Maharashtra Pollution Control Board

Annual Report

2004–05

Maharashtra Pollution Control Board

Published by Dr. D. B. Boralkar, Member Secretary, on behalf of the Maharashtra Pollution Control Board at 'Kalpataru Point', Sion (East), Mumbai.

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List of Abbreviations Used

AAQM = Ambient Air Quality Monitoring

CHWTSDF = Common Hazardous Waste Treatment, Storage and Disposal Facility

CIDCO = City and Industrial Development Corporation

CPCB = Central Pollution Control Board

DISH = Department of Industrial Safety and Health

EPCA = Environmental Pollution Control Authority

GEMS = Global Environmental Monitoring System

GoM = Government of Maharashtra

MCGM = Municipal Corporation of Greater Mumbai

MIDC = Maharashtra Industrial Development Corporation.

MINARS = Monitoring of Indian National Aquatic Resource Systems

MPCB = Maharashtra Pollution Control Board

MSSIDC = Maharashtra Small Scale Industrial Development Corporation

NAMP = National Air Monitoring Programme

NRAP = National River Action Plan

NEERI = National Environmental Engineering Research Institute

SAMP = State Air Monitoring Programme

TSDF = Treatment, Storage and Disposal Facility

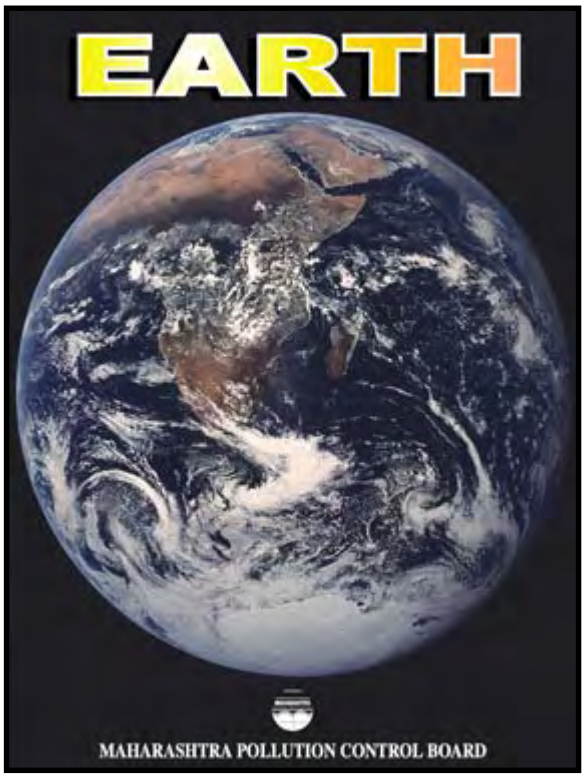
1 Introduction

THE UNITED NATIONS CONFERENCE on the Human Environment was held in Stockholm (Sweden) from 5 to 16 June, 1972. This was the first attempt by the world community to recognize the importance of environmental protection. The Indian delegation was led by the then Prime Minister, the late Shrimati Indira Gandhi. In her speech, Smt. Gandhi highlighted the links between poverty and pollution. She resolutely affirmed India's conviction that the removal of poverty – through the process of development based on environmental considerations – is essential to environmental protection. Twenty years after Stockholm, in 1992, the Earth Summit held in Rio de Janeiro considered the report of the World Commission on Environment and Development chaired by Ms. Brundtland, the then Prime Minister of Sweden, and adopted the approach of sustainable development as *the* tool for environment protection. This approach is now popularly known as Agenda 21. It also covers issues related to biodiversity, climate change, persistent organic pollutants, etc.

The first environment protection regulation in India was introduced in Maharashtra in 1966, when the state government set up a Directorate of Water Pollution Control. The Maharashtra Prevention of Water Pollution Act was promulgated in 1969. The Maharashtra Pollution Control Board (MPCB) was set up in 1970. Subsequently, in 1974, Parliament passed the Water (Prevention and Control of Pollution) Act. The Central Pollution Control Board and the State Pollution Control Boards were set up by the Central Government and State Governments respectively under this Act.

In 1981, Parliament passed the Air (Prevention and Control of Pollution) Act and in 1986, the Environment (Protection) Act. Thereafter, rules pertaining to the management of hazardous chemicals, hazardous wastes, biomedical wastes, municipal solid wastes, chemical accidents and response, plastic recycling, environment impact assessment, coastal zone regulation, etc., were notified by the

MPCB posters for environment protection



Central Government in the Ministry of Environment and Forests under the various provisions of the Act. The responsibility for the implementation of various provisions of these Acts and Rules was entrusted largely to the State Pollution Control Boards.

The MPCB, which was initially concerned with issues related to water pollution only, soon found its mandate expanded to cover other aspects of environmental protection as well. The activities of the Board soon became multidisciplinary in nature, and, in addition, science and technology based. Presently, considering the challenges it faces in the implementation of environmental regulations, the Board is gearing up to undertake several capacity building activities, including setting up of infrastructure laboratories, engaging services of environmental scientists and engineers, preparing action plans for prevention and control of pollution, and others.

An illustrative list of the legislations implemented by the State Pollution Control Board:

- The Water (Prevention and Control of Pollution) Act, 1974 ('Water Act').
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Air (Prevention and Control of Pollution) Act, 1981 ('Air Act').
- The Environment (Protection) Act, 1986 ('EP Act').
- The Hazardous Wastes (Management and Handling) Rules, 1989/2003 ('HW Rules')
- The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 ('HC Rules').
- The Municipal Solid Wastes (Management and Handling) Rules, 2000 ('MSW Rules).
- The Bio-Medical Waste (Management and Handling) Rules, 1998 ('BMW Rules').
- The Noise Pollution (Regulation and Control) Rules, 2000 ('Noise Rules').
- The Recycled Plastics Manufacture and Usage Rules, 1999.
- The Chemical Accidents (Emergency Plan ning, Preparedness and Response) Rules, 1996 (Chemical Accidents Rules).
- The Batteries (Management and Handling) Rules, 2001.
- Notification on the Use of Fly Ash etc., 1999.
- The Coastal Regulation Zone Notification, 1991 ('CRZ Notification').
- The Environment Impact Assessment Notification, 1994 (EIA Notification)
- The Ozone Depleting Substances (Regulation) Rules, 2000.

2. Constitution of the Maharashtra Pollution Control Board

THE GOVERNMENT OF MAHARASHTRA (GoM) in exercise of the powers conferred upon it under section 4 of the Water Act reconstituted the Board through notifications dated 16 June 2000, 14 March 2001, 11 March 2003 and 2 January, 1 June, 14 June, 23 July, 24 September and 2 November 2004.

In accordance with the above notifications, during the year under report, the Board comprised a part-time chairperson, five officials representing the interests of the GoM and two officials representing the companies and corporations owned and controlled by the GoM. In addition to these, five members representing the interests of local bodies and three members representing the interest of industries, trade, fisheries, etc., were nominated by the government. A full time member-secretary was appointed to execute the decisions taken by the Board.

The list of Board members as on 31.03.05 is given below:

(A) Shri Bhupati Prasad Pandey, I.A.S.
Principal Secretary (Environment)
(w.e.f. 2.11.2004) *Chairperson*

(B) Members representing the State Government:

1. The Secretary to the Government, Environment Department, *Member*
2. The Secretary to the Government, Public Health Department, *Member*
3. The Secretary to the Government, Urban Development Department, *Member*
4. The Secretary to the Government, Home Department, *Member*
5. The Secretary to the Government, Water Supply and Sanitation Department, *Member*

(C) Members of local authorities functioning in the State:

1. Shri Salim Patel Samsher Patel, *Member*
2. Shri Rajeshwar Neture, *Member*

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3. Shri Amol Narsing Patil, *Member*
4. Shri Pandurang Yashwantrao Tayade, *Member*
5. Shri Viking Mangaldas Chokhawala, *Member*

(D) Members representing the interests of agriculture, fisheries, industry, trade or any other interest that, in the opinion of the government, ought to be represented on the Board:

1. Shri Hemant Takle, *Member*
2. Shri Vijay Kurtadkar, *Member*
3. Shri Suresh Deshmukh, *Member*

(E) Members to represent the companies or corporations owned, controlled or managed by the GoM;

1. The Chief Executive Officer, Maharashtra Industrial Development Corporation (MIDC), *Member*
2. Member-Secretary, Maharashtra Jeevan Pradhikaran, *Member*

(F) Dr. D. B. Boralkar, *Member-Secretary*

Recent changes

- Shri B. P. Pandey, Principal Secretary (Environment), GoM, has been appointed chairperson of the Board by a notification dated 2 November 2004, in place of Shri Mushtaq Antulay.
- In place of the Managing Director, State Industrial and Investment Corporation of Maharashtra (SICOM), the Secretary, Water Supply and Sanitation Department and Member-Secretary, Maharashtra Jeevan Pradhikaran have been appointed to represent the companies or corporations owned, controlled or managed by the GoM as members.
- Two new members representing the interest of local bodies – Shri Vipin M. Chokhawala, councillor, Navapur Municipal Council and Shri Pandurang Tayade, corporator, Aurangabad Municipal Corporation – were nominated by the GoM by a notification dated 14 June 2004.

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3. Meetings of the Board

THERE WERE TWO MEETINGS of the Board held during the year:

141st Meeting	8.07.2004	Mumbai
142nd Meeting	16.08.2004	Mumbai

Proceedings of the 141st meeting:

1) The Board agreed in principle to continue the Zoning Atlas activity during the Tenth Five Year Plan (2003–04 to 2006–07). It was also decided to incorporate the activity of environmental improvement of the state's religious and tourist places and ecologically fragile areas in the programmes of the Board. The expenditure incurred for these programmes would be met from the cess fund.

2) The Board approved the purchase of premises belonging to MSSIDC at Udyog Bhavan Nagpur, admeasuring 553.11 sq. mts., for the purpose of a regional office/laboratory.

3) In respect of hazardous wastes and hazardous chemicals lying within units closed for a long time, it was resolved that regional officers of the Board will approach the Court Receiver (wherever such sites are in the possession of the Court Receiver) for taking remedial measures along with the officials of the Department of Industrial Safety and Health (DISH). In case of sites not under Court Receiver, MIDC would take over possession and clean the affected site as suggested by the Supreme Court Monitoring Committee (SCMC).

4) The Board approved a sum of Rs.25 lakhs for conducting an evaluation study of Common Effluent Treatment Plants (CETPs) at Tarapur, Lote-Parshuram, Mahad, TTC, Taloja, Patalganga-Rasayani, Dombivli and Badlapur.

5) Approval was accorded for shifting the sub-regional offices Aurangabad-III and Nagpur-III to Latur and Bhandara respectively.

6) It was decided that, subject to post-facto approval of the state government, the deposit-linked insurance scheme available to state government employees who are subscribers to the Gen-

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eral Provident Fund Scheme of the state government, shall be made applicable to the employees of the Board with effect from 1.8.2004.

7) The Board approved the budgetary provision and sanctioned reimbursement of educational expenditure to employees and officers of the Board along the lines of MIDC, MSSIDC, etc.

Proceedings of the 142nd meeting:

1) An estimated cost of Rs.12 lakhs was sanctioned for Phase-I of the study on air quality trends and health impacts in Mumbai using mathematical models.

2) An estimated expenditure of Rs.35 lakhs was sanctioned for a project proposal submitted by NEERI on a review of the standards for land disposal of treated effluent for irrigation at Aurangabad and for an assessment of studies of soil, plant and ground water following land disposal of industrial effluent at MIDC Butibori.

3) Approval was accorded to the annual report prepared for the year 2001-02.

4) A lumpsum budget estimate of Rs.61 lakhs was approved for furnishing the Board's newly purchased office premises on the second floor, Kalpataru Point, Sion, Mumbai.

5) The MPCB decided to pay accommodation charges and travelling allowances to the non-official members as per the rate approved by the chairperson of the Board.

6) The MPCB approved the furnishing of existing and newly purchased office premises for regional and sub-regional offices.

As provided under Section 9 of the Water Act and Section 11 of the Air Act, the Board constituted various committees for efficient and effective implementation of the provisions of the various Acts and Rules.

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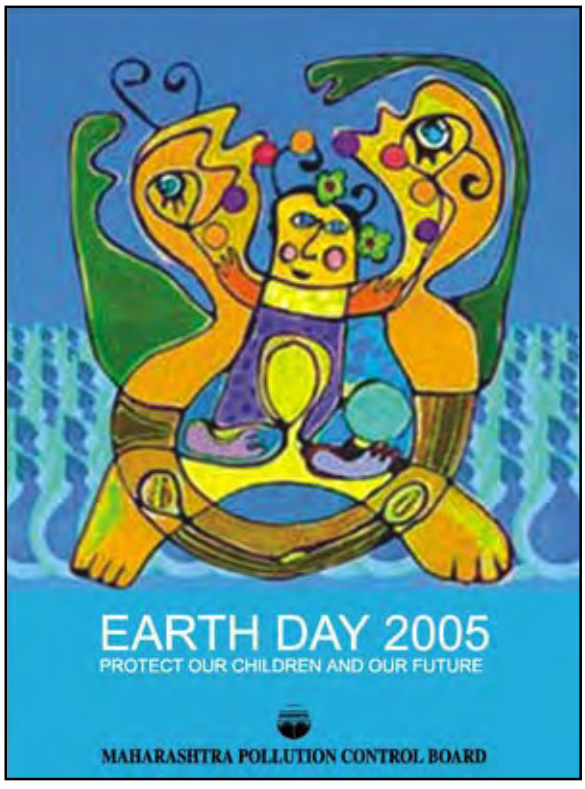

4. Committees constituted by the Board

DURING THE YEAR UNDER REPORT, the following committees were constituted for specific work:

1. Consent Appraisal Committee

The Consent Appraisal Committee appraises the consent applications of certain categories of industries. It comprised the following members:

1) Shri Mushtaq Antulay, *Chairperson*
2) Shri Suresh Deshmukh, *Member*
3) Shri Hemant Takle, *Member*
4) Shri Vijay Kurtadkar, *Member*
5) Shri Salim Patel, *Member*
6) Shri Rajeshwar Neture, *Member*
7) Shri Amol N. Patil, *Member*
8) Dy. Secretary (Technical), Environment Department, Government of Maharashtra, *Member*
9) Technical Advisor, (MIDC), *Member*
10) Dr. D. B. Boralkar, MS, MPCB, *Member Secretary*

2. Technical Advisory Committee

The Technical Advisory Committee is constituted to guide and monitor the technical and scientific activities of the Board. During the period, it comprised the following members:

1) Dr. Dilip Biswas, former chairperson, CPCB, *Chairperson*
2) Dr. A. D. Sawant, Jt. Director of Higher Education, GoM *Member*
3) Shri. A. K. Jain, Advisor, AIILSG, Mumbai, *Member*
4) Shri. G. N. Warade, Director (Environment), Government of Maharashtra, *Member*
5) Dr. Arvind M. Lali, Reader in Chemical Technology, UDCT, Mumbai, *Member*
6) Dr. S. K. Gupta, Head, CESE, IIT, Mumbai, *Member*

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7) Dr. C. R. Kulkarni,
Bio-Technology Expert, Pune, *Member*
8) Dr. S. K. Hazra,
Chairman, SHE Expert Committee of ICMA, Mumbai, *Member*
9) Dr. A. D. Bhide,
Solid Waste Management Expert, *Member*
10) Member-Secretary, MPCB, *Member*
11) Water Pollution Abatement Engineer, MPCB, Mumbai, *Member*
12) Air Pollution Abatement Engineer, MPCB, Mumbai, *Member*
13) Principal Scientific Officer, MPCB, Mumbai *Member*
14) Regional Officer (HQ) , MPCB, Mumbai *Convener*

The chairperson of the MPCB could nominate an expert/additional member, if required.

The terms of reference of the committee were as under:

1) To examine and recommend a comprehensive plan for the prevention, control or abatement of pollution.

2) To examine and approve economical and reliable methods for treatment and disposal of wastes, (including budget, manpower, and strategies for implementation) as specified in Section 17 of Water Act, Section 12 of the EP Act and Section 9 of the EP Rules.

3) To examine and recommend standards for emissions and effluent disposal.

4) To examine and recommend revocation or variation of any orders earlier issued for prevention, control or abatement of pollution.

5) To examine and advise the Board on any technical matter referred to it by the chairperson or the member-secretary.

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3. Expert Committee for the computerization of MPCB's activities

The Board in its 139th meeting held on 22 January 2004 took a policy decision to computerize its operations and activities so as to increase its efficiency, streamline its activities and simultaneously make the Board's functioning more transparent. It was decided to invite tenders to carry out a System Requirement Study (SRS), preparation of the Detailed Project Report (DPR) and Request For Proposal (RFP) for undertaking the proposed computerization activities.

In order to evaluate the proposals received from. I. T. solution providers and to provide suitable recommendations, an expert committee consisting the following members was appointed:

1) Dr. D. B. Boralkar
   MS, MPCB, *Chairperson*,
2) Dr. Sanjay Gehlot
   Director, NIC, Delhi, *Member*
3) Shri Nitin Gadre
   Director, Information Technology, GoM, *Member*
4) Prof. S. Iyer,
   K. R. School of Information Technology, IIT, Mumbai, *Member*
5) Shri. Dilip Badwe,
   Flat No. 201, Nyati Hermitage II,
   NDA Road, Bavdhan, Pune, *Member*
6) Shri. Surendra Jadhav
   Dy. Secretary (Tech),
   Deptt. of Environment, GoM, *Member*
7) Dr. S. B. Katoley
   Consultant, MPCB, Mumbai, *Member*
8) Chief Accounts Officer, MPCB, Mumbai
   Member
9) Shri Bharat Nimbarte
   Regional Officer (HQ), MPCB, Mumbai,
   Convener

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The terms of reference of the committee were as under:

1) To evaluate the technical and commercial bids submitted by the vendors and examine any other issues related to the completion of evaluation of the bids and selection of the vendor.

2) To rank the bidders, based on their composite score, computed as weighted average of the technical and commercial score, in the manner prescribed in the 'Approach Paper' prepared by the Board for this purpose.

3) To recommend an appropriate I. T. solution provider to execute the work of SRS and to prepare DPR and RFP.

4) To decide on other issues related to the completion of evaluation of the bids and selection of the vendor.

5) To submit the recommendations of the committee in respect of the above, to the Board.

4. Local Area Environment Committee

The Supreme Court of India is considering a writ petition (civil) No. 657/1995 regarding the management of hazardous wastes (HW) in India. The apex court had issued a detailed order on 14.10.2003 in the above writ petition and had directed all states to comply with its directives. A special committee called the Supreme Court Monitoring Committee (SCMC) consisting of experts and NGOs has been appointed by the court to monitor the compliance of its directives by the states. The SCMC visits the states to review the compliance of the orders of the Supreme Court and report regularly on this to the court through the Ministry of Environment and Forests, Government of India.

The SCMC visited Maharashtra in June 2004 and held discussions with MPCB and MIDC on the compliance of the directives of the court. The SCMC also visited the industrial estate of the MIDC at Tarapur and noticed that sump No. 2 of

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the CETP at Tarapur contained effluent with a pH of 2 (highly acidic). The SCMC directed the MPCB to issue closure orders to the 75 industries that were contributing effluent to sump No.2. Accordingly, the Board closed all the 75 industries forthwith and directed that they be allowed to function again only after they had submitted individual bank guarantees of Rs. 25,000 and given an undertaking that the pH of sump No.2 will always be within the prescribed limits (5.5 to 9) failing which the bank guarantees would be collectively forfeited. A small committee consisting of local, well-known personalities and representatives of MIDC, the industries and MPCB was constituted to monitor the effluent quality at sump No.2 and the CETP on a daily basis.

The experience gained by this committee prompted the Board to establish an official mechanism in the form of a Local Area Environment Committee (LAEC) for the Tarapur industrial area consisting of the following members:

1) Dr. V. K. Iya, *Chairperson*
2) Executive Engineer, MIDC, Thane, *Member*
3) Chairperson or his representative, TEPS *Member*
4) Dr. Ramakant Panda, CMD, Tarapur General Hospital, *Member*
5) Regional Officer, MPCB, Thane, *Member*

The terms of reference of the committee were as under:

1) To monitor effluent treatment plants established by the industries and bring the names of the defaulters to the notice of the Member-Secretary of the Board.

2) In the event of failure of conveyance system the primary treated effluent shall be taken to the sump in the tankers and proper manifest of the same shall be maintained by the concern industry and submit to the SRO, Tarapur.

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3) To visit the units and recommend necessary corrective measures as and when necessary.

4) Non-official members of the committee were permitted to visit any industry with prior permission of the Member-Secretary of the Board.

5) To oversee and monitor the illegal dumping of the hazardous wastes in and around Tarapur industrial area.

6) To monitor the implementation of directions issued by the SCMC from time to time and report compliance to the Member-Secretary of the Board.

The committee could meet as and when necessary. The committee was required to submit monthly reports to the member-secretary. The tenure of the committee was one year.

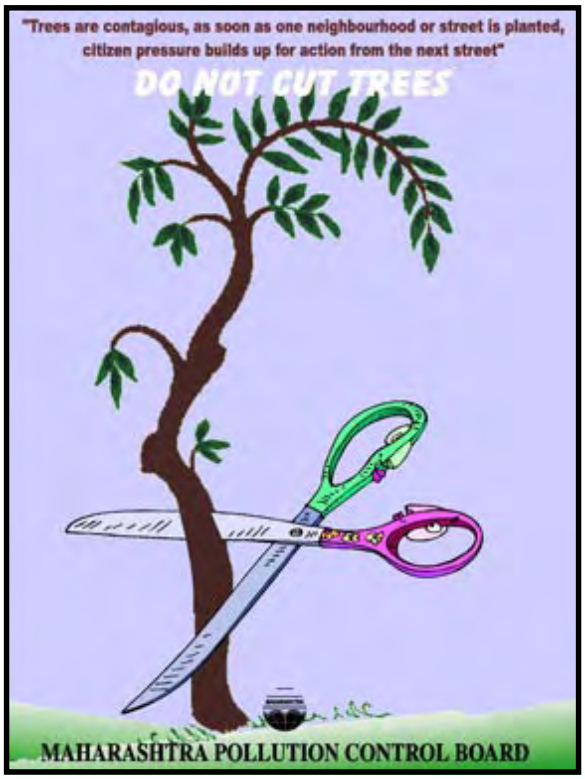
5. Bukkawar Committee

In order to examine the potential and management of hazardous chemicals in various industrial areas in Maharashtra, an expert committee was set up under the chairmanship of Shri V. G. Bukkawar, retired Joint Director, DISH.

The committee was required to study the safety, occupational health and environmental aspects of the chemical industries which use, store and handle or import large quantities of hazardous chemicals, as listed under the Hazardous Chemical Rules, 1989 (HC Rules). The composition of the committee was as under:

1) Shri. V. G. Bukkawar
   Retired Joint Director,
   Directorate of Industrial Safety and Health,
   Government of Maharashtra, *Chairperson*
2) Shri. S. K. Hazra
   Expert on Hazardous Waste Chemical
   Accidents; Representative, ICMA, *Member*
3) Dr. B. N. Thorat
   Reader, ICT, Mumbai, *Member*
4) Dr. A. V. Natu,
   Retired Manager, SHE, *Member*

MPCB posters for environment protection



5) Shri. R. G. Pethe,
WPAE, MPCB, Mumbai, *Convener*

The terms of reference of the committee were as under:

1) To review the status of compliance regarding manufacture, storage, handling and import of: (i) HC Rules (ii) HW Rules (iii) Chemical Accidents Rules.

2) To review the safety measures taken by the industries and the emergency preparedness for accidents that lead to environmental pollution.

3) To review safety aspects and environmental pollution control measures taken by all such industries located in industrial areas of Thane, Mumbai, Navi Mumbai, Raigad and Ratnagiri districts.

4) To suggest remedial measures to strengthen safety operation and pollution control.

5) To review on-site and off-site Disaster Management Plans prepared by the industries and consider alternate measures for the instant activation of the on-site and off-site management plans.

The tenure of the committee was for one year, i.e. upto 8.12.2005. The chairperson could co-opt any person as a member of the committee, if required, for its effective functioning. The committee was required to submit a final report on completion of its work.

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6. Verification Committee for implementation of technology standards for re-refining/ recycling of waste or used oil

The Ministry of Environment and Forests, Government of India, through a notification dated 20.5.2003 notified the Hazardous Waste (Management and Handling) Amendment Rules, 2003. Rule 21 (1) made it mandatory for all re-refiners and recyclers of used oil and waste oil to switch over to environmentally sound technologies as prescribed in the Rules within six months from the date of commencement of the amended rules. The

time period prescribed for switching over to new technologies expired on 20 November 2003.

In the follow-up meeting on implementation of the Supreme Court's order held on 25.11.2003 with the regional officers of the Board, it was decided to constitute a committee of experts to verify the compliance by the refiners and recyclers with Rule 24 of the amended Hazardous Waste Rules. The committee comprised the following members:

1) Prof. Arvind Lali,
   Chemistry Deptt. UDCT, Mumbai, *Member*
2) Shri Hemant Takle,
   Member, MPCB, *Member*
3) Shri Deepak Ved
   Petroleum Re-Refiners Association of India, *Member*
4) Dr. S. S. Bala,
   Zonal Officer (West), CPCB, Vadodara, *Member*
5) Shri. B. B. Nimbarte
   Regional Officer, MPCB Mumbai, *Convenor*

The terms of reference of the committee required it to visit all recycling and refining units in the State and give recommendations as to how individual units may comply with the HW Rules.

The tenure of the committee was three months from the date of its constitution.

7. Expert Committee on Biomedical Wastes

In order to assist the Municipal Corporation of Greater Mumbai (MCGM) in the management of biomedical wastes in Mumbai, an expert committee was constituted to guide and evaluate the technical, scientific and financial aspects of the bids submitted by bidders in response to the RFP issued by the Board for establishment of four common biomedical waste collection centres and the transportation, treatment and disposal facilities for the management of biomedical wastes in Mumbai.

MPCB posters for environment protection

The composition of the committee was as under:

1) Shri. Subroto Ratho,
   Additional Municipal Commissioner,
   MCGM, *Chairperson*
2) Shri. Sunil Soni,
   Director, Municipal Administration, GoM,
   Member
3) Dr. A. K. Jain,
   Sr. Adviser, AIILSG, Mumbai, *Member*
4) Secretary, Environment Department,
   GoM or his representative, *Member*
5) Dr. Rohini Kelkar,
   TATA Memorial Hospital, Mumbai, *Member*
6) Dr. V.K. Iya,
   21, Saras Bagh, Deonar, Mumbai, *Member*
7) Shri. S. B. Patil,
   Executive Engineer, MIDC, *Member*
8) Smt. Deepika D'Souza,
   Med-Waste (NGO), Mumbai, *Member*
9) Prof. S.K. Gupta,
   IIT, Mumbai, *Member*
10) Dr. Shenoy,
    Representative of Indian Medical Association, Mumbai, *Member*
11) Dr. K. R. Shetty,
    Representative of Hospitals Association,
    Mumbai, *Member*
12) Shri. Markandaya,
    Chief Engineer, Solid Waste Management,
    MCGM, *Member*
13) Shri. Parikh,
    Deputy Chief Engineer,
    Solid Waste Management, MCGM, *Member*
14) Dr. D. B. Boralkar,
    Member Secretary, MPCB, *Convener*

The chairperson of the MPCB could nominate an expert/additional member as and when required.

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The terms of reference of the committee were as under:

1) To evaluate the proposals submitted by interested bidders on technical and financial capabilities as per the Biomedical Waste (Management and Handling) Rules, 1998, the guidelines published by CPCB and the RFP document issued by MPCB.

2) To evaluate the techno-business proposals submitted by interested bidders as per the RFP document.

3) To evaluate the commercial offers submitted by interested bidders as per the RFP document

4) To examine and advise the MPCB on any technical matter and select successful bidders as per the terms of the RFP document.

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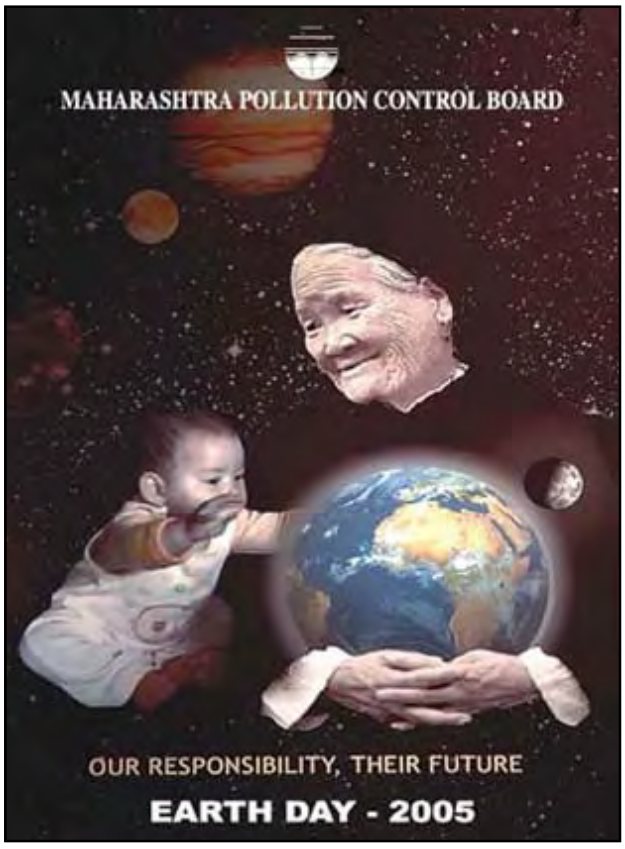

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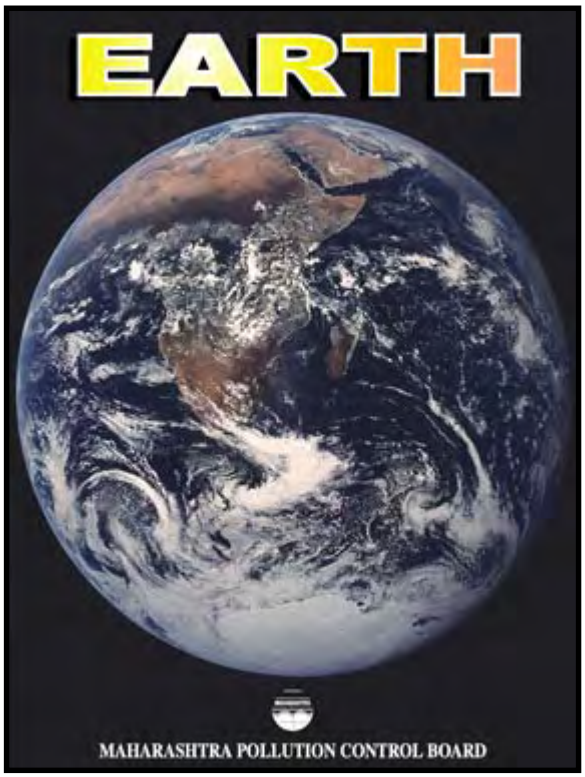

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The MPCB, which was initially concerned with issues related to water pollution only, soon found its mandate expanded to cover other aspects of environmental protection as well. The activities of the Board soon became multidisciplinary in nature, and, in addition, science and technology based. Presently, considering the challenges it faces in the implementation of environmental regulations, the Board is gearing up to undertake several capacity building activities, including setting up of infrastructure laboratories, engaging services of environmental scientists and engineers, preparing action plans for prevention and control of pollution, and others.

An illustrative list of the legislations implemented by the State Pollution Control Board:

- The Water (Prevention and Control of Pollution) Act, 1974 ('Water Act').
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Air (Prevention and Control of Pollution) Act, 1981 ('Air Act').
- The Environment (Protection) Act, 1986 ('EP Act').
- The Hazardous Wastes (Management and Handling) Rules, 1989/2003 ('HW Rules')
- The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 ('HC Rules').
- The Municipal Solid Wastes (Management and Handling) Rules, 2000 ('MSW Rules).
- The Bio-Medical Waste (Management and Handling) Rules, 1998 ('BMW Rules').
- The Noise Pollution (Regulation and Control) Rules, 2000 ('Noise Rules').
- The Recycled Plastics Manufacture and Usage Rules, 1999.
- The Chemical Accidents (Emergency Plan ning, Preparedness and Response) Rules, 1996 (Chemical Accidents Rules).
- The Batteries (Management and Handling) Rules, 2001.
- Notification on the Use of Fly Ash etc., 1999.
- The Coastal Regulation Zone Notification, 1991 ('CRZ Notification').
- The Environment Impact Assessment Notification, 1994 (EIA Notification)
- The Ozone Depleting Substances (Regulation) Rules, 2000.

2. Constitution of the Maharashtra Pollution Control Board

THE GOVERNMENT OF MAHARASHTRA (GoM) in exercise of the powers conferred upon it under section 4 of the Water Act reconstituted the Board through notifications dated 16 June 2000, 14 March 2001, 11 March 2003 and 2 January, 1 June, 14 June, 23 July, 24 September and 2 November 2004.

In accordance with the above notifications, during the year under report, the Board comprised a part-time chairperson, five officials representing the interests of the GoM and two officials representing the companies and corporations owned and controlled by the GoM. In addition to these, five members representing the interests of local bodies and three members representing the interest of industries, trade, fisheries, etc., were nominated by the government. A full time member-secretary was appointed to execute the decisions taken by the Board.

The list of Board members as on 31.03.05 is given below:

(A) Shri Bhupati Prasad Pandey, I.A.S.
Principal Secretary (Environment)
(w.e.f. 2.11.2004) *Chairperson*

(B) Members representing the State Government:

1. The Secretary to the Government, Environment Department, *Member*
2. The Secretary to the Government, Public Health Department, *Member*
3. The Secretary to the Government, Urban Development Department, *Member*
4. The Secretary to the Government, Home Department, *Member*
5. The Secretary to the Government, Water Supply and Sanitation Department, *Member*

(C) Members of local authorities functioning in the State:

1. Shri Salim Patel Samsher Patel, *Member*
2. Shri Rajeshwar Neture, *Member*

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3. Shri Amol Narsing Patil, *Member*
4. Shri Pandurang Yashwantrao Tayade, *Member*
5. Shri Viking Mangaldas Chokhawala, *Member*

(D) Members representing the interests of agriculture, fisheries, industry, trade or any other interest that, in the opinion of the government, ought to be represented on the Board:

1. Shri Hemant Takle, *Member*
2. Shri Vijay Kurtadkar, *Member*
3. Shri Suresh Deshmukh, *Member*

(E) Members to represent the companies or corporations owned, controlled or managed by the GoM;

1. The Chief Executive Officer, Maharashtra Industrial Development Corporation (MIDC), *Member*
2. Member-Secretary, Maharashtra Jeevan Pradhikaran, *Member*

(F) Dr. D. B. Boralkar, *Member-Secretary*

Recent changes

- Shri B. P. Pandey, Principal Secretary (Environment), GoM, has been appointed chairperson of the Board by a notification dated 2 November 2004, in place of Shri Mushtaq Antulay.
- In place of the Managing Director, State Industrial and Investment Corporation of Maharashtra (SICOM), the Secretary, Water Supply and Sanitation Department and Member-Secretary, Maharashtra Jeevan Pradhikaran have been appointed to represent the companies or corporations owned, controlled or managed by the GoM as members.
- Two new members representing the interest of local bodies – Shri Vipin M. Chokhawala, councillor, Navapur Municipal Council and Shri Pandurang Tayade, corporator, Aurangabad Municipal Corporation – were nominated by the GoM by a notification dated 14 June 2004.

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3. Meetings of the Board

THERE WERE TWO MEETINGS of the Board held during the year:

141st Meeting	8.07.2004	Mumbai
142nd Meeting	16.08.2004	Mumbai

Proceedings of the 141st meeting:

1) The Board agreed in principle to continue the Zoning Atlas activity during the Tenth Five Year Plan (2003–04 to 2006–07). It was also decided to incorporate the activity of environmental improvement of the state's religious and tourist places and ecologically fragile areas in the programmes of the Board. The expenditure incurred for these programmes would be met from the cess fund.

2) The Board approved the purchase of premises belonging to MSSIDC at Udyog Bhavan Nagpur, admeasuring 553.11 sq. mts., for the purpose of a regional office/laboratory.

3) In respect of hazardous wastes and hazardous chemicals lying within units closed for a long time, it was resolved that regional officers of the Board will approach the Court Receiver (wherever such sites are in the possession of the Court Receiver) for taking remedial measures along with the officials of the Department of Industrial Safety and Health (DISH). In case of sites not under Court Receiver, MIDC would take over possession and clean the affected site as suggested by the Supreme Court Monitoring Committee (SCMC).

4) The Board approved a sum of Rs.25 lakhs for conducting an evaluation study of Common Effluent Treatment Plants (CETPs) at Tarapur, Lote-Parshuram, Mahad, TTC, Taloja, Patalganga-Rasayani, Dombivli and Badlapur.

5) Approval was accorded for shifting the sub-regional offices Aurangabad-III and Nagpur-III to Latur and Bhandara respectively.

6) It was decided that, subject to post-facto approval of the state government, the deposit-linked insurance scheme available to state government employees who are subscribers to the Gen-

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eral Provident Fund Scheme of the state government, shall be made applicable to the employees of the Board with effect from 1.8.2004.

7) The Board approved the budgetary provision and sanctioned reimbursement of educational expenditure to employees and officers of the Board along the lines of MIDC, MSSIDC, etc.

Proceedings of the 142nd meeting:

1) An estimated cost of Rs.12 lakhs was sanctioned for Phase-I of the study on air quality trends and health impacts in Mumbai using mathematical models.

2) An estimated expenditure of Rs.35 lakhs was sanctioned for a project proposal submitted by NEERI on a review of the standards for land disposal of treated effluent for irrigation at Aurangabad and for an assessment of studies of soil, plant and ground water following land disposal of industrial effluent at MIDC Butibori.

3) Approval was accorded to the annual report prepared for the year 2001-02.

4) A lumpsum budget estimate of Rs.61 lakhs was approved for furnishing the Board's newly purchased office premises on the second floor, Kalpataru Point, Sion, Mumbai.

5) The MPCB decided to pay accommodation charges and travelling allowances to the non-official members as per the rate approved by the chairperson of the Board.

6) The MPCB approved the furnishing of existing and newly purchased office premises for regional and sub-regional offices.

As provided under Section 9 of the Water Act and Section 11 of the Air Act, the Board constituted various committees for efficient and effective implementation of the provisions of the various Acts and Rules.

