search	60 Students of Classes VII & VIII of schools in Howrah participated in the workshop that dealt with issues like water pollution, noise pollution and biodiversity.
Workshop titled 'Vacation Classes'	30.05.04 to 11.06.04	Ramakrishna Mission Residential College, Narendrapur	Jagadis Bose National Science Talent Search	55 Students of Classes XI & XII of schools in Darjeeling, Jalpaiguri, Cooch Behar and Kolkata attended the workshop that dealt with issues like Urban Area & Environment, Atmospheric Science, Our Feathered Friends & Joint Forest Management
Teachers' Training Workshop on medicinal plants	12.05.04 & 13.05.04	Gorumara Jungle Camp, Jalpaiguri	WWF-India	24 teachers from 11 schools participated in the workshop.
Workshop on medicinal plants and rainwater harvesting	14.05.04 & 15.05.04	Gymkhana Club, Darjeeling	WWF-India	35 students and teachers from 11 schools (including 2 NGO members) participated in the workshop.
Teachers' Training Workshop at Kolkata	17.08.04 & 18.08.04	Bible Society	WWF-India	34 teachers from 16 Schools of Kolkata attended the workshop that dealt with assessment of water quality and rainwater harvesting.

Activity	Date	Venue	Collaborating organisations	Action Status
Workshop on Environment & Mathematics	15.09.04 to 18.09.04	Katwa Kashiram Das Institution, Katwa, Burdwan	Jagadis Bose National Science Talent Search (JBNSTS)	60 students of schools of Burdwan district participated in the workshop
Workshop on Physics and Environment	14.10.01 to 17.10.04	Kamalpur Netaji High School, Bankura	JBNSTS	31 children (of age-group 12-14 years) of four schools of Bankura district participated in the workshop
Study of mangroves	03.11.04 & 04.11.04	Sunderbans	WWF-India	60 students and teachers from 13 schools of Purba Medinipur district participated in the event.
Teachers' training workshop at Coochbehar	08.11.04	Coochbehar Hotel, Coochbehar	WWF-India	36 teachers from 12 district participated in the workshop on Medicinal Plants
Study of Birds	09.11.04	Rasik Beel, Coochbehar	WWF-India	30 students and 20 teachers from 12 schools of Coachbehar district participated in the event.
	11.11.04	Rajabhatkhawa Forest, Jalpaiguri	WWF-India	50 students and 10 teachers from schools of Siliguri and Jalpaiguri districts participated in the event.
	17.01.2005	Satragachi Jheel & Botanical Garden	WWF-India	35 students and seven teachers from different schools of Kolkata attended the programme
Teacher's Training workshop at Darjeeling and Kalimpong	03.12.04	Ramakrishna Mission B. Ed College, Darjeeling	United States Asia Environment Programme (USAEP)	A total of 40 teachers from various colleges of the districts of North Bengal participated in the workshop.
Workshop on soil testing at Purulia	29.12.04	Laulara R C Academy, Purulia	WWF-India	100 students and Teachers from 16 schools of Purulia District attended the programme
Workshop on Vermiculture at Purulia	30.12.04	Laulara R C Academy, Purulia	WWF-India	100 students and teachers from 16 schools of Purulia District attended the programme
Workshop on Medicinal Plants	21.01.2005	Vijoyanagar Adarsa Vidya Mandir, Sunderbans	WWF-India	1000 students and teachers from different schools of Sundarbans attended the programme

Activity	Date	Venue	Collaborating organisations	Action Status
<b>Biodiversity</b>				
Setting up of Parasar Udyan, an Experimental-cum-Medicinal Plant Garden	13.04.04	Bidhannagar College Campus	Bidhannagar College	An Experimental-cum-Medicinal Plant Garden was inaugurated under the Environmental Campaign of the WBPCB. A rainwater harvesting system (set up by the WBPCB) is existing in the same campus. This twin project has been designed in a way that the rainwater collected from the water harvesting system could be used for the medicinal plant garden.
Workshop on Plantation	16.07.04	Smriti Soudha, Nimtouri, Purba Medinipur	WWF-India	65 students and teachers from 16 schools of the district of Purba Medinipore participated in the workshop.
Assorted nature Programme for children with cerebral palsy	28.01.2005	Indian Institute of Cerebral Palsy (IICP) premises	Indian Institute of Cerebral Palsy (IICP) & BITM	80 participants attended the programme
Environmental awareness programme on for visually challenged children	18.03.05	Birla Industrial Technological Museum (BITM) Campus	BITM	110 visually challenged students from Blind Schools of Kolkata participated in the programme
<b>Personal Hygiene &amp; Public Health</b>				
Awareness Programme on safe disposal of biomedical waste in government hospitals of West Bengal	03.08.04	RG Kar Medical College & Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 54 staff of the hospital attended the programme
	26.08.04	Calcutta National Medical College & Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 50 staff of the hospital attended the programme
	30.08.04	MR Bangur Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 36 staff of the hospital attended the programme
	14.09.04	Nilratan Sarkar Medical College & Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 74 staff of the hospital attended the programme

Activity	Date	Venue	Collaborating organisations	Action Status
	24.09.04	SSKM Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 48 staff of the hospital attended the programme
	08.10.04	Vidyasagar Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 32 staff of the hospital attended the programme
	12.10.04	S.N. Pandit Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 50 staff of the hospital attended the programme
	25.11.04	I.D. Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 35 staff of the hospital attended the programme
	30.11.04	K. S. Roy TB Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 50 staff of the hospital attended the programme
	15.12.2004	Chittaranjan Seba Sadan, Sishu Hospital & College of Obsterics & Gynecology, Kolkata	Medicare Incin Pvt. Ltd.	About 24 staff of the hospital attended the programme
	16.12.2004	Lady Duffrin Hospital, Kolkata	Medicare Incin Pvt. Ltd.	About 65 staff of the hospital attended the programme
<b>Restriction on Plastic Carry Bag use</b>				
Restriction of plastic carry bags in heritage/tourist sites	15.04.04	Hazarduari Palace, Murshidabad	WBPCB officers	The site was free of plastic waste.
	06.07.04	The Millennium Park	PUBLIC (NGO)	The place was clean and free of plastic waste. The Board, however, gave a few suggestions to the park authority for further improvement.
	06.07.04	The Zoological Gardens	PUBLIC, PBVM (NGOs)	The place was not free of plastic waste. Visitors were found to plastic carry bags inside the premises. The Zoo Authority was asked to keep stricter vigilance on the entry of plastic carry bags inside the zoo premises.

Activity	Date	Venue	Collaborating organisations	Action Status
	06.07.04	National Library	PUBLIC, PBVM (NGOs)	The place was clean and free of plastic waste. The Board, however, gave a few suggestions to the park authority for further improvement.
	08.07.04	The Indian Botanic Gardens	PBVM (NGO)	The place was found to be free of plastic waste.
	08.10.04 at 3.00 p.m.	Science City	Nodal Officer of Police, South 24 Pdns.	The place is clean and free of plastic waste.
	08.10.04 at 4.00 p.m.	Energy Education Park	Nodal Officer of Police, South 24 Pdns.	The place was found to be clean.
	11.10.04 at 3.00 p.m.	Indian Museum	PUBLIC, Concern for Calcutta	The concept of banning the plastic carry bags in the site was discussed and explained in the meeting. The site has an advantage of either restricting plastic bags at the single entry point or making it compulsory for the visitors deposit their plastic bags at the counter.
	11.10.04 at 4.00 p.m.	Eden Garden	Concern for Calcutta	The place is comparatively clean. The site has a disadvantage of restricting the entry of plastic bags at the back-gate entry point where security personnel are not present.
	12.10.04 at 2.30 p.m.	Birla Industrial and Technological Museum	PUBLIC, Pashchim Banga Vigyan Mancha, Concern for Calcutta	The concept of banning the plastic carry bags in the site was discussed and explained in the meeting. The NGOs promised to extend help for organising awareness programmes in this regard.
	12.10.04 at 3.30 p.m.	Birla Planetarium	PUBLIC, Pashchim Banga Vigyan Mancha, Concern for Calcutta	The place is clean and free of plastic waste.