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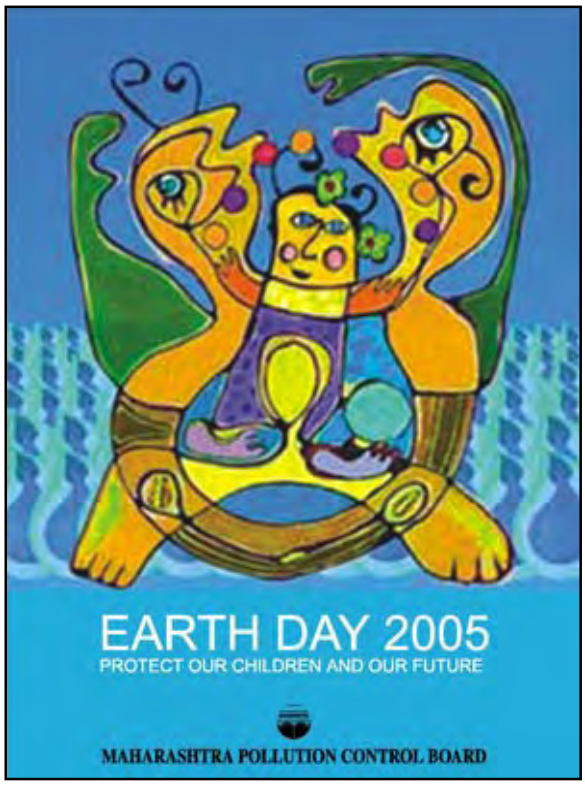

4. Committees constituted by the Board

DURING THE YEAR UNDER REPORT, the following committees were constituted for specific work:

1. Consent Appraisal Committee

The Consent Appraisal Committee appraises the consent applications of certain categories of industries. It comprised the following members:

1) Shri Mushtaq Antulay, *Chairperson*
2) Shri Suresh Deshmukh, *Member*
3) Shri Hemant Takle, *Member*
4) Shri Vijay Kurtadkar, *Member*
5) Shri Salim Patel, *Member*
6) Shri Rajeshwar Neture, *Member*
7) Shri Amol N. Patil, *Member*
8) Dy. Secretary (Technical), Environment Department, Government of Maharashtra, *Member*
9) Technical Advisor, (MIDC), *Member*
10) Dr. D. B. Boralkar, MS, MPCB, *Member Secretary*

2. Technical Advisory Committee

The Technical Advisory Committee is constituted to guide and monitor the technical and scientific activities of the Board. During the period, it comprised the following members:

1) Dr. Dilip Biswas, former chairperson, CPCB, *Chairperson*
2) Dr. A. D. Sawant, Jt. Director of Higher Education, GoM *Member*
3) Shri. A. K. Jain, Advisor, AIILSG, Mumbai, *Member*
4) Shri. G. N. Warade, Director (Environment), Government of Maharashtra, *Member*
5) Dr. Arvind M. Lali, Reader in Chemical Technology, UDCT, Mumbai, *Member*
6) Dr. S. K. Gupta, Head, CESE, IIT, Mumbai, *Member*

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7) Dr. C. R. Kulkarni,
Bio-Technology Expert, Pune, *Member*
8) Dr. S. K. Hazra,
Chairman, SHE Expert Committee of ICMA, Mumbai, *Member*
9) Dr. A. D. Bhide,
Solid Waste Management Expert, *Member*
10) Member-Secretary, MPCB, *Member*
11) Water Pollution Abatement Engineer, MPCB, Mumbai, *Member*
12) Air Pollution Abatement Engineer, MPCB, Mumbai, *Member*
13) Principal Scientific Officer, MPCB, Mumbai *Member*
14) Regional Officer (HQ) , MPCB, Mumbai *Convener*

The chairperson of the MPCB could nominate an expert/additional member, if required.

The terms of reference of the committee were as under:

1) To examine and recommend a comprehensive plan for the prevention, control or abatement of pollution.

2) To examine and approve economical and reliable methods for treatment and disposal of wastes, (including budget, manpower, and strategies for implementation) as specified in Section 17 of Water Act, Section 12 of the EP Act and Section 9 of the EP Rules.

3) To examine and recommend standards for emissions and effluent disposal.

4) To examine and recommend revocation or variation of any orders earlier issued for prevention, control or abatement of pollution.

5) To examine and advise the Board on any technical matter referred to it by the chairperson or the member-secretary.

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3. Expert Committee for the computerization of MPCB's activities

The Board in its 139th meeting held on 22 January 2004 took a policy decision to computerize its operations and activities so as to increase its efficiency, streamline its activities and simultaneously make the Board's functioning more transparent. It was decided to invite tenders to carry out a System Requirement Study (SRS), preparation of the Detailed Project Report (DPR) and Request For Proposal (RFP) for undertaking the proposed computerization activities.

In order to evaluate the proposals received from. I. T. solution providers and to provide suitable recommendations, an expert committee consisting the following members was appointed:

1) Dr. D. B. Boralkar
   MS, MPCB, *Chairperson*,
2) Dr. Sanjay Gehlot
   Director, NIC, Delhi, *Member*
3) Shri Nitin Gadre
   Director, Information Technology, GoM, *Member*
4) Prof. S. Iyer,
   K. R. School of Information Technology, IIT, Mumbai, *Member*
5) Shri. Dilip Badwe,
   Flat No. 201, Nyati Hermitage II,
   NDA Road, Bavdhan, Pune, *Member*
6) Shri. Surendra Jadhav
   Dy. Secretary (Tech),
   Deptt. of Environment, GoM, *Member*
7) Dr. S. B. Katoley
   Consultant, MPCB, Mumbai, *Member*
8) Chief Accounts Officer, MPCB, Mumbai
   Member
9) Shri Bharat Nimbarte
   Regional Officer (HQ), MPCB, Mumbai,
   Convener

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The terms of reference of the committee were as under:

1) To evaluate the technical and commercial bids submitted by the vendors and examine any other issues related to the completion of evaluation of the bids and selection of the vendor.

2) To rank the bidders, based on their composite score, computed as weighted average of the technical and commercial score, in the manner prescribed in the 'Approach Paper' prepared by the Board for this purpose.

3) To recommend an appropriate I. T. solution provider to execute the work of SRS and to prepare DPR and RFP.

4) To decide on other issues related to the completion of evaluation of the bids and selection of the vendor.

5) To submit the recommendations of the committee in respect of the above, to the Board.

4. Local Area Environment Committee

The Supreme Court of India is considering a writ petition (civil) No. 657/1995 regarding the management of hazardous wastes (HW) in India. The apex court had issued a detailed order on 14.10.2003 in the above writ petition and had directed all states to comply with its directives. A special committee called the Supreme Court Monitoring Committee (SCMC) consisting of experts and NGOs has been appointed by the court to monitor the compliance of its directives by the states. The SCMC visits the states to review the compliance of the orders of the Supreme Court and report regularly on this to the court through the Ministry of Environment and Forests, Government of India.

The SCMC visited Maharashtra in June 2004 and held discussions with MPCB and MIDC on the compliance of the directives of the court. The SCMC also visited the industrial estate of the MIDC at Tarapur and noticed that sump No. 2 of

MPCB posters for environment protection

the CETP at Tarapur contained effluent with a pH of 2 (highly acidic). The SCMC directed the MPCB to issue closure orders to the 75 industries that were contributing effluent to sump No.2. Accordingly, the Board closed all the 75 industries forthwith and directed that they be allowed to function again only after they had submitted individual bank guarantees of Rs. 25,000 and given an undertaking that the pH of sump No.2 will always be within the prescribed limits (5.5 to 9) failing which the bank guarantees would be collectively forfeited. A small committee consisting of local, well-known personalities and representatives of MIDC, the industries and MPCB was constituted to monitor the effluent quality at sump No.2 and the CETP on a daily basis.

The experience gained by this committee prompted the Board to establish an official mechanism in the form of a Local Area Environment Committee (LAEC) for the Tarapur industrial area consisting of the following members:

1) Dr. V. K. Iya, *Chairperson*
2) Executive Engineer, MIDC, Thane, *Member*
3) Chairperson or his representative, TEPS *Member*
4) Dr. Ramakant Panda, CMD, Tarapur General Hospital, *Member*
5) Regional Officer, MPCB, Thane, *Member*

The terms of reference of the committee were as under:

1) To monitor effluent treatment plants established by the industries and bring the names of the defaulters to the notice of the Member-Secretary of the Board.

2) In the event of failure of conveyance system the primary treated effluent shall be taken to the sump in the tankers and proper manifest of the same shall be maintained by the concern industry and submit to the SRO, Tarapur.

MPCB posters for environment protection

3) To visit the units and recommend necessary corrective measures as and when necessary.

4) Non-official members of the committee were permitted to visit any industry with prior permission of the Member-Secretary of the Board.

5) To oversee and monitor the illegal dumping of the hazardous wastes in and around Tarapur industrial area.

6) To monitor the implementation of directions issued by the SCMC from time to time and report compliance to the Member-Secretary of the Board.

The committee could meet as and when necessary. The committee was required to submit monthly reports to the member-secretary. The tenure of the committee was one year.

5. Bukkawar Committee

In order to examine the potential and management of hazardous chemicals in various industrial areas in Maharashtra, an expert committee was set up under the chairmanship of Shri V. G. Bukkawar, retired Joint Director, DISH.

The committee was required to study the safety, occupational health and environmental aspects of the chemical industries which use, store and handle or import large quantities of hazardous chemicals, as listed under the Hazardous Chemical Rules, 1989 (HC Rules). The composition of the committee was as under:

1) Shri. V. G. Bukkawar
   Retired Joint Director,
   Directorate of Industrial Safety and Health,
   Government of Maharashtra, *Chairperson*
2) Shri. S. K. Hazra
   Expert on Hazardous Waste Chemical
   Accidents; Representative, ICMA, *Member*
3) Dr. B. N. Thorat
   Reader, ICT, Mumbai, *Member*
4) Dr. A. V. Natu,
   Retired Manager, SHE, *Member*

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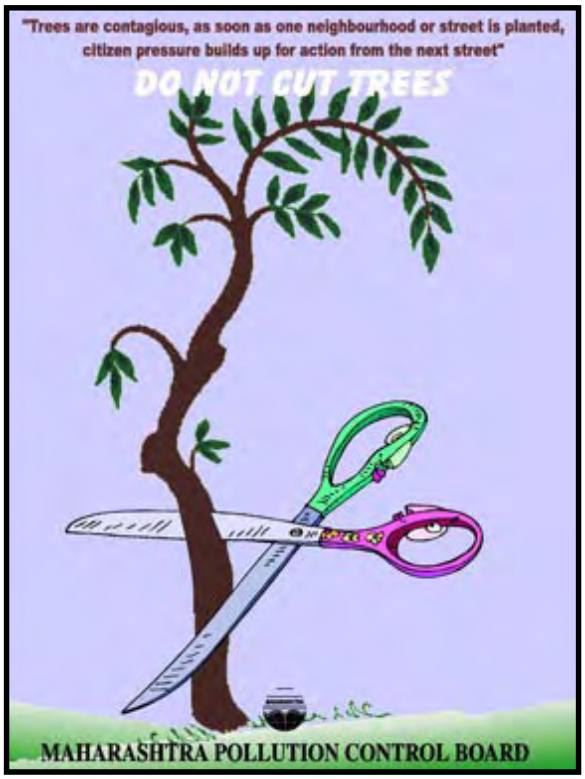

5) Shri. R. G. Pethe,
WPAE, MPCB, Mumbai, *Convener*

The terms of reference of the committee were as under:

1) To review the status of compliance regarding manufacture, storage, handling and import of: (i) HC Rules (ii) HW Rules (iii) Chemical Accidents Rules.

2) To review the safety measures taken by the industries and the emergency preparedness for accidents that lead to environmental pollution.

3) To review safety aspects and environmental pollution control measures taken by all such industries located in industrial areas of Thane, Mumbai, Navi Mumbai, Raigad and Ratnagiri districts.

4) To suggest remedial measures to strengthen safety operation and pollution control.

5) To review on-site and off-site Disaster Management Plans prepared by the industries and consider alternate measures for the instant activation of the on-site and off-site management plans.

The tenure of the committee was for one year, i.e. upto 8.12.2005. The chairperson could co-opt any person as a member of the committee, if required, for its effective functioning. The committee was required to submit a final report on completion of its work.

MPCB posters for environment protection

6. Verification Committee for implementation of technology standards for re-refining/ recycling of waste or used oil

The Ministry of Environment and Forests, Government of India, through a notification dated 20.5.2003 notified the Hazardous Waste (Management and Handling) Amendment Rules, 2003. Rule 21 (1) made it mandatory for all re-refiners and recyclers of used oil and waste oil to switch over to environmentally sound technologies as prescribed in the Rules within six months from the date of commencement of the amended rules. The

time period prescribed for switching over to new technologies expired on 20 November 2003.

In the follow-up meeting on implementation of the Supreme Court's order held on 25.11.2003 with the regional officers of the Board, it was decided to constitute a committee of experts to verify the compliance by the refiners and recyclers with Rule 24 of the amended Hazardous Waste Rules. The committee comprised the following members:

1) Prof. Arvind Lali,
   Chemistry Deptt. UDCT, Mumbai, *Member*
2) Shri Hemant Takle,
   Member, MPCB, *Member*
3) Shri Deepak Ved
   Petroleum Re-Refiners Association of India, *Member*
4) Dr. S. S. Bala,
   Zonal Officer (West), CPCB, Vadodara, *Member*
5) Shri. B. B. Nimbarte
   Regional Officer, MPCB Mumbai, *Convenor*

The terms of reference of the committee required it to visit all recycling and refining units in the State and give recommendations as to how individual units may comply with the HW Rules.

The tenure of the committee was three months from the date of its constitution.

7. Expert Committee on Biomedical Wastes

In order to assist the Municipal Corporation of Greater Mumbai (MCGM) in the management of biomedical wastes in Mumbai, an expert committee was constituted to guide and evaluate the technical, scientific and financial aspects of the bids submitted by bidders in response to the RFP issued by the Board for establishment of four common biomedical waste collection centres and the transportation, treatment and disposal facilities for the management of biomedical wastes in Mumbai.

MPCB posters for environment protection

The composition of the committee was as under:

1) Shri. Subroto Ratho,
   Additional Municipal Commissioner,
   MCGM, *Chairperson*
2) Shri. Sunil Soni,
   Director, Municipal Administration, GoM,
   Member
3) Dr. A. K. Jain,
   Sr. Adviser, AIILSG, Mumbai, *Member*
4) Secretary, Environment Department,
   GoM or his representative, *Member*
5) Dr. Rohini Kelkar,
   TATA Memorial Hospital, Mumbai, *Member*
6) Dr. V.K. Iya,
   21, Saras Bagh, Deonar, Mumbai, *Member*
7) Shri. S. B. Patil,
   Executive Engineer, MIDC, *Member*
8) Smt. Deepika D'Souza,
   Med-Waste (NGO), Mumbai, *Member*
9) Prof. S.K. Gupta,
   IIT, Mumbai, *Member*
10) Dr. Shenoy,
    Representative of Indian Medical Association, Mumbai, *Member*
11) Dr. K. R. Shetty,
    Representative of Hospitals Association,
    Mumbai, *Member*
12) Shri. Markandaya,
    Chief Engineer, Solid Waste Management,
    MCGM, *Member*
13) Shri. Parikh,
    Deputy Chief Engineer,
    Solid Waste Management, MCGM, *Member*
14) Dr. D. B. Boralkar,
    Member Secretary, MPCB, *Convener*

The chairperson of the MPCB could nominate an expert/additional member as and when required.

MPCB posters for environment protection

The terms of reference of the committee were as under:

1) To evaluate the proposals submitted by interested bidders on technical and financial capabilities as per the Biomedical Waste (Management and Handling) Rules, 1998, the guidelines published by CPCB and the RFP document issued by MPCB.

2) To evaluate the techno-business proposals submitted by interested bidders as per the RFP document.

3) To evaluate the commercial offers submitted by interested bidders as per the RFP document

4) To examine and advise the MPCB on any technical matter and select successful bidders as per the terms of the RFP document.

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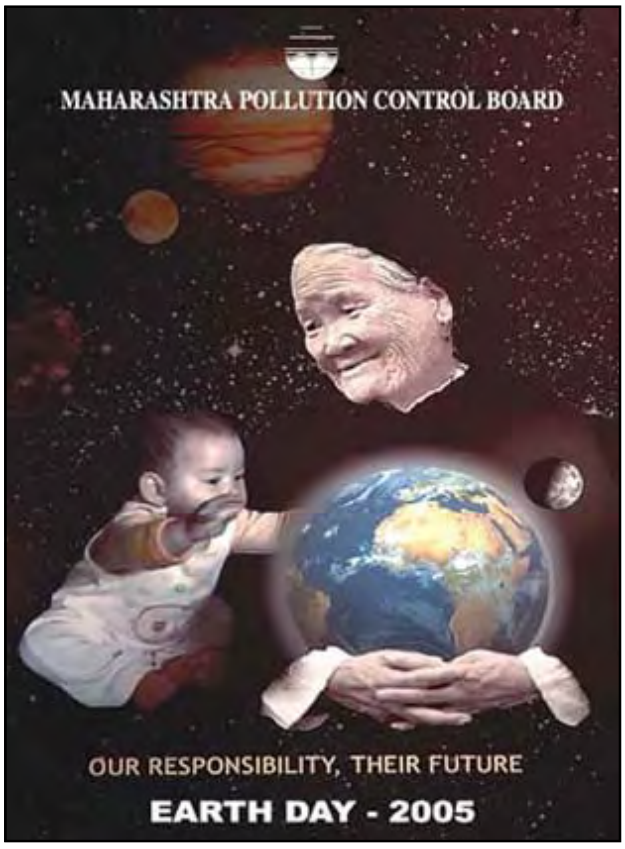


5. 'The wholesomeness of water'

WATER IS A RENEWABLE natural resource.

Due to the ever increasing industrialization, population and urbanization, this precious resource is continually under stress. There are multiple dimensions to water quality and its deterioration.

Lack of awareness and civic sense, and use of inefficient methods and technology lead more than 50% of water wastage in the domestic, agriculture and industrial sectors.

Water pollution is rendering much of the available water unsafe for consumption.

There is heavy extraction of water for domestic, industrial and agricultural purposes.

Age-old customs and habits of community and cattle bathing and washing in rivers are responsible for rampant pollution of river water. The release of domestic waste water, agricultural runoff water and industrial effluents promote excessive growth of algae in water bodies, which results in their eutrophication.

Pathogenic pollution or microbiological contamination of water due to its mixing with untreated /inadequately treated domestic sewage/waste water is another cause for concern. Unfortunately, the inability of the authorities to keep a check on the issue is also to blame for this state of affairs.

Depending upon the best designated use of water, the river waters in the State are classified into four classes: A-I, A-II, A-III and A-IV. Water quality is judged through physical, chemical and biological tests conducted by the Board in its well equipped central laboratory at Navi-Mumbai and the regional laboratories established across the State. (*The sections that immediately follow report mainly on municipal sewage and its handling. Chapter six deals with pollution of water from industrial sources.*)

MPCB posters for water conservation

5.1 Municipal Sewage

About 42% of the State's population (9.69 crores) live in urban areas. There are now 22 Municipal Corporations, 221 Municipal Councils and seven Cantonment Boards in the State. The volume of effluent generated from Municipal Corporations is approximately 45,62,680 m^3/day.

Due to rapid urbanization, municipal bodies face many problems like collection, treatment and disposal of waste water, solid wastes, biomedical waste, plastic waste, etc. Most of the waste water generated by local bodies is disposed off either on land or into surface water. Land disposal causes ground water pollution whereas the disposal into surface water affects the aquatic life. In order to measure and record the concentration of pollutants present in sewage, sewage samples are also collected for analysis. To control pollution, actions are initiated under relevant provision of Water Act, the Environment Protection Act and the Rules made thereunder.

There is no adequate sewerage system in any of the municipal bodies in the State. However, the Board is attempting to ensure that this issue is solved in the long-term. Sixteen corporations have

Water monitoring at municipal nalla near Colourchem, Thane

arrangements for partial treatment of sewage, while nine corporations have arrangements for the treatment and disposal of solid waste. Sewage Treatment Plants (STPs) have been provided by Mumbai, Pune, Thane, Pimpri-Chinchwad, Navi-Mumbai, Nagpur and Nashik Municipal Corporations. Although these plants are in operation; their capacity to treat the influent is inadequate. The Board regularly checks these STPs for adequacy of the effluent characteristics with the prescribed standards.

The construction work for the STPs for the Jalgaon and Akola corporations is in process. The Cantonment Boards of Pune, Kirkee and Lonavala Municipal Council have adequate STPs, but their operation and maintenance is very poor. The Aurangabad Municipal Corporation has been provided with a STP by City and Industrial Development Corporation of Maharashtra (CIDCO). Under the NRAP (National River Action Plan), the construction of STPs at Nanded, Nasik, Sangli and Karad are under progress, under the jurisdiction of the Maharashtra Jivan Pradikaran.

The Board has also prosecuted noncompliant local bodies in the courts of law. For instance, a case was filed against the Kolhapur Municipal Cor-

Water monitoring at Rabodi nalla, Thane

poration due to noncompliance with effluent standards and bank guarantee of Rs.10 lakhs was forfeited. Directions have also been issued to the Kalyan-Dombivli Corporation under Section 5 of the Environment Protection Act, while a bank guarantee of Rs.3 lakhs was taken from Ambernath Municipal Council for operation of its STP.

The status of municipal corporations in terms of generation and treatment of effluents in the State as on March 2005 is given in table 1.

Table 1: Generation and treatment of effluents of municipal corporations

Sr. No	Region	No. of corporations	Total population	Qty. of water consumption M3/D	Qty. of effluent generated M3/D	No. of corporations having partial treatment & disposal arrangement for sewage
1	Mumbai	1	12500000	4510000	2250000	1
2	Navi Mumbai	1	703000	237000	190000	1
3	Thane	2	2020300	336500	269200	1
4	Kalyan	3	2264169	422000	334000	3
5	Pune	3	5008722	1001000	667000	3
6	Nagpur	1	2600000	500000	400000	1
7	Nashik	5	2770489	237975	190380	3
8	Amravati	2	1250000	107000	76600	-
9	Aurangabad	2	1430558	102000	80500	1
10	Kolhapur	2	920740	159000	105000	2
	Total	**22**	**31467978**	**7612475**	**4562680**	**16**

5.2 Water Quality Monitoring

For the rational planning of a water pollution control programme, it is imperative to understand the nature and extent of pollution control required.

To achieve this, a scientific water quality monitoring programme was done in Maharashtra during the year 2004–05.

The rivers in the state are generally monsoon-fed. Only a few rivers – Godavari, Krishna, Bhima and Tapi – are perennial in nature. There is extremely low flow in the rivers after monsoon. The river water quality depends on the extent of pollution as well as water flow in the river. The dilution factor, which is crucial to dilute the effect of pollutants being discharged, is also not available after monsoon. Domestic waste water without sufficient treatment from the cities, towns and villages located on the bank of rivers finds its way into rivers. As a result, water quality in the rivers near Nasik, Bhusawal, Pune, Pimpri Chinchwad, Sangli, Karad, Kolhapur, Ichalkaranji, etc., is therefore not good during lean flow period . Parameters such as BOD, coliform count, etc., indicate pollution due to domestic waste/sewage.

Under the MINARS (Monitoring of Indian National Aquatic Resource System) and GEMS

Water sampling by MPCB officers

(Global Environmental Monitoring System) projects, water quality is being monitored through 48 monitoring stations. Monitoring at these stations is being done as per norms fixed by CPCB/WHO. The frequency of monitoring of the stations under the MINARS project is also as per CPCB guidelines. The number of stations have increased from 33 to 43. Earlier out of 33 stations in the State, 14 stations were monitored quarterly and the remaining monthly, but now out of 43 sanctioned locations, quarterly monitoring is conducted at 21 locations, while the other locations are monitored monthly. The details of the monitoring stations, frequency of monitoring is given in the following tables 2 and 3.

Table 2: GEMS project

Sr.no.	River	Monitoring station	Station code	Frequency of monitoring
1	Bhima	Takli	28	Monthly
2	Godavari	Dhalegaon	12	Monthly
3	Krishna	Sangli	37	Monthly
4	Krishna	Karad	36	Monthly
5	Wainganga	Ashti	11	Monthly

Forty-six rivers, including main rivers like Godavari, Krishna, Bhima, Tapi and other rivers with tributaries, were monitored for water quality through 141 locations set up along these rivers. The number of locations monitored for A-I, A-II and A-IV class of waters were eight, 115 and 18 respectively. It has been observed that at 64% of the locations the water quality has deteriorated, as indicated by elevated (higher than prescribed) biochemical oxygen demand (BOD) levels, thus indicating organic pollution in the river. The dissolved oxygen (DO) levels at five locations located on the Godavari, Mutha and Nag rivers did not conform to the standard.

Table 3: MINARS project

Sr. No.	River	Monitoring station	Station code	Frequency of monitoring
01	Godavari	Nashik	1211	Quarterly
02	Godavari	Ramkund	1096	Monthly
03	Godavari	Gangapur dam	1095	Monthly
04	Godavari	Raher	1209	Monthly
05	Godavari	Jaikwadi	1312	Monthly
06	Godavari	Nanded	1210	Monthly
07	Krishna	Rajapur weir	1151	Monthly
08	Krishna	Kurundwad	1310	Monthly
09	Krishna	Dhom dam	1194	Quarterly
10	Krishna	Islampur	1906	Monthly
11	Panchganga	Ichalkaranji	1311	Quarterly
12	Panchganga	Kolhapur	1904	Monthly
13	Bhima	Band garden	1190	Quarterly
14	Bhima	Vithalwadi Pune	1189	Quarterly
15	Bhima	Narsingpur	1188	Monthly
16	Bhima	Pandarpur town	1911	Quarterly
17	Bhima	Pandarpur town	1912	Quarterly
18	Bhima	Daund	1192	Quarterly
19	Bhima	Porgaon	1191	Quarterly
20	Tapi	Ubad village	1314	Monthly
21	Tapi	Bhusaval	1251	Monthly
22	Tapi	Ajand village	1313	Monthly
23	Girna	Jalgaon	1252	Quarterly
24	Girna	Malegaon	1253	Quarterly
25	Patalganga	MIDC w/w	1462	Monthly
26	Patalganga	Shilphata bridge	1151	Monthly
27	Wardha	Rajura bridge	1212	Quarterly
28	Wardha	Pulgaon	1315	Monthly
29	Kalu	Atale village	1092	Quarterly
30	Nira	Sarola bridge	1463	Monthly
31	Kundalika	Roha bridge	1152	Quarterly
32	Kolar	Kampthee bridge	1908	Quarterly
33	Kanhan	Asegaon	1909	Quarterly
34	Kalu	Atale village	1092	Quarterly
35	Purna	Dhupeshwar	1913	Quarterly
36	Wainganga	After confluence with Kanhan	1910	Quarterly
37	Rangavali	Navapur	1907	-
38	Ulhas	Mohane NRC bund	1093	Monthly
39	Ulhas	Badlapur W/W	1094	Monthly
40	Bhatsa	Pise dam	1461	Quarterly
41	Mahim creek	Mahim	1318	Quarterly
42	Thane creek	Elephanta island	1317	Quarterly
43	Basin creek	Thane	1316	Monthly

In the current year, maximum water quality deterioration has been observed at Ubhad village, Bhusaval, and Ajanad on the Tapi river, at Gangapur dam, Ramkund and downstream of Nasik on the Godavari river, at Karad on Krishna river, Pandharpur on the Bhima river and Asoli bridge on the Nag river. The highest BOD (333 mg/l) and chemical oxygen demand (COD) levels (368 mg/l) were recorded at Asoli bridge on the Nag river. The reading for total coliform (TC) count was found very high (45,629 MPN/100), i.e., exceeding the standard at Bhusaval on the Tapi river.

The water quality assessment of rivers in the Pune region shows that BOD values have significantly reduced at the stations monitored under MINARS programme. However, the DO levels are not satisfactory, and a slight increase in the TC count has also been noticed at Daund and Paragon on the Bhima river. The Pawana river has shown deterioration in water quality at Pimprigaon and Dapodi. Alandi, located on the Indrayani river (a tributary of Bhima river) also showed increase in COD. However, the BOD levels have reduced compared to those recorded in the previous year. Water quality analyses results have shown an increase in BOD level at almost all locations along

Ground water monitoring station at Mira Bhayander, Thane

the rivers flowing through Satara and Solapur Districts (part of Krishna and Bhima rivers). Though the DO levels were found satisfactory at Narsingpur and Takli on the Bhima river, the TC count has increased in the current year.

Krishna, Panchganga, Vashishti, Murchkadi are the rivers flowing through Kolhapur region. The results of water quality analysis, when compared with the last year's result, reveal that DO levels are satisfactory at all stations. However, the concentration of TC is slightly increased at Ichalkaranji on the Panchganga river and Rajapur on the Krishna river. The water quality of Vashishti and Jagbudi rivers in Chiplun was also found satisfactory. At one spot (near the nalla on the Muchkundi river, Ratnagiri region), the BOD level was found to be elevated as compared to last year's result. In sum, the overall water quality in the Kolhapur region remains more or less within the standard except at Karad on the Krishna river.

In the Nagpur region, river water quality has been assessed at 13 stations set up along the rivers Wainganga, Wardha, Nag and Kahhan. The COD and BOD concentrations at Asoli bridge on the Nag river were very high. Kamptee Road, on Pilli river, has also shown elevated BOD levels. Water

Drinking water source monitoring at Pehlar riverwater works.

quality at Pulgaon bridge on the Wardha river was found to be in conformity with the standards. At the other locations, COD and DO levels have not changed much from the previous reporting year.

In Amravati region, deterioration in water quality was observed at Kund, Haturna, and Bhatkali on Pedhi river. Compared to last year, there was an improvement in the water quality of Pedhi and Purna rivers, except at Kolhapur. High deterioration in water quality was observed at Amravati on Amba river, where the concentrations of BOD and COD were 135 mg/l and 251 mg/l respectively. The water quality of Penganga river deteriorated at Belkhed and Umarkhed. Comparison with data of the past two years reveals that DO levels have not changed in the Penganga river. However water quality at Akola on the Morna river and Lakhpuri and Dhupeshwar on the Purna river have deteriorated.

Drinking water source monitoring at Bhatsa river

5.3 Rivers of the coastal belt

Patalganga river

Industries have been prohibited from discharging treated effluent in the A-II zone of the Patalganga river. However, the Khopoli Municipal Council located in A-II zone of the river is a major source of river water pollution since it discharges domestic effluent to the tune of 11 MLD into the river without any treatment. The fish farms of Khopoli also discharge untreated effluent into the river.

In saline water zone, treated industrial effluent from the industries located in MIDC, Patalganga and Rasayani is discharged at one point near Kharpada bridge. However, there is inadequate dispersal and mixing of pollutants with the river water at this spot, thus leading to pollution of the river water.

Another major source of pollution in this river is from the tail race water released by the Tata Power Company. The quantity of this discharge is dependent on the production capacity, which varies from day to day. Even the lowest recorded discharge of tail race water causes pollution.

Water quality monitoring on Ulhas creek near Bhayandar

Other reasons for pollution along the river include the following:

- Neglect in cleaning the gravity channels through which the water from various dams at Lonavala passes;
- Unauthorized disposal of hazardous waste along the bank of river;
- Frequent accidents of tankers carrying chemicals/oil etc., at Bor Ghat, upstream of Khopoli.

Kundalika river

Pollution in this river is caused by the discharge of industrial effluent from Roha, MIDC into its saline zone at Are Khurd village, as well as the discharge of municipal sewage through open gutters. At times, accidental discharge of industrial effluent has also been known to occur.

Savitri river

MIDC developed an industrial area adjacent to the Savitri and Kalu rivers in the year 1980. An effluent collection and disposal facility was also provided with the discharge point upto the saline zone of the Savitri river at Ambet. The episodic discharge of waste water leads to pollution along the river and also affects riparian rights. Discharge of untreated domestic sewage by the Mahad Municipal Council (which lacks a sewage treatment plant) has also led to pollution of the river Savitri.

The Patalganga, Kundalika, Kalu and Savitri rivers have been monitored by the Raigad Region. The monitoring result reveals that except for Kharpada on Patalganga, Are Khurd on Kundalika and Wakan bridge on Amba river, water quality remain more or less within the standards.

Ulhas river

Although the DO concentration and TC count in the Ulhas, Bhatsa, Tansa Kalu and Vaitarna rivers were found to be satisfactory, the BOD levels exceeded the limits at all stations. There are 4 locations where the water is classified under the A-I category. However, due to the rise in BOD levels, the designated category of water classification has not been adhered to. When compared to last year's result, it is seen that there is slight increase in BOD, COD and TC count at a few locations.

Efforts are being made to reduce pollution along the river. The Ulhas Nagar Corporation has prepared a proposal to provide for the treatment and diversion of the Khemini nalla and tenders have been called from various parties for the same. The Badlapur Municipal Council also prepared proposal for a STP. The Waldhuni nalla carries the industrial effluent from the industrial estates of Badlapur and Ambernath, as well as domestic effluent from the Ambernath Council and Ulhasnagar Municipal Corporation. This nalla flows through a residential area and there have been numerous complaints concerning foul odours and pollution of the creek. Consequently, the MPCB and the Ulhasnagar Municipal Corporation have initiated the Waldhuni Cleaning Programme – i.e. 'Green bridge and Green Lake' – using cheap but innovative technology. The Ulhasnagar Corporation will work as the nodal agency for this project.

The pollution level of major rivers expressed in terms of range of pollutants is presented in table 4 below:

Table 4: Pollution levels of major rivers

River	BOD mg/l	COD mg/l	DO mg/l	Total coliform MPN/100 ml
Godavari	2.1–56	8–154	4–7.3	199–18823
Krishna	5–49	28–36	5–7	180–365
Bhima	5.1–23	25–33	3.2–6.8	170–356
Tapi	4.7–16.9	24–40	6.0–6.7	169–45629
Mula-Mutha	5.6–28.9	29–44	1.8–6.5	30–312
Wainganga/ penganga	2.9–8.6	2.9–62	5.4–6.7	280–460
Wardha	3.1–9.9	21*	5.5–6.1	220–254
Purna	2.5–6.6	17–61	3.5–6.2	700*
Patalganga	5.5–50	26–130	5.5–6.3	214–349
Ulhas	5.3–6.9	19–28	6.4–6.8	197–206
Kundalika	5.1–17.7	23–118	5.3–7.2	196–203

'*' indicates analysis carried out at one location only.

The water quality observed during 2004–05 in terms of parameters BOD and DO for Godavari and Krishna rivers is presented in figures 1 (a) – (d).

In order to improve the water quality and minimize water pollution of the rivers, the following steps have been taken:

1) On the Godavari river at Nashik, an additional STP was constructed under the NRAP (in addition to the three existent STPs at different locations in Nashik city). The STP at CIDCO Aurangabad is already in operation. The work of the STP at Nanded, under the aegis of the NRAP, is also under progress. Paithan city is also included under this programme.

2) Similarly, for the Krishna river which is included in the NRAP, two stretches at Sangli and Karad were selected for the programme. The Wai Municipal Council on the Krishna river is also included in the programme. A full-fledged STP is being constructed at Sangli, which is expected to start by 2007. A sum of Rs.3.87 crores was also sanctioned for installation of a STP in Karad city.

3) A new HDPE pipeline discharging into the creek has been installed at Lote in order to prevent accidental leakage of effluent.