Activity	Date	Venue	Collaborating organisations	Action Status
	12.10.04 at 4.00 p.m.	Nehru Children's Museum	PUBLIC, Pashchim Banga Vigyan Mancha, Concern for Calcutta	The concept of banning the plastic carry bags in the site was discussed and explained in the meeting. The administrator was asked to inform all children and staff of the Museum of the order to facilitate its proper enforcement.
	15.10.04 at 4.15 p.m.	Nalban Boating Complex	PUBLIC, Pashchim Banga Vigyan Mancha	The place is very clean and free of plastic waste.
	15.10.04 at 4.45 p.m.	Swabhumi	Pashchim Banga Vigyan Mancha	The place is clean. However, the shopkeepers at the site distribute plastic carry bags to the customers.
	5.01.05	Barrackpore Gandhi Ghat	-	The place was clean and free of plastic waste. Visitors were, however, found to carry plastic bags within the premises.
	5.01.05	Soakhal Energy Park	Hooghly Zilla Parishad, Hooghly Mass Education Society (NGO)	The place is clean. Visitors were, however, found to carry plastic bags within the premises.
	5.01.05	New Digha Paryantan Kendra, Chandannagar, Hooghly	Hooghly Zilla Parishad, Hooghly Mass Education Society (NGO)	Visitors were found to carry plastic bags within the premises. The concept of banning the plastic carry bags in the site was discussed and explained in the meeting.
Restriction of plastic carry bags in ecologically sensitive areas	05.09.04	Tin Batir More, Siliguri	WWF-India	50 students of Siliguri participated in the event.
	25.12.04 & 26.12.04	Sonakhali, Sunderbans	WWF-India	120 students from 22 schools of Sunderbans attended the programme
	08.01.2005	Canning Launch Ghat, Sunderbans	WWF-India	from different schools of Sunderbans attended the programme



Activity	Date	Venue	Collaborating organisations	Action Status
	25.01.2005 at 10:30 a.m.	Conference Room, Minakshi Guest House, Digha	Government departments, Police Department, local authorities, Hotelier Associations, NGOs	36 participants attended the meeting to chalk out a future course of action regarding the implementation of ban of plastic carry bags in coastal regulation zone areas like Digha, Sankarpur etc. in Purba Medinipur district.
Training programme on the preparation of bio-degradable carry bags	16.04.04 at 11.00 a.m.	Paribesh Bhaban	Indian Institute of Cerebral Palsy (IICP)	About 22 participants (entrepreneurs and representatives from NGOs) took part in the training sessions of the workshop.
	02.12.04	Capital Hall, Darjeeling Municipality	Indian Institute of Cerebral Palsy	78 participants attended the workshop. The participants were primarily representatives of different wards of Darjeeling Municipality, predominantly women and unemployed youth who are in need of a viable employment opportunity.
	03.12.04	Capital Hall, Darjeeling Municipality	Indian Institute of Cerebral Palsy	56 participants attended the workshop. The participants were primarily representatives of different wards of Darjeeling Municipality.
	04.12.04	Paribesh Bhawan, Siliguri	Indian Institute of Cerebral Palsy	56 participants attended the workshop. The participants were representatives of Federation of Chambers of Commerce & Industries (FOCIN), Brihottoro Siliguri Khuchra Byabshayee Samiti (BSKBS), Bidhan Road Byabshayee Samiti (BRBS) as well as representatives of Convenor NGOs of North Bengal namely St. John's Ambulance Association, Alipurduar Nature Club, Chanchal Janakalyan Samity.

Activity	Date	Venue	Collaborating organisations	Action Status
	04.02.2005 at 11:00 a.m.	Kalyani Pouro Bhawan, Kalyani	IICP	30 participants from different NGOs under Kalyani Municipality attended the programme
<b>Noise Pollution</b>				
Training-cum-Awareness Programme on Environment (including lectures, audio-visual shows and technical sessions)	25.06.04 & 26.06.04	Paribesh Bhaban	National University of Juridical Sciences	17 officials of Kolkata Police attended the programme
	09.07.04 & 10.07.04	Paribesh Bhaban	National University of Juridical Sciences	17 personnel from West Bengal Police participated in the programme.
	23.07.04 & 24.07.04	Paribesh Bhaban	National University of Juridical Sciences	30 Personnel from Kolkata Police attended the programme
	06.08.04 & 07.08.04	Paribesh Bhaban	National University of Juridical Sciences	20 officials from West Bengal Police participated in the event
	20.08.04 & 21.08.04	Paribesh Bhaban	National University of Juridical Sciences	25 officials from Kolkata Police participated in the event
	10.09.04 & 11.09.04	Paribesh Bhaban	National University of Juridical Sciences	25 Nodal officers of West Bengal Police and Kolkata Police participated in this programme
	23.03.05	Training Hall, Paribesh Bhaban	West Bengal Police, Kolkata Police	25 nodal officers of West Bengal Police and Kolkata Police participated in the programme

## Staff Strength of the Board During 2004-2005

Sl. No.	Name of the Post	Sanctioned Strength	Current Strength
1.	Chairman	1	1
2.	Member Secretary	1	1
3.	Chief Engineer	2	1
4.	Chief Scientist	1	1
5.	Senior Environmental Engineer	5	5
6.	Senior Scientist	3	2
7.	Senior Personnel Manager	1	0 (on dual charge)
8.	Deputy Secretary	1	1
9.	Senior Law Officer	1	1
10.	Environmental Engineer	15	15
11.	Scientist	7	7
12.	Finance & Accounts Manager	2	2
13.	Junior Scientist	16	9
14.	Assistant Environmental Engineer	45	28
15.	Programmer	1	1
16.	Assistant Finance Manager / Accounts Officer	3	3
17.	Administrative Officer	2	2
18.	Law Officer	1	0
19.	Law Officer (Grade I)	1	1
20.	Assistant Law Officer	1	1
21.	Junior Accounts Officer	3	3
22.	Superintendent	2	2

Sl. No.	Name of the Post	Sanctioned Strength	Current Strength
23.	Junior Environmental Engineer	14	7
24.	Technician	1	1
25.	Environmental Analyst	22	14
26.	Information Officer	1	1
27.	Head Assistant	4	4
28.	Cashier	1	1
29.	Head Clerk	1	1
30.	Computer Operator	5	4
31.	Stenographer	9	9
32.	Senior Accounts Clerk	5	1
33.	Draftsman	3	2
34.	Upper Division Assistant	25	25
35.	Lower Division Assistant	27	23
36.	Junior Environmental Assistant	17	16
37.	Typist	4	3
38.	Typist-cum-clerk	6	3
39.	Accounts Clerk	3	0
40.	Tracer	1	0
41.	Driver	5	3
42.	Laboratory Assistant	9	7
43.	Record Supplier	3	3
44.	Group 'D'/Laboratory Attendant	44	27
45.	System Analyst	1	0
46.	PRO	1	0
47.	Librarian	1	0
	<b>Total</b>	<b>328</b>	<b>242</b>