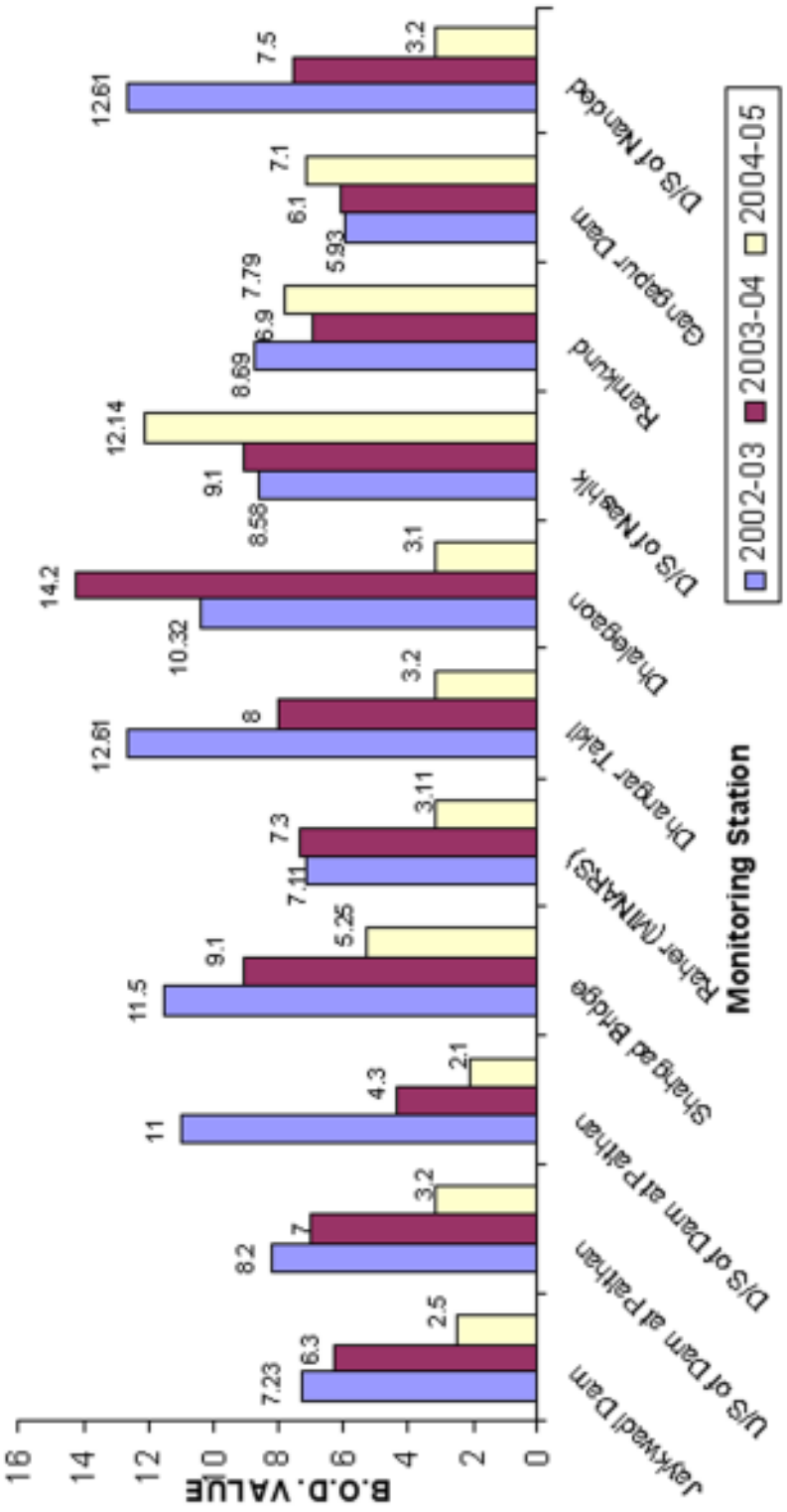


Fig.1a: BOD profiles of Godavari river

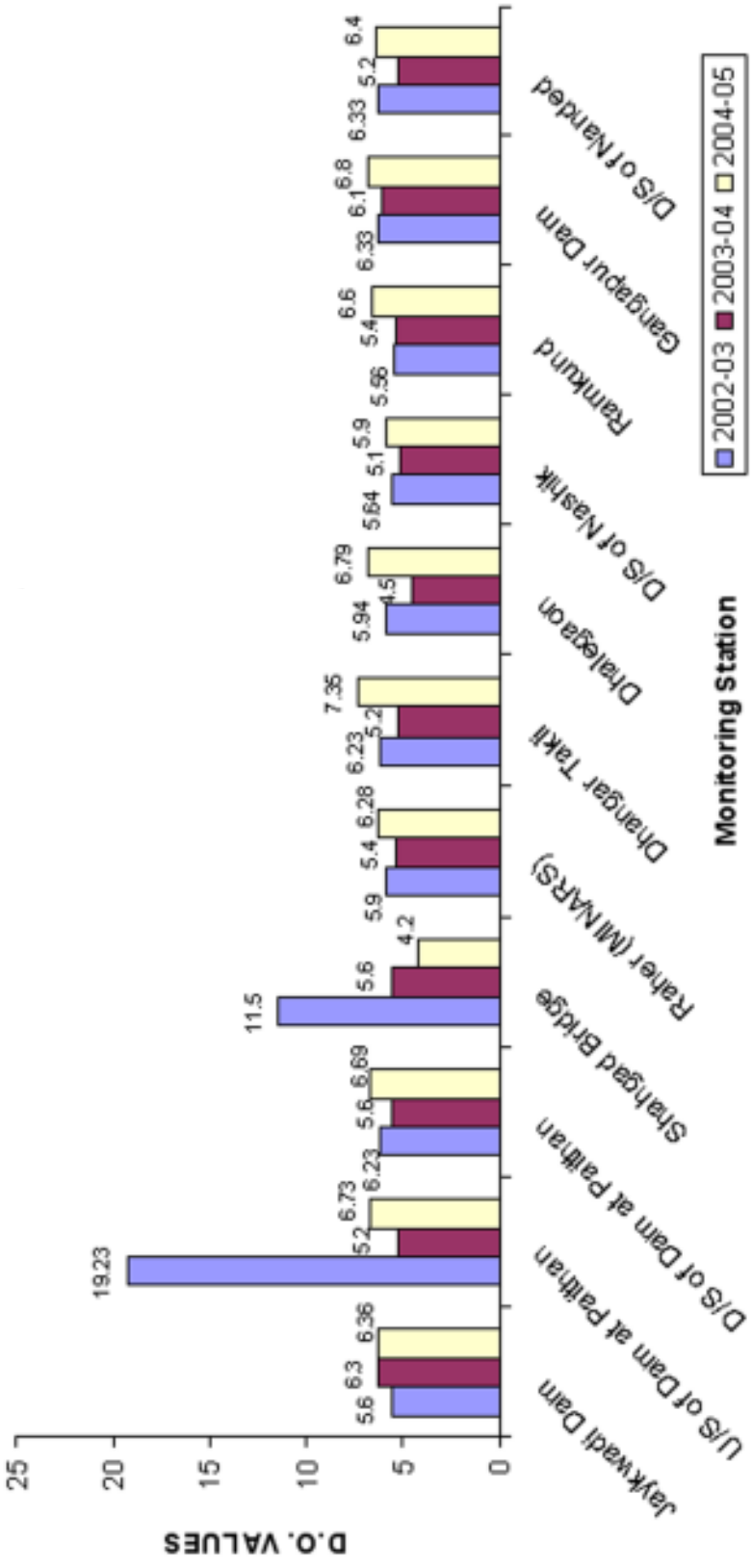


Fig.1b: DO profiles of Godavari river

Fig.1c: BOD profiles of Krishna river

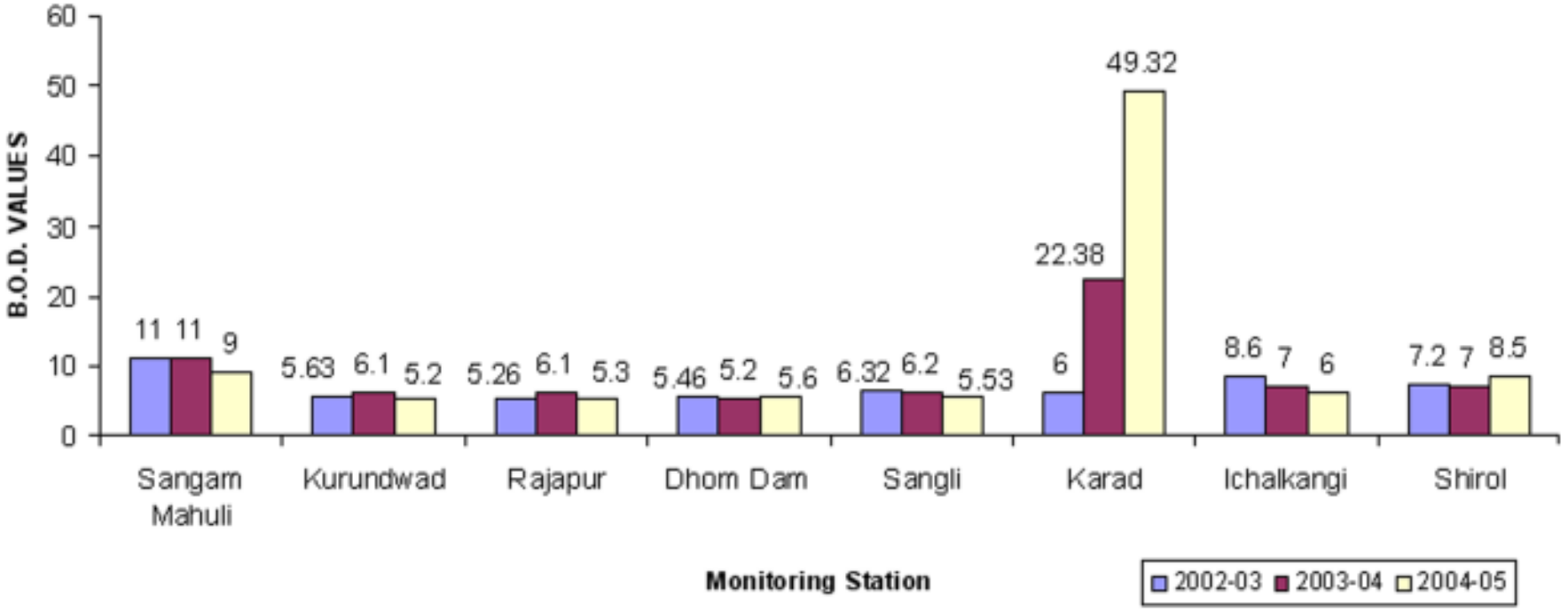
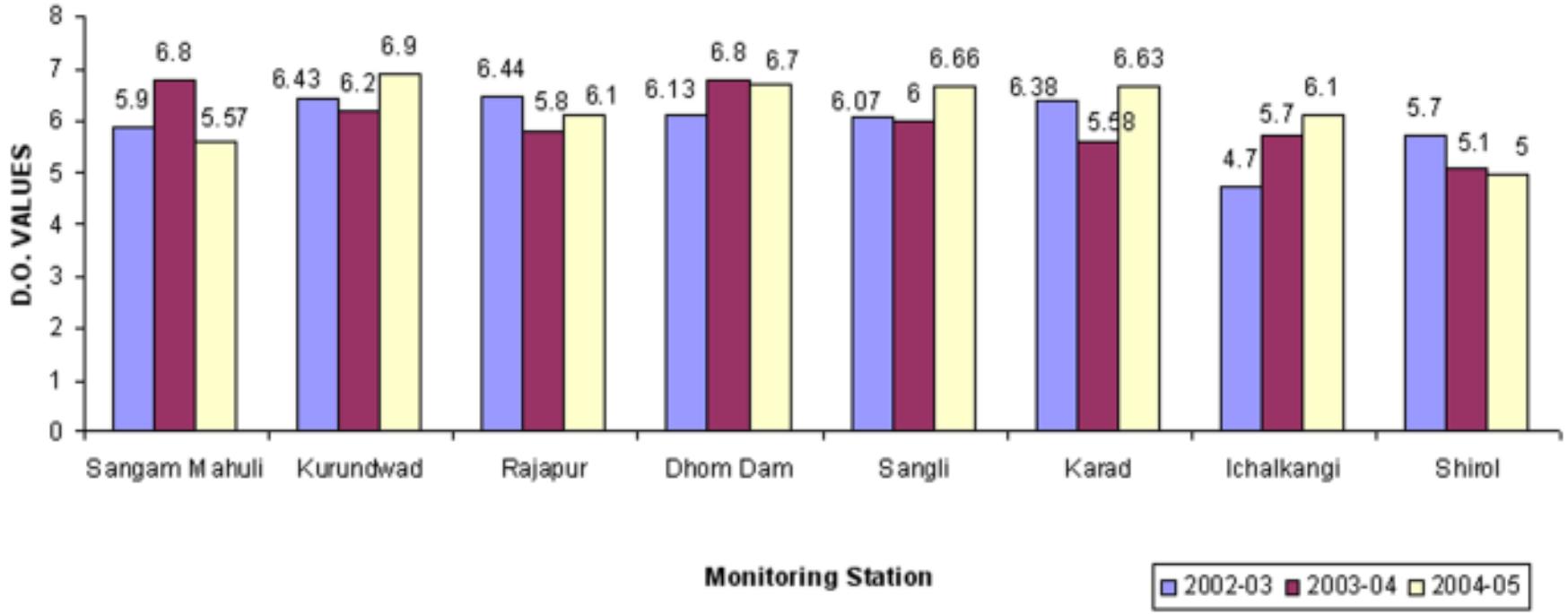


Fig.1d: DO profiles of Krishna river



4) The Board has also been actively pursuing offenders by filing cases in the court of law, such as those against the Kolhapur Municipal Corporation and Ichalkaranji Municipal Council.

5) Directions have been issued to upgrade the STP and the CETP at certain places. Forfeiture of bank guarantees and refusal to grant consents have been resorted to in order to prevent the discharge of effluent into the rivers.

6) Complaints regarding water pollution were received from villagers of Kurkumbh and Pandharewadi of Daund taluka in Pune district. The Board has taken concrete steps to minimize water pollution in this area. The MS of MPCB has discussed this issue with the Collector of Pune. Directions have been issued to industries and MIDC to take suitable steps to control water pollution. The Board has also proposed to undertake a study to improve the ecosystem surrounding the MIDC Kurkumbh area.

5.4 Lake water pollution

During the year, lake water samples were collected from Thane region only. Water samples from 12 different lakes were analysed. The analysis of water samples reveals that organic pollution is much higher than the prescribed standard in BPT tank and Ganesh talao. The BOD, COD and DO profiles of the monitored lakes are represented in the following graph. The Deo talao and Papdy talao (lakes) were also monitored in the last year. Comparisons with the results obtained during the previous year indicate that although the COD levels have decreased, the values of BOD increased during the year. An improvement in the DO level was noticed in the water of Papdy talao. Plans are being prepared to include a larger number of lakes in the state for monitoring of water quality, commencing next year.

5.5 Coastal water pollution

Maharashtra State has a sea coast of 720 km in length. There are several chemical-based industrial zones along the sea coast such as MIDC's Patalganga, TTC, Lote-Parshuram, Mahad, Roha etc. that discharge their effluents into marine waters. Besides, various tidal inlets such as Thane creek, Backbay, Mahim creek, Ulhas creek and Versova creek receive a variety of pollutants from domestic and industrial discharges. Activities like aquaculture, salt pans and ship breaking yards also contribute to some extent to the poor quality of coastal waters. The local municipal bodies situated along the coastal belt do not have sufficient treatment and disposal facilities for waste water; hence, the discharge from local bodies also causes coastal pollution.

During the year, the Board monitored sea water quality at 42 different locations. Reports reveal that as compared with the previous year, there has been an improvement in DO and COD concentrations in the waters of Mumbai coast. The highest concentration of BOD (69.8 mg/l) was observed in the Mithi river while the highest COD concentration (865.3 mg/l) was observed at Mandavi creek in Ratnagiri. DO levels were not found to be satisfactory at Dharamtar creek in Raigad, Shivaji Park in Mumbai, Vasai fort and Uttan Sea in Thane, and Airoli bridge and Kopra bridge in Navi-Mumbai. BOD levels were satisfactory only at Ambet in Raigad and Bhagvati Port in Ratnagiri.

The number of locations where the BOD and DO exceeded the limits is shown in the following table 5.

Table 5: Monitoring of coastal waters

Region/Area	No. of locations monitored	No. of locations where BOD exceeds the limit	No. of locations where DO is below the limit
Mumbai	12	6	1
Raigad	6	4	1
Thane	8	8	2
Tarapur	7	7	-
Navi-Mumbai	3	3	2
Ratnagiri	2	1	-
Kalian	2	2	-

Besides these monitoring programmes, the Board has also monitored the water quality of rivers, ground water, lake water and coastal water in the State during the year through a network of selected locations. The region wise break-up of the number of locations monitored for the year 2004–05 is given below in table 6:

Table 6: Locations monitored for water pollution

Region	No. of locations monitored for			
	River	Lake	Ground water	Coastal water
Mumbai	-	-	-	11
Thane	1	12	20	13
Navi-Mumbai	1	-	1	2
Kalyan	6	-	-	2
Raigad	5	-	8	6
Nashik	3	-	-	-
Pune	9	-	8	-
Kolhapur	4	-	5	3
Aurangabad	3	-	2	-
Amravati	6	-	6	-
Nagpur	9	-	3	-

A complaint was filed regarding pollution of Mula-Mutha river due to discharge of sewage from Pune City and its inadequate treatment provided by the Pune Municipal Corporation. The issue of immersion of Ganapati idols during the Ganesh festival and the resulting pollution was also brought up in the complaint. A public interest litigation was also filed in this regard in the Bombay High Court, Mumbai. In response, after conducting an intensive study, the Board prepared a report on the status of the water quality in the river which has been submitted to the High Court. A short summary of the findings of the study are provided below:

1) At Vithalwadi, minimum and maximum BOD levels were observed to be 6 mg/l and 24 mg/l respectively. At Mundhawa , the corresponding readings were 6 mg/l and 26 mg/l respectively.

2) The BOD level of Mula-Mutha river downstream of Pune city was higher than upstream of it.

3) BOD levels were in the range of 6.0 mg/l to 72.0 mg/l between the Vithalwadi and Sangam bridge catchments.

4) The STP of Pune Municipal Corporation treats domestic effluent to the tune of 305 MLD,

Coastal waters near Tarapur

while the remaining 146 MLD of effluent is discharged directly into the river without treatment.

5) During the Ganesh festival, i.e., in the month of September 2004, the concentration of sulphate, suspended solids and total dissolved solids were found to exceed the prescribed standards. Rainfall and the release of water from the Khadakwasla dam during this period was found to affect the quality of water in the river. Continuous monitoring of the river water during the Ganesh festival for three to four years is needed in order to arrive at a definite conclusion concerning the possibility of long-term river pollution due to immersion of the Ganapati idols.

5.6 Bio-monitoring

Considering the importance of water quality and biodiversity of surface water bodies, it was proposed to initiate bio-monitoring studies of water bodies subjected to hydroelectric power generation in the country. Bio-monitoring is an emerging tool for integrated water quality assessment comprising of studies of physicochemical as well as biological water quality parameters. In short, bio-monitoring can provide comprehensive information about the overall health of a water body.

Coastal waters near Mumbai

The proposal presented by the CPCB for bio-monitoring of water bodies connected to major dams used for hydroelectric power generation was discussed at a meeting held by the Board. Dr. D.B. Boralkar expressed his willingness to take an active part in implementation of this programme. However, specific training in bio-monitoring was required for the scientists of the MPCB. The Chairman, CPCB suggested that the scientists from the MPCB be deputed for 'hands-on' training to CPCB for bio-monitoring and that they may be involved in one of the rounds of bio-monitoring of the Yamuna river by the CPCB. Accordingly, a follow-up proposal for the same was submitted to the CPCB. As a result, ten scientists of the MPCB were trained in bio-monitoring of water bodies during 7–11 March, 2005. Monitoring of river Godavari is planned next year.

5.7 Improvements to the water monitoring network

As proposed by the MPCB, CPCB sanctioned 10 new stations under NWMP for the rationalization and optimization of the water monitoring network. The list of parameters to be analysed in surface

Microorganisms found during bio-monitoring

water (rivers, lakes, ponds, drains and creeks) and groundwater (tube wells, dug wells and hand pumps), the frequency of sampling and the specific months for monitoring, along with methods of analyses, charges for sampling and analyses, etc., were specified by the CPCB.

5.8 Mission Waldhuni nalla

Waldhuni nalla originates in the hills near Ambernath. The nalla receives domestic waste water from Ambernath, Ulhasnagar and Kalyan area. The MIDC areas at Badlapur, Ambernath (Chikloli Morivali, and Additional Ambernath) are located in the catchment area of Waldhuni nalla. There are also major chemical industrial units located at Ambernath and Shahad which discharge treated waste water into the Waldhuni nalla. About 120 MLD of waste water is being discharged through this nalla into the Ulhas creek.

The polluted Waldhuni nalla is creating a nuisance for nearby residents as the same flows through densely populated urban areas. This polluted stretch gives out offensive odours, particularly during night time and in the winter season, creates insanitary conditions and is also an eyesore for the commuters of Central Railway.

The polluted Waldhuni nalla

It is estimated that a collection system for the waste water from urban areas and industries through an under ground drainage system, its treatment and safe disposal will cost a sum of approximately Rs.100 crores. As the local bodies are unable to provide the necessary funds for an effluent collection, treatment and disposal system, the MPCB has taken the lead in selecting a natural system for cleaning up of the Waldhuni nalla. A meeting with various stakeholders was called by the MPCB in December 2004 to initiate a dialogue on the issue.

The proposal based on the natural system was prepared by M/s. Shrishti Eco Research Institute, Pune. Ten green bridges and four green lakes are proposed to be provided along the course of Waldhuni nalla. The total cost of the project (including operation and maintenance charges for one year) is estimated at Rs.50 lakhs. A meeting was held in Ulhasnagar Municipal Corporation on 17 February 2005 and it was decided to implement the project for the clean up of the nalla. The cost of the project will be shared by the Board, Ulhasnagar Municipal Corporation, Ambernath Municipal Council, Kalyan-Dombivali Municipal Corporation and major industrial units in the area. The MLA from Ulhasnagar constituency has also consented to contribute to the project from the 'MLA Fund'. The successful implementation of this project is expected to go a long way in solving pollution problems such as this one, in urban areas in other parts of the State. The project will be implemented in the year 2005–06.

6. Industrial Pollution of Water

MAHARASHTRA IS ONE OF THE most highly industrialised states in India. Many of the industries are located in the Mumbai region. Most industrial activities give rise to substantial pollution of air and water, generate hazardous waste, noise, etc. With the rise of industrial estates in the state, areas like Thane, Navi-Mumbai, Kalyan, Nashik, Pune and Pimpri-Chinchwad regions that have a large number of pollution-prone industries are also facing chronic industrial pollution.

The state has a policy which requires that a safe distance be maintained between industrial units and rivers in order to avoid discharge of effluent into water bodies. The policy also ensures that no industry will be established along a river bank.

Recycling and reuse of waste by industries is encouraged.

6.1 Consent management

Consent management is one of the core functions of the Board and the principal means by which it prevents, controls and manages pollution to avoid environmental degradation. Industries, local bodies, hospitals, development projects, etc., covered under the environment protection regulations are required to obtain NOC/consent/authorization from the Board before any steps are taken towards project development. People demand that the consents be granted quickly to avoid delay in project implementation. There have admittedly been situations in the past when considerable time has been taken to clear applications for consent, causing delays of several months. This has reflected poorly on the efficiency of the Board and also caused harassment to the applicants.

A fast track system was subsequently introduced by the Board for disposal of applications in an expeditious manner. Powers were delegated to decentralize decision-making. Instructions were issued to complete the processing within one week at the field level. Now, consents are generally granted within 15 to 30 days. 'Consent to estab-

MPCB posters for environment protection

lish' can be granted even earlier. There even are instances when consents have been granted in a single day depending upon the merits of the case. The Act provides a time period of 120 days to grant or refuse consent, but the Board is completing this work well within the given time period. On an average, about 200 cases are being cleared every month at the head office which deals mainly with the red category of industries – much higher than those in previous years. The orange and green categories of industries are given consent clearance at regional and sub-regional office levels respectively. The enormity of the task handled by the Board is presented in tables 1 and 2.

Quick disposal of consents and a friendly regulatory system are two of the most important factors in attracting investments to the state. As a result of the steps taken by the Board (outlined above), there has been widespread appreciation by industry and by development agencies.

Consents /authorizations to industries	55811
Authorizations to local bodies	250
Authorizations for biomedical waste	6062
Assessments under water cess	6956

Table 1: Status of consents granted by the head office during the period April 2004 to March 2005

Region	Applications received		Consent granted		Applications refused		Applications sent back to SRO	
	Establish	Operate	Establish	Operate	Establish	Operate	Establish	Operate
Mumbai	3	90	7	62	-	1	-	2
Navi Mumbai	82	206	59	193	-	7	1	1
Thane	102	328	97	342	-	5	1	3
Kalyan	137	337	135	313	4	8	2	11
Raigad	69	174	50	159	4	1	6	4
Pune	132	291	111	335	-	1	-	-
Nashik	79	274	73	221	-	1	-	-
Nagpur	106	247	82	174	1	2	-	3
Aurangabad	60	127	50	152	-	20	3	29
Amravati	64	104	62	78	12	1	2	2
Kolhapur	108	195	62	128	-		-	-
Total	942	2373	788	2157	21	47	15	55

Table 2: Status of consents granted by regional and sub-regional offices

Region	Establish	Operate	Consent granted for 15 years	Simplified consents granted
Mumbai	15	458	16	1
Navi Mumbai	262	334	8	-
Raigad	64	93	3	-
Thane	160	983	5	-
Kalyan	130	321	1	-
Pune	471	1506	15	2
Nashik	507	778	5	104
Nagpur	261	437	3	-
Amravati	232	150	8	-
Aurangabad	298	499	1	4
Kolhapur	480	564	-	1
Total	**2880**	**6123**	**65**	**112**

As per the data compiled for the year 2004–05, there are 55,811 industrial units identified by the Board for implementation of pollution control measures (table 3). They include 8,636 red, 9,551 orange and 37,724 green categories of industries. The total of pollution-prone industries and the total volume of effluent generated is given in table 4.

Table 3: Industry statistics as on March 2005

		Red			Orange			Green			Grand
Sr.No	Region	LSI	MSI	SSI	LSI	MSI	SSI	LSI	MSI	SSI	Total
1	Mumbai	57	32	634	21	26	351	3	15	4195	5334
2	Navi Mumbai	87	47	792	7	14	356	5	4	1006	2318
3	Thane	32	82	738	2	10	303	4	5	3805	4981
4	Kalyan	32	40	981	3	5	365	5	7	1096	2534
5	Raigad	75	74	187	6	13	183	4	118	370	1030
6	Pune	210	144	1047	32	82	1504	43	90	3865	7017
7	Nashik	164	50	469	13	16	518	14	6	7302	8552
8	Nagpur	112	116	779	8	36	1928	2	6	3198	6185
9	Amravati	44	27	227	3	10	1288	1	-	2128	3728
10	Aurangabad	120	88	294	14	22	1081	5	7	4180	5811
11	Kolhapur	61	94	600	18	10	1303	1	5	6229	8321
	Total	**994**	**794**	**6748**	**127**	**244**	**9180**	**87**	**263**	**37374**	**55811**

Table 4: Industrial pollution status year 2004–05

Sr. No	Region	No.of pollution prone industries			No. of non-polluting Industries	Total Effluent generated M3/d	Quantity treated M3/d
		Water	Air	H.W			
1	Mumbai	558	689	218	4428	4723191	4723191
2	Navi - Mumbai	1211	634	517	934	28,000	28,000
3	Thane	915	535	613	4290	16879	16879
4	Kalyan	1013	1040	652	1093	103	103
5	Raigad	206	315	340	386	87000	87000
6	Pune	1148	1145	669	4634	77352	77352
7	Nashik	761	1289	451	6334	119262	119262
8	Nagpur	654	1222	273	4128	529101	529101
9	Amravati	339	1127	91	1980	1002243	1000637
10	Aurangabad	465	1010	238	4344	267670	267670
11	Kolhapur	734	1089	293	4323	71917	71917
	Total	**8004**	**10095**	**4355**	**36874**	**6922718**	**6921112**

Of the water pollution prone industries, 5,987 have adequate treatment facilities. Of air pollution-prone industries, 6,637 have adequate emission control facilities. There are 4,355 industries generating hazardous waste. Out of these, 2,960 have adequate treatment and disposal facilities (table 5).

Table 5: Status of treatment and disposal facilities provided by industries as on 31 March 2005

Sr.. No.	Region	No. of Industries having adequate treatment and disposal facilities			No. of industries having partial treatment and disposal facilities			No. of industries having no treatment and disposal facilities		
		Water	Air	Haz. waste	Water	Air	Haz. waste	Water	Air	Haz. waste
1	Mumbai	319	548	218	237	139	-	2	2	-
2	Navi - Mumbai	997	634	517	213	-	-	1	-	-
3	Thane	738	517	602	177	18	-	-	-	11
4	Kalyan	805	1040	561	208	-	-	-	-	91
5	Raigad	179	252	340	27	63	-	-	-	-
6	Pune	874	779	605	234	191	54	40	175	10
7	Nashik	676	1163	371	77	126	73	8	-	7
8	Nagpur	226	162	111	427	582	162	1	478	-
9	Amravati	154	256	21	176	829	12	9	42	58
10	Aurangabad	327	355	82	125	653	23	13	2	133
11	Kolhapur	692	931	188	42	158	105	-	-	-
	Total	**5987**	**6637**	**3616**	**1943**	**2759**	**429**	**74**	**699**	**310**

In order to control industrial pollution, the government has proposed several plans and policies. Under the Central Action Plan, 872 major polluting industries have been identified. Of these, 592 industries have taken necessary control measures while another 180 industries have been closed. Action has been taken against 23 defaulting units. The status of industries under the Central Action Plan is shown in table 6.

Table 6: Central Action Plan region wise status as on 31.3.05

Sr. No.	Region	Total No. of units	Total No. of units closed	Total No. of units complying with the standards	Total No. of units not complying with the standards
1	Mumbai	9	2	7	0
2	Navi-Mumbai	74	13	61	0
3	Thane	89	12	76	1
4	Kalyan	19	5	13	1
5	Raigad	76	4	44	28
6	Pune	80	10	46	24
7	Kolhapur	285	80	202	3
8	Nashik	36	9	26	1
9	Aurangabad	118	38	70	10
10	Nagpur	57	6	27	24
11	Amravati	29	1	20	8
	Total	**872**	**180**	**592**	**100**

Note: Actions are being taken against defaulting units

For clusters of small-scale industries, CETPs have been established at 22 industrial locations, covering a total of 4,034 units and having a capacity to treat an effluent volume of 164.35 MLD (*see section on CETPs below*).

6.2 Monitoring of industries

Industrial activities are regularly monitored by the Board. The Board conducts stack emission monitoring and also asks industries to conduct their own stack monitoring. Industries are also monitored regularly to assess the efficacy of pollution control measures. The monitoring of industries includes checking compliance of consent conditions and environmental standards. Untreated/treated samples, law evidence samples, hazardous waste samples, etc., are collected for analysis, so as to observe the concentration of pollutants. Adequacy of treatment plants and their operation are monitored. The ar-

rangements made for reuse, recycle of treated effluent and waste are also checked. Industries covered under cess are also monitored to assess the quantum of water consumption. The number of industries monitored and the samples collected during the year 2004–05 are presented in table 7:

Table 7: Industries monitored and samples taken

Sr. No.	Regional office	Visit for grant of consent renewal	Visit for checking compliance	Trade effluent samples (JVS)		Law evidence samples		Air samples		Hazardous waste samples
				UT	T	UT	T	UT	T	
1	Mumbai	145	644	14	955	0	0	609	90	173
2	Navi Mumbai	537	1,776	165	1,265	1	0	124	0	271
3	Raigad	199	1,027	136	1,049	0	2	135	189	503
4	Thane	613	1,025	175	1,128	1	6	119	77	195
5	Kalyan	264	888	71	912	1	2	124	155	97
6	Pune	581	1,577	466	1,362	1	1	532	504	63
7	Nashik	799	1,235	347	1,139	1	0	110	133	111
8	Aurangabad	366	987	421	812	0	0	280	110	203
9	Nagpur	498	756	451	750	0	0	278	233	359
10	Amravati	401	334	29	291	0	0	124	31	67
11	Kolhapur	438	956	151	780	4	2	119	137	117
	Total									

Untreated - UT; Treated - T

6.3 Ground water pollution

Ground water quality has been monitored at 55 locations in different areas of the state, covering Pune, Amravati, Thane, Aurangabad, Kolhapur, Raigad, Nagpur, Ratnagiri, Navi-Mumbai, etc. There is no fixed monitoring network for ground water. Analysis reports indicate that though pH values and DO levels are within the prescribed limits, total hardness, chlorides, sulphates and nitrates exceed the standards at a few locations.

Ground water pollution has been noticed in some locations of Aurangabad, Thane, Tarapur, Pune and Nagpur.

The total hardness was found to be very high at 'Robodi well' in Thane, 'Ranjangao village' in

Aurangabad, 'Dhok Sanghvi' in Pune and 'Padoli borewell' in Chandrapur.

Total hardness and chloride concentrations were found to have increased significantly at 27 locations. Sulphate concentrations exceeded the limit at twelve locations in the areas of Aurangabad, Amravati, Thane and Pune.

Ground water quality monitored in Kolhapur, Navi-Mumbai and Raigad regions was found to be within the prescribed limits (see table 8).

Table 8: Number of sampling locations and parameters

Region	No. of locations monitored	No. of locations where parameters exceeded
Aurangabad	2	2
Amaravati	6	4
Thane	22	12
Navi-Mumbai	1	-
Raigad	8	-
Pune	8	7
Kolhapur	5	-
Nagpur	3	2
Total	**55**	**27**

Action has been taken against industries causing ground water pollution. MIDC Kurkumbh has been directed to treat and dispose of the effluent at a safe place within the earmarked area of Roti village. Industries responsible for ground water pollution have also been directed to adopt reverse osmosis treatment technology. A proposal for a CETP to alleviate ground water pollution at MIDC Waluj is under active consideration of the Board.

As provided under section 33A of the Water Act 1974, proposed directions were issued to 646 plants and final directions to 749 plants to tackle water pollution arising from industrial activities. Under section 31A of the Air Act 1981, proposed directions were issued to 612 plants and final directions to 141 plants to tackle air pollution arising from industrial activities.

The following observations concerning the activities conducted by the Board based on its monitoring of industrial pollution are pertinent:

1) Due to the absence of an adequate effluent carrying system in areas under the MIDC, partially treated industrial effluent discharged from member industries of CETPs located in non-MIDC areas usually enters the local nalla. These nallas flow into the creeks, polluting them.

2) Bhiwandi Nizampur Municipal Corporation and adjoining areas accommodate a number of textile processing and yarn dyeing units. Though the industries have provided effluent treatment plants, they are not operated efficiently. The resulting discharge of inadequately treated effluent into the Kamavari creek has led to complaints of pollution from residents of the area. The Board has conducted an investigation and issued notices to several defaulting units.

6.4 Industrial estates and CETPs

The scheme of CETPs is being implemented for clusters of industries in MIDC areas as a part of the common environmental infrastructure for environment protection. Common effluent treatment plants (CETPs) are being promoted by the Central Government for clusters of industries for the management of industrial effluents, especially those generated by small and medium enterprises.

Industrial waste water collection and treatment is considered a negative externality by industries. In the case of small and medium enterprises (SMEs), the viability of pollution control systems is inhibited by technical and financial problems. However, the quantity of effluent although small is highly toxic and often non-biodegradable. The presence of persistent organic compounds in the waste water from SMEs manufacturing chemicals and petrochemicals is also of much concern. Therefore, CETPs have been promoted as a solution for the pollution problems caused by clusters of SMEs located in industrial estates.

Low pH effluent from Tarapur industrial estate

Broken effluent drain at Tarapur industrial estate

The setting up of the CETP is a collective action of the stakeholders to find an acceptable solution for pollution problems. Unfortunately, CETPs can neither be defined as a fully voluntary negotiation, nor a direct result of regulation by the MPCB. Instead, CETPs are the outcome of a cohesive response from industries under the influence of:

a) Financial assistance from the World Bank
b) Government acceptance of the scheme
c) Judicial pronouncements (in some cases)
d) Various factors specific to the area

CETPs are being constructed with 25% subsidy from the Central Government, 20% from the MIDC and 5% from MPCB. Fifteen per cent of the cost is contributed by the user industries, while 35% is a loan from financial institutions. The scheme was started in 1990. The first CETP in Maharashtra was set up at Tarapur. This was followed by CETPs at TTC., Navi Mumbai, Dombivali, Taloja, Mahad, Lote Parshuram, etc. However, for one reason or another, most of the CETPs were not complying with the standards in terms of effluent quality of treated waste water at the outlet. As a result, there were several complaints from residents of these areas and the issue became a common subject of questions and debates in the legislative assembly. (Status of CETPs is given in table 9.)

A concerted action was initiated by MPCB in July 2004 to secure compliance by the CETPs with the directions of the Supreme Court regarding the management of hazardous wastes. A series of actions was taken by the Board against the defaulters, intensive discussions and meetings were held with industry and time-bound action plans were prepared for each CETP. Work of strengthening and upgradation of treatment units at CETPs is now in progress. All CETPs are now complying with the primary standards and it is expected that by June 2005 all of them will be achieving the other standards prescribed by the Board as well.

Merely providing a CETP does not always ensure its correct and long-term operation. In most cases, there is a divergence between the initial proposal for a CETP and its actual commissioning. Factors considered at the time of planning a CETP project do not always hold good after its completion. In fact, CETPs have become a major source of water pollution and hazardous waste generation. Thus, while CETPs are widely promoted and subsidized, the desired results are not always seen in reality. This makes it all the more important to explore and analyse the various failures of CETPs.

In view of the above, the Board is planning to undertake a performance evaluation of CETPs as they exist today and also analyse the various reasons for their failure or success, as the case may be. This exercise should lead to certain recommendations for actions that could be taken up systematically over a period of time. Studies will be conducted for the evaluation of CETPs at Tarapur, Lote-Parshuram, Mahad, TTC, Taloja, Patalganga – Rasayani, Dombivali and Badlapur.

What follows is a more detailed report on each of the individual CETPs operating in the state designed to meet the needs of specific MIDC estates:

1. MIDC Area, Waluj, Dist. Aurangabad

The MIDC Area, Waluj, is located on the Aurangabad-Pune state highway at a distance of about 20 km from Aurangabad city. The total MIDC area is about 1520 hectares.

The principal industries are engineering (electroplating and surface treatment), chemical and bulk drugs, breweries, pharmaceuticals, etc. The composition of the industries in the industrial area is as follows:

a) Engineering (mechanical, electrical) – 35%

b) Chemical, pharmaceuticals and breweries – 21%

Table 9: Status of CETPs in Maharashtra as on 31.3.2005

Sr. No.	Name of CETP and Location	Status	Members	Capacity in MLD	Cost in lakhs	Subsidy released (lakhs) MoEF	MPCB	MIDC
1	Ambernath Chemical Zone	In Operation	34	0.25	40	10	Nil	7 .06
2	Ambernath (Additional) CETP	Not Commissioned	-	7.5	650	Nil	Nil	Nil
3	Chikhloli Morivali CETP Ambernath	Under Construction	140	0.8	130	Nil	Nil	Nil
4	CETP Badlapur	Partly in Operation	245	8	450	87.22	19.17	69.78
5	CETP Dombivali (Chemical)	In Operation	170	1.5	260	50	Nil	62.5
6	Dombivali (Textile)	In Operation	117	14	667	109.5	33.35	110.35
7	Saravali MIDC	Work not yet started	22	2.5	178.5	NA	NA	NA
8	Taloja Phase I	Operating	820	12.5	616	83.51	18.49	104
9	Taloja Phase II	Yet to commissioning	820	10	1200	NIL	NIL	NIL
10	CETP Rasayani	Under Stabilization	27	15	700	128	35	132
11	CETP RIA, ROHA	Under Stabilization	52	10	1250	108	57.44	197.26
12	CETP Mahad	Partly in Operation	157	7.5	744	100	30.97	110.37
13	CETP Sangli - Miraj	Ready for Commissioning	17	1.5	200	50	Nil	40
14	CETP Jaysingpur	Operational	20	0.8	35.70	16.34	8.17	8.19
15	CETP Lote Parshuram	In Operation	111	4.5	425	81	21.17	79.79
16	CETP Tarapur	In Operation	241	2	306	30	Nil	35
17	Solapur	Not Commissioned	15	1.5	250	NA	NA	21.11
18	Kurkumbh -MIDC	In Operation	66	1	120	NA	NA	NA
19	Ranjangaon	In Operation	3	11.5	300	NA	NA	NA
20	Buti Bori, Nagpur	Under Construction	-	5	700	NA	NA	35.38
21	CETP Khairane	Operating	480	12	400	50	-	50
22	CETP Additional Khairane	Under Construction	477	15	825	65	26.56	71.66
23	CETP Tarapur (Aditional)	Under Construction	995	25	1863.22	Nil	Nil	Nil

c) Metal and metal processing –11%

d) Construction product – 07%

e) Food and commodities – 12%

f) Printing, plastic, paper products and others –14%

There are approximately 1230 industries in total ranging from small to medium and large scale units. Around 250 of these units generate industrial effluent. Of these, 42 are large and medium and the balance are small scale units. The large and medium scale units are major contributors to waste water generation.

The total quantity of effluent generation from the units is about 9.5 MLD which includes 6.5 MLD industrial and 3 MLD domestic effluents. The break-up of the same is given below:

a) Effluent generation from MSI and LSI Units – 9.15 MLD

b) Effluent generation from Small Scale Units – 0.35 MLD

The SSI units thus contribute around 4% of the total waste water generated from the Waluj MIDC area.