## List of Abbreviations & Acronyms

AAS	Atomic Absorption Spectrophotometer	CPCB	Central Pollution Control Board
AAQM	Ambient Air Quality Monitoring	CV	Coefficient of Variation
ADDA	Asansol Durgapur Development Authority	DG	Diesel Generator
ADB	Asian Development Bank	DIAS	Direct Internet Access System
AETC	Auto Emission Testing Centre	DO	Dissolved Oxygen
AFPRO	Action for Food Production	ESCI	Engineering Staff College of India
ARAI	Automotive Research Association of India	EIA	Environment Impact Assessment
ASV	Anodic Stripping Voltmeter	EMIS	Environment Management Information System
BHEL	Bharat Heavy Electrical Limited	FC	Faecal Coliform
BITM	Birla Industrial & Technological Museum	GCMS	Gas Chromatograph with Mass Spectrophotometer
BMW	Biomedical Waste	GEMS	Global Environment Monitoring System
BOD	Biochemical Oxygen Demand	GoI	Government of India
CA	Chromosomal Aberrations	GPI	Grossly Polluting Industries
CBD	Central Business District	GSR	
CEPT	Centre for Environmental Planning & Technology	HAD	Haldia Development Authority
CIDA	Canada-India Environmental Institutional Strengthening Project on Autorickshaw LPG conversion Demonstration	HC	Hydrocarbon
CII	Confederation of Indian Industries	HMC	Howrah Municipal Corporation
CNG	Compressed Natural Gas	HPLC	High Performance Liquid Chromatograph
CO <sub>2</sub>	Carbon Di-oxide	HT	High Tide
CO	Carbon Mono-oxide	ICC	Indian Chamber of Commerce
COD	Chemical Oxygen Demand	ICMAM	Integrated Coastal and Marine Area Management Project Directorate
		ICEF	India-Canada Environment Facility

ILS	Integrated Library System	PAH	Polycyclic Aromatic Hydrocarbons
IPCP	Industrial Pollution Control Project	PET	Polyethylene tetra-phthalate
IT	Information Technology	PLI	Public Liability Insurance
JBIC	Japan Bank for International Cooperation	PM	Particulate Matter
KEIP	Kolkata Environment Improvement Project	PPP	Public Private Partnership
KMA	Kolkata Metropolitan Area	PUC	Pollution-under-control
KMC	Kolkata Metropolitan Corporation	RDS	Respirable Dust Sampler
KMDA	Kolkata Metropolitan Development Authority	ROS	Reactive Oxygen Species
KVA	Kilovolt-Ampere	RPM	Respirable Particulate Matter
LT	Low Tide	RO	Regional Office
LPG	Liquefied Petroleum Gas	RTA	Regional Transport Authority
MFT	Milipore Filtration Technique	SA	Side A
MINARS	Indian National Aquatic Resources	SB	Side B
MN	Micronuclei	SD	Standard Deviation
MoEF	Ministry of Environment & Forests	SEE	Senior Environmental Engineer
MPN	Most Probable Number	SIAM	Society of Indian Automobile Manufacturers
MSW	Municipal Solid Waste	SIG	Significant
MT	Metric Tonnes	SJDA	Siliguri-Jalpaiguri Development Authority
NAMP	National Air Monitoring Programme	SoE	State of Environment
NAAQM	National Ambient Air Quality Monitoring	SPM	Suspended Particulate Matter
NGC	National Green Corps	SO <sub>2</sub>	Sulphur Di-oxide
NGO	Non Governmental Organisation	TA	Technical Assistance
NOC	No-objection Certificate	TAC	Technical Advisory Committee
NO <sub>2</sub>	Nitrogen Dioxide	TC	Total Coliform
NPC	National Productivity Council	TERI	The Energy & Resources Institute
NRCP	National River Conservation Plan	TSDf	Treatment Storage & Disposal Facility
NS	Not Significant	VMH	Victoria Memorial Hall
O&M	Operation & Maintenance	WBCPC	West Bengal Cleaner Production Centre
		WBPCB	West Bengal Pollution Control Board
		WWF-India	World Wildlife Fund for Nature - India