Most of the large and medium scale industries have treatment facilities of their own which enable primary, secondary as well as tertiary treatment at a few places. All the industries in the area have been granted consent for use of their treated effluent for purposes of gardening or plantations on their own land. Though they have sufficient land for disposal of treated effluent for such purposes, in most cases this is not done in a scientific manner. Many of the small scale industries are engaged in carrying out electroplating jobs, surface treatment, phosphating, painting, etc., and do not have full-fledged effluent treatment and disposal facilities. Due to this, the substandard effluent generated from such industries is being disposed of outside the factory premises. The MIDC authorities have not provided any conveyance and collection system for such effluent.

There have been a number of complaints of surface and ground water contamination in and around MIDC Waluj area. The Board also received a complaint about such pollution from the local MLA of Gangapur in January 2005. The Board has since carried out a survey of the MIDC area, Waluj, in January and February 2005. During the survey, samples of wells and bore wells of Ranjangaon (Shenpunji) were collected and analyzed. The analysis reports indicate that the ground water of the area is indeed contaminated. The Board has recently awarded a project to NEERI, Nagpur, for carrying out a study of the problem and to suggest appropriate remedial measures including standards for BOD, COD and TDS for improving the present situation in the area.

The Board has issued directions under Section 33A of the Water Act to the Executive Engineer, MIDC Aurangabad on 23.1.2005 and directed him to prepare a concrete proposal for the collection of the total effluent from all the industries in the area. The MIDC has also been asked to prepare a proposal for the scientific disposal of treated effluent beyond the catchment area of the percolation tank located at Ranjangaon (Shenpunji). The MIDC was also directed to lift the total water in the percolation tank and have it cleaned before 30.4.2005. The Board has taken action against 41 industries in the MIDC Waluj area from January 2005 for not providing full-fledged treatment and disposal facilities by issuing various directions under the provisions of the Water Act. In addition, the Board has also issued show cause notices to 62 industries in the area. There was a question regarding water pollution in and around Waluj MIDC area in the Maharashtra assembly session in the month of March, 2005.

There are three associations of industries in the MIDC Waluj area. These are:

a) The Waluj Industries Association;

b) The Maharashtra Agriculture and Small Scale Industries Association; and,

c) The Chamber of Marathwada Industries and Agriculture.

The Waluj Industries Association is the leading association for the establishing of a CETP in Waluj MIDC Area. The MIDC has also decided to install a CETP in the area. The detailed project report for installation of a 10 MLD capacity CETP was submitted by the Waluj Industries Association to MIDC in June, 2004. The proposed cost of the project is Rs.16.25 crores. A tripartite agreement has been signed by the JVC (who is providing the necessary infrastructure) and the Waluj Industries Association, but it has not yet been signed by the MIDC authorities till date. All the major industries are ready to join the CETP.

2. MIDC Area, Chikalthana, Dist. Aurangabad

The MIDC Area, Chikalthana, is established on the banks of the river Sukna. As per the Board's River Water Classification, the river Sukna comes under the A-II class of water. The MIDC area is located adjacent to the Aurangabad-Jalna highway and Aurangabad city.

There are about 450 industries comprising small, medium and large scale units. Of these, about 30 generate effluent. Out of these, 15 are medium and large scale units and the remaining are small scale units. Most of the large and medium scale units are polluting in nature and are also major water consumers. They are also major contributors to waste water generation. There are mainly engineering (electroplating and surface treatment), chemical and bulk drugs, distilleries, pulp and paper, pharmaceuticals, etc., industries in the area.

The total quantity of effluent generation from units located in MIDC Chikalthana Area is about 2.0 MLD which includes 1.5 MLD industrial and 0.5 MLD domestic effluent. The break-up is given below:

a) Effluent generation from MSI and LSI units – 1.9 MLD.

b) Effluent generation from Small Scale units – 0.1 MLD.

Most of the large and medium scale industries have treatment facilities of their own which enable primary, secondary as well as tertiary treatment at a few places. All the industries in the area have been granted consent for use of their treated effluent for purposes of gardening or plantations on their own land. Though they have sufficient land for disposal of treated effluent for such purposes, in most cases this is not done in a scientific manner. Most of the small scale industries have not provided for full-fledged effluent treatment and disposal facilities and due to this, substandard effluent generated by these units is being disposed of outside the factory premises. The MIDC au-

Tarapur CETP

Dombivali phase I

thorities have not provided conveyance and collection systems for such effluent either. There are a number of complaints of surface and ground water pollution in and around the MIDC Chikalthana area and about fish mortality in the Sukna reservoir. The residential areas of Naregaon, Masnatpur, Ashoknagar, etc., have been developed on the periphery of the MIDC Chikalthana area.

The Board has issued various directions from January 2005 under the provisions of the Water Act to twelve units and notices to 15 industries located in MIDC Chikalthana.

There are two associations of industry in the MIDC Chikaltana Area. These are:

a) The Maharashtra Agriculture and Small Scale Industries Association.

b) The Chamber of Marathwada Industries and Agriculture.

Neither of the industry associations nor the MIDC authorities have taken any steps to work towards the establishment of a CETP in the Chikalthana MIDC area.

3. MIDC Tarapur

The Tarapur industrial area has a small capacity CETP of 2 MLD working since 1995. This CETP was very much inadequate to meet the total industrial effluent generation of about 25 MLD. This was resulting in regular discharge of fairly acidic and non-complying effluent in the local water bodies causing pollution.

The MPCB had been pursuing the provision of a new CETP from 1996. However, for some reason or the other, the work on the new CETP could not proceed. In June 2004, the Supreme Court Monitoring Committee during a visit to the MIDC area, on observing this extraordinary delay in the provision of a full capacity CETP in the industrial area resulting in the discharge of non-complying effluent into the environment, directed that stringent action be taken against the defaulting industries. The Board immediately carried out investigations and issued directions for closure of 75 industries. The industries then assured the SCMC that they would take collective responsibility for maintaining the environmental standards and also to provide a new CETP of 25 MLD capacity by 31.05.05.

Accordingly, the association has started collection of the capital contribution from the industries and the actual work on the CETP was started in November, 2004. The construction of the CETP is under progress and it is proposed that the CETP will be commissioned by December, 2005.

4. MIDC Ambad Industrial Area, Dist. Nashik

Nashik is a major industrial town situated in northern Maharashtra on the Mumbai-Agra national highway, approximately 180 km from Mumbai and 210 km from Pune. The town has a personality of its own due to its mythological, historical, social and cultural associations. The climatic conditions of Nashik are almost similar to those of Pune and Bangalore city and the city has a pleasant environment throughout the year.

Nashik district is a major industrial and agricultural centre known for its automobile and engineering industries, and industries processing sugar and grape. Due to its location and climatic advantages, the district has attracted many industries.

In addition to MIDC Satpur at Nashik, MIDC had developed 521 hectares of land at Ambad village known as Ambad MIDC located on NH No.3, i.e., the Mumbai-Agra National Highway, just about 5 to 6 kms from Nashik city.

MIDC Ambad area is mainly developed for engineering type of industries. Besides engineering, there are foundries, forging, electroplating, electronics, plastics, pharmaceuticals etc. The main industrial units are Glaxo Smithkline Pharmaceuticals Ltd., Crompton Greaves Ltd., Gabriel India Ltd., Kirloskar Oil Engines, Blue-Cross Ltd.,

Garware Polyesters, Hindustan Coca-cola and medium and small scale engineering sectors.

The total industries in existence are about 850 and the details are given below:

Engineering	:	450
Automobile	:	015
Pharmaceuticals	:	015
Foundries	:	010
Electrical, Electronics	:	025
Electroplating	:	025
Rolling mills	:	005
Plastic	:	055
Others	:	250

The above industries are basically water polluting industries. The approximate quantity of total effluent generated from the Ambad MIDC area is about 1280 CMD (domestic – 552 CMD; industrial – 728 CMD). From the total effluent generation, medium and large scale industries are generating 1180 CMD of effluent and the remaining comes from the small scale sector. Thus only about 8% of effluent is generated from the small scale units. In the area, all large and medium scale industries have provided full-fledged effluent treatment arrangements on their own and the treated effluent is either recycled, or used in the premises for gardening or plantation purposes.

The main water pollution problems are due to electroplating units which are about 40 to 50. All these electroplating units are engaged in job work for other industries and most of them only have consent under the Water Act. These industries earlier receive their consent under the green category for engineering activity. Later, however, they switched over to electroplating activity. The identification of defaulting units is under process and action is being taken against them as and when they are noticed by the Board. Since the units in the electroplating sector are of very small size, they face problems of operation and maintenance of

Roha CETP

Patalganga primary CETP

their effluent treatment arrangements, resulting in water pollution problems in the area.

As the MIDC has developed the area for engineering industries, it has not provided an underground drainage system and hence treated or partly treated effluent finds its way towards low lying areas, creating places for the mosquito breeding and other activities. Industrial units are regularly requesting MIDC authorities to provide arrangements for the effluent generated from small scale industries. This issue is raised in NIMA meetings regularly and was also discussed during a meeting with the Industries Minister during a recent visit to Nashik.

On request from industries in this area, the Board has already taken up the matter of pollution control facilities with MIDC Nashik. The Board has officially communicated to the MIDC that if the MIDC and the industry association are going for construction of a CETP in the industrial area principally for the small scale units, it will provide necessary assistance in this regard. Problems of disposal of hazardous waste have also been highlighted by the industries association during various meeting. As the quantity of hazardous waste generation is very small, the Board has suggested that industries in the area go for a common collection centre and not for the development of a common treatment and disposal facility which would be economically unviable for the area..

In conclusion, the following infrastructure and facilities are required to be established for MIDC Ambad:

- Provisions for an underground drainage system for the MIDC areas in Nashik
- Provision of a CETP for the small scale industries in the area
- A common hazardous waste collection centre for the area.
- Green development of the open spaces of the area.

5. MIDC, Lote Parshuram

Lote Parshuram, MIDC, was established in the year 1982 for chemical industries. Gradually, due to increased industrial growth, pollution related problems have been increasing day by day. There are 155 industries in this area which include red/LSI-11, red/MSI-22, and red/SSI-62. Twenty industries belong to SSI/orange category and 40 belong to green/SSI. About 40 industries are closed. Approximately 93 industries (major industries include five pesticide, four bulk drug, seven dyes and intermediates and four paint manufacturing units) contribute the major effluent generation in this area. By the end of 2001, they had individual effluent treatment (full/partial) facilities from where they disposed of their effluent into the MIDC gutter/sewerage system.

Increased pollution problems from SSI and MSI Red industries made MPCB promote a CETP in the area. The Board, in association with the MIDC, made various efforts to facilitate construction and commissioning of the CETP in the year 2001. However, the CETP was not adequate and stable enough to treat incoming effluent load to achieve standards laid down under the provisions of the EPA Rules, 1986. Therefore, the CETP association was directed to improve O&M with necessary upgradation in the year 2005.

Inadequate treatment and disposal system of the industries and poor performance of the CETP led to serious pollution problems after 2003. These finally led to a fish kill during October-November, 2003. Thereafter the Board conducted a review of all its actions and imposed fresh conditions for proper upgradation and improvement in O&M on each of the individual members of the CETP having individual and joint responsibilities to treat their effluents to the environmental standards. The Board had given directions to the CETP association to improve the operation and maintenance of the plant and also to increase its capacity. The Board

took bank guarantees of Rs.100,000 from LSI, Rs.50,000 from MSI and Rs.25,000 from SSI from December 2004 to January 2005 to ensure adequate effluent treatment at each industry level as well as CETP level.

The Hon'ble Environment Minister, Shri Ganeshji Naik, along with Dr. D. B. Boralkar of the Board together with senior officers visited Lote MIDC area and the CETP in the month of March 2005 in view of the assurances taken. Meetings were taken with all concerned representatives, industries associations, CETP associations, local complainants and the Dabhol Khadi Sangharsh Samiti. Dr. Boralkar held discussions with the officers concerned and asked for extensive surveys of the area.

The Board thereafter carried out an extensive survey in March 2005, for identifying defaulting industries that were responsible for destabilising the CETP. Accordingly, actions are being taken against these industries by giving them closure notice.

6. MIDC, Roha

MPCB has issued proposed directions under section 33A of the Water Act to 13 defaulting industries in MIDC, Roha. The CETP was set up in Roha as a result of proactive actions taken by the Board.

The effluent collection sump of MIDC, Dhatav, Roha, was totally filled with sludge. Constant persuasion and prodding actions were taken by the Board to ensure the sump was de-sludged and handed back to the CETP in March, 2005.

7. MIDC, Mahad

In MIDC, Mahad, the third phase of the CETP was commissioned after proactive efforts of the Board. The Board took a bank guarantee of Rs.25 lakhs from the CETP association, Mahad, against stabilization of the CETP. Proposed directions were issued to 18 defaulting industries. Closure directions were issued to five industries.

Badlapur CETP

Taloja CETP

The Board ensured that the lifting of hazardous waste from the MIDC area was carried out by the MIDC authorities as per the directions of the SCMC. The entire hazardous waste from the MIDC area was eventually lifted to Mumbai Waste Management Ltd (MWML) at Taloja by the MIDC.

MIDC also removed 3,157 tonnes of sludge from the collection sump of the Mahad CETP to MWML. MIDC authorities also replaced the 12 km old disposal pipeline up to Muthawale with HDPE and the 3 km effluent collection pipeline after constant persuasion from the MPCB.

8. MIDC, Kalmeshwar

MIDC Kalmeshwar is located on the Nagpur-Katol state highway. There are 56 industrial units located in this area, of which 14 industries are air polluting while seven generate effluent. The total effluent generation in Kalmeshwar MIDC is 364 CMD. Major polluting industries are steel, rolling mills, mineral processing, etc.

A survey was conducted to identify defaulting units in January, 2005. On the findings of the survey, directions were issued to 46 industries in March, 2005.

9. MIDC, Butibori

There are 289 industrial units located in MIDC, Butibori. Of these, a total of 65 units are generating effluent. Total effluent generated in the MIDC area is 4.5 MLD. Thirty units in the area are air polluting.

The Board issued directions to three industries for air pollution control. Three units were asked to submit a bank guarantee. Rs.2 lakhs were collected from the industries on this account.

10. MIDC, Hingna

Approximately 900 industrial units are located in MIDC Hingna. There are 65 effluent discharging units and 50 air polluting units. Total industrial effluent generated at the MIDC area is one MLD.

The Board has issued directions to 198 units. Of these, 117 were asked to submit a bank guarantee. The Board received bank guarantees of Rs.10.8 lakhs from 33 industries.

11. MIDCs, Thane Region

There are two industrial estates in Thane-I region, namely, Wagale industrial estate and Dewan and Sons industrial estate. There are 1257 industrial units, out of which 17 are large scale, 30 are medium scale and 1210 small scale industries.

Vasai taluka and Thane taluka industrial estates are located in Thane-II region. There are 1279 small scale industries, 4 medium and 4 large scale industries.

Palghar taluka industrial estate is located in Tarapur-I region. There are 2034 industries established in this area, out of which 1956 are small scale industries.

Tarapur-II region MIDC covers Dahanu industrial estate, Talasari, Jawahar, Vikramgad and Mokhada, consisting of total 569 units, of which 562 are small-scale industries.

The Board has taken proactive part in cleaning the Paneri nalla at Palghar with bioremediation techniques from industrial associations.

At Tarapur MIDC, hazardous waste was dumped on a vacant plot of MIDC. The Board has provided guidelines and directions to MIDC authorities for the effective encapsulation of the hazardous waste dump site in a scientific manner to avoid the leaching of pollutants into the ground water.

The Board has issued directions to 28 units and closure notices have been issued to 91 industrial units.

12. MIDC, Dombivali

In Dombivali MIDC, major industries are textile and dyeing. The Board has directed MIDC to upgrade the existing CETP by addition of aerators as well as increase its capacity to handle effluent load from Dombivali MIDC Phase I and II.

The Board has obtained a bank guaranty of Rs.25 lakhs from the textile and chemical units concerned.

Approximately 1400 tonnes of illegally dumped hazardous waste was lifted from MIDC Dombivali by MIDC authorities to CHWTSDF, Taloja, as per the directions given by the SCMC and the Board.

The Board issued proposed directions to 29 defaulting industrial units under Section 33A of the Water Act. Closure notices were issued to 21 industries. Bank guarantees to the tune of Rs.7.65 lakhs were obtained from the industries. The Board eventually encashed bank guarantees of Rs.1.75 lakhs due to unsatisfactory performance..

There are two CETPs: one (chemical) and another (textile) with capacities of 1.5 and 14 MLD respectively. The treated effluent of the textile CETP was not meeting the standards and substandard effluent was being discharged into the environment. Hence the Board issued directions under Section 33 A of the Water Act to 287 industries to stop their manufacturing activity for 48 hours in December 2004. Subsequently, after getting an assurance from the CETP managements that they would take steps to upgrade the existing ETP, the Board gave directions to upgrade the existing textile CETP and to enhance the capacity of the unit to take the entire effluent load of Dombivali MIDC area Phase-I and Phase II. The Board obtained a bank guarantee of Rs.25 lakhs from both the CETPs, i.e., Rs.15 lakhs from the textile CETP and Rs.10 lakhs from the chemical CETP.

Accordingly, the textile CETP upgraded the existing facility by replacing eight submerged aerators with surface aerators of bioreactors. All four modules of upgraded bioreactors were completed.

A task force committee was formed to execute the work of augmentation of the existing textile CETP from 14 MLD to 16 MLD. Work is in progress.

Mahad primary CETP

TTC CETP

A major chemical industry was found discharging untreated effluent carrying hazardous waste (having COD of 31200 mg/l and SS – 220 mg/l) during the night vigilance of the regional officer and sub-regional officer, Kalyan. The Board in the circumstances issued show cause notice. After personal hearing and assurance given by the industry to upgrade its existing ETP, the show cause notice was withdrawn by the Board subject to the vital condition that the unit would contribute an amount of Rs.25 lakhs to upgrade the CETP and submit a bank guarantee of Rs.2 lakhs. Accordingly, the concerned industry paid Rs.25 lakhs for upgradation of the CETP and also submitted Rs.2 lakhs as bank guarantee to the Board.

Approximately 1400 tonnes of illegally dumped hazardous waste in Dombivli MIDC area have been lifted by the MIDC authorities and sent to CHWTSDF, Taloja.

The field officer, sub-regional officer and the regional officer of the regional office, Kalyan, are carrying out night vigilance in the Dombivli MIDC area on the pattern of five, three and two days a week respectively.

During the past year alone, the following actions have been taken against units found violating norms during the visits:

- Proposed directions under Section 33A of the Water Act, 1974 issued to the concerned industries;
- Closure directions issued to the industries – 21;
- Bank guarantee encashed from the industries – Rs.1,75,000;
- Bank guarantee obtained from the industries – Rs.7,65,000.

13. MIDC, TTC, Navi Mumbai region

TTC industrial area is the largest chemical zone in Asia. In this industrial area, there are large petrochemical, bulk drug, pesticides, pharmaceutical and other chemical units. There are 2800 industries in MIDC, TTC area. Out of these, 550 units are user members of the CETP. The CETP at TTC is of 12 MLD capacity and was commissioned in 1997. The effluent is collected through closed pipeline. CETP consist of primary and secondary treatment. The treated effluent from the CETP is discharged through a closed pipeline of 7.7 kms into Thane creek. An additional CETP of 15 MLD capacity will be constructed and commissioned shortly. The Board has issued proposed directions to the 60 defaulting units in the area and closure directions to seven units for non-compliance of effluent discharge standards. MPCB has permitted the CETP to collect effluent by tankers from those areas where MIDC has not provided a drainage pipeline.

14. MIDC, Patalganga, Raigad region

There are about 29 industries, out of which 22 are in operation. At present, about 13 MLD of effluent are generated. In this area, a CETP of 15 MLD capacity has been provided, which was commissioned in February, 2004. The effluent is collected through an underground, closed pipeline. The treated effluent from the CETP is discharged at Kharpada in the saline water zone through a discharge pipeline. The Board has given show cause notices to five defaulting industrial units and directions under section 33A to five units in this area. The effluent from units outside the MIDC area is also brought to this CETP for treatment, so as to utilize the installed capacity and good results are achieved. The CETP has also proposed to recycle treated effluent water by providing for its tertiary treatment and selling it to user member units.

15. MIDCs, Pune

There are 10 MIDC areas in Pune region. Of the 3600 industries located in this region, 1650 industries are in Satara and 1755 in Solapur region. In MIDC Kurkumbh, engineering and chemical

industries are established. The Board has given show cause notices to 52 defaulting industrial units in this area.

Under the Pune Action Plan, 166 industrial units were given directions whereas 18 industrial units were given directions under the Solapur Action Plan.

16. MIDCs, Amaravati region

At Yawatmal MIDC and Vani MIDC, two proposed directions were issued to defaulting industries. At Akola MIDC, five proposed directions were issued to industrial units and a bank guarantee of Rs.90,000 was collected from three industries. A closure notice was given to one industry in Akola MIDC region.

At Khamgaon MIDC, one proposed direction was issued and a bank guarantee of Rs.50,000 was collected .

6.5 Other industrial sectors

1. Distilleries

There are 64 distillery units in Maharashtra of which 33 have bio-methanisation plants for primary treatment. Out of these 33 units, 24 dispose of the effluent from the biogas plant by aerobic composting, five units have aerobic secondary treatment and final disposal by ferti-irrigation, three units have installed reverse osmosis (RO) units for concentrating the biogas plant effluent and further disposal of RO concentrate by aerobic composting. One unit is disposing of biogas effluent by solar evaporation.

Another 25 units have adopted re-boilers for concentration of spent wash and aerobic composting for treatment and disposal of effluent. Six distilleries are closed due to financial and administrative problems. Solar evaporation is not allowed as a method of disposal of raw or treated spent wash. Availability of press mud, dilution water and difficulty in operation during rainy season are the constraints in the treatment and dis-

'This industry has received an award for pollution control in the last week itself!'

posal of spent wash by composting and ferti-irrigation. The adoption of RO plants for reduction in volume of spent wash and restrictions on operation during the rainy season are being proposed in order to comply with the requirements of the charter on Corporate Responsibility for Environment Protection (CREP).

Table 10: Distilleries: Status of compliance with environmental standards

Sr. No.	Treatment facility	No. of units	Grade
1	Primary treatment (biogas) only	Nil	Very bad
2	Biogas + solar evaporation	1	Bad
3	Primary treatment (biogas) and aerobic composting	24	Good
4	Biogas + aerobic secondary treatment + ferti-irrigation	5	Very good
5	Biogas + RO + aerobic composting	3	Best

2. Paper and pulp

The black liquor generated from agro pulping has very high pollution potential. A caustic recovery plant can effectively handle black liquor in an environmentally sound manner. However, the minimum capacity of a pulping section for adopting a caustic recovery plant is around 100 T/day. Since pulping units are mostly with a capacity of less than 100 T/day, they are not able to adopt caustic recovery plants.

All paper units in the state except M/s Ballarpur Industries, Ballarpur and Simplex Mills, Gondia have switched over to waste paper or ready-made pulp as raw material.

3. Refineries and petrochemical units

The Board has monitored refineries and petrochemical industries for CREP compliance. The Central Pollution Control Board has issued new standards and guidelines for the refinery industry sector. The Board has discussed these with the refinery industries and experts in the area. The Board has also participated in the core meeting organized by CPCB for finalization of standard norms for the refinery sector.

In Mumbai city, the air pollution problem was very severe in Chembur area. There are four giant units located in the area, namely M/s. Rashtriya Chemicals & Fertilizers Ltd (RCF Ltd.); M/s. Hindustan Petroleum Corporation Ltd (HPCL); M/s. Bharat Petroleum Corporation Ltd (BPCL); and M/s. Tata Power Ltd.

HPCL is using LSHS, liquid gas and liquid naphtha as fuel. Now BPCL has proposed to install a flue gas desulphurisation unit (FGD) to remove sulphur compounds and catalyst particles. The company is executing the 'Green Fuels and Emission Control Projects' (GFEC) in order to produce eco-friendly automobile fuels and to further upgrade their quality, thereby improving the quality of ambient air nationwide. HPCL has three ambient air monitoring stations to monitor pollutants like SO_2, NO_X, SPM, HC and CO. Air quality is monitored regularly. Continuous stack monitoring system (CSMS) is also installed on 25 major stacks and air quality through the stack is also monitored regularly.

New technologies are transforming sugar factory effluent into good compost

BPCL has commissioned low noise/low NO_X burners at their FCCU charge heater to control noise as well as air pollution. The company has installed diesel hydro-desulphurisation facilities for production of low (0.05% wt.) sulphur diesel. Air quality is monitored regularly at three continuous ambient air quality monitoring stations and five stack air quality monitoring stations. To control/ stop lead pollution in ambient air fully from motor spirit, BPCL has installed a methyl tertiary butyl ether (MTBE) unit for manufacture of oxygenates to replace tetra ethyl lead (TEL).

4. Dyes and dye intermediates

The Board organized a meeting with industry representatives for compliance with the CREP guidelines. The number of industries identified by the Board for CREP in the state is 102. Compliance of dyes and dye intermediates industrial sector was submitted to the CPCB.

The industries manufacturing pigments were not included in 'dyes and dye intermediates' sector. The Board has now taken a decision to include these industries in dyes and dye intermediates sector from March, 2005.

5. Fertilisers

There are a total of 14 fertilizer industries in the state. Compliance of these industries under the CREP programme is reported to CPCB. In Maharashtra, all fertilizer units are complying with the CREP programme.

Rashtriya Chemicals & Fertilizers Ltd. (RCF Ltd.), located at Chembur area, changed over to associated gas from LSHD for controlling the air pollution in the Chembur area. RCF has also installed dust scrubbing and fume scrubbers for the Suphala plant, concentrated nitric acid tail gas scrubber, start-up scrubbers in the sulphuric acid plant and bag filters to control air pollution. Installation of an additional scrubber in the ammonium nitro phosphate plant reduced ammonia pollution in ambient air. The company has installed a continuous stripper in the new ammonia plant and a de-dusting unit in the Urea-V plant.

6. Bulk drugs

There are 121 bulk drug units in the state identified by the Board and monitored for CREP compliance. Mycelium handling is a major problem for bulk drug units using the fermentation process.

One industry at Nashik installed a reverse osmosis (RO) unit and recycled the treated water. Reverse osmosis is an advanced tertiary treatment technology to reduce total dissolved solids from water. Installation of the unit has minimized the waste water quantity and the treated water is recycled back to the process. Industry has also segregated the wastewater and thus minimized the waste in the process.

Similarly, Sun Pharmaceuticals, Ahmednagar, has done waste minimization by segregating the wastewater. Segregation of concentrated streams and treating them separately reduces the waste quantity by reusing the water.

7. State of the Air

AIR POLLUTION HAS BECOME a growing and severe problem, particularly in urban areas. India has many metropolitan cities, a large number of urban areas and a vast rural region. There are several sources of air pollution such as power plants, industrial stacks, oil refineries, vehicular traffic, fossil fuel burning and many other anthropogenic activities in urban areas. In the rural sector, the major sources of air pollution are domestic fuel burning (chullas) and agricultural emissions such as pollen, biomass burning, etc. Naturally occurring processes like dust storms also add significantly to air pollution.

In urban areas, vehicles and industries are the two principal causes of air pollution, contributing 60% and 12% of the pollution load respectively. Other contributing factors are emissions from boiler stacks, coal mining, lime kilns, brick kilns, construction activities, stone crushers, burning of solid wastes, use of impure fuel and emissions from chemical, rubber, textile, iron and steel, cement, fertilizer and leather industries.

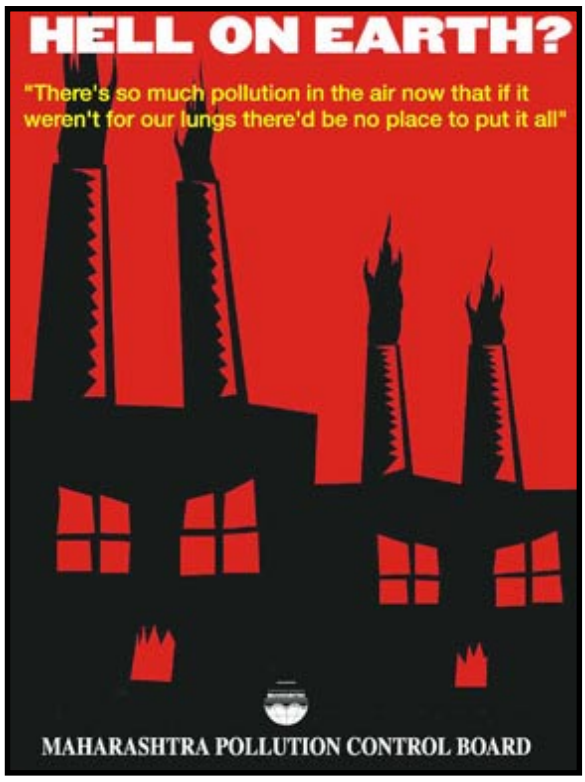
7.1 Monitoring and Control Measures

To improve air quality and to take preventive and control measures for air pollution, scientific data relating to air quality is essential. The state of Maharashtra has been declared as 'Air Pollution Control Area' in November 1995. Thereafter, it has become mandatory to monitor the ambient air quality in the state. Accordingly, ambient air quality monitoring is conducted through industries, local bodies and educational and research institutions.

Ambient air quality standards have been notified by the Ministry of Environment and Forests to safeguard the public from most commonly occurring and damaging pollutants, like sulphur dioxide (SO_2), oxides of nitrogen (NO_X), carbon monoxide (CO), lead (Pb), suspended particulate matter (SPM) and ground level ozone (O_3).

As an integral part of the air pollution control programme, CPCB has established a national net-

MPCB posters against air pollution



work of ambient air quality monitoring stations. This nationwide effort called the National Ambient Air Quality Monitoring (NAAQM) programme was launched in 1984 with a network of 28 monitoring stations covering seven cities. Over the years, the number of stations has increased and presently, the network comprises around 290 stations spread over 92 cities and towns distributed over 24 states and four UTs. In addition to the NAAQM, operated by the CPCB, MPCB has set up ambient air quality monitoring stations under its own initiative known as the State Air Monitoring programme (SAMP).

To assess the ambient air quality, mobile vans with sophisticated instruments and computerized data recording systems were procured by the Board. These vans have been allotted to seven regional offices. The Board's central laboratory as well as its regional laboratories are being strengthened to meet the requirement of analysis of air samples. In Mumbai and Thane cities, the concerned Municipal Corporations monitor the ambient air quality. Mumbai Municipal Corporation monitors air quality through a network of nine stations in the city. Under the NAAQM project sponsored by the CPCB, there are 28 fixed stations to assess ambient air quality in the state. Pune, Aurangabad, Nashik, Nagpur, Chandrapur, Solapur, Dombivli and Ambernath cities have been covered under this project. The Board monitors Chandrapur and Dombivli-Ambernath areas under the project, while stations in other cities are operated by local educational institutions. The stations sanctioned for Mumbai and Thane cities under this project are being monitored by NEERI and the Thane Municipal Corporation respectively. These stations are monitored twice in a week. Some major industries have also installed their own continuous air quality monitoring systems.

The details of the monitoring stations under the NAAQM project are given in table 1:

MPCB posters against air pollution

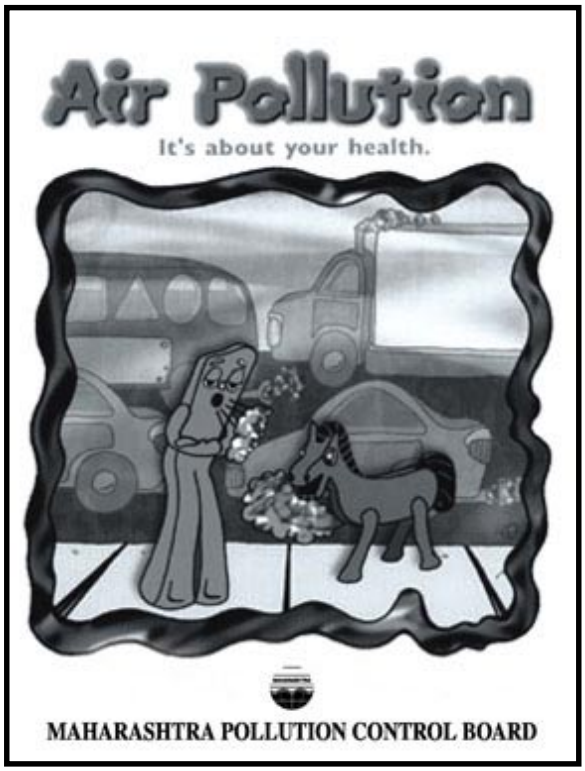


Table 1: Monitoring stations under the NAAQM project

Sr.no.	Name of the city	No. of stations	Operating agency
1	Mumbai	3	National Environmental Engineering Research Institute
2	Pune	3	University of Pune
3	Nashik	3	K.T.H.M. College, Nashik
4	Nagpur	6	V.R.C.E. Nagpur
5	Chandrapur	3	MPCB, Chandrapur
6	Solapur	2	Walchand Institute of Technology, Solapur
7	Kalyan	2	MPCB, Kalyan
8	Aurangabad	3	MPCB
9	Thane	3	Thane Municipal Corporation

Air quality is being monitored at 26 locations in Maharashtra under the National Air Monitoring Programme (NAMP) coordinated by the CPCB. The major cities covered under the programme are Mumbai, Thane, Nashik, Nagpur, Chandrapur, Solapur, Kalyan and Pune. Air quality monitoring locations are selected based on prevailing land-use pattern in areas classified as industrial, residential, commercial and sensitive. Air pollutant parameters monitored regularly at all the sites are respirable suspended particulate matter (RSPM), SPM, SO_2 and NO_X. SPM is monitored 8 hourly for 24 hours, whereas SO_2 and NO_X are monitored 4 hourly for 24 hours. Monitoring frequency is twice a week. Thus, in a year, 104 (days) observations are available. The overall monitoring results for the year reveal that out of 73 locations, the RSPM concentration exceeds the limit at 33 locations, SPM at 20, and NO_X and SO_2 at six locations each. The highest concentrations of pollutants has been noticed in the Tarapur industrial area, and in the residential areas of Ulhasnagar and Amravati. During the year, the levels of monitored pollutants were well within the standards at MIDC, Taloja.

In Mumbai, the Board monitors air quality at two traffic junctions: Sion and Mulund. The Board has been monitoring these stations over the last five years. The comparison of analytical data generated over the last two years shows that there is

no reduction in the concentration of SO_2. The NO_X levels observed during the year were within the prescribed limits at Mulund junction, but exceeded the limit at Sion junction in the months of April, May, July, November and December 2004. The highest concentrations of NO_X – 253 μg/m^3 and 218.7 μg/m^3 – were recorded at Sion in April and May 2004 respectively. The RPM levels were found beyond the prescribed limits throughout the year at Sion, with the highest recorded value at 406.5 μg/m^3 in May 2004. At Mulund, the observed RPM levels exceeded the standard in May and December 2004 only. However, when compared with the previous year's results, there has been a reduction in RPM levels at both the junctions for the remaining months. The graphs showing levels of pollutants observed during the year are presented in figures 1 and 2.

AAQM conducted in Raigad region reveals that air quality parameters met the prescribed standards at all locations, except for MIDC Roha and Mahad. When compared with the previous year, a rise in concentration of SPM and RPM was noticed in the present year. At MIDC Roha, the RPM was found to exceed the limit, while the SO_2 level exceeded the limit at MIDC Mahad.

Air monitoring station, Pune

In Navi-Mumbai, maximum air quality deterioration was observed at Turbhe Naka where the SPM concentration recorded was as high as 789 $\mu g/m^3$. Polluted ambient air levels were also observed at STP Koparkhairne.

As regards Nagpur and Amravati regions, one industrial, three commercial and four residential locations were monitored. All the monitored residential locations in Amravati showed levels of SPM and RPM which exceeded the standards. The commercial locations monitored in Chandrapur city also exhibited over-the-limit levels for RPM and SPM.

In Kalyan region, SO_2 levels were found to exceed the standard in the Badlapur industrial area. The monitored residential area in Ulhasnagar also had higher than the prescribed NO_X level. The SPM concentration recorded at Ulhasnagar residential area was as high as 747 $\mu g/m^3$. It was noted that the RPM values exceeded the limit at 70% of the monitored locations. In Thane region, most of the locations monitored were industrial. The pollutants at a few industrial locations were found to have exceeded the prescribed limits. At a commercial area in Bhayandar, the recorded SO_2 and RPM levels were beyond the allowed limits.

Air monitoring station, Kolhapur

Fig.1: AAQ monitored at Sion Junction during the year 2004-05

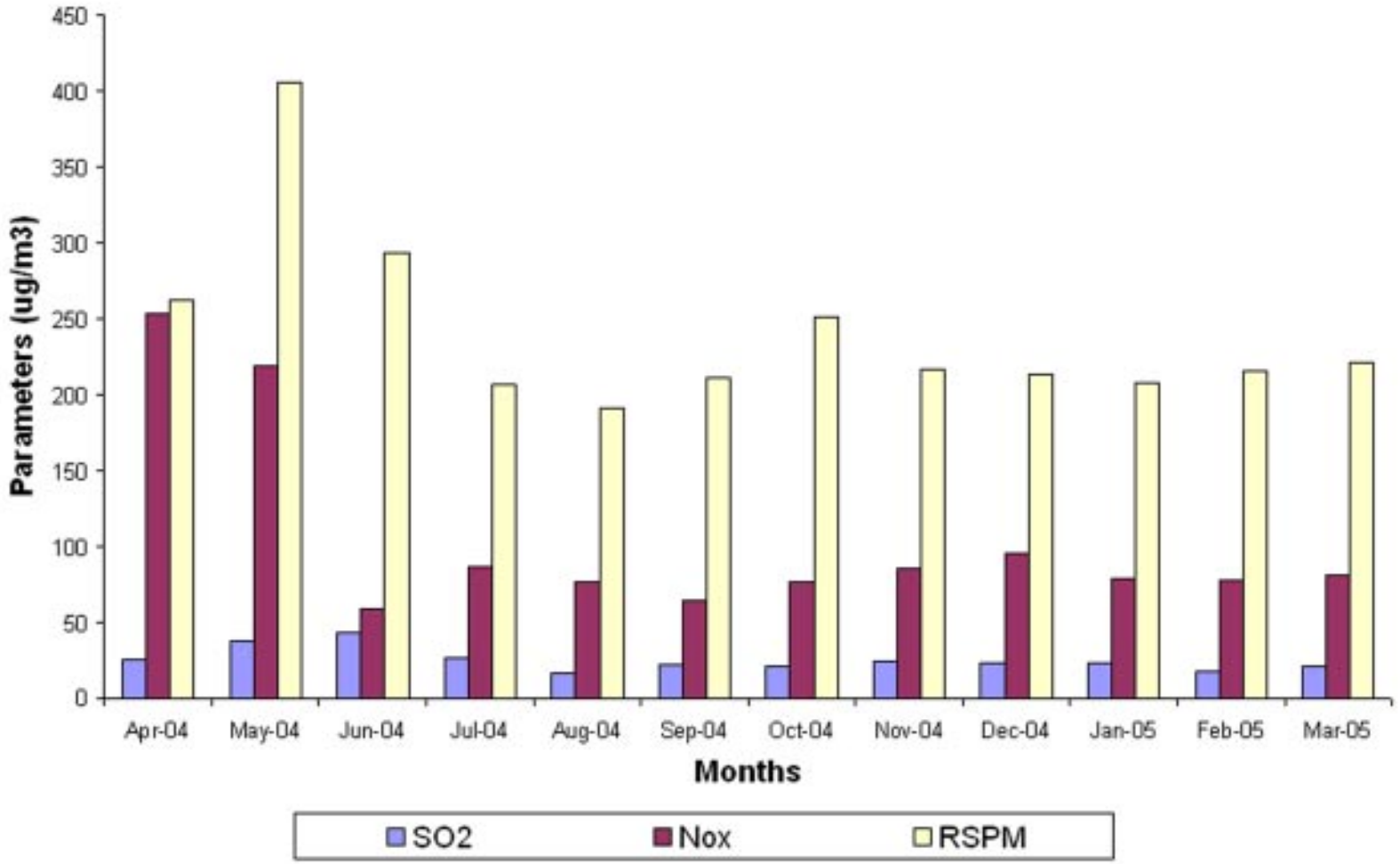
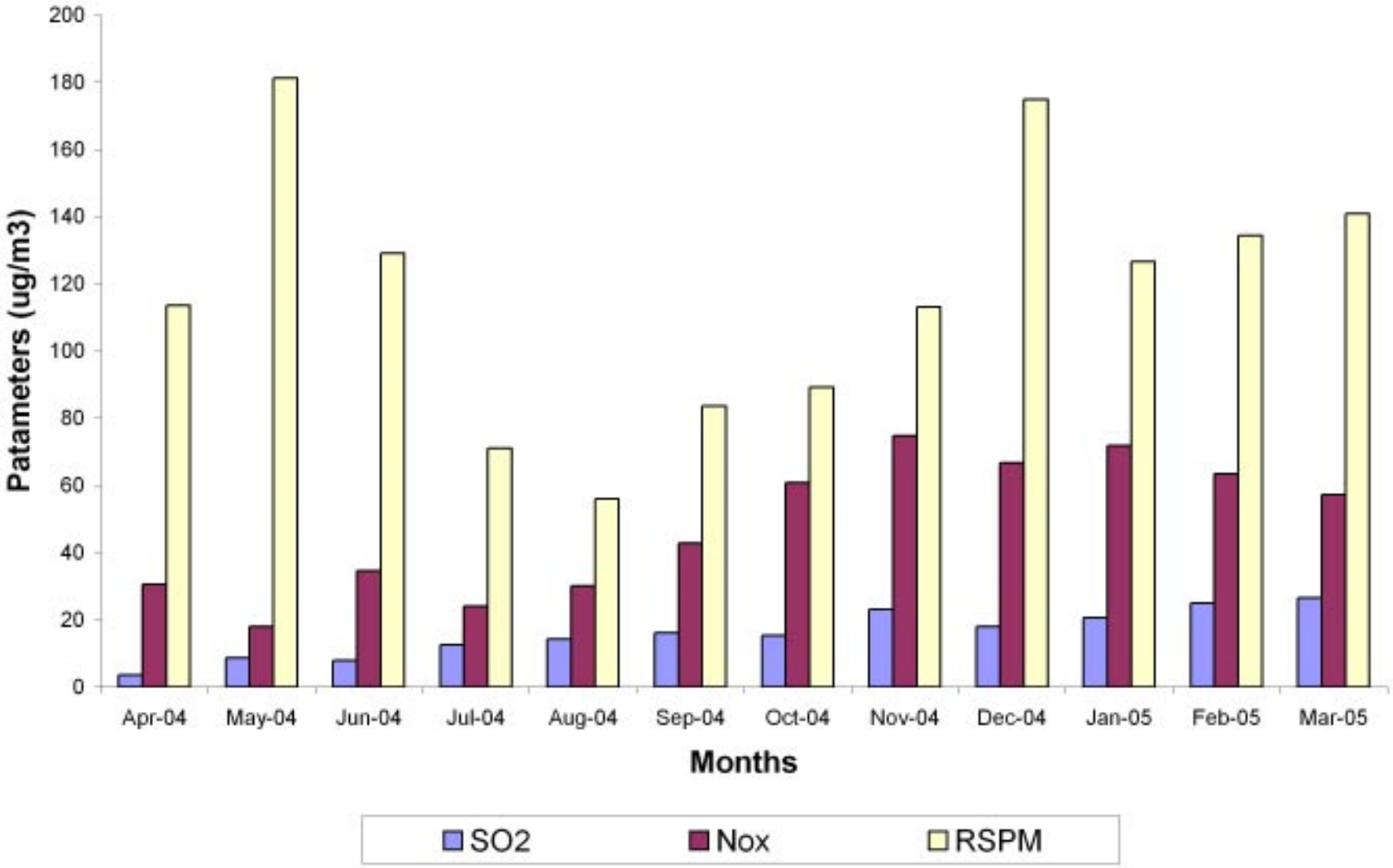


Fig.2: AAQ monitored at Mulund Junction during the year 2004-05



Ambient air quality monitoring in Kolhapur region revealed that the air quality had deteriorated at MIDC Lote and MIDC Sangli during the year. When compared with the previous year's results, a reduction in SPM levels was observed in all the locations, except Sangli and Lote.

Cities in the Pune region have been covered under a separate action plan for the control of air pollution. Monitoring results of this region obtained for the year under report indicate that the values of SPM and RPM exceeded the limit at most of the locations classified as commercial or residential. The values of NO_X were reduced when compared with those of the previous years. The highest concentrations of SPM (713 $\mu g/m^3$) and RSPM (228 $\mu g/m^3$) were recorded at Powai naka in Satara and Ashok chowk in Solapur respectively. At Karve road (a residential area in Pune city), the RPM levels were found to have exceeded the limit.

The analyses of ambient air in Aurangabad and Nashik regions indicate that the RPM levels exceeded the limit at commercial/residential locations in Latur, Nanded and Nashik. The air quality at Parli TPS was found satisfactory during the year.

Table 2 provides details of ambient air quality monitoring under the NAAQM project for the period April 2004 – March 2005.

For Mumbai, Pune and Solapur cities, action plans have been prepared for control of air pollution as directed by the Supreme Court. The Board has monitored ambient air quality through 70 locations established during the reporting year. Out of these 45 were industrial, eight were residential and the remaining 17 were commercial locations. The region-wise break-up of these stations is given in table 3.

MPCB posters against air pollution

Table 2: Ambient air quality monitored under NAAQM project during the period April 2004 to March 2005

Sr. No.	Monitoring stations	Parameters	Min.	Max.	Annual average
1	**Dhobi Ghat, Kopri** (R)	SO_2	5.9	10.67	7.62
	Thane	NO_X	9.33	14.5	11.40
		RPM	44.3	47	45.53
2	**Shahu Mkt., Naupada** (C)	SO_2	6.6	9.4	7.95
	Thane	NO_X	8.43	16.25	12.19
		RPM	44	47.75	46.35
3	**Balkum and Kolshet** (I)	SO_2	6.75	10.83	9.09
	Thane	NO_X	10.42	113.15	25.47
		RPM	47.74	49.13	48.42
4	**Govt. Polytechnic, Sadar** (C)	SO_2	7.13	9.89	8.55
	Nagpur	NO_X	12.63	39	20.46
		RPM	22.5	81.56	44.04
5	**Institution of Engineers** (R)	SO_2	7.75	8.67	8.29
	North Ambazari Rd, Nagpur	NO_X	14.25	42.44	20.43
		RPM	32.13	83	51.03
6	**MIDC Office** (I)	SO_2	8.13	10.13	9.08
	Hingna Road, Nagpur	NO_X	15	42.44	22.17
		RPM	31.88	82.5	50.57
7	**WIT Campus, Ashok Chowk** (I)	SO_2	17.13	19.11	18.24
	Solapur	NO_X	38.67	41.67	40.11
		RPM	123.13	151.13	137.95
8	**Chitale Clinic, Saat Rasta** (R)	SO_2	17.75	19.56	18.52
	Solapur	NO_X	38.75	42.22	40.30
		RPM	124.25	162.13	144.32
9	**Kalbadevi** (C)	SO_2	6	7	6.33
	Mumbai	NO_X	9	27	18.92
		RPM	29	110	63.58
10	**Parel** (C)	SO_2	6	8	6.42
	Mumbai	NO_X	9	25	16.25
		RPM	31	135	70.83
11	**Worli** (C)	SO_2	6	10	7.17
	Mumbai	NO_X	5	28	14.17
		RPM	39	123	76.08
12	**SRO – Office** (C)	SO_2	10.22	29.6	18.88
	Chandrapur	NO_X	19	41.17	28.50
		RPM	50	188	83.71
13	**MIDC – Chandrapur** (I)	SO_2	18.22	33.38	25.83
	Chandrapur	NO_X	28.56	45	37.11
		RPM	65.22	166.33	110.46
14	**Nagar Parishad – Chandrapur** (R)	SO_2	15.67	30.67	22.13
	Chandrapur	NO_X	27.83	40.33	33.59
		RPM	51.5	178.75	104.87
15	**Dombivali** (I)	SO_2	19.57	111.5	56.66
	Kalyan	NO_X	18.57	69.89	41.66
		RPM	35.44	128.75	74.95
16	**Ambernath** (C)	SO_2	19	53.56	32.82
	Kalyan	NO_X	18.29	67	41.70
		RPM	47.57	141.89	92.99

Note: 'I' indicates industrial type, 'R' indicates residential type and 'C' indicates commercial type.

Table 3: Break-up of monitoring stations

Region	No. of locations			Total
	Commercial	Residential	Industrial	
Raigad	0	0	5	**5**
Aurangabad	2	0	2	**4**
Navi-Mumbai	1	0	4	**5**
Nagpur	3	0	1	**4**
Kalyan	2	1	6	**9**
Thane	3	0	16	**19**
Kolhapur	0	0	7	**7**
Pune	6	2	4	**12**
Amravati	0	4	0	**4**
Nashik	0	1	0	**1**

In accordance with the orders of the Bombay High Court, the MPCB also monitors two stations in Mumbai city i.e., at Sion and Mulund. The daily monitoring results of these stations are given to Doordarshan and cable TV channels for display at the end of the daily news. The results are also displayed on the website of the Board (table 4):

Table 4: Ambient air quality monitoring at Sion and Mulund in the year 2004–05 (Annual average, µg/m^3)

Sr. No.	Location	SO_2	NO_x	RSPM
1	Sion	25	105	242
2	Mulund	16	48	118

In response to actions initiated by the Board, the polluting industries have installed dust collection, scrubbing, electrostatic precipitation and fumes extraction systems. They have been strongly advised to operate the pollution control equipment so as to prevent air pollution. Industry and vehicles also have been advised to use LSHS/CNG type fuels so as to reduce and avoid generation of air pollution. Action was also taken against defaulting industries, in the form of directions for closure.

7.2 Observations on ambient air quality monitoring

Under NAAQM, the Board has been monitoring ambient air quality in Solapur city monthly at two locations viz. Ashok Chowk and Saat Rasta (Chitale Hospital) since the year 2000. The air quality parameters being measured include SO_2, NO_X, SPM and RSPM. The annual average values of the above parameters for the years 2000, 2001 and 2002, indicate that the SPM and RSPM values have been exceeding the prescribed limits. The monitoring results also show that the maximum values of RSPM were recorded in the months of February and March, and the minimum values were noticed in the months of July and August. The reasons for this can be attributed to the heavy vehicular traffic in the monitored area, lack of adequate public transport within the city prompting people to use personal vehicles, re-suspension of dust due to the arid and dry climatic conditions prevailing in the city, and poor road conditions.

In addition to the monitoring stations set up under the NAAQM programme, MPCB also conducted ambient air quality monitoring at the following monitoring stations during October 2003 – November 2003 so as to re-examine the RSPM values in Solapur city.

MPCB's mobile air monitoring van

- Shivaji Chowk,
- Saat Rasta Chowk
- Near MIDC, Akkalkot Road (new).

The results of the air quality monitoring at the above locations confirmed that SPM and RSPM levels exceeded the standards. Industrial stack monitoring of air polluting industries in Solapur conducted by the Board, indicated that SO_2 levels were within the permissible limits. However, SPM levels from industrial emissions exceeded the limits.

7.3 Action plan for control of air pollution at Pune and Solapur

The Supreme Court of India is considering a Public Interest Litigation (writ petition No.13029/1985) regarding air pollution in 16 cities in India. Mumbai, Solapur and Pune cities in Maharashtra have been included for the preparation of action plans for the control of air pollution for these cities which inter-alia should also include pollution reduction strategies. The Bombay High Court is also seized of the matter of air pollution control in Mumbai as per the action plan prepared by the state government.

The Board prepared action plans for the control of air pollution in Pune and Solapur and submitted them to the Environmental Pollution Con-

Air pollution from transportation

trol Authority (EPCA) set up by the Supreme Court under the Chairmanship of Shri Bhurelal.

Based on the review meeting taken by the EPCA in January 2005 at Pune, MPCB has issued directions regarding:

- Use of LPG in auto rickshaws;
- Use of CNG in buses;
- Parking policy and the way to implement it in the cities;
- Building bus terminals on the outskirts of the cities to avoid traffic and polluting vehicles;
- Construction of bypasses to reduce congestion in the cities;
- Construction of pavements;
- Ensuring supply of cleaner petrol (1% benzene) and diesel (500 ppm sulphur) in accordance with Euro III – compliance from April, 2005
- Completion of CNG supply pipe line from Panvel to Pune by December 2006.

7.4 Solapur

Solapur city is geographically located on the south east fringe of Maharashtra state, in the Bhima and Sina river basins, and is drained either by the Bhima river or its tributaries. Solapur district is bounded on the north by Ahmednagar and Osmanabad districts, on the east by Osmanabad and Gulbarga (Karnataka State) districts, on the south by Sangli and Bijapur (Karnataka State) and on the west by Satara and Pune districts. The Solapur district head quarters i.e. Solapur city, is situated about 550 mts above mean sea level. Solapur is the only city in the district with a municipal corporation.

The entire district of Solapur falls under the rain shadow area, which means rainfall is uncertain and scanty. The monsoon period stretches from the second fortnight in June to the end of September, bringing rains from the south-west monsoon. The recorded average rainfall for the district is 620.57 mm. Due to the scanty and non-uniform rains, water scarcity prevails in the area, which in turn adversely affects the socio-economic condition of its people. Solapur city receives water from Ujani dam.

The population of Solapur city is 8,73,037 and the area is about 180 sq. kms. There are about 4,783 industries in Solapur district. The major industries in Solapur are textiles, oil mills, bidi and sugar factories.

Since air quality of an area is known to be impacted seriously by vehicular traffic in and around it, the background research for the action plan also included a thorough investigation into the transport facilities, traffic patterns and vehicular fuel usage in Solapur city. The following details were noted:

1) The Solapur Municipal Transport Corporation has a fleet of 127 buses which provide local public transport. Twenty-five buses, however, have been decommissioned by the corporation. At the time of conducting background research for the action plan of the city, there were 59 buses on and 43 buses off the road due to various reasons. Thus, given the huge population of the city and its comparatively small bus fleet, the city lacks adequate public transport facilities.

2) Most of the trucks and other large transport vehicles coming from outside the city travel through the heart of Solapur city. The Solapur Municipal Corporation (SMC) has constructed one bypass at National Highway No.13 to divert this heavy vehicular traffic. SMC has also decided to improve the conditions of the roads in the city with the help of the Maharashtra State Road Development Corporation.

3) Emissions from two wheelers are a serious problem. The reduction in the number of two wheelers is not possible unless the users themselves decide to switch over to public transport for their commuting needs.

4) It may be desirable to register only 4-stroke two or three wheelers to reduce the existing emissions of carbon monoxide. A corresponding amendment in the Motor Vehicles Act would be necessary to achieve this objective. The Transport Department is preparing a proposal for this.

5) Since 1 January 2004, the public sector oil companies in Solapur have been supplying diesel with a sulphur content of 0.05%, petrol with benzene content of 3% and sulphur content of 0.05%. As per the current road map on fuel quality, oil companies were slated to start supplying diesel with a sulphur content of 0.035%, petrol with a benzene and sulphur content of 1% and 0.05% respectively, from April 2005 onwards. However, at the time of conducting research for the action plan, there was no plan under consideration to set up retail outlets for auto LPG or CNG fuels.

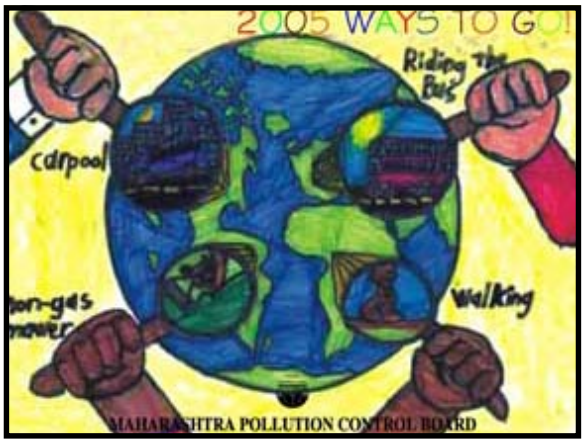
6) Although the road map prepared by the Ministry of Road Transport does not include Solapur city, actions are being initiated or have already been taken to implement the same for the city, as a part of the strategy to reduce the air pollution.

7.5 Assessment of Volatile Organic Compounds (BTX)

Volatile organic compounds have acquired importance in air quality issues due to their toxicity. Some VOCs are toxic, having both carcinogenic and non-carcinogenic hazards such as neutron-toxicity. Various industries viz., petrochemicals, printing ink manufacturers, fuel and power industries, pesticides, pharmaceuticals and chemical industries contribute to emissions of VOCs. Vehicular emissions and fugitive emissions from petrol pump operations are listed as a primary cause of concern with regards to the total VOC concentration in an area. VOCs are principal contributors to the formation of ozone and other petrochemical oxidants leading to urban smog.

Recent research has shown that many of the toxic VOCs present in the ambient air, such as ben-

MPCB posters for environment protection



zene, toluene and xylene (BTX) are originating predominantly from mobile and area source emissions rather than industrial point sources. A survey has been carried out for assessing BTX levels in the ambient air of Mumbai in the year 2004 at five different locations. Results are presented in table 5 below:

Table 5: Assessment of Volatile Organic Compounds (BTX)

Sr. No.	Location	Benzene (µg/m^3)	Toluene (µg/m^3)	Xylene (µg/m^3)
1	Sion (Near Sion Hospital)	60.53	146.15	50.67
2	Mulund (Near Johnson & Johnson)	51.60	213.17	43.08
3	Hutatma Chowk (near American Express Tower)	38.04	77.19	30.47
4	Mahim Causeway (S. V. Road & Eastern Express Highway junction)	37.21	54.90	28.43
5	Dahisar Naka	82.89	204.99	77.34

7.6 Industrial air pollution control

Entire Maharashtra State has been declared as 'Air Pollution Control Area' under the provisions of Air Act 1981 since November 1995. MPCB is stipulating necessary conditions for provision of air pollution control equipment while granting consents to industries having air pollution potential. Some of the sectoral initiatives are detailed below:

1. Thermal Power Plants

The Maharashtra State Electricity Board is the major thermal power generating agency and has eight thermal power plants in various parts of the state. Out of these eight plants, one is gas-based while the other seven are coal-based (table 6):

Table 6: Major power stations in Maharashtra and air pollution control systems

Sr. No.	Name of thermal power plant	Installed capacity in MW	Air pollution control system
1.	M/s. Chandrapur Super Thermal Power Station	2340	ESP Provided
2.	M/s. Koradi Thermal Power Station	1100	ESP Provided
3.	M/s Khaperkheda Thermal Power Station	840	ESP Provided
4.	M/s. Nashik Thermal Power Station	910	ESP Provided
5.	M/s. Parli Thermal Power Station	690	ESP Provided
6.	M/s. Bhusawal Thermal Power Station	482.5	ESP Provided
7.	M/s. Paras Thermal Power Station	62.5	ESP Provided
8.	M/s. Gas Thermal Power Station Uran dist. Raigad	852.0	–
9.	M/s. Trombay Power Station	1330	ESP Provided
10.	M/s. Dahanu Thermal Power Station	500	ESP Provided

In order to secure compliance of environmental standards, MPCB has taken several initiatives, such as:

1) All the thermal power plants have installed electrostatic precipitators (ESP) for collection and removal of dust. Operation of these ESPs is automated in order to increase their efficiency and optimise their performance. The major concern is the lack of availability of good quality coal in terms of ash content. The average ash content in coal is about 40–45% against the expected 29–30%. This puts an extra load on the ESP. Considering this constraint, MSEB has started working on the use

Air pollution from a thermal power plant at Koradi

of washed coal. Further, MSEB has submitted upgradation and modernization proposals for all ESPs so that they can comply with the emission norms.

2) The State Electricity Board has further attempted to use bag house (fabric) filters at one of their units in Koradi. The experiment was found to be successful and it is planned to adopt this technology at other places as well. This has brought down the emission levels to less than 100 against the maximum limit of 150.

3) Recently, the State Electricity Board has also installed on a trial basis ammonia gas conditioning at Khaperkheda TPS to limit TPM emissions. The results are encouraging.

4) MSEB has also started recycling water from fly ash ponds: plants like Khaperkheda have already achieved 100% recycle.

5) Ozonization of cooling tower water: Conventionally, chlorine is used for disinfection of cooling tower water. Chlorine, however, is a known ozone-depleting substance and remains in various toxic and hazardous forms in water after use. The use of ozone for disinfection of cooling tower water was attempted as it is more eco-friendly though relatively costlier. This is being tried for the first time in India.

Problem sponge iron plant at Chandrapur

2. Sponge Iron Plants

About sixteen sponge iron plants are located in various parts of Maharashtra. Sponge iron manufacturing is a dry process and is known for air pollution problems. The major pollutant is suspended particulate matter. MPCB has prescribed several conditions including good manufacturing practices for control of pollution. The following measures were taken to limit air emissions:

1) Electrostatic precipitator at kilns/bag filter/ wet scrubber

2) Dust collector at material handling section.

3) Dust collector at coal crusher, etc.

The Board has also made it mandatory for all sponge iron plants to maintain a documentary record of the opening of the emergency cap attached to the kiln. The Board, in fact, has proactively advised the industry about environmentally sound management of flue dust and char produced in the process.

3. Cement plants

Maharashtra has seventeen cement plants distributed across the state. Of these, there are four major integrated cement plants in Chandrapur district. Suspended particulate matter is the major pollutant along with sulphur dioxide.

The Board is granting consent specifying several conditions for the control of dust emissions from process and also from the material handling system. Generally, the Board continues to stipulate the following measures for cement plants:

1) Electrostatic precipitator at kilns/bag filter/ wet scrubber;

2) Dust collector at material handling section;

3) Dust collector at coal crusher, etc.

Cement plants in general are found to be complying with the standards. They are increasingly using higher proportions of fly ash in the manufacturing process.

4. Coal mines

In Maharashtra, coal mines are located in Chandrapur, Amrawati (Wani) and Nagpur districts. Coal mines are of two types: open cast and underground mines.

Table 7 shows the number of mines in various districts:

Table 7: Coals mines in Maharashtra

Sr. No.	District	Type of mine	
		Open cast mine	Underground mine
1.	Chandrapur	16	11
2.	Amrawati	07	02
3.	Nagpur	03	04
	Total	**26**	**17**

The coal mines listed above are owned by Western Coalfields Limited (a Govt. of India undertaking). There are various environmental issues associated with these coal mines such as vibration due to blasting, ground water depletion, dust emission during blasting, coal handling and transportation, coal stock yards, etc.

To limit the air pollution and associated nuisance, coal mines have initiated the following measures:

1) Controlled blasting to limit vibration;

2) Fixed water sprinkling arrangements and use of mobile water tankers to control dust emissions from coal handling and transportation;

3) Covering coal trucks with tarpaulin sheets;

4) Supply of cooking gas instead of coal for domestic purposes;

5) Provision of metallic roads in mine area.

Fixed sprinklers to minimise air pollution at coal mine at Telwasa, Chandrapur

8. Statutory duties under the Environment (Protection) Act, 1986

THE ENVIRONMENT PROTECTION ACT was passed by Parliament in 1986. Thereafter, several notifications have been issued under various provisions of the Act for dealing with many chronic environmental problems faced all across the country. In many of these notifications, the state PCBs have been made nodal agencies for implementing their various provisions. The following is a brief list of the various notifications in which the state Boards have been given a critical role and empowered to take a series of actions as well:

1) The Noise Rules, 2000;

2) The Battery Rules, 1999;

3) The Municipal Solid Waste Rules, 2000;

4) The Biomedical Waste Rules, 1998;

5) The Hazardous Waste Rules, 1989;

6) Notification on Fly Ash Utilisation;

7) The Recycled Plastic Rules.

8.1 Monitoring of the Noise Rules

Noise has been defined as a pollutant under the Air Act, 1981. Engineering industries, construction activities, vehicles, loud speakers and bursting of fire crackers in festivals/functions, D.G. sets are the main causes of noise pollution. During the year, the Board monitored noise levels in different cities/areas in the state through 117 locations (table 1):

Monitoring of noise and air pollution from fire crackers

Table 1: Noise levels monitored in different cities

Sr. No.	Region	Cities/Area covered	Commercial locations	Residential locations	Industrial locations	Sensitive locations	Total
1	Raigad	7	5	3	1	0	9
2	Aurangabad	2	6	0	0	0	6
3	Navi Mumbai	6	1	2	3	0	6
4	Nagpur	3	14	1	0	0	15
5	Kalyan	6	9	6	0	0	15
6	Thane	5	10	3	0	0	13
7	Kolhapur	4	14	6	0	1	21
8	Pune	6	17	3	2	0	22
9	Amravati	3	4	4	0	2	10
	Total	**42**	**80**	**28**	**6**	**3**	**117**

Noise monitoring was also especially conducted during the festivals of Diwali, Ganesh Chaturthi and Navratri festival. The data has been collected from 42 locations in different areas of Mumbai, Pune, Nashik, Kolhapur and Nagpur regions.

The Central Pollution Control Board (CPCB) has notified the ambient noise standards in 1987 under section 20 of the Air (Prevention and Control of Pollution) Act, 1981. The noise standards specify limits as 55 dB(A) and 45 dB(A) as limits for day and night time respectively for residential areas, 75 dB(A) and 70 dB(A) in the day and night time for industrial areas, and 50 dB (A) and 40 dB(A) in the day and night for silence zones.

Solving the problem of noise in urban areas is one of the most difficult problems faced by the Board. The strategy towards noise pollution control and abatement is to identify avoidable and non-avoidable noise sources, and eventually attempt a control over avoidable noise.

In 1989, noise was notified as a pollutant under Schedule III of the Environment Protection Act. Ever since then, noise pollution has drawn a lot of attention and attempts are being made by NGOs and government organizations to create awareness on the dangers of excessive noise. The Noise Pollution (Regulation and Control) Rules 2000 have been notified on 14 February 2000. In the state of Maharashtra, the Police Department

has been authorized for taking legal action against defaulters.

The number of locations where noise levels exceeded the limits laid down is presented in table 2:

Table 2: Number of location where noise levels exceeded limits

Class monitored	No. of locations in dBA	Range of noise level level exceeded	No. of locations where the noise recorded at	Highest noise level the limit
Industrial	6	68–88	2	M/s NOCIL Navi-Mumbai (88 dBA)
Commercial	117	50–115	93	Panch Batti Palghar (115 dBA)
Residential	29	54–109	20	Irani road Dahanu (109 dBA)
Sensitive	3	60–76	3	Civil Hospital Sangli (76 dBA)

The following observations have been made by the Board based on its monitoring activities for noise pollution:

1) The main source of noise pollution in Mumbai is vehicular traffic. Use of pressure horns, poor maintenance of vehicles, continued usage of old automobiles and an outdated public transport system in general contribute to noise pollution. Another major source of noise pollution is 'social noise' which is the purposeless noise created by different social groups during festivals, social occasions, etc., through the use of loudspeakers and bursting of fire crackers. In Mumbai, the Board monitored noise levels at six residential-cum-commercial locations. The maximum noise level was recorded at Wadala bus depot (103.9 dBA). At all the monitored locations, the noise level was beyond 89 dBA, well above the prescribed limits.

2) Pune region including Pune, Pimpri-Chinchwad, Satara and Solapur sub-regions, has also been monitored for noise levels. The noise level has been monitored at 22 locations in six towns. Most of the locations monitored were in the commercial zone. It has been observed that noise lev-

els were well within the limit (in the range 60–87 dBA) only in the Pimpri-Chinchwad area. The highest noise level was recorded at M.G. Road in Pune city. Two residential locations in Pune also recorded a higher than acceptable level of noise. During the Ganesh festival, noise levels were found to be in the range of 75–86 dBA, while during Diwali, the same was in the range of 80–107 dBA. A significant rise in noise levels has been noticed during the Diwali festival only.

3) All monitoring stations in Amravati region covering Yavatmal, Amravati and Akola cities have recorded noise levels which have exceeded the limit. The highest noise level of 97.5 dBA was recorded at Sneh Nagar location in Yavatmal city. Noise levels also exceeded the limit at two sensitive locations in Amravati and Akola towns.

4) Except for one industrial location in Navi Mumbai, the noise level exceeded (range between 60–88 dBA) the standard at all other monitored locations during the year. The highest noise level was observed at M/s NOCIL, an industrial location.

5) In Kolhapur region, noise levels have been monitored at five residential, 14 commercial and one sensitive location. The observed noise levels were in the range of 70–97 dBA. The highest noise level was recorded at Shivaji Peth and Rajarampuri (residential locations in Kolhapur). Out of 20 locations, the noise levels were above 80 dBA at twelve of them. A special noise monitoring project was conducted during the Diwali festival and it revealed noise levels ranging from 75–92 dBA in Kolhapur city.

6) In Aurangabad region, noise monitoring was conducted in Aurangabad and Latur cities. All selected locations were commercial in nature. The noise levels were found to be well below the prescribed limits in Aurangabad, but exceeded the standards in Latur.

MPCB posters urging people against use of firecrackers

7) Panvel, Kalamboli, Khopoli, Pen, Pali, Alibag and Mahad have also been monitored for noise levels. Except for the Khopoli Industrial Estate in Khopoli, noise levels were found to have exceeded the limit at all the eight monitored locations in residential and commercial areas of Khopoli. The highest noise level was recorded at Bhagwandas Chowk, a commercial location in Mahad town. The noise levels measured were in the range of 72–94 dBA. Mahad was observed to be most noise-polluted town.

8) Noise levels exceeded the standards in Nagpur and Chandrapur cities, where only commercial locations were selected for monitoring. The highest noise level (101.33 dBA) was recorded in Chandrapur city at Gandhi Chowk. Noise levels were also monitored during the Navratri festival in Nagpur, so as to allow a comparison between levels before and during the festival. It was observed that the values of noise levels recorded before the festival were within the limit, but exceeded the same during the festival (in the range of 78–83 dBA).

The overall data analyses report reveals that in comparison to other regions, noise levels were found more or less well within limit at all locations in Kalyan and Aurangabad regions. The noise levels exceeded the limit by a large margin in Thane region.

'I will advise you to take these tablets. They will temporarily deafen your ears so that you can avoid the noise during the festival.'

8.2 Implementing the Battery Rules, 2001

About 150,000 tonnes of batteries are discarded from automobiles, telecom equipment, railways etc., in the country. These batteries contain lead, which is a toxic metal and must be handled with care. Lead adversely affects human health and the ecosystem. Toxic fumes of lead generated due to improper recycling by small cottage-type industries are of serious concern. In order to regulate collection of old/used batteries and their recycling in an environmentally sound manner, the Government of India notified the Lead Acid Batteries (Management and Handling) Rules in the year 2001, under the

provisions of the Environment (Protection) Act, 1986. These Rules have stipulated a time-bound target to be achieved by the states for the collection of old or used batteries.

The Batteries Rules are intended to regulate the management and handling of lead acid batteries, with specific responsibility assigned to the manufacturers/importers, re-conditioners, assemblers, dealers, recyclers, auctioneers, bulk consumers and consumers. There is a general lack of awareness among these stakeholders of the various requirements under the Rules.

Therefore, the Board issued notices in Marathi and English in leading newspapers in April 2004 (*see alongside*) declaring that compliance was required with the Rules by the dates provided in the regulation. Each individual covered under the Rules would be required to submit compliance statements on or before 30 June and 31 December every year.

M/s. Exide Industry Limited owns lead acid battery manufacturing units in the MIDC industrial area at Taloja and Kanjur Marg (East) Mumbai. The Company has 566 authorized dealers who sell new lead acid batteries to consumers and who also collect used ones. These dealers are divided into four major zones, namely Mumbai, Navi-Mumbai, Nagpur and Pune. Besides these units, there are two other registered battery manufacturing units in Navi Mumbai. There are thought to be 27 battery reconditioning units in the state carrying out the activities of assembling and reconditioning batteries.

The information collected by the Board from battery dealers in the state is provided in table 3. However, there have been difficulties in collecting accurate information in this regard due to lack of awareness among battery consumers.

MAHARASHTRA POLLUTION CONTROL BOARD

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PUBLIC NOTICE

Management of Batteries (Management and Handling) Rules 2001

The Ministry of Environment and Forests, Govt. of India has notified the Batteries (Management and Handling) Rules 2001 which are applicable to all battery manufacturers, importers, re-conditioners, assemblers, dealers, recyclers, auctioneers, consumers and bulk consumers.

It is mandatory on the part of all battery manufacturers, importers, re-conditioners, assemblers, dealers, recyclers, auctioneers, consumers & bulk consumers to ensure that the used batteries are collected back against the sale of new batteries. Similar responsibilities are also cast upon the battery dealer, bulk consumers, consumers & recyclers under these rules.

It has come to the notice of Maharashtra Pollution Control Board that battery manufacturers, importers, assemblers, dealers, recyclers, auctioneers, consumers and bulk consumers do not return back the used lead batteries as required under the above rules and even are engaged in selling such used batteries to lead battery smelting units in an unauthorized way. The Board has taken a serious note of such violation & illegal activities which are punishable under the provisions of the Environment (Protection) Act, 1986.

By this notice all concerned persons, organizations are directed to comply with the provisions of the Batteries (Management and Handling) Rules 2001 & to return the used batteries to the respective dealers. The bulk consumers are directed to sell the old used lead batteries only to those lead recyclers having authorization of the Central Pollution Control Board. The compliance in this regard shall be submitted to the Maharashtra Pollution Control Board on or before 30th June & 31st December every year. Non-compliance will attract legal action under the provisions of the Environment (Protection) Act,1986 & the aforesaid rules.

(D.B.Boralkar)
Member Secretary

Table 3: Information collected with regard to the Batteries (Management and Handling) Rules, 2001

Sr. No.	Name of the Region	Total no. of lead acid batteries purchased			Total no. of lead acid batteries for return/sale		
		2001–02	2002–03	2003–04	2001–02	2002–03	2003–04
1	Mumbai	8,799	9,019	9,003	962	941	1,937
2	Navi Mumbai	1,283	1,347	2,265	1,087	1,053	1,778
3	Thane	-	285	2,495	-	-	90
4	Kalyan	400	500	570	215	288	348
5	Raigad	2,355	2,450	2,631	4,304	4,249	4,242
6	Nashik	4,218	6,571	7,539	2,910	4,805	5,641
7	Pune	6,003	11,900	26,501	2,531	4,450	17,716
8	Kolhapur	1,323	803	840	502	372	392
9	Nagpur	8,121	11,901	13,842	1,186	1,764	2,562
10	Aurangabad	2,959	1,085	1,670	871	838	1,117
11	Amravati	8,556	9,864	11,124	2,493	2,866	3,507

Apart from these battery manufacturers, there are new lead acid battery importers who have obtained registration with the MoEF under Rule 4 of the Battery Rules for the sale of imported lead acid batteries in India. There are five such importers of new lead acid batteries in the state of Maharashtra. These importers, however, have failed to submit the mandatory half-yearly returns to the Board. Hence, the Board issued show cause notices to them on 20 January 2005, directing them to comply with the mandatory requirements under the Rules. Replies from these units are awaited and the Board shall take action accordingly.

In the state of Maharashtra, the major bulk consumers of lead acid batteries are the Maharashtra State Road Development Corporation, the Maharashtra Electricity Board, and AAI, military establishments in and around Mumbai, the BEST and the railways. From the information gathered by the Board, it is evident that these bulk consumers generally auction their used lead acid batteries as per the Hazardous Waste (Management and Handling) Amendment Rules, 2003 only to authorized recyclers or re-refiners that have EST technology along with a valid registration from CPCB.

The information collected by the Board from bulk battery consumers is given in table 4.

Table 4: Information concerning usage of lead acid batteries by bulk consumers

Sr. No.	Name of the Region	Total no. of lead acid batteries purchased			Total no. of lead acid batteries for return/sale		
		2001–02	2002–03	2003–04	2001–02	2002–03	2003– 04
1	Mumbai	13,581	12,548	9,007	23,292	16,133	10,001
2	Navi-Mumbai	125	100	171	-	466	120
3	Thane	1,129	1,134	1,222	1,450	908	1,327
4	Kalyan	72	114	118	72	114	118
5	Raigad	511	325	432	754	467	594
6	Nashik	50	165	320	35	130	162
7	Pune	2,425	1,936	2,069	690	2,049	2,192
8	Kolhapur	3,162	1,368	1,376	1,047	1,315	7,745
9	Nagpur	819	1,220	1,174	687	1757	944
10	Aurangabad	682	471	660	641	389	279
11	Amravati	1,942	1,034	1,911	1,761	911	1,,059

There are eight units having valid registration for recycling lead acid batteries from CPCB. Three units have submitted their half-yearly returns on recycling of batteries. Information is being collected from the remaining units.

M/s. Nayan Metals Pvt. at Lote, engaged in manufacturing of lead ingots from waste/old batteries, was found to be operating in violation of the Hazardous Waste Rules and the consent conditions issued by the Board. As per the SCMC directive, directions to the unit for closure were passed on 25 October 2004 by the Board**.** The industry later complied with the SCMC directions by becoming a member of the CHWTSDF at Taloja and by replacing old filter bags for effective air pollution control.

It may be appreciated that the level of implementation done by the MPCB is among the highest in the country in terms of collection of batteries from dealers and large consumers as well. The recovery rate in the state has been 65% from dealers as against the target of 90% required by the Rules. As far as the collection of batteries from major consumers/auctioneers is concerned, the

percentage recovery has been more than 100%. In fact, last year it was 165%.

8.3 Management of Municipal Solid Wastes (MSW)

There are 250 urban local bodies (ULBs) in Maharashtra which include municipal corporations, municipal councils, nagar panchayats and cantonment boards. All local bodies have to put in place proper collection, treatment and disposal systems for management of municipal solid wastes as per requirements given in the Municipal Solid Waste Management Rules notified in the year 2000 under the Environment (Protection) Act, 1986. Up to April 2003, most of the local bodies had failed to obtain mandatory authorization from the Board as per the said Rules. Most of them were not in compliance with the provisions and stipulations of the Rules.

The present scenario of MSW management is still quite dismal. Almost all ULBs practise unhygienic open dumping methods and/or burning of waste. Waste collection activities have been insufficient and irregular, thereby creating further problems not just with the treatment and disposal of MSW, but also with human health. The processing of MSW as per the provisions of the MSW Rules requires basic infrastructure for collection, transportation, processing and sanitary land filling. However, the cost of setting up this infrastructure is very high. The ULBs do not possess adequate resources and finance to meet these costs. It has been observed that the cost of processing waste is high due to excessive overheads (high salaries) of employees, redundant personnel, low productivity, and high 'social benefits'. Inadequately qualified/trained staff is another major issue which needs to be dealt with for proper operation and maintenance of MSW processing plants to taken place. Public awareness and community participation which are envisaged to be crucial factors for effective imple-

Segregating dry from wet waste

mentation of the MSW Rules 2000 are also lacking.

MSW generated in urban local bodies (ULBs) mainly comes from households, commercial establishments, street sweepings, construction and demolition waste, biomedical waste and industrial hazardous waste. The Rules stipulate that biomedical and industrial hazardous waste should not be mixed with MSW, and shall be disposed off separately. MSW (free from biomedical and industrial wastes) shall be segregated at source for disposal through avenues such as recycling, reprocessing, composting, vermicomposting, waste to energy, anaerobic digestion and sanitary landfills. Source segregation of MSW will depend upon its moisture content, biodegradability and calorific value.

The MSW (Management and Handling) Rules 2000 provide for the collection, segregation, transportation, processing and scientific disposal of solid wastes to protect human health and quality of environment and are applicable to every municipal authority in whose jurisdiction waste is generated. The compliance criteria applied to the ULBs as per provisions of the Rules are listed out below:

- Prohibition of littering and providing adequate storage facility for MSW.

Transportation of municipal solid wastes

- Segregation and storage as per waste categories, viz., biodegradable, recyclable, debris and construction waste.
- Processing of biodegradable and recyclable waste.
- Collection and transportation of waste.
- Disposal of non-biodegradable, non-recyclable and inert waste in sanitary landfills.
- Environmental monitoring of sanitary landfills, viz., ground water and ambient air quality monitoring.
- Awareness and participation of citizens along with NGOs.

As a first step, the Board successfully persuaded all the local bodies in the state to obtain mandatory authorization, prepare an action plan for management of MSW, and identify/notify suitable land for setting up facilities for treatment and disposal of wastes generated in the city.

While dealing with public interest litigations, the Supreme Court of India as well as the High Courts have appreciated the sincere efforts taken by the Maharashtra Board in this regard. In its order dated 5.10.2004 in Writ Petition (Civil) No.

Improper disposal of municipal solid wastes

888/1996 (*Almitra H. Patel & Anr. v/s Union of India & Ors.*), the Supreme Court made special mention of the actions taken by the Maharashtra Board in implementing the Municipal Solid Wastes (Management & Handling) Rules, 2000. The Court specifically recorded that the number of authorizations granted by the Board for solid waste management had increased from 32% to 98%. In the same breath, the Court went on to cite the example of Maharashtra for the creation of a solid waste management cell for effective implementation of the Rules.

Out of 250 ULBs which have applied to the MPCB for authorization to treat and dispose MSW, the Board has granted the necessary authorisation to 246 of them. Applications for authorization from two ULBs were refused by the Board. The status of the various ULBs in Maharashtra with reference to the MSW Rules (2000) is shown in table 5.

Burning of municipal solid wastes in urban areas

Table 5: Status of ULBs with respect to MSW Rules (region wise abstract) as on March 2005

Sr. No.	Name of Region	No. of ULB's	No. of authorizations /approvals by MPCB	No. of applications under process	No of ULB not applied for authorization	No of ULB refused authorization	No of ULB submitted Form II
1	Amravati	40	39	1	Nil	Nil	40
2	Aurangabad	53	53	Nil	Nil	Nil	53
3	Kalyan	5	5	Nil	Nil	Nil	5
4	Kolhapur	24	24	Nil	Nil	Nil	24
5	Mumbai	1	0	Nil	Nil	1	1
6	Nagpur	31	31	Nil	Nil	Nil	31
7	Nashik	41	40	Nil	Nil	1	41
8	Navi Mumbai	2	2	Nil	Nil	Nil	2
9	Pune	34	34	Nil	Nil	Nil	34
10	Raigad	10	10	Nil	Nil	Nil	10
11	Thane	9	8	1	Nil	Nil	9
	Total	**250**	**246**	**2**	**Nil**	**2**	**250**

Authorisation to urban local bodies is issued based on

- Identification of site for secured landfill
- Notification of the site for secured landfill
- Action plan for proper treatment and disposal of municipal solid waste as per the MSW Rules.
- State Government Directorate of Municipal Administration / Department of Water Supply and Rural Sanitation preparing the project for financial assistance for management of MSW

Note:

250 ULBs =243 Corp/councils + 3 Cantonment Boards + 4 Nagarpanchayats. The Board has refused authorisation to the Mumbai Municipal Corporation and the Trimbakeshwar Municipal Council.

Akola Municipal Corporation and Virar Municipal Council have applied for authorisation and these are under process.

In order to implement the said rules effectively, the Board also took legal action against defaulting local bodies by way of issuing notices and directions under Section 5 of the Environment (Protection) Act, 1986 read with the MSW (Management and Handling) Rules, 2000.

In order to review compliance of the orders of the Court, MPCB held consultations with the All India Institute of Local Self-Government, Mumbai and with the Water Supply and Sanitation Department, Government of Maharashtra on the subject. The Chief Secretary, Government of Maharashtra, also convened a meeting of all the concerned departments to take a comprehensive review and to initiate further steps required for the effective implementation of the Rules in the state of Maharashtra.

1) For effective implementation of the Rules, the Divisional Commissioners were requested to

take up the issue with the municipal commissioners and chief officers of the Local Authorities.

2) The regional and sub-regional officers of the Board proactively carried out the work of obtaining the completed Form II, and then reviewing and granting authorizations to the applicants, as per the directions of the Court.

All the authorities have submitted their Annual Reports in Form-II to the Board. Immediately after receipt of these annual reports, a consolidated annual report was prepared and submitted to the CPCB on 15th of September 2004.

3) For effective implementation of the said Rules, the Water Supply and Sanitation Department of the Government of Maharashtra issued a Government Resolution dated 26 August 2003, requiring a District Level Committee under the District Magistrate (Collector) to be constituted, and having representatives from the Pollution Control Board, the Forest Department, the Ground Water Board, the Planning Department, regional officers/sub-regional officers of MPCB, etc. The terms of reference of the committee are as follows:

- To suggest ways to improve the existing practices at MSW dumping grounds in the state.
- To carry out a survey for identifying new locations for landfill sites.

New municipal solid waste treatment unit installed in Pune

- To pinpoint and provide necessary assistance to local authorities after considering the difficulties experienced by them in implementing the Rules.
- To discuss and solve issues concerning any other matter relating to effective implementation of the said rules.

4) The District Magistrates are authorized to acquire the land identified for landfill sites and hand these over to the concerned local authorities.

5) A number of such committees have been constituted in the state. In order to select a landfill site for disposal of MSW based on environmental considerations, MPCB prepared a checklist for selection of such sites and the same was forwarded to all local bodies for consideration.

The Coastal Regulation Zone (CRZ) Notification of 1991 prohibits location of MSW disposal facilities in CRZ areas. In some cities, the availability of land in the areas not covered by CRZ is an additional constraint. Due to these policies and regulations, MPCB finds it difficult to approve proposals received from local bodies for development of landfill sites for the disposal of MSW.

The matter is being followed up by the State Government, with the support of concerned de-

Special vehicles for transportation of garbage

partments. The required sites are being / have been identified and a proper inventory is being prepared for the entire state. A progress report in this regard will be submitted to the Court.

The Board has taken the initiative to provide financial assistance for establishing MSW processing plants/landfill sites to five select LBs. Memoranda of Understanding (MoUs) in this regard were also signed. MPCB has sanctioned financial assistance to the tune of Rs.3.5 crores, of which Rs.2 crores were released up to July 2004. MPCB has taken up demonstration projects in these five cities, namely:

a) Ambad (Jalna)

b) Sonpeth (Parbhani)

c) Navapur (Nandurbar)

d) Murud-Janjira (Raigad)

e) Baramati (Pune)

In all these cities, technical and financial assistance is provided by the Board towards the setting up of municipal solid waste collection, transport, treatment and disposal facilities, as well as towards augmenting the existing infrastructure. Project implementation is in full swing and in advanced stages of completion at Ambad, Sonpeth and Navapur. For the other locations, orders will be issued shortly by the respective local bodies and work is likely to commence soon.

In addition, the Board is also making efforts to support local bodies at Gadhinglaj, Pandharpur and Jalna. Shri Ganesh Naik, Hon'ble Minister of Environment, has announced financial assistance of Rs.20 lakhs for local bodies in Konkan as they are small towns. This assistance is in the form of zero interest loan returnable in 20 years @ Rs.1 lakh per year. Modalities for programme implementation are being worked out by the Board.

The Board selected four religious places where an 'Environmental Improvement Programme' will

MPCB posters on garbage

be undertaken. One aspect of the programme is the scientific disposal of MSW. The preparation of a Detailed Project Report (DPR) for the project – the first of its kind – is in progress.

In order to facilitate public-private partnerships in the management of MSW by local bodies, the Board has prepared model tender documents and draft agreements. This will ensure a uniform approach and provide guidance to interested local bodies. This has been done for the first time in the country. Draft agreements and model tender documents are posted on MPCB's website and can be downloaded free of cost, so that the benefit can be availed by all the local bodies in the country.

With limited access to financial and other resources, the ULBs find it very difficult to provide an improved level of service. Therefore, private sector participation in solid waste management becomes necessary. The MSW management by local bodies shall be assisted with the participation of the private sector based on options such as 'Build, Own and Operate' (BOO) and 'Build, Own, Operate and Transfer' (BOOT) basis, depending upon the situation. As stated before, this is particularly required for local bodies which have financial and technical constraints thus restricting the proper management of MSW.

In this regard, the Board jointly organized a seminar with the Bombay Chamber of Commerce and Industries, Mumbai to explore private participation in MSW management. Additionally, in order to assist local bodies for preparation of agreements for the management of MSW between themselves and the operator of the proposed facility, MPCB engaged the services of M/s. CRISIL to formulate the needed documents in consultation with the All India Institute of Local Self-Government, Mumbai, and the Commissioner and Director of Municipal Administration, Government of Maharashtra.

MPCB posters on garbage

8.4 Management of Biomedical Wastes

Biomedical Waste (M&H) Rules, 1998 are in force in the state of Maharashtra. The rules stipulate a time period for providing treatment and disposal facilities for the biomedical waste generated in all health care establishments. It is necessary in the larger interest of public health to treat and dispose of biomedical wastes in the most appropriate scientific manner as prescribed in the said Rules.

There are in all 10,394 health care establishments (10 beds or more), which can be covered for regulations under the management of the Biomedical Wastes Rules, 1998. Until last year, only 1,192 units were covered under authorization.

To speed up implementation of the BMW Rules, a meeting was held on 19.7.2004 under the chairmanship of Principal Secretary (Env.) Maharashtra state. As per the direction of the Principal Secretary (Env.), MPCB took the following actions:

1) The monthly status report of compliance with the Biomedical Waste (M&H) Rules, 1998, is to be hosted on MPCB website every month.

2) Applications for authorization (for above 50 bedded hospitals) were received from the regional

Autoclave at biomedical waste treatment plant

officers with comments and after these were scrutinised, the authorizations were issued.

3) Applications for authorization were received from all the government hospitals of Maharashtra. After verification of the details, authorizations were issued to them.

A public notice was issued in all leading newspapers, directing all hospitals and health care establishments to apply for authorization under the BMW Rules by 16 August 2004. Regional officers of the Board issued 3,036 show cause notices to defaulting Health Care Establishments (HCE) in Maharashtra.

To date, 6,062 health care establishments have applied and obtained authorization from the Board.

A meeting of the State Advisory Committee on BMW was held on 28.9.2004 under the Chairmanship of the Principal Secretary (Env.) in Mantralaya, Mumbai.

At the meeting, the chairman suggested that legal action be taken against health care establishments having capacity of 100 beds or more that are not complying with the provisions of the BMW (M & H) Rules, 1998, as amended.

Biomedical waste awaiting disposal

On 8.12.2004, the Board issued show cause notices for prosecution to twelve hospitals having a bed strength of more than 100. These hospitals had not obtained BMW authorization under the Biomedical Waste (M&H) Rules, 1998 and had not become members of the Common Biomedical Waste Facility in their area. The authorizations were granted to these hospitals only after they were in compliance of the BMW rules.

A report on the status of common facilities for collection, treatment and disposal of biomedical waste in Maharashtra was prepared by MPCB and submitted to the SCMC.

The incinerator of the BMW common facility at Sewri, Mumbai was closed down as it was unable to comply with the BMW rules. As an interim arrangement, the incinerable biomedical waste was allowed to be transported to Mumbai Waste Management Ltd., Taloja, instead of to Sewri.

The MCGM seized a truck that was found dumping BMW at a non-conforming location and filed an FIR with the police. The Board thereafter suspended the authorization given to the BMW transporter M/s. Bhavani Travels. The Board also filed a criminal complaint against the transporter

Used bottles and outdated medicines are a problem area

in the court of the Metropolitan Magistrate, 15th Court, Mumbai under sub-section (1) of section 15 of the E (P) Act, 1986, read with Rules 7 and 8 of the BMW (M&H) Rules, 1998 (as amended) for the offence of disposing of biomedical waste in a non-conforming manner. Considering the request of the MGCM and the problem of transporting BMW in the Mumbai area, the suspension of authorization of the transporter has been kept in abeyance without prejudice to the criminal case filed by the Board.

Three more transporters identified by MCGM have been granted authorization for BMW transportation on 13.1.2005. These include M/s. City Care Ltd., Mulund, Mumbai; M/s. Sainath Enterprises, Mahim, Mumbai; and M/s. S. D. Shirole Transport, Sewri, Mumbai.

Table 6: Information on common biomedical waste treatment facility

YEAR	No. of CBMWTSDF	Total No. HCEs covered	%	Total No. of beds	Qty. of BMW received & treated kg/M
March '03 to March '04	17	4,541	43.74	59,849	2975.4 MT/Y
March '04 to March '05	23	7,832	75.42	79,857	4490.28 MT/Y

The Board has also taken proactive measures in facilitating the development of about 22 common facilities for the management of BMW in different cities in Maharashtra. It has issued directions under the BMW Rules to these common facilities for strictly maintaining compliance with environmental standards. A bank guarantee of Rs.50,000 has also been taken by the Board from the operators of the facilities as a proof of their intent to comply with the standards and upgrade the system wherever necessary within the time-bound action plan submitted to the Board.

The Board is also providing technical guidance and assistance services to Brihan Mumbai Municipal Corporation for management of BMW in the city. A comprehensive proposal concerning the

management of BMW in Greater Mumbai was also prepared and presented to the Municipal Authority and to the Government.

MPCB was appointed Project Management Consultant by MCGM for preparation of the tender documents, tender evaluation and recommendation for the establishment of three new BMW treatment and disposal sites in Mumbai city. Accordingly, MPCB formed an Expert Committee for the tender, published the tender notice advertisement in the newspaper, prepared the tender documents, organized meetings of the tender committee and also allotted the work of financial evaluation to M/s. Crisil Ltd., Mumbai. Techno-commercial proposals of the qualified bidders are under consideration by the committee appointed. The RFP document concerning the development of Common Biomedical Waste Treatment facilities in Mumbai is hosted at the MPCB website.

Table 7: Status of authorisations granted under Biomedical Waste (M&H) Rules, 1998 as on March 2005

Sr. No.	Region	Total No. of HCEs (Bedded Hospital)	Total No. of HCEs Applied	No. of authorizations granted	Application under process	No. of HCEs member of CTSDF	Show cause notices issued cause	Application received after show
1	Amravati	851	514	448	35	198	560	225
2	Aurangabad	1348	713	713	Nil	567	579	85
3	Kalyan	421	358	333	25	400	150	38
4	Kolhapur	920	632	545	87	793	266	155
5	Mumbai	1351	873	853	20	853	Nil	Nil
6	Nagpur	1447	894	300	594	499	754	164
7	Nashik	1344	1038	1016	22	880	142	30
8	Navi Mumbai	131	131	130	1	130	1	Nil
9	Pune	1885	1193	1093	59	1253	376	244
10	Raigad	260	250	250	Nil	68	40	27
11	Thane	436	389	381	8	381	168	114
	Total	**10394**	**6985**	**6062**	**851**	**6022**	**3036**	**1082**

The status of implementation of the Biomedical Waste Rules (1998) as on March 2005 is given in table 8.

Table 8: Status of Implementation of BMW (Management and Handling) Rules, 1998

Sr. No.	Region	Total No. of HCEs (bedded hospital)	Total No. of HCEs applied	No. of authorizations granted	Application under process	No. of HCEs member of CTSDF	Show cause notices issued	Application received after show cause
1	Amravati	851	514	448	35	198	560	225
2	Aurangabad	1,348	713	713	Nil	567	579	85
3	Kalyan	421	358	333	25	400	150	38
4	Kolhapur	920	632	545	87	793	266	155
5	Mumbai	1,351	873	853	20	853	Nil	Nil
6	Nagpur	1,447	894	300	594	499	754	164
7	Nashik	1,344	1,038	1,016	22	880	142	30
8	Navi Mumbai	131	131	130	1	130	1	Nil
9	Pune	1,885	1,193	1,093	59	1,253	376	244
10	Raigad	260	250	250	Nil	68	40	S27
11	Thane	436	389	381	8	381	168	114
	Total	**10,394**	**6,985**	**6,062**	**851**	**6,022**	**3,036**	**1,082**

Mercury control in health care facilities

Mercury waste generated from heath care establishments is not classified as biomedical waste, as mercury is already classified under Schedule-II of the Hazardous Waste (Management and Handling) Rules (amended 2003). However, as suggested by the CPCB, necessary actions are being taken to ensure proper collection, treatment and

Illegally imported waste oil stored at JNPT

disposal of mercury wastes generated by health care establishments having biomedical waste authorization as per the Hazardous Waste Rules.

8.5 Management of Hazardous Wastes

The Supreme Court of India is considering a public interest litigation regarding management of hazardous wastes in India (writ petition No.657 of 1995). The Court considered various recommendations contained in the report of the High Powered Committee, appointed under the chairmanship of Prof. M. G. K. Menon, and issued a detailed order dated 14 October 2003 directing all the concerned authorities to take follow-up actions in a time-bound manner on those directives regarding management of hazardous wastes and expeditious implementation of the Hazardous Waste Rules.

The order, among other things, included time-bound actions for setting up of hazardous waste management facilities, closure of industries operating without authorization, preparation of inventory of waste generated, identification of illegal waste dumpsites and removal of wastes from such illegal sites to safe disposal places, mass awareness, dissemination of information, institutional capacity building, etc.

HW secured landfill work in progress at MIDC Tarapur

Composition of the Supreme Court Monitoring Committee

Dr. G. Thyagarajan
(Chairman)

Dr. V. Rajagopalan
(Chairman, Central Pollution Control Board)

Dr. Claude Alvares
(Director, Goa Foundation)

Dr. Sukumar Devotta
(Director, National Environmental Engineering Research Institute)

Dr. D.B.Boralkar
(Member Secretary, Maharashtra Pollution Control Board)

Dr. M. O. Garg
(Director, Indian Institute of Petroleum)

Dr. S. P. Mehrotra
(Director, National Metallurgical Laboratory)

Dr. J.S.Yadav
(Director, Indian Institute of Chemical Technology)

Dr. S. Sivaram
(Director, National Chemical Laboratory)

Shri. K.V. Bhanujan
(Chairman, Gujarat Pollution Control Board)

Dr. Subba Rao
(Addl. Director, HSMD) Ministry of Environment and Forests, Govt. of India (Member Secretary)

The Court went on to appoint a Monitoring Committee, under the Chairmanship of Dr. G. Thyagarajan, Former Director, Council for Scientific and Industrial Research (CSIR), to oversee compliance of the issued directives.

Additionally, the Monitoring Committee was required to submit quarterly report to the Court regarding actions taken by the concerned authorities. Based on the ATRs filed by the SCMC from time to time, the Court is passing further orders in the matter. All ATRs submitted by the MPCB are to be found on the website of the Board.

The state of Maharashtra generates almost half the hazardous waste generated in India. The task of putting in place a proper waste management system for this waste is enormous. However, MPCB has done much appreciated work in implementing the Court's orders in letter and sprit. The SCMC has applauded the exemplary work done by the Board and the MIDC in successful clean-up operations, compliance of environmental standards by industries, raising public awareness, stringent action by the Board against defaulters by way of levy of fines, prosecutions, etc.

As directed by the Supreme Court, it was first immediately decided that industries identified as defaulters as per the Hazardous Wastes (Management and Handling) Rules, 1989 shall be considered for issuance of closure directions. A total of 3,427 such units were identified in the state. A fresh assessment was also carried out to ascertain the presence of any additional hazardous waste generating units in Maharashtra which might have remained undetected for any reason up to the present time.

As per the directives of the Supreme Court, action was initiated against industries that did not possess authorizations and also against those that were not complying with the conditions laid down in the authorization order issued to them by the Board. The status in terms of closure directions

issued by the Board, and withdrawal of those directions in respect of those industries which thereafter complied with the orders of the Apex Court and of the Board is given in table 9:

Table 9: Category	Action by MPCB
Total no. of industries operating without authorization or not complying with authorization conditions: Closure directions issued till date.	823
No. of industries now complying with the directions and hence closure directions withdrawn.	623
No. of industries closed for non-compliance/electric supply disconnected.	16
No. of units found to be closed for various reasons.	76
No of industries which have been granted permission to store hazardous wastes due to Treatment, Storage and Disposal Facility (TSDF) distance criteria.	108
No. of units that have become members of CHWTSDF as on March 2005.	Taloja: 1,811 TTC: 953

These actions, viz., issuance of directions to hazardous waste generating units, levy of fines, etc., are being continued so that the industries are compelled to take the hazardous waste lying in their premises to the common TSDF at Taloja or at TTC.

Inventorisation of hazardous wastes

It is a stupendous task to carry out re-Inventorisation of hazardous wastes since there are a large number of such units spread over several industrial areas in the state. The Board employed a novel approach to carry out the inventorisation directed by the Apex Court. A committee headed by the member-secretary of the Board was constituted on 18 August 2004 to authenticate the findings of the studies on inventorisation of hazardous wastes. The approach was found to be practical in securing fairly accurate information on hazardous waste generation by any particular industry.

The Inventorisation revealed that there are 4,355 units generating hazardous wastes to the tune of 8 lakh MT/yr in the state.

Table 10: Region-wise estimated quantity of HW generated in Maharashtra as per the inventory as of March 2005

Sr. No.	Regions	No. of industries generating HW	Secured landfill MT/Y	Method of disposal Incineration MT/Y	Sale / recycling MT/Y	Total MT/Y
1	Navi Mumbai	517	43210	50772	14745	108727
2	Pune	669	38584	12829	15716	67129
3	Nagpur	273	55854	11220	43626	110700
4	Thane	613	45608	6826	22734	75168
5	Aurangabad	238	7393	1847	17509	26749
6	Raigad	340	94008	21997	38473	154478
7	Kalyan	652	52345	7907	47004	107256
8	Amravati	91	9780	371	2574	12725
9	Nashik	451	21240	7601	27525	56366
10	Kolhapur	293	19269	12700	16263	48232
11	Mumbai	218	31536	12108	17520	61164
	Total	**4355**	**418827**	**146178**	**263689**	**828694**

However, as per the assessment based on the Hazardous Waste Rules amended in 2003, there was an increase in the number of HW generating industries. Their number as per the current assessment now stands at 3874 as a result of additional categories of HW in the amended HW Rules, 2003. The identification of HW units is an on-going exercise. The completion of the HW inventory has helped in identification of new HW generating units in Maharashtra as per the amended HW Rules.

Hazardous waste disposal facilities

There are two common facilities for management and disposal of hazardous wastes set up at Taloja and TTC industrial areas of MIDC in Thane district. These facilities are high technology and capital intensive. The Central Government in the Ministry of Environment and Forests, MPCB and MIDC have provided capital subsidy to these facilities so as to reduce the tariff and motivate the user industries to manage their waste in an environmentally sound manner by despatching it to these facilities. The state-of-the-art technology applications at these facilities can be compared with similar units in other parts of the world.

Both TSDFs are within a reasonable distance of about 100 km from the location of the majority of hazardous waste generating units in the seven districts adjoining Mumbai-Thane. The first cell of the TSDF at Taloja was commissioned in November 2002, while the incinerator became operational in November 2004.

The incineration facility is an integral part of the TSDF at Taloja. Since the incinerator at Taloja TSDF became operational in 2004, nearly 14,430 tonnes of incinerable waste has been disposed of at the facility. This includes the incinerable waste that was stored by industries at the MWML facility and the imported waste oil lying at CSFs in the JNPT area, presently being incinerated in line with the orders of the Supreme Court dated 5.1.2005.

MPCB had issued directions to the industries that were storing hazardous wastes in their premises to transport these to the nearest CHWTSDF for treatment and disposal. Accordingly, the disposal of hazardous wastes is taking place in the two TSDFs set up at TTC and Taloja. The following tables (11a and 11b) show the quantities of hazardous wastes received at TTC and Taloja CHWTSDFs for treatment and disposal during January 2004 to October 2005:

Table 11 (a): Hazardous waste received at Taloja CHWTSDF

Sr. No.	Month	Direct disposal in SLF (MT)	Treatment & disposal in SLF (MT)	Incineration (MT)	Total (MT)
1	**April. 04**	1800	1750	250	**3800**
2	**May. 04**	5000	8000	300	**13300**
3	**June. 04**	1800	1000	400	**3200**
4	**July 04**	1240	905	335	**2480**
5	**August. 04**	814	997	436	**2247**
6	**Sept. 04**	1104	1365	505	**2974**
7	**October 04**	867	1217	526	**2610**
8	**Nov 04**	1300	1662	505	**3467**
9	**Dec 04**	5022	2871	673	**8566**
10	**Jan 05**	2920	3710	432	**7062**
12	**Feb 05**	3165	4513	619	**8297**
13	**March 05**	3947	3670	659	**8276**
	Total	**58062**	**53291**	**12779**	**124132**

Table 11 (b): Hazardous waste received at TTC CHWTSDF

Sr. No.	Month	Direct disposal in SLF (MT)	Treatment & disposal in SLF (MT)	Incineration (MT)	Total (MT)
1	**April. 04**	133	—	—	**133**
2	**May. 04**	258	77	NA	**335**
3	**June. 04**	0.55	nil	NA	**0.55**
4	**July 04**	nil	6	NA	**6**
5	**August. 04**	4.49	7.75	Nil	**12.25**
6	**Sept. 04**	1.07	15.59	Nil	**16.66**
7	**October 04**	30.43	6.29	Nil	**36.72**
8	**Nov 04**	192	82	NA	**274**
9	**Dec 04**	221	108	NA	**329**
10	**Jan 05**	127	91	NA	**218**
11	**Feb 05**	284	81	NA	**365**
12	**March 05**	1176	147	NA	**1323**
	Total	**4438.292**	**1513.837**	**44.411**	**5996.55**

***** Incineration material received at TTCWMA is sent to M/s MWML, Taloja for incineration since TTC WMA does not have the incineration facility.

In the case of industries located in Nagpur, Aurangabad, Amravati, Kolhapur, Pune and Nashik districts – where the distance from the CHWTSDF is more than 200 km – it was decided to permit storage of hazardous wastes onsite till a CHWTSDF is established by the MIDC for those regions. Wherever possible, industries have been directed to carry out onsite disposal (by recycling), or by incineration (only if an incineration facility is available) or by sale of the wastes to registered recyclers who possess EST and ESM facilities and are authorized by the CPCB to receive such wastes for recycling/re-refining or incineration. The Board is keeping a strict vigil through its offices in the state on those industries that are storing or giving their waste to registered recyclers so that there is no pilferage and unauthorized waste recycling/re-using.

The establishment of new TSDFs at Butibori (Nagpur) and Ranjangaon (Pune) to cater to the needs of HW disposal in Nagpur, Amravati Pune and Kolhapur regions is in advanced stages of development. EIA studies on these TSDFs have been completed. After completion of the public hearings for the facilities at both places, the land will be earmarked for them by MIDC. The work to develop the TSDFs at the above locations is being

awarded on BOOT basis by MIDC. However, the response to the RFPs for TSDF sites at Shendre in Aurangabad and Mahad has been very poor.

To comply with sub-rule 2 of Rule 5 of the HW Rules (amended, 2003), the Board has issued an order for allocation of hazardous waste generating areas for disposal of generated wastes in the existing and proposed common hazardous waste treatment, storage and disposal facilities (CHWTSDF) at Taloja, TTC, Ranjangaon, Butibori, Shendre and Mahad (table 12).

Table 12: Status of CHWTSDF sites in Maharashtra

Sr. No	Location	Capacity	Status
1	Taloja, Raigad	SLF: 120000 TPY Incinerator: 2.0 TPH	SLF operational (2002) Incinerator is in operation since November 2004. The first cell of TSDF was covered during monsoon and is being capped now. The monitoring of leachates is a continued activity. Post closure monitoring activity shall begin after capping is completed by MWML. The Second cell of TSDF, which was closed during monsoon, has been reopened now.
2	TTC, New Mumbai	SLF: 10000 TPY	SLF operational (2004). First cell was commissioned in Jan. 2004. The cell was closed during the monsoon period and has been reopened now. There is no incinerator.
3	Butibori (Nagpur)	SLF: 50000 TPY Incinerator: 2.0 TPH	The site is to go for public hearing, prior to its being granted consent by the Board.
4	Ranjangaon (Pune)	SLF: 50000 TPY Incinerator: 2.0 TPH	The site is to go for public hearing, prior to its being granted consent by the Board.
5	Shendre	SLF: 50000 TPY TPH	MIDC has reported that the SCMC directive to develop a TSDF at Shendre is being put before its Board for approval after which further action shall be taken to develop this TSDF.
6	Mahad	Incinerator: 3.0 ` TPH	MIDC has reported that the SCMC directive to develop a TSDF at Mahad is being put before its Board for approval after which further action shall be taken to develop this TSDF.

Removal of hazardous wastes from illegal dump sites

The Supreme Court had also directed that illegal and/or unauthorized hazardous waste dumps be cleared and the wastes lifted and sent to secured landfills (TSDFs). To achieve this, the Board adopted a three-pronged approach to ensure full compliance with the directives of the Apex Court.

(a) Hazardous wastes lying within the premises of industries

Directions were issued by the Board to those industries storing hazardous wastes on their premises. They were directed to lift these wastes and send them to the nearest CHWTSDF for treatment and disposal immediately. Table 13 shows the quantity of hazardous wastes received at TTC and Taloja CHWTSDFs during the year under report.

Table 13: Disposal options at TSDFs in the state

	TSDF SITE	Direct disposal in SLF (MT)	Treatment & disposal in SLF (MT)	Incineration (MT)	Total (MT)
1	TALOJA	28,979	31,660	5,640	66,279
2	TTC	2,428	622	-	3,150
	Total	**31,407**	**32,282**	**5,640**	**69,429**

Twenty-five industries were issued Proposed Directions as per Rule 16 (3) of the Hazardous Wastes Rules concerning the levy of fines for storing unacceptable quantities of hazardous wastes on their premises. Upto date, six industries have paid the fines totalling Rs.22,48,500 to the Board. Some industries have sought additional time and/or have requested a review and personal hearing in the matter of payment of fine.

Other actions like issuing show cause notices, directions under appropriate sections of the Act/Rules against the defaulters that are not sending hazardous wastes to the TSDFs, have also been taken by the Board.

The Board has found that premises of some closed units in MIDC areas are being used for dumping hazardous wastes illegally. Action is being taken against those responsible for such violations.

(b) Hazardous wastes lying in MIDC industrial areas

i) Illegal hazardous waste dumpsites

There are several plots in MIDC areas that were actually earmarked for the disposal of solid non-hazardous wastes. However, these plots, over a period of time, have become illegal dump sites for hazardous wastes. Lack of vigilance by the MIDC is the principal reason for the non-conforming use of these plots.

Various steps involved in the process of identification of these illegal dump sites are listed below:

- A joint visit by the MPCB, MIDC and the Industries Association representative to identify these illegal hazardous waste dumpsites.
- The team estimated the hazardous waste quantity, took samples to test characteristics and contents.
- Wherever found necessary, samples of ground water and leachate from the adjoining areas was collected and tested in the laboratory.

Approximate quantities of illegal hazardous waste in such dumps is given in table 14:

Table 14: Illegal hazardous waste dumps at CETPs

Sr. No.	MIDC area	Illegal dump (Approx. Qty., MT)
1.	MIDC, TTC (A and EL Block)	200
2.	MIDC, TTC (C Block)	100
3.	MIDC, Dombivali	180
4.	MIDC, Dombivali Phase-II	30
5.	MIDC, Ambernath (Chikhloli and Morivali)	17
6.	MIDC, Ambernath	08
7.	MIDC, Badlapur	15
8.	MIDC, Tarapur	40,000
9.	MIDC, Patalganga	200
10.	MIDC, Roha	200
	Total	**40950**

Since the hazardous waste in illegal dumps sites in MIDC areas (except Tarapur) was found to be of manageable quantities, the SCMC had given specific directions to the MIDC to get the hazardous wastes from these areas removed within the allocated time-frame i.e., up to January, 2005 and to make special efforts to despatch them to the CHWTSDF at Taloja. As directed by the SCMC and starting from 10 January 2005, MIDC started lifting and disposing of the wastes in the illegal hazardous waste dumps from MIDC to the TSDF at Taloja. To date, 2,086 MT of this waste have been lifted from seven MIDC areas. The lifting was certified by Mumbai Waste Ltd and the Board's officers. As of now, there is no illegal waste lying in the industrial areas except the waste at Tarapur which is to be capped in the SLF being created *in situ*.

ii) Hazardous wastes at Tarapur

About 1.5 lakh MT of hazardous wastes are lying at a dumpsite in Tarapur MIDC industrial area.

The options proposed for handling these wastes were:

Hazardous wastes dumped at Raksha Chem, Mahad

a) Lifting and shifting of these wastes to Taloja CHWTSDF through special transport vehicles for landfilling.

b) Capping the heap and sludge in an engineered manner at the site itself.

c) Creating a secured landfill cell on the same plot as per CPCB guidelines and filling it with the hazardous wastes as a one-time measure, capping it permanently once filled and then carry out post-closure monitoring.

The analysis report of the hazardous wastes indicated that the sludge had become almost inactive as it had been lying there for long many years and therefore it could go safely for landfill without any treatment.

All the options were studied and discussed at length with the MIDC, NEERI, SCMC and the facility provider. After detailed discussion, considering all pros and cons of the solutions proposed and the risks involved in transporting these wastes to Taloja, it was ultimately decided to go for the third option, that is, creation of a one-time SLF on the same plot.

MIDC has now prepared a project for onsite rehabilitation of the illegal hazardous waste dump

Temporary storage of ETP sludge at Mahad CETP

in consultation with NEERI. NEERI has approved the SLF creation plan based on CPCB guidelines. The SCMC has directed that the work of establishing and commissioning a secured landfill at Tarapur be completed by the MIDC on or before 15 May 2005. Accordingly, tenders have been called for creating the SLF and finally disposing of the hazardous wastes.

The Board has also granted permission for the establishment of the proposed engineered landfill at Tarapur.

A Local Area Environment Committee (LAEC) was appointed by the Board to monitor compliance with the Supreme Court directives. This committee continues to play an important role in the control of pollution at MIDC Tarapur. Since the formation of the LAEC, the pH at sump No. 3 continues to be within the range of 5.5 to 9.0, as per the MPCB's conditions of consent given to the CETP at Tarapur. The terms of reference of the LAEC were drafted by the Board and were appreciated by the Chairman of the SCMC. (Given its success, an LAEC for Dombivali industrial area has also been formed to monitor compliance with the directives of the SCMC and the Board.)

iii) CETP sludge

The sludge generated by the CETPs in the MIDC areas forms one of the major sources of hazardous waste. As per the information gathered by the SCMC visiting team in June 2004, table 15 provides the quantum of the hazardous wastes lying in the CETP sumps of different industrial areas:

Table 15: Quantity of hazardous wastes lying in the CETP sumps of MIDC industrial areas

Sr. No.	Name of Industrial Area	Qty. of H.W. (M.T.) Approx.
1	Mahad	1,747
2	Roha	200
4	Taloja	200
5	Badlapur	15
6	Ambernath	25
7	Dombivali (I and II)	210
8	TTC, Thane Belapur	200
9	Patalganga	200
	Total	**2,797**

The SCMC had directed the MIDC to concern itself urgently with the transport and disposal of the CETP sludges to the TSDF at Taloja, and to submit a report on compliance with the direction 31 October 2004. MIDC, however, was unable to complete the task of lifting these wastes from the industrial areas within the stipulated period. Following a further review by the SCMC on 11 January 2005 at its meeting in Mumbai, the sludge removal process for most industrial areas was completed.

(c) Using remote sensing for identification of illegal hazardous waste dump sites

The Supreme Court had directed states to prepare an inventory of all illegal hazardous waste

Illegal hazardous waste dump at Tarapur

dumpsites in their respective jurisdictions. The SCMC deliberated extensively on this issue at its meeting held in April 2004 at CPCB New Delhi and later took a decision to explore the possibility of employing remote sensing techniques to identify such dumpsites. This was followed by a meeting with the NRSA in May 2004. SCMC had directed Maharashtra to support such a project in view of the large scale illegal hazardous waste dumps existing in the state.

The MPCB accepted the suggestion and requested NRSA to prepare a proposal for the consideration of the Board. Accordingly, NRSA submitted a proposal which deals with the identification of illegal hazardous waste dump sites in Thane district by using remote sensing techniques.

Thane district was selected as the study area and the illegal dumps of hazardous wastes in this district were proposed to be identified using space borne remote sensing data from two points of time for the purpose. The data gathered would be analysed and interpreted as per the standard protocol being followed by NRSA in similar situations. The time period for completion of the work from the date of award of work would be six months and the estimated expenditure for the entire project work would be Rs.4.42 lakhs.

Hazardous waste burning at MIDC, Tarapur

The scope of work of the study would include the following:

- Identification and mapping of the hazardous waste dump sites;
- Mapping of the surface water and drainage; wetlands etc;
- Identification of the built up areas; industrial locations;
- Proximity analysis of the dumpsites;
- Submission of draft and final reports.

NRSA has since submitted a draft report on their findings on employing remote sensing techniques for the identification of the hazardous waste dumps in and outside the industrial areas of Tarapur, Dombivali and Ambernath.

The Airport Authority of India (AAI), Mumbai, had raised a serious concern about disposal of unclaimed/uncleared hazardous chemical goods lying in their godowns at the Cargo Complex, Sahar Disposal Unit, CSI Airport, Mumbai. The MoEF had directed MPCB to review the matter and submit a report on the issue. A decision was taken to send the unclaimed/uncleared hazardous goods for disposal to the CHWTSDF Taloja. AAI was instructed to complete this work by 31 May 2005.

A common landfill site at MIDC Lote-Parshuram for Goa and Maharashtra

During its visit to Goa, the SCMC noticed that the quantity of hazardous waste generation by the industry in Goa was not enough to warrant the establishment of a separate CHWTSDF for the small state. Therefore, the SCMC directed Goa and Maharashtra to explore the possibility of setting up a joint landfill site at MIDC Lote-Parshuram or any other suitable place to cater to the hazardous waste disposal needs of industries in Goa and southern Maharashtra. The Chief Minister of Goa also made a request to the Chief Minister of Maharashtra regarding permission to use the TSDF in Maharashtra for disposal of hazardous wastes

Copy of a letter from the Chairman, SCMC to the Chief Secretary, Maharashtra, appreciating the work done by the MPCB in implementing the SC order dated 14.10.2003 on hazardous wastes

Shri Arun Kumar Mago,

In response to my letter dated May 31, 2004 regarding the captioned subject, we have received information from your State Environment Secretary and Member Secretary, Maharashtra Pollution Control Board. This information has been included in the 3rd Quarterly ATR being submitted to the Court.

I am writing this letter to appreciate the strong and exemplary action taken by your State to streamline the enforcement of HW Rules and compliance of Court directions in right earnest. I believe that your continued support to MPCB and MIDC will set right the situation and show the way for other states too.

With kind regards,

Dr. Thyagarajan
Chairman,
Supreme Court Monitoring Committee
on Hazardous Wastes Management
Ministry of Environment and Forest (HSMD)

from Goa. These issues are being examined by the MIDC, which is the nodal agency for the development of infrastructure for the disposal of such wastes. The Board is interacting with the pollution control authorities in Goa so as to gather the necessary information required by MIDC in this regard.

Show cause notices to auctioneers of hazardous wastes

As per the Hazardous Waste Rules, waste oil/ used oil and other hazardous wastes listed in Schedule IV should be sold or auctioned only to those recyclers registered with the CPCB and possessing an EST/ESM facility, so that the auction of such materials in the state is regulated.

Show cause notices were issued to 17 auctioneers and bulk consumers selling such wastes to unauthorized recyclers. The MSEB's Super Thermal Power Station was issued a show cause notice for levy of a fine for various defaults on the part of the organisation. One of these defaults included storage of waste oil and its disposal by auction.

Show cause notices were also issued to BEST Undertaking, MCGM, Mumbai, Maharashtra State Road Transport Corporation, Mumbai and its regional depots in the state for disposal of the used

Special vehicles for hazardous waste transport and disposal

oil/ waste oil in a manner that did not conform with the directives of the Supreme Court.

The Supreme Court of India heard the matter concerning the containers of waste oil lying at JNPT, MbPT and Container Freight Stations in Navi-Mumbai. These containers contained used oil/waste oil imported from abroad and which were not claimed by the importers. The Court passed orders regarding the actions to be taken to dispose of the material. The orders of the apex court were communicated to all concerned.

Implementation of hazardous waste transportation guidelines

According to the Court's order, transportation of hazardous wastes is to be done strictly as per Rule 7 of the Hazardous Waste Rules, 2003 and the guidelines issued by CPCB in that regard. In compliance with the orders of the Apex Court, the Board issued directions to all parties involved in the transportation of hazardous wastes in the state, i.e. generators, auctioneers, buyers, sellers, transporters, etc. Further, pending verification of compliance with the guidelines, the Board revoked all authorizations issued to transporters of hazardous wastes. A public notice was issued to this effect by the Board in the leading newspapers.

In response to the public notice, 28 hazardous waste transporters applied for authorization under the revised transportation guidelines. The applications were processed and conditional authorizations granted to these transporters. The Board is periodically organizing awareness campaigns on the subject through its regional offices, as well as monitoring compliance with the conditions imposed in the authorizations issued to the transporters.

Clean technology for re-refining/recycling used/waste oil

The Supreme Court had directed that re-refining/recycling of used oil/waste oil shall be carried out only through the application of clean technology. In this connection, the Board issued a public

New waste oil processing unit with environmentally safe technology

Reclaimed oil from the same unit

notice in leading newspapers to inform all concerned parties regarding the provisions laid down in the Rules and about the Apex Court's directives. Further, the Board suspended all authorizations of defaulting units. The member-secretary of the Board appointed an Expert Committee for verification of compliance in terms of adoption of clean technology in the process of re-refining and recycling used oil/waste. The Committee is functioning at the present time.

Both ports, viz., the Jawaharlal Nehru Port Trust (JNPT) and the Mumbai Port Trust (MbPT) have been directed to auction/sell their waste oil/ used oil and other wastes listed in Schedule 4 only to authentic users/recyclers registered with the CPCB.

The MoEF amended the Hazardous Waste Rules, 1989 with effect from 19 July 2004 by notification no. S.O. No. 826 (E), granting an extension of six months to recyclers/re-refiners for setting up plants with EST/ESM technology up to 31 December 2004. The Board has been monitoring progress in this matter.

Display board outside industrial unit providing environmental information about the unit

Burning of hazardous and non-hazardous wastes on beaches

The directives of the Supreme Court concerning burning of hazardous and non-hazardous wastes on beaches have been communicated to the District Collectors in the coastal districts of Maharashtra. They have been asked to take effective steps to stop the burning of hazardous or non-hazardous wastes on beaches and/or near creeks. A public notice informing the general public about the Court's directive was also issued in leading newspapers. Field officers of the MPCB located in the coastal districts were also instructed to maintain a vigil and report violations so that legal action may be initiated against those disobeying the order.

Display of information regarding authorization granted by the Board

Directions were issued to industries for display of information regarding authorization granted by the Board. A public notice to this effect was issued through leading newspapers in the state, directing all concerned to ensure compliance with the court's orders.

The SCMC team also issued directions that the setting up of display boards by the industries must be ensured by the Board. To date, 2,210 industries have complied with this direction.

Hazardous waste incinerator at Taloja

Shipbreaking

Shipbreaking has been carried out at Mumbai Port for the last several decades. At present, the facility is available at the waterfront of Powder Works Bunder and Lakri Bunder (south) at Darukhana. The area has been demarcated into seven and twelve plots respectively, along with adjacent land to facilitate breaking and storage of broken material.

The total number of ships broken during the last five years upto January 2005 is given below:

Year	No. of ships broken	Total LDT broken on M.T
2001-2002	63	96,803
2002-2003	62	75,243
2003-2004	57	20,434
Nov 04 to Jan 05	11	

Pursuant to the apex court order dated 14.10.2003, the ship breakers are now required to submit the following documents before beaching of the vessel destined for breaking:.

1) M.O.A. (Memorandum of Agreement)

2) Port worthiness report

3) Light displacement tonnage (LDT) certificate

4) Physical delivery certificate

5) Gas free certificate (in case of tankers)

6) Customs NOC for beaching

7) Customs noted Bill of Entry

8) Ship's registry/tonnage certificate

9) Deposit receipt (90 days' payment) of shipbreaking charges.

Subsequent to beaching, the ship breakers are required to submit the following documents before breaking of the vessel:

1) Bill of sale

2) Commercial invoice

3) Payment receipt of Port charges

4) Bill of Entry (made out of charges)

5) Customs' NOC/Permission for breaking of ship

6) Undertaking to complete breaking (within the prescribed time limit)

7) LDT certified by Dy. Conservator

8) NOC issued by Dy. Conservator/Director, Pollution Control Cell.

The ship breaking permission is finally granted to the ship breaker subject to the following conditions.

1) That he will provide booms along the entire shipside throughout the tenure of shipbreaking to prevent the escape of ship wastes into the harbour water.

2) That in the event of the vessel discharging or spilling accidentally or otherwise oil and oily water or causing chemical pollution anywhere in the waters of the Port or throwing garbage or rubbish anywhere within the Port limits, without permission, he will pay the penalty/cleaning charges upto Rs.75,000 for oil/chemical pollution and upto Rs.40,000 for garbage/rubbish pollution. The decision of the Deputy Conservator in regard to payment of penalty/cleaning charges will be final and binding on him.

3) That disposal of the oil sludge in the wrecked vessel be mandatorily given to government notified parties only in compliance with the Petroleum Act to avoid oil pollution.

4) That he will complete breaking of the vessel as per the undertaking given by him.

8.6 Notification on Fly Ash Utilization

The air pollution caused due to emission of fly ash from coal based thermal power plants is a major cause of negative health impacts on the people living in their vicinity. In the state of Maharashtra alone, about 30,000 tonnes of fly ash is generated every day by thermal power plants to produce about

Transport of fly ash from thermal power plant

Table 16: Utilisation of Fly Ash in Maharashtra at a glance

Sr No	Name of TPS in MT	Production level (MW)	Coal consumption during the year	Av. Ash Content in coal (%)	Ash Generation during the year in MT	Present ash Disposal method	Category-wise Utilization in MT/Year						Present fly ash Utilization (%)
							Bricks	Bunds	Cement	Landfill	Others	Total	
1	Chandrapur	2340	9282344	40.48	3757297	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	63664	-	36000	2200	45894	147758	3.93
2	Koradi	1100	3912242	37.53	1468444	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	40295	-	-	-	49200	89495	6.09
3	Khaparkheda	840	3642407	35.08	1277612	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	38175	-	371445	-	44454	454074	35.87
4	Parali	690	2352607	37.93	892354	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	22776	-	27170	108000	44422	202368	22.68
5	Bhusawal	482.5	1764160	32.38	571188	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	186507	-	69551	-	47953	304011	53.22
6	Nashik	910	2405933	36.53	878866	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	18412	-	28439	17500	1993	66344	7.55
7	Paras	58	263472	31.22	82254	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	71160	-	912	-	1980	74052	90.03
8	Dahanu (Reliance Energy)	500	2366985	29.08	584640	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	613	7040	-	94	140160	147907	25.3
9	Tata Power	1330 (only 500 MW - coal based)	1957000	-	38081	Bricks, Manufacturers, Bunds, Agriculture, Cement & Others	-	5251	-	15492	17338	38081	100

12,000 MW of power. In order to regulate the disposal and utilization of fly, Government of India has issued a notification making it mandatory for brick manufacturers to use fly ash. This has also been aimed at reducing the exploitation of the precious natural top soil layer for the making of bricks. The Board issued directions to more than 3,800 brick manufactures for utilization of fly ash. The cooperation of District Collectors was also sought for implementing the notification.

1) The Maharashtra State Electricity Generation Company (MSEGCO) has installed fabric filters (bag house) for collection of dust at the Koradi Thermal Power Station Unit No.5. This technology has been installed for the first time in India at a thermal power plant.

2) The other thermal power plants of Maharashtra are also attempting to utilize the fly ash (see table 16). Paras Thermal Power Station in Akola District, Nagpur, is achieving more than 95% fly ash utilization. The status of fly ash utilization at these power stations is regularly displayed on the Board's website.

3) MSEGCO has started ammonia gas injection for flue gas conditioning for better dust removal at the Electro Static Precipitator (ESP) in their Khaparkheda Thermal Power Station. This

Hazardous waste landfill at Taloja

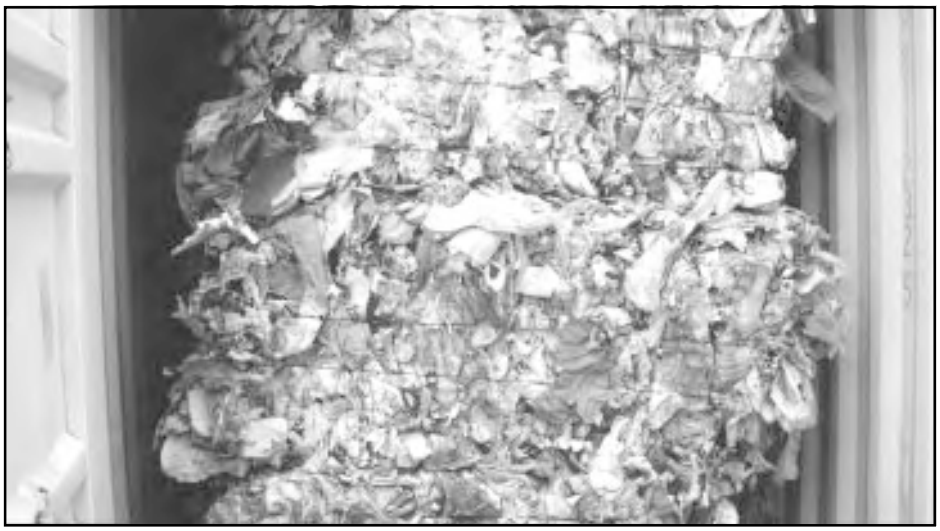
technology has significantly improved the dust collection efficiency thereby reducing the dust emissions from the stack. Considering the success of this flue gas conditioning, similar technique is being followed at the Chandrapur Thermal Power Plants.

4) Dry flash ash collection and high concentration slurry disposal (HCSD) system is installed and in operation at Khaparkheda unit 3 and 4. HCSD system is used to transport the ash with minimum water. In the HCSD system, the solids concentration is 65% to 74% against conventional 20% to 30%. This technology reduces the use of precious water resources and also preserves the characteristics of the fly ash.

8.7 Notification on plastic carry bags

In response to the widespread choking of stormwater drains by thin plastic bags, MPCB issued a notification in 1999 banning the manufacture of plastic bags less than 20 microns in thickness. In response to the ban, the regional officers of the Board have been keeping a strict vigilance over the plastic bags manufacturing units located throughout the state and have been taking requisite legal action under the Recycled Plastics Manufacture and Usage Rules, 1999 (amended 2003).

Imported plastic waste at JNPT



Three such defaulting plastic bag manufacturing units have been prosecuted in the current reporting year alone.

The Board also issued show cause notices to defaulters among recycled plastic manufacturers for not complying with the rules in matters of registration from the prescribed authority. As a result, nine of the recycled plastic manufacturer units applied for registration by paying the requisite fee to the Board, which in turn granted them a registration certificate.

To ensure that the ban was not being flouted, the Board set up vigilance squads at the corporation and taluka levels, with the help of local bodies and concerned departments of the State Government. As a result, fines amounting to several thousand rupees were collected from defaulters. For instance, the total cumulative fine collected by the Kalyan – Dombivali Municipal Corporation from defaulter wholesalers and retailers since January 2004 amounts to Rs.36,450.

The treatment and disposal of contaminated scrap plastic/recycled plastic and plastic bags is also addressed under the Rules. The Board issued a public notice to this effect in leading newspapers which appeared on 9 December 2004.

9. Enforcement

THE BOARD FUNCTIONS AS an environmental law enforcing body in the state. This is one of the principal functions of the Board. In order to regulate and control pollution from different sources, the Board maintains constant vigil on industries as well as on local government bodies. Through the consent order, certain conditions are imposed on industrial units, which must be complied with. These conditions are based on the type and load of pollution generated by the industry. They also depend on the environmental conditions in which the industry exists.

9.1 Enforcement through consent

In order to expedite enforcement through the consent regime, the Board has delegated powers to regional officers and sub-regional officers for the Orange and Green category of industries respectively. Steps have been taken for expeditious grant of consent for Red category of industries by the member-secretary. Status of consent granted by the head office is displayed on MPCB's website. Efforts are being made to grant consent to industries within 30 days of the filing of applications. In last year alone, enforcement has improved as can be seen from the following data:

- MSW Authorization (from 32 % to 98%)
- BMW Authorization (from 15 % to 80%)
- HW Authorization (from 50% to 95%)

9.2 Prosecutions launched and convictions secured

The Board regularly conducts environmental monitoring of polluting units and follows up for necessary installation of pollution control equipment. Notices are served to defaulters for non-compliance with pollution control norms. Legal action under appropriate sections of the Acts is the last remedy for defaulting units that fail to comply with the consent conditions even after notices have been served. The defaulting units are also called for a hearing so that their problems can be discussed and possible solutions may be considered. It is the

'He is not a terrorist. He has only worn that special suit for protection from pollution!'

Board's experience that large-scale industries generally take necessary measures for pollution control. Some medium and small scale industries do not take sufficient steps due to constraints like space, finances and skilled manpower to operate their pollution control systems.

During the year 2004–05, several notices were issued by the regional offices of the Board to defaulting industries. The details are tabulated in the following table.

Table 1: Details of notices sent by the Board's regional offices to defaulting industries

	Reasons for sending the notice:		
Regional Offices	**To upgrade treatment facility**	**To install treatment facility**	**To achieve compliance with standards**
Navi Mumbai	75	36	576
Thane	35	4	174
Kalyan	67	6	229
Raigad	25	0	61
Pune	60	30	863
Nashik	81	13	461
Nagpur	171	44	494
Aurangabad	71	24	125
Amravati	32	64	118
Kolhapur	47	13	237
Total	**664**	**234**	**3,338**

Table 2: The status of prosecutions launched (cases filed) and convictions secured as of March 2005 is provided as under:

Relevant rule	**No. of cases filed**	**No. of convictions secured**
Under Section 43, 44 of Water (Prevention and Control of Pollution) Act, 1974	301	58
Under Section 33 of Water (Prevention and Control of Pollution) Act, 1974	140	87
Under Section 39 r. w, 21 of Air (Prevention and Control of Pollution) Act, 1981	146	114
Under Section 22A of Air (Prevention and Control of Pollution) Act, 1981'	3	1

There have been a number of cases pending in various courts for long periods of time due to which no effective steps were being taken by certain plants for control of pollution generated by their units. For the effective and speedy disposal of such cases, the provisions of Section 33A of the Water Act,

1974 and Section 31A of the Air Act, 1981 were invoked. Under these provisions, the polluter can be compelled to submit an undertaking with a time-bound programme for upgradation/modernization of or any requisite alteration to the pollution control devices. The number of proposed and final directions issued by the Board in this connection during the year under report is stated in the table 3 below:

Table 3: Proposed and final directions issued by the Board

Sr.No.	Regional Office	No. of industries to which directions were issued				Total
		U/s 33A of Water Act, 1974		U/s 31A of Air act, 1981		
		Proposed direction	Final direction	Proposed direction	Final direction	
1	Mumbai	10	0	30	0	40
2	Navi Mumbai	123	4	27	17	171
3	Raigad	57	18	3	26	104
4	Thane	16	612	0	0	628
5	Kalyan	77	34	42	34	187
6	Pune	58	10	200	21	289
7	Nashik	1	31	1	0	33
8	Aurangabad	33	13	101	39	186
9	Nagpur	113	3	107	3	226
10	Amravati	25	1	23	1	50
11	Kolhapur	133	23	78	0	234
	Total	**646**	**749**	**612**	**141**	**2,148**

Directions for compliance issued to industrial units in MIDC Kalmeshwar and Hingna, Dist. Nagpur

The Board carried out an extensive survey of the industrial units located in Kalmeshwar and Hingna to assess the status of compliance. It was observed that many industries were operating without consent and without adequate pollution control devices.

Directions under the provisions of 33A of the Water Act, 1974 and 31A of the Air Act, 1981 were issued to the industrial units directing them to take remedial measures in a time-bound manner.

The representatives of the industries were given an opportunity of being heard and they were directed to take steps for compliance of the provi-

sions of the Water Act and the Air Act. The compliance of the directions is being monitored.

Panchaganga river: pollution from textile units

There is a burning issue of Panchaganga river pollution since the year 2000. In January 2005, the drinking water source of twelve villages in the vicinity of Ichalkaranji city situated downstream of the river was disturbed. At that time the Board had taken strong actions against the defaulting textiles and other units in the Laxmi Coop. Ind. Estate., the Parvati Coop. Ind. Estate and the Ichalkaranji Coop. Ind. Estate. A total of eleven industries were closed u/s 33A of the Water Act, 1974 and proposed directions were issued to 22 industries that were found violating consent conditions issued to them. The Board compelled the industries concerned to provide adequate treatment and disposal facilities for industrial effluent. The industry associations finally agreed to provide a common effluent treatment plant, for which they deposited Rs.52 lakhs with the Ichalkaranji Municipal Council which would execute the upcoming CETP project. The Member-Secretary of the Board granted a hearing to the affected units and thereafter allowed them to restart their manufacturing activities.

The industry association and the nagarpalika pursued the matter with the Central Government and they were able to get Rs.62 crores sanctioned under the textile cluster development scheme, of which Rs.18 crores was for the CETP.

Panchaganga river: Bank guarantee from the Kolhapur Municipal Corporation

A number of agitations were faced by the regional office at Kolhapur due to mixing of untreated municipal sewage with the Panchaganga river. The office took several legal actions from time to time. A bank guarantee of Rs.1 lakh was finally taken from the Kolhapur Municipal Corporation. As the problem continued, the bank guarantee was encashed by the Board. This was a unique instance of such action in the whole country con-

'They have come to understand environmental issues of the area.'

cerning non-performance of a local body. The Board also filed a criminal case against the Kolhapur Municipal Corporation for being a continuous defaulter u/s 45 A of the Water Act 1974. This was in addition to the earlier case filed by the Board in 1998 against the Kolhapur Municipal Corporation.

Other actions taken by the Board at Kolhapur:

1 No. of show cause notices issued – 68

2 No. of proposed directions issued u/s 33A of the Water Act, 1974 and u/s 31A of the Air Act, 1981 – 178

3 Final directions issued u/s 33A of the Water Act, 1974 and U/s 31A of the Air Act, 1981 – 87

Krishna river: Actions against the municipal corporations and industry

In Sangli district, the Krishna river is the main water source. In the month of March 2005, a major ecological upset led to a large fish kill (amounting to five tonnes). The event occurred due to mixing of sewage from Sangli city. The fish kill was sourced to reduction of dissolved oxygen levels in the river water. Accordingly, action has been taken against Sangli, Miraj and Kupwad Municipal Corporation u/s 33A of the Water Act, 1974.

L.K. Akiwate Co-op Industrial Estate, Akiwate, Jaysingpur tal. Shirol, dist. Kolhapur, has a co-op CETP that is operated by the members of the society. The Board issued proposed directions u/s 33A of the Water Act, 1974 for upgradation of the CETP and for better disposal system to cope with the problems of the Krishna river.

Polluter put behind the bars

1. MPCB had filed a criminal complaint under Section 25, 26 read with section 44 of the Water (Prevention & Control of Pollution) Act, 1974 against a textile processing unit viz., the Matushree Textile Ltd., located at MIDC Industrial Area, Badlapur, Dist. Thane. The unit was found to be discharging trade effluent not conforming to the standards prescribed by the Board in the consent.

'He is trying overcome the fuel prices by adding some more liquid.'

The officers of the Board had collected samples by following due procedure as laid down under Section 21 of the said Act and got the same analysed in the government laboratory.

Based on the analysis report, which was indicating higher values and other evidence on record the matter was argued. The Chief Judicial Magistrate, Thane vide order dated 21.3.2005 convicted the accused and punished him with simple imprisonment of two years. In addition, fine of Rs.1,000 was imposed and in case of default in payment of fine, the court imposed simple imprisonment of further period of one month.

2. The decision of the Court has sent strong message to wilful defaulters that violation of pollution control laws can be a very costly affair.

Legal action against CETPs

The Board took a stringent view of non-compliance of standards by CETPs and levied harsh punishments to bring them on line. The actions included:

1) Tarapur: 75 industries were closed for one week. Water supply was also disconnected. Permission to restart was given only after obtaining commitment from industries to set up a CETP by June, 2005. A bank guarantee of about Rs. 75 lakh was secured as proof of their commitment.

2) Mahad: The industry association responsible for setting up the CETP was pulled up by the Board. A bank guarantee of Rs. 25 lakh was taken from the industries to complete the work by February 2005. Work of CETP is now completed and commissioning is in progress. This is one of the high technology treatment facilities of its kind in this area.

3) Taloja: 58 defaulting industries were identified and show cause notices were issued. Industries have started the work of upgradation of waste water treatment plant and it is due to be completed

'I just removed the few trees to enable us to see the board better and to develop some public awareness.'

by June 2005. Once completed, the water quality of the Kasadi river will improve considerably.

4) Dombivali: 287 industrial units were closed for three days in entire industrial estate of Dombivali phase I and II due to the non-compliance of the environmental standards at the CETP. Fines of several lakhs of rupees was levied by the Board. As a result of the action by the Board, things are rapidly improving at Dombivali. Upgradation of the CETP to comply with effluent standards will be completed by June 2005.

5) Based on the report filed by MPCB, the Bombay High Court (Aurangabad bench) levied a fine of Rs. 10,000 on one distillery in Nashik district.

Actions under Rule 16 of the HW Rules, 1989

Pursuant to the order of the Supreme Court of India in W.P. (Civil) No. 657 of 1995 filed by Research Foundation for Science Technology and National Resource Policy V/s Union of India & Anr., and in order to effectively implement the provisions of the Hazardous Waste (M & H) Rules, 1989, the Board has been strictly monitoring the movements of hazardous waste.

The officers of the Board identified eleven industrial units, which were storing hazardous waste within their premises in an illegal manner. Such units were served with notices under rule 16 of the said Rules.

After giving an opportunity of personal hearing and based on the reports of officers of the Board, fines were imposed on six units to the tune of Rs. 22, 48,500.

Hazardous wastes in Lote Parshuram area

There are 49 industries in Lote Parshuram MIDC area which are generating units have installed the display Boards and become the member of CHWTSDF. A survey was conducted in this area and accordingly closure directions were issued to defaulting industries for non compliance of H.W. (M&H) Amended Rules 2003.

Lote Parshuram Environment Coop Society is used to operate and maintain the CETP at MIDC Lote. It is also a member of the CHWTSDF. Time to time appropriate direction has been given to the management for disposal of hazardous wastes. The Board has pursued the matter and conducted meeting of all CETP members and H.W. generating industries

Legal action against illegal transport and handling of hazardous waste oil

One company located in Uttar Pradesh is engaged in the business of recycling of waste lubricating oil/industrial oil. The company had obtained registration as a recycler and re-processor of waste oil from the Central Pollution Control Board.

The company used to participate in the auctions of waste oil/used oil in the State of Maharashtra. The company never provided details of quantity and quality of waste oil/used oil purchased in the auctions, mode of transport, manifest forms, etc. Besides this, the requisite authorization was also not obtained from the Maharashtra Board.

The authorized auctioneers of used oil/waste oil in the State were asked to submit requisite information with regard to the material being auctioned by them. One of these auctioneers (M/s. Power Grid Corporation Ltd., Chandrapur), was directed to comply with the provisions of the Hazardous Wastes (M& H) Rules, 1989 (as amended) before disposal of their hazardous waste oil. A condition was imposed by the Board requiring all parties lifting the material to obtain the necessary authorization of the Board before transporting waste oil out of the state.

Being aggrieved by the said condition, the company moved the Bombay High Court with a writ petition. The MPCB made detailed written as well as oral submissions before the Court and vehemently argued for the requirement of authoriza-

tion for transportation of hazardous wastes from one state to another.

By an order dated 24 November 2004, the High Court refused to grant interim relief to the petitioner company. The company was, however, asked to make an application to the Board in the prescribed form and also supply the necessary information as sought by the Board. The Board was directed to pass appropriate orders on receipt of the application. The company, however, did not submit the application in the prescribed form. In the meantime, it lifted 1414 drums of transformer oil/used oil from the Brihan Mumbai Electricity and Transport Co. (BEST) and did not provide any details to the Board. The non-compliance was brought to the notice of the High Court by the Board which filed an additional affidavit in this regard on 10 January 2005.

The matter was finally heard on 18 January 2005. The Court was informed that the company had made an application on 15 January 2005. The Board was directed to decide the application within four weeks. The petition was disposed of.

The High Court did not accept the plea of the petitioner company that the State Pollution Control Board has no authority to demand a separate NOC/authorization for transportation of hazardous wastes. On the contrary, the Court directed the company to make an application for authorization in the given format. In the meanwhile, the petitioner company succeeded in getting a letter from the CPCB which purportedly set out the procedure for transport of hazardous waste. In the letter (dated 29 October, 2004), the Additional Director, I/C HWMD, issued a suo-moto 'clarification' addressed to all SPCBs/PCCs. A copy of the 'clarification' was also marked to the petitioner company which placed it before the High Court by way of an additional affidavit dated 11 November 2004. The High Court did not take cognizance of the said 'clarification' as is evident from the orders passed by the Court dated on 24.11.2004 and 18.1.2005.

Legal action against transporter of bio-medical waste

The Board received a report from the Brihanmumbai Mahanagarpalika informing it that bio-medical waste was being sold to unauthorized persons/vendors/ bhangarwalas in violation of the terms and conditions of the authorizations granted. A raid was organized on 27 May 2004 by the officials of the Brihanmumbai Mahanagarpalika through its vigilance officers and activists of a non-governmental organization. During the raid, it was found that bio-medical wastes – packed in four yellow bags, four red bags and two plastic cans – was being removed from authorized vehicles and sold to a rag picker at Wadala, Mumbai.

During the inspection and subsequent interrogation, it was revealed by the drivers of the vehicles that bags containing bio-medical wastes were collected from various hospitals and transported for treatment and disposal at a common facility located at Sewri, Mumbai. The drivers confessed that they had been selling the wastes for the last month for a consideration of Rs.50 – Rs.60 on each trip.

Considering the pilferage of bio-medical wastes, the Board cancelled the authorization of the transporter. On 9.8.2004, the Board filed a criminal complaint u/s 15 of the Environment (Protection) Act, 1986 read with Rules 7 and 8 of the Bio-Medical Waste (Management & Handling) Rules, 1998 (as amended) against the transporter in the court of the Metropolitan Magistrate, Mazgaon.

9.3 Appreciation from the judiciary

The High Courts and Supreme Court of India are responsible for adding both dignity and respectability to the environmental jurisprudence evolved in India so far. Timely intervention of judiciary has

helped in protection and preservation of the environment.

1) While dealing with public interest litigations, the Hon'ble Supreme Court of India as well as the High Courts have appreciated the sincere efforts taken by the Maharashtra Pollution Control Board. The Hon'ble Supreme Court of India in Writ Petition (Civil) No. 888/1996 (*Almitra H. Patel & Anr. V/s Union of India & Ors.*) appreciated the actions taken by the Maharashtra Pollution Control Board to implement the Municipal Solid Wastes (Management & Handling) Rules, 2000. The Hon'ble Court specifically mentioned that the number of authorizations granted by the Maharashtra Pollution Control Board for solid waste management had increased from 32% to 98%. In the same breath, the court cited the example of Maharashtra, where a solid waste management cell had been created and the rules were being implemented effectively.

2) The Chairman, Supreme Court Monitoring Committee appointed by the Apex Court in Writ Petition No.657/1995 (*Research Foundation For Science & Technology V/s Union of India*) in a communication to the Chief Secretary, Govt. of Maharashtra, has also appreciated the strong and exemplary actions taken by the Maharashtra Pollution Control Board to streamline the enforcement of the Hazardous Wastes (Management & Handling) Rules, 1989 as well as compliance with the directions of the court in right earnest.

3) The Noise Pollution (Regulation & Control) Rules, 2000 specify the role of the prescribed Authority. The Maharashtra Pollution Control Board has been playing a pro-active role in implementation of these rules by carrying out source as well as ambient noise level monitoring, particularly during festive seasons.

4) The Hon'ble Mumbai High Court (Nagpur Bench) by its order passed in Writ Petition No.632/2004 (*Congress Nagar Citizens Association V/s The State of Maharashtra & Ors.*) has appreciated the efforts taken by the Maharashtra Pollution Control Board in monitoring noise levels at an exhibition organized by a social organization. The monitoring was carried out jointly with the Police Dept. and the report was submitted to the Hon'ble Court. The court also directed the Police Dept. to avail of the services of the MPCB, an autonomous body to monitor noise levels, and further directed it to extend all possible co-operation to the officials of the Board in monitoring and regulating noise pollution in the city, particularly during festivals and exhibitions conducted in public places.

5) Mahableshwar and Panchgani, situated in Satara district of Maharashtra, are well known hill stations, visited by a large number of tourists. There are many hotels, restaurants, educational institutions, hospitals and other residential/commercial buildings in the Mahableshwar and Panchgani regions, generating substantial quantity of trade effluent and municipal sewage. This was all being discharged without adequate treatment, contaminating the main Venna lake.

With the directions of the Court, the Maharashtra Pollution Control Board carried out an extensive survey and identified the polluters and also issued directions u/s 33A of the Water (Prevention & Control of Pollution) Act, 1974 and u/s 31A of the Air (Prevention & Control of Pollution) Act, 1981, directing them to provide ETP/STP in a time bound manner. As a result of continuous monitoring, these institutions are taking corrective measures. This action of the MPCB was appreciated by the Hon'ble High Court in Writ Petition No. 7308/2002 and Public Interest Litigation No.39/2003.

10. Other Major Environment Issues

PLACES WITH A RELIGIOUS significance in Maharashtra are also revered pilgrim places. On several occasions, large numbers of people gather at such locations. These places are generally situated in small or medium sized towns. Due to the sudden huge conglomeration of people at one time, a number of problems are generated, which adversely affect the environment and public health. The problems arising out of such activities mainly associated with mass bathing, cloth washing, etc., are the pollution of rivers / lakes, pollution due to indiscriminate disposal of municipal solid waste, disposal of plastics, noise pollution, dust pollution, contamination of drinking water, etc.

10.1 Environmental Improvement At Religious Places

These religious sites generally lack basic infrastructure in terms of water supply, collection, treatment and disposal of sewage, disposal of municipal solid wastes, etc., and are thus unable to cope with the environmental issues posed by the large congregations of devotees that visit them. In order to address these needs, the Board decided to take up a specific project to deal with the environmental improvement of such places in the state of Maharashtra. Under this project, the board provides technical and some financial assistance for taking up demonstration projects at select religious places.

The basic design of the projects is based on the concept of the eco-city project being implemented by the MoEF / CPCB at various places, e.g. Mathura, Vrindavan, etc. These projects are proposed to be implemented with the cooperation of the local authorities. To begin with, the Board has approved the following religious places as candidates for the environmental improvement work:

1) Shirdi / Shani-Shinganapur
2) Alandi
3) Bhima Shankar
4) Ashta Vinayak (Temples)
5) Jejuri (Khandoba)

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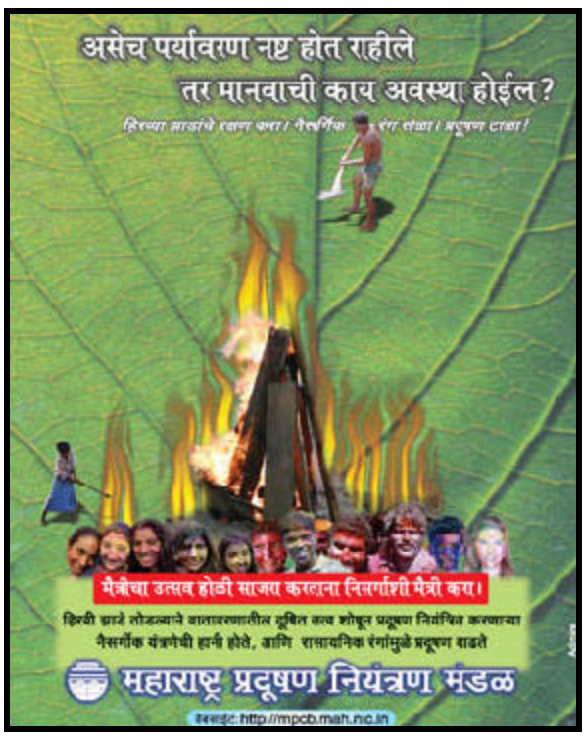

6) Pandharpur

7) Mahoor

8) Shegaon

In order to take up implementation of the projects systematically over a period of time, the Board has commenced preparatory work for the projects slated for Shirdi/Shani-Shingnapur and Alandi. The services of M/s. Willber Smith Associates Pvt. Ltd., Bangalore, have been engaged to undertake these studies. The following steps are proposed to be taken:

1) Preparation of conceptual paper

2) Preparation of pre-feasibility and feasibility report

3) Preparation of Detailed Project Report, especially for proposed infrastructure improvements

4) Tender process for selection of project implementing agency

5) Implementation of monitoring programme

6) Completion of the project and hand over to local authorities

Shani Shingnapur

Shani Shinganapur is famous for its temple dedicated to Lord Shani. The location is a unique pilgrim centre in Maharashtra, famous for its doorless houses. The offerings of leaves and flowers to the god generate about 1.5 to 2 tonnes of solid waste every day, the disposal of which has been a problem for the local gram panchayat and devasthan authorities. MPCB was approached by the Devasthan Committee along with a Pune based NGO, M/s. Conservation Education and Research Institute, with a proposal seeking technical and financial assistance for the project of vermi-composting the solid waste at a site reserved by the Devasthan two kilometres away from temple.

The Board considered the proposal for extending technical and financial assistance to the project, with the understanding that after two years, the

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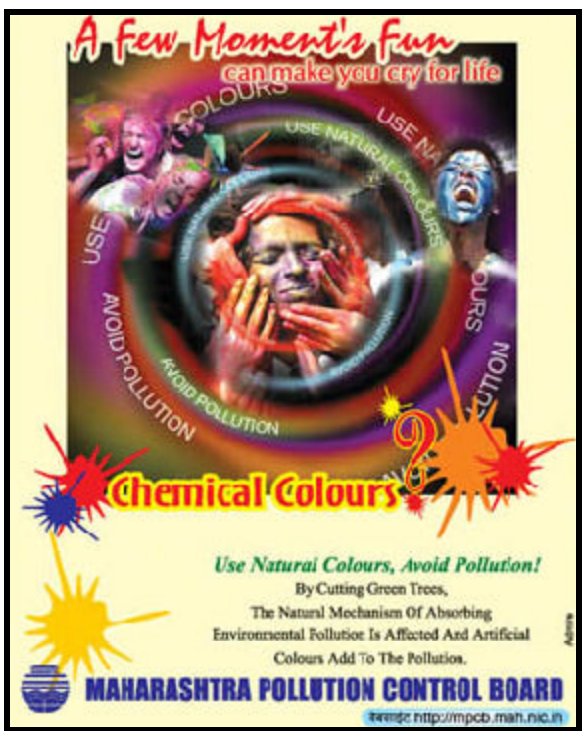

Devasthan Committee would take responsibility for further operation and maintenance of the project. It is expected that the project will be self-sustainable after the two year period of external support. Work on the project has already been started.

Alandi

Saint Shri Dnyaneshwar, author of the famous 'Dnyaneshwari', was born in Alandi in 1275 AD. He spent the greater part of his short life-span in Alandi, taking 'Sanjeeva Samadhi' at the age of 22 in 1296 AD at Alandi. Hence, Alandi is popularly known as *Devachi Alandi*.

Alandi lies on the banks of the river Indrayani near Pune. It is a pilgrim centre for various reasons. Thousands of devotees participate in a fair held in Alandi which ends at Pandharpur in the month of *Ashadh.* Additionally, nearly five lakh pilgrims visit Alandi on the occasion of *Ashadhi Ekadashi*. On Karthik Purnima, a mela is held in Alandi with nearly five lakh pilgrims in attendance. Being the famous pilgrim centre that it is, Alandi has a large floating population – about 8,000–10,000 people/day – which itself is a cause for concern for environmental management.

Shirdi

Shirdi is a small village in Kopargam taluka, Ahmednagar district. It is one of the most important pilgrim places in Maharashtra. Devotees of the sage *Sai Baba* are regular visitors to Shirdi.

The various tasks proposed to be undertaken for each of the projects are explained below.

Preparation of a Concept Plan for Environmental Improvement

Task 1: Assessment of the existing situation

The first task of the project consultant will be to study and analyse the existing situation of Shirdi, Shani-Shingnapur and Alandi, with specific reference to their historic and religious importance and popularity as pilgrim destinations.

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Task 2: Field reconnaissance surveys

Based on the profile of each pilgrim centre (prepared from Task 1), detailed field reconnaissance surveys for the following components shall be carried out by the consultants.

Sub- Task 2.1: Environmental survey

Sub-Task 2.2: Infrastructure survey

Sub-Task 2.3: Health survey

Sub–Task 2.4: Survey of religious/historic places

Task 3: Collection and analysis of secondary data

As part of this task, the consultants shall collect the available data on the demography, environment and existing infrastructure facilities from the local body and other government departments and agencies.

Task 4: Preparation of concept plan for environmental improvement

Based on the outputs of the above tasks, a concept of Integrated Environmental Improvement Plan (IEIP) will be prepared for each location**.**

Task 5: Stakeholder consultation and finalization of IEIP

The concept plans shall be prioritized and finalized in consultation with various stakeholders like ULBs, PWD, Department of Health, Department of Water Supply, local NGOs and relevant institutions, revenue departments, temple trusts, etc. Priority components of the eco-city projects will also be considered and the structure of the final IEIP will be prepared. M/s. Willber Smith Associates Pvt. Ltd. shall present the final 'Concept Plan for Environmental Improvement' to the all concerned departments/agencies involved/to be involved during and after project implementation. The concept plan will also be placed before a Technical Advisory Committee/Expert Committee. Further work on the projects will be undertaken after its approval..

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Feasibility study of the concept plan

The finalised concept plan will comprise of the following activities, as applicable to each pilgrim centre.

Task 6: Conservation and restoration of rivers

Rivers, lakes and other surface water bodies receiving untreated wastewater from the project centres will be analysed for formulating detailed restoration plans. This component shall also focus on improving river environs so as to position them as destinations for the pilgrim population.

Task 7: Conservation plans for religious/historic and archaeological monuments

This component will focus on formulating conservation plans for various religious / historic and archaeological monuments in the project centres. In performing the various sub-activities of this component, the authorities of the Temple Trust, Department of Archaeology, Department of Tourism, local NGOs and residents of the project centres shall be the main stakeholders, and structured consultation with all these agencies will be carried out.

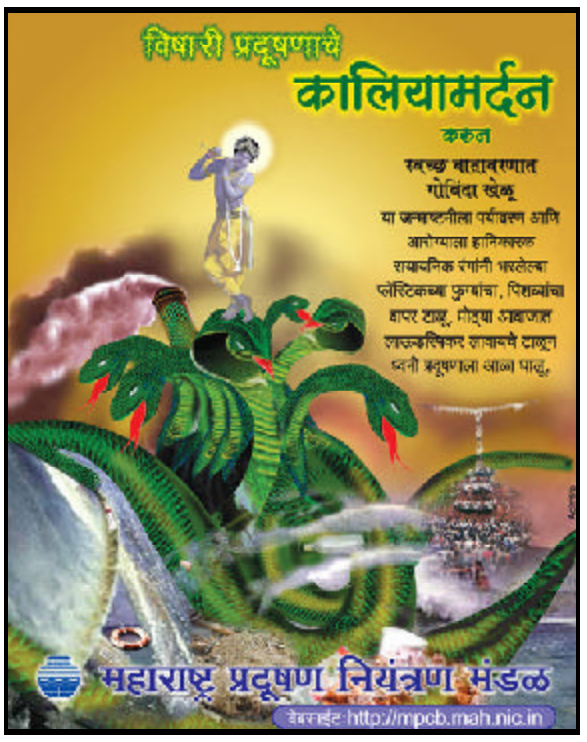
Task 8: Development of support infrastructure for eco-tourist destinations

The serene setting and religious atmosphere of the project centres provides an ideal platform for the development of these locations as eco-tourist destinations. However, the centres lack basic infrastructure for tourism activities, especially during times such as annual congregations. In view of the above, a comprehensive Eco-tourism Development Plan shall be prepared for the centres.

Task 9: Development of solid waste management plans

Traditionally, solid waste management in small religious locations such as the project centres has been done in an ad hoc manner. With the large number of tourists/pilgrims visiting the centres, their contribution towards solid waste generation is more significant than that of the local popula-

MPCB posters to educate people during festivals



tion. In this light, it is very important to formulate an integrated solid waste management plan that not only satisfies the MSW Rules (2000), but also functions efficiently during peak tourist seasons.

Task 10: Sewerage and sanitation improvements

The other aspect of environmental degradation in religious places concerns the lack of proper sanitation facilities. In their absence, the waste water generated by the local population and tourists is discharged into the surface water bodies through various nallasand drains. With surface water bodies forming an important component of the environment, their pollution is bound to lead to a number of environmental concerns in the project centres. In view of the above, the development of safe sewerage and sanitation facilities for the centres is crucial.

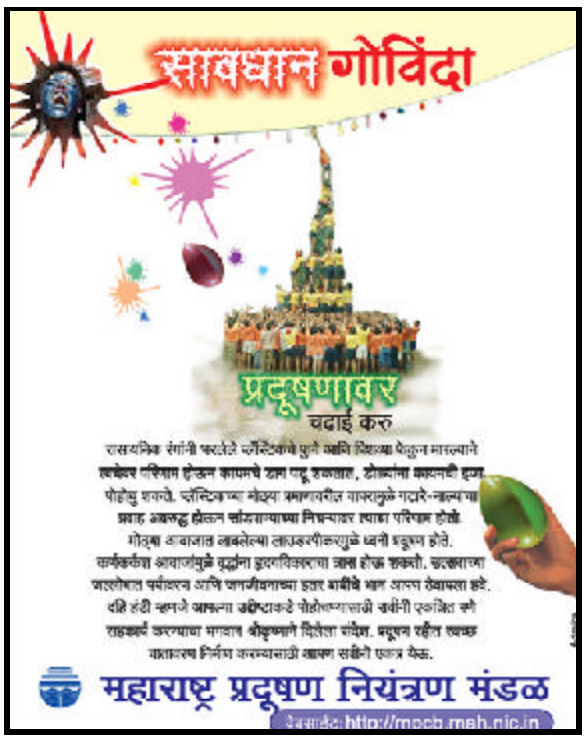
Task 11: Improvement and augmentation of the water supply system

Water supply facilities in small locations such as the pilgrim centres are generally not satisfactory for large numbers of people, such as those seen during pilgrimages. With the intention to develop these centres as eco-tourist destinations, the current water supply and infrastructure for future development proposals needs to be analysed very carefully. It is therefore proposed to carry out tasks to explore the need for the water supply augmentation in the project centres.

Task 12: Upgradation and improvement of roads, drainage, street lights and other infrastructure

Roads, drainage and street lights are the other important components of integrated development of special category towns. In the light of the above, a detailed analysis of the service levels of the above components will also be analysed. Necessary projects shall be formulated based on the adequacy of the same, duly supported by the appropriate prioritization of projects.

MPCB posters to educate people during festivals



Task 13: Plantation and landscaping

In the proposed IEIP, developing green areas such as parks, gardens and landscaping in and around the places of tourist importance will be considered as an important component. Hence, studies here will include landscaping, plantations along the streams/lakes, roadside and traffic islands, MSW dumpsites, parking places, etc. The requirement of underground electrical cabling, replacement of shops, etc., will be also considered.

Task 14: Project development options

The proposed IEIP would be developed with an aim to improve the environs of the centres and develop them as an eco-tourism destination. The projects will also integrate the goals and targets of the MOEF and CPCB. Some of the project components are bound to concern urban infrastructure elements dealt with by agencies such as the Public Works Department, Maharashtra Jeevan Pradhikaran, etc. Hence, it would be necessary to place the project in line with the development objectives of these agencies so as to garner adequate financial resources for the development of infrastructure, and to achieve the overall goal of comprehensive urban development.

Other options for resource mobilization, such as the feasibility of private sector participation, would also be explored for the following areas:

- Development of tourist infrastructure and operating them on BOT basis;
- Collection, treatment, transportation and disposal of solid and biomedical wastes;
- Recycling of plastic waste;
- Renovating and maintaining historic monuments;
- Development of parks, gardens, riversides etc., on BOT basis.

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Preparation of Detailed Project Reports

The various tasks and sub-tasks discussed in the earlier sections will provide a final list of project components to be taken up for implementation in the project centres. The activities performed above will generate estimates of the projects for establishing the feasibility of their components. Detailed costs, however, need to be provided as also the exact costs for each component. This will involve the following engineering surveys, as applicable for the specific component.

- Topographic surveys for the design of water supply, sewerage and road networks
- Soil investigations for the design of various structures
- Structural design, detailed rate analysis and bill of quantities for various components
- Technical specifications, general arrangement drawings and construction drawings, etc.

All these activities are not envisaged as part of this study, and shall be taken up as a separate examination, after securing the necessary funds and during its implementation. Block cost estimates however, will be provided based on the field investigations by the consultants, and will be deemed adequate for the appraisal of the funding agencies.

Time frame:

The time period for the completion of the above tasks is seven months.

10.2 Immersion of Idols

During the Ganesh festival in Maharashtra, river water quality deteriorates due to immersion of idols in water bodies. Water quality before and after the Ganesh festival was monitored in Pune, Thane and Kolhapur region. Banners promoting the use of environment friendly idols for the festival were also displayed in Pune city for creating mass awareness.

MPCB posters to educate people during festivals

10.3 Preparation of a Field Guide for the protection and preservation of mangroves

Mangroves are an important element of the coastal ecosystem. The Indian coast harbours several mangrove species which are not found in all the coastal States. The mangrove bio-diversity changes as per the location.

The importance of protection of mangroves cannot be underestimated, particularly after the role mangroves played in mitigating the impacts of the tsunami.

Dr. Leela Bhosale, Head of the Department of Botany, Shivaji University, Kolhapur, who has also worked as a Member of the National Mangrove Committee as well as a Member of the Goa and Maharashtra Coastal Zone Management Authorities, approached the Board with a request to extend financial assistance for preparation of a pictorial guide for species identification in the field. The Board considered the request and sanctioned an amount of Rs. 3.51 lakhs for this purpose.

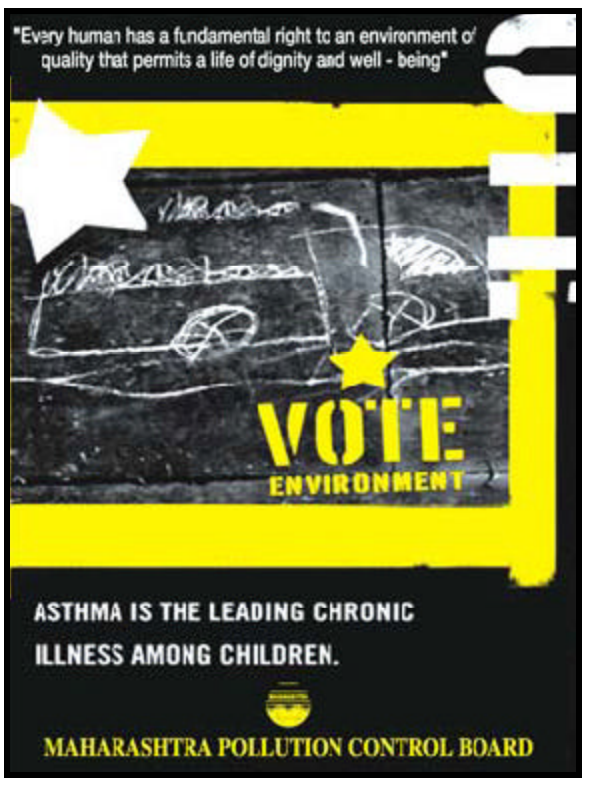
Dr. Bhosale thereafter submitted a draft report having thirteen chapters of various aspects of mangroves. The total area coverage of mangroves (major locations) in the state was identified. Work of this kind is being done for the first time in the country. An exact and authentic ground survey was carried out. The report presents coloured photographs of microscopic sections with the support of anatomical details which are understandable even by a lay person. The important uses of mangroves are also explained.

The report will be useful for researchers, non-governmental organizations, regulatory agencies and other government agencies and the public.

10.4 Control of slaughterhouse pollution

Maharashtra has a sizable population of life stock (396 lakh animals and 354 lakh poultry as per 1997). Per capita availability of meat in India (1.4 kg/annum) is less than in other parts of the world. In order of preference, the meat of poultry,

MPCB posters on environment protection



goat, sheep, pig, buffaloes and cattle are consumed in descending order. The slaughter houses function under the Ministry of Food Processing and Animal Husbandry.

As per Municipal Acts in force, the local bodies (municipal corporations, councils, cantonment boards) are supposed to ensure that there is no unauthorized and unorganised slaughter of animals in their jurisdiction. These local bodies are also responsible for providing facilities for organised slaughter to meet the demand for meat. The health and sanitation aspects are to be looked after by the urban local bodies.

Under the Prevention of Cruelty to Animals Act, 1960, (54 of 1960), the Government of India has framed rules on 26 March, 2001 which are called the Prevention of Cruelty to Animals (Slaughter House) Rules, 2001.

Shri Laxmi Narain Modi, of Animal Rights International, 305, Sakshi House, 40-41, Nehru Place, Near Delhi on 6.12.1996, wrote a letter to the Board insisting that municipal local bodies provide proper arrangements for slaughter houses. Regional officers of the Board were issued with a circular informing them that this should be brought to the notice of the municipal local bodies (WP/Legal (HQ)/B-8312 dated 23.2.1996).

The issue of pollution control in slaughter houses, meat and sea food processing units was discussed in the 45th Conference of Chairpersons and Member Secretaries of Pollution Control Boards held in January 1996. The time schedule for implementation of the standards was also discussed. Accordingly, the CPCB wrote to the SPCBs on 15.12.1999 highlighting the decisions taken.

The CPCB itself issued directions under Section 18 (I)(b) of the Water Act, 1974 on 23.7.2002 asking for compliance with necessary pollution control measures by slaughter houses followed up by a reminder dated 2.12.2002. The regional officers were directed to take necessary action as per

MPCB posters on environment protection

the Board letter No.WP/Legal/B-380 dated 30.1.2003.

In the year under review, MPCB took action against the non compliant slaughter houses since 1999 and the details were compiled and submitted to the CPCB as under:

Regions:

1) WP/Legal/B-2989 dated 3.9.2004
Thane & Raigad

2) WP/Legal/B-3061 dated 10.9.2004
Amravati & Aurangabad

3) WP/Legal/B-3361 dated 17.9.2004
Pune, Kalyan, Kolhapur,

Nashik, Mumbai, Nagpur

Navi Mumbai

The Board has taken action against the slaughter houses in the state as per the provisions of the Water Act, 1974 from time to time.

Table 1: Tackling slaughterhouse pollution

Sr. No.	Region	No. of slaughter houses identified	Show cause notices under Section 33A	Directions under Section 33A
1.	Navi Mumbai	Nil	—	—
2	Mumbai	2	—	—
3.	Aurangabad	3	—	—
4.	Raigad	1	—	1
5.	Pune	7	1	6
6.	Kolhapur	7	7	—
7.	Thane	(3)	—	7
8.	Kalyan	7	—	7
9.	Nashik	5	4	1
10.	Nagpur	31	31	—
11.	Amravati	2 (refusal 1)	—	—

A few municipal corporations have proposed to provide modern slaughter houses, but the projects are halted halfway. The details in these cases are provided below:

1) The Solapur Municipal Corporation was establishing a modern slaughter house at Mulegaon Tanda. A writ petition was filed against this by Shri Pandit Krishnanath Bhosale (*Pandit Krishnanath Bhosale V/s State & Ors*. PIL No.29/2004). The case is pending hearing before the Bombay High Court.

2) The Aurangabad Municipal Corporation has prepared a project for modernization of the slaughter house. The project is sanctioned by the Government of India for Rs.224.2 lakhs. The grants are not yet released.

3) The Amravati Municipal Corporation commenced construction of a modern slaughter house with all necessary provisions for pollution control. Construction of the slaughter house is almost complete. But due to agitation by activists against killing of animals, the corporation has passed a resolution to close down the mechanical slaughter house on 19.3.2005. The cost of the project was Rs.98.2 lakhs. Rs.47 lakhs out of the Government of India's sanctioned contribution of Rs.49.25 lakhs have been received and spent.

Table 2: List of slaughter houses against whom directions for closure under section 33A of the Water Act, 1974 have been issued before 12.7.2005.

Sr.No.	Name of the Industry	Closure directions No. & date
Kalyan Region:		
1	West Dombivali Slaughter House, KDMC, Fish Market, Dombivali	MPCB/ROK/TB/254 19/1/2005
2	Mahatma Phule Mutton Market KDMC, Kalyan	MPCB/ROK/TB/252 19/1/2005
3	KDMC Beef Slaughter House Near Patri Pool, Kalyan	MPCB/ROK/TB/253 19/1/2005
4	Slaughter House of Big Animals, Slaughter House, Idgah Rd, Bag Bunder, Bhiwandi, Bhiwandi Nizampur Mun Corpn.	MPCB/ROK/TB/249 19/1/2005
5	Slaughter House of Small Animals, Fish & Mutton Market, Teenbatti, Bhiwandi	MPCB/ROK/TB/250 19/1/2005
6	Slaughter House of Small Animals, Fish & Mutton, Market, Bushar Mohalla, Bhiwandi	MPCB/ROK/TB/251 19/1/2005
7	Slaughter House of Small Animals, Padghaghar.	MPCB/ROK/TB/248 19/1/2005
Nashik Region:		
1	The Chief Officer Kopergaon Municipal Council, Kopargaon, Ahmednagar	WP/Legal(LW)/B-4331 8/11/2004
Raigad Region:		
1	M/s.Royal Foods, Plot No.46, Pleasure Park, Chikhale, Panvel, Dist. Raigad.	ROR/TB/1158 18/10/2004
Pune Region:		
1	Officer In-charge, ASC Abattoirs, 58th Company Supply, Depot, Khadki, Pune	ROP/3944/04 22/11/2004
2	Chief Executive Officer, Khadki Cantonment Board, Khadki, Pune	ROP/3943/04 22/11/2004
3	Veterinary Superintendent, Pune Mun Corpn, (PMC slaughter house) Salunkhe Vihar Rd, Kondhwa, Pune	ROP/4323/04 13/12/2004
4	Cantonment Executive Officer, Dehu Road Cantonment Board, Dehu Rd, Pune	ROP/4400/04 17/12/2004
5	Cantonment Executive Officer, Pune Cantonment Board, Netaji Nagar, Kondhwa, Pune	ROP/4401/04 17/12/2004
6	Veterinary Officer, Pimpri Chinchwad Mun Corpn, Near Pimpri Bridge, Pimpri, Pune - 411 018	ROP/4666/04 29/12/2004
7	Solapur Municipal Corporation, Slaughter House, Begam Peth, Solapur	6/1/2005
8	Solapur Municipal Corporation, Slaughter House, Jodhhavi Peth, Solapur	6/1/2005
Thane Region:		
1	Slaughter House, Mahatma Phule, Mandai of T.M.C, Thane	MPC/ROT/Dir-268/279 25/1/2005
2	M/s.Rabodi Slaughter House, T.M.C., Dist - Thane.	MPC/ROT/Dir-270/281 25/1/2005
3	Holy Slaughter House, Near Holy Water Supply, Sump House, Vasai, Dist- Thane.	MPC/ROT/Dir- /280 25/1/2005

10.5 Rainwater Harvesting

Being impressed with the need to popularize the idea of conservation of the state's natural resources, MPCB took the initiative to construct an illustrative model of rainwater harvesting for all industries, government offices, private homes and educational institutes to adopt at their respective premises.

The Board decided to innovate by incorporating a rooftop rainwater harvesting system at their Udyog Bhavan premises at Nagpur.

The project was preceded by a study, in view of its multifaceted advantages. The study aimed at exploring the possibility of implementing the rainwater-harvesting technique in the Udyog Bhavan premises of the Board. The field observations when systematically interpreted in correlation with lithology and the meteorological data were found to be extremely encouraging.

The availability of assured and adequate amount of rainfall, supportive geo-environmental conditions at the site and the positive economic benefits expected as a result of the rainwater harvesting were sufficient reasons for the Board to go ahead with the scheme.

Dr. D. B. Boralkar inaugurates the MPCB building designed for rainwater harvesting

M/s Srushti Sewa, Nagpur conducted a systematic survey. This included estimation of rainwater precipitation on the Udyog Bhavan office premises, assessment of the collection mechanism and details of the existing rainwater disposal system. (Srushti Sewa is an NGO working for protection and conservation of vastly depleting natural resources in rural as well as the urban areas and is a well-known promoter of the rooftop rainwater-harvesting scheme.)

'Rooftop Rain Water Harvesting' is the technique through which rainwater is captured from the roof catchments and stored in surface/subsurface reservoirs to meet later household needs. The principal objective of rooftop rainwater harvesting is to make water available for future use. In Nagpur city, the study found there was a potential to collect and store 80 m^3 (or 80, 000 litres) water per annum from every 100 m^2 roof area.

The Udyog Bhavan premises host many important government offices. Water requirement is met from the municipal water supply scheme, which is adequate to meet the demand. Water is mainly required for non-drinking purposes such as washing, toilets and bathrooms, laboratories, gardening and other domestic purposes. A dug well with a

Rainwater harvesting structure at Nagpur

3.0 m dia and 6 m depth is also a supplementary source of water for the building. However, water requirement is totally dependent on the Municipal water supply. The Udyog Bhavan building is located near a small tributary of the river Nag. This tributary flows in north-south direction on the eastern side of the building.

The total area of the premises being 6047 m^2, the built up area was 5909 m^2. The building is six-storied and each floor consists of 965 m^2. The total rooftop of the building was measured and found to be 1002 m^2. Rooftops of the buildings have been systematically designed with slope to drain out the rainwater through drainpipes (160 mm diameter PVC pipeline). These drainpipes are interconnected and subsequently open into the nearby nala, discharging all the rainwater in the form of surface run off. The rooftop has been divided in two sections, viz., northern and southern sections respectively. These act as catchment divides. The amount of rainwater incidence on these roof areas along with other roof areas has been estimated below. As mentioned earlier, the roof top area was measured to be 1,002 m^2. Considering 1000 mm. rainfall incidence over these rooftops, 802 m^3 water is received in the form of rain fall every year.

(Annual rainwater incidence = Rooftop area x annual precipitation x 0.8 = 1002 x 1.0 x 0.8 = 802 m^3 or 8,00,200 litres/annum.)

Based on the lithological formation and aquifer properties of the lametas, a recharging system was proposed. The rainwater incidence on the rooftops is systematically diverted towards a recharging trough trench. This recharging trench would act as a medium to divert the rainwater for recharging the aquifer. The proposed dimension of the trench is designed to accommodate the rainfall incidence on the rooftop of the Udyog Bhavan building. The proposed sump will be connected to the dug well. This sump will also be connected to the existing overhead tank from where the water distribution network all over the building is already established. The overflow from the sump will be sent for recharging. In this method a pit of (3m x 3m x 2m) dimension will be constructed and connected with an approved WATIN filter, which will filter the water before recharging the aquifer. This filter is to be located near the dug well so that all the filtered water may be allowed to pass into this well. A sedimentation / settling sump is also advisable near the filter in order to arrest all the silt and clay deposited on the rooftop, pipelines, etc.

10.6 Zoning Atlas

The zoning atlas programme was initiated in 1997-98 with full financial support from the CPCB. Each developmental activity includes consideration of a land use. The environmentally relevant land uses that can pose an impact on the environment include trade, industry, housing, surface transport, refuse/hazardous waste and wastewater treatment installations, quarrying/mining, agriculture, recreation and tourism, etc.

Of various developmental activities, industrial activity has the potential to cause irreversible reactions in the environment and hence is posing a major threat. In case of industrial development, environmental impact assessment (EIA) has been conventionally used as a tool for permitting new projects. However, there are numerous inadequacies in the current procedures of environmental impact assessment. Thus, it is evident that the major challenge is not just finding a site for an industry or a developmental activity but is finding a solution for achieving sustainable development. It is being increasingly realised that the developmental activities are to be planned in such a way that the socio-economic objectives are fulfilled without causing adverse impacts on the environment.

In India, presently, spatial planning approach is mostly limited to urban areas. This has been leading to unbalanced development and formation of uneconomic agglomerations on the one hand and

depleted ecological areas on the other. Spatial planning based on assessment of existing environmental profiles as well as potential assimilative capacity could help environmentally acceptable development and resolve the conflicts that authorities are otherwise confronted with. Planning of activities based on assessment of local or regional environmental impacts could be a useful approach for introducing the concept of spatial planning in a limited manner under Indian conditions.

Accordingly, in 1994, MoEF announced the need to introduce a development concept that was environmentally sound and compatible with economic policy. In 1995, the MoEF introduced a programme popularly known as the 'Zoning Atlas for Siting of Industries' (ZASI) with financial assistance of the World Bank through CPCB, Delhi and technical assistance of GTZ, Germany.

The Zoning Atlas for Siting of Industries zones and classifies the environment in a district and presents the pollution receiving potential of various sites/zones in it, and the possible alternate sites for industries, through easy-to-read maps. The industrial zones are identified based on the sensitivity and pollution receiving potential of the district.

The MoEF sanctioned the first project under the programme to MPCB in the year 1994 for preparation of ZASI for Ratnagiri district. The project was outsourced to M/s. Mitcon Ltd., Pune.

In the second phase, Pune and Aurangabad districts were allotted assistance for preparation of ZASI, along with provision of project staff and funds under a World Bank funded project.

In March 2000, MPCB decided to create a separate cell within the Board using the available manpower with it for the programme. In August 2001 MPCB deputed two full-time scientists from its available staff for the project. In October 2001, CPCB Delhi communicated its approval for the appointment of staff on contract through direct appointment at Board level after following due procedures prescribed by CPCB/MoEF. MPCB accordingly appointed three planners, one accounts assistant and one data entry operator for the project from January to February 2002.

In September 2003, MPCB and CPCB entered into an agreement for the continuation of the project till the end of the Tenth Five Year Plan. After the Tenth Five Year Plan period, the Chairman, CPCB, convened a meeting of Chairman/Member Secretaries of all SPCBs to discuss the utility and need of continuing the zoning atlas programme as an activity of the SPCBs. During the meeting, all SPCBs agreed in principle to continue the activity and to extend partial financial assistance towards the salary requirements of staff from collected cess/Boards' funds, and to subsequently continue the programme with the approval of the state government. During the meeting, it was also decided to reorganize priority areas for zoning atlas activity to ensure immediate implementation of the results of the programme. The following actions were proposed, some of which were undertaken during the year under report:

1) Preparation of district environment atlas
2) Preparation of state environmental atlas
3) Creation of state industrial siting guidelines
4) Environmental management plans for urban areas, mining, tourism, religious places and ecologically fragile areas
5) Eco-industrial estate planning

The following officers and staff of the zoning atlas division attended training under the zoning atlas project.

Table 3: Training of officers for the zoning atlas

	Name of Course	Duration	Place	Nominated officers & staff
1	Eco-industrial estate planning	21 days	CETP, Ahmedabad	S.C. Kollur R.D. Nandgaonkar
2	Hazard identification and risk assessment in isolated storage	5 days	DMI, Bhopal	Dr. A. R. Supate
3	GIS application in Zoning Atlas project	5 days	CPCB, Delhi	S. C Kollur R. D Nandgaonkar
4	Environmental statements including waste minimization environmental auditing and management system	3 days	BHEL, Haridwar	A. D. Saraf

The district level ZASI

The study relates the sensitivity of environment with the pollution potential of industries. The atlas identifies sites suitable for siting of polluting industries (i.e., capable of withstanding pollution from industries) with minimal environmental impact and risk.

District level industrial siting guidelines

These guidelines clearly bring out information on environmentally sensitive zones/areas to be avoided for location of industries, or certain processes or operations to be restricted in the district. This will help in implementing the district level ZASI.

District Environmental Atlas

The District Environment Atlas will be a compilation of environment related information in the form of maps, texts and statistical data at the district level. It includes maps on general/physical features, surface/ground water features, environmentally sensitive zones, and major sources of pollution. The atlas will be 1 : 2,50,000 scale.

The State Environmental Atlas

The State Environmental Atlas will be a compilation of environment related information in the form of maps, texts and statistical data at the state level. It will include maps on general features like administrative boundaries, major settlements, transportation network, etc. Physical characteristics of

the State will include land use, physiography, land capability etc. The surface / ground water features will include drainage patterns, uses, quality, flows, etc. Environmentally sensitive zones will consider major sources of pollution, biological diversity, incompatible land uses, etc., in the state.

State-level industrial siting guidelines

The State level industrial siting guidelines will clearly demarcate the areas to be avoided for establishing new industries and the rules/norms/ procedures to be followed to obtain consent to establish.

The present status of projects under the ZASI programme in Maharashtra is shown in the table below:

Table 4: Present status of on-going projects under the ZASI programme in Maharashtra

Sr.No	Project	Activities	Status
1	ZASI	ZASI– Ratnagiri	Completed
		ZASI – Pune	Completed
		ZAS –Aurangabad	Completed
2	District Level Siting Guidelines	ZASI – Ratnagiri	Draft completed
		ZASI – Pune	Draft completed
		ZASI - Aurangabad	Draft completed
3	District Environmental Atlas	Pune	Completed
		Aurangabad	Completed
		Ratnagiri	In progress*
4	State Environmental Atlas	Maharashtra	In progress
5	State Level Industrial Siting Guidelines	Maharashtra	In progress

*: Concept plan competed, RFP under preparation. These projects will continue through 2005 – 06.

11. Research and Development

IMPLEMENTATION OF ENVIRONMENTAL regulations requires a solid base of science and technology, with a back up of research and development activities. The Board is required to undertake investigative research, develop and assess its policy programmes and initiatives. This area was not given adequate attention in the past. Since the past year, the Board has taken up several such projects which are of great importance for environment protection and improved public health.

The following is the list of important research based projects being implemented by the Board either on its own or in collaboration with other scientific institutions:

- Collaboration with US EPA for air pollution control studies at Pune.
- Collaboration with NEERI, Nagpur for study of environmental impacts of disposal of effluent on land at Aurangabad and Nagpur.
- Monitoring of noise pollution at different cities during Diwali.
- Measurements of benzene, toluene and xylene (BTX) in ambient air at Mumbai. This will help in developing understanding regarding expo-

Laboratory technician using gaschromatograph

sure of public to toxic volatile organic compounds which are emitted from vehicles.

- Collaborative project of CPCB under Indo-Canadian Cooperation regarding preparation of Indian Register for Potentially Toxic/Hazardous Chemicals.
- CPCB-MPCB project on preparation of Zoning Atlas for Siting of Industries (ZASI) based on environmental consideration.
- Preparation of environmental management plan for Patalganga industrial area.
- Biological monitoring of river quality for understanding the ecological impact on the river water quality.
- Preparation of guidelines for operation and management of effluent treatment plants.
- Mission Waldhuni nalla for control of water pollution (128 MLD) by application of innovative and cheaper technology.
- Comparative study of effect of air pollution on health of children in Mumbai and New York. The Board is working with US EPA/ USAEP to develop a collaborative project.

Three of the above studies are reported in some detail below:

1) 'Review of Permissible Limit of BOD and TDS for Land Disposal at Aurangabad' by NEERI, Nagpur

MIDC Aurangabad currently faces severe environmental problems concerning disposal of generated wastes. The problem has intensified due to a rapid increase in population in the area and industrial activities, and a general lack of adequate waste treatment and disposal facilities. In particular, ground water reserves in the area are threatened with pollution due to the disposal of sewage and trade effluent onto the land without any or only partial treatment.

Proposal

In view of above, it is proposed to carry out a review study for determining the permissible limits of BOD and TDS for land disposal at Aurangabad. An external consultant will be engaged this review. The proposal which was placed for approval in 139th Board Meeting of the MPCB, dated 22 January 2003 and the Board, has received the subsequent go-ahead in the current reporting year.

Such a review would replace the single disposal standard and thus culminate in a 'Standard Design Protocol' for multi-component (soil-water-plants) systems. The enforcement of the present single standard limits for BOD and TDS do not appear to be able to tackle the problem of pollution of ground water due to the discharge of effluent on land.

Objectives

The following are the objectives of the proposed study:

1) To undertake geophysical investigations near effluent discharge points.
2) To measure the potential for ground water pollution by studying leaching / percolation mechanisms of the land disposal system.
3) To evaluate the suitability of various types of soils for treatment and disposal of waste water, including a study of the physico-chemical and microbiological changes.
4) To develop mathematical models which can predict the transport and removal of contaminants in partially saturated soil.
5) To calibrate and validate these models using the column lysimeter study.
6) To carry out sensitivity analysis of the various parameters in each model so as to study system behaviour under various operating conditions.

7) To develop guidelines for the disposal of waste water through a design protocol.

Stipulated time frame

The total estimated time period for the study is three years.

Financial requirement

The total estimated cost of the project is Rs. 30 lakhs.

2) 'Assessment of Status of Soil, Plant and Ground Water Following Land Disposal of Industrial Waste Water at MIDC, Butibori, Nagpur' by NEERI, Nagpur

Land disposal of wastewater is touted as one alternative towards achieving zero discharge. However, the application of waste water on land needs to be carried out scientifically, failing which certain problems such as soil sickness, ground water pollution and ultimately, irreversible ecological damage may arise.

About 45 industries located in the MIDC area of Nagpur practice zero discharge. The treated waste water generated by these industries is presently discharged on land. The resulting status of the land with respect to soil, plant and ground wa-

Uptodate facilities for R and D

ter quality is not known, and requires to be investigated in order to evaluate the deficiencies in the present land disposal practice, if any.

Stipulated time frame

The total estimated time period for the study is 9 months.

Financial requirement

The total estimated cost of the project is Rs. 5 lakhs.

3) 'Study of Air Quality Trends and Health Impacts in Mumbai Using Mathematical Models' by NEERI, Mumbai

Urban air pollution has posed a problem for city dwellers for decades. The city of Mumbai is no different. Coupled with the industrial revolution and rapid growth in vehicular traffic, Mumbai has been facing the brunt of severe air pollution for last three decades.

Mumbai has population of about 1.25 crore, but occupies a relatively small area of only 603 km^2. There are about 689 air polluting industries in and around the city, including stone crushers and one thermal power plant. Industries in the air-polluting category include textile mills, chemicals, pharmaceutical, engineering and foundry units. The city's traffic statistics are alarming; there are over 11 million vehicles, with a road length of just 1,800 sq km and over 200 new cars registered every day.

Mumbai is the only Indian city having sufficient environmental pollution data for last 25 years. In 1978, the average level of NO_2 was around 13 $\mu g/m^3$ which was less than (and hence in compliance with) the WHO standard of 60–90 $\mu g/m^3$. However, in the following years there was a considerable increase in NO_2 levels, which was attributed to the tremendous growth in the number of petrol and diesel vehicles in the city. Thereafter, annual concentrations always exceeded the WHO guideline, reaching a peak of 385 $\mu g/m^3$ in 1987. In 1991, the annual average concentrations decreased to 285 μg/m3. However, SPM emissions have increased significantly in recent years and it is estimated that they will continue to rise. In fact, Mumbai is amongst one of the three cities in the world with highest level of SPM.

Cases of respiratory disorders due to the elevated air pollution levels have increased dramatically during the last two decades In 1992, a WHO /UNEP study investigated the prevalence of respiratory diseases in different areas of Mumbai. The study showed that about 97 percent of the subjects were exposed to annual average TSP concentrations exceeding the WHO air quality guidelines. The study also showed that adverse health effects were significantly greater in number and severity in highly polluted areas, compared to those with less pollution. It was concluded that air pollution in Mumbai city posed a grave threat to the health of its citizens.

Objectives of the study

The following are the objectives of the proposed study:

i. Collation of information on the present status of air quality and its effect on human health in Mumbai city, and identification of gaps.
ii. Investigations into effects of interventions on the issue over last 25 years, i.e., after the Air Act, 1981 came into being.
iii. Use of air quality and health information in the BENMAP (i.e. the Environmental Benefits Mapping and Analysis Programme) simulation model with a view to assess impacts of actions taken..
iv. Integration of a web-enabled information package on air quality in Mumbai with the MPCB website.

Stipulated time frame

The total estimated time period for the study is 12 months.

Financial requirement

The total estimated cost of the project is Rs. 12 lakhs.

MPCB's modernized laboratory facilities

12. Mass Awareness and Public Participation

IT IS IMPORTANT THAT PEOPLE are made aware of the environmental issues affecting them. Such awareness and education helps in preventing negative impacts. Mass awareness also helps in creation of proper perception of the Board and its activities in society. Courts are also directing boards from time to time to involve themselves in mass awareness programmes.

12.1 Mass awareness

The Board made intensive efforts in the last one year in this area. Some of the important initiatives are listed below:

1) Publication of a report on the impact of mass bathing on the water quality of the Godavari river during the Kumbh mela at Nashik.

2) Report on the environmental status of Nagpur region.

3) Report on the river water quality of Maharashtra, January 2005.

4) Report on the water pollution of Mithi river, June 2004.

5) The website of the MPCB has been relaunched and is being updating on a daily basis. The size of the website was 5 MB in January 2004. Now it is more than 60 MB and is growing. An Environmental Information Centre has been newly created to foster public awareness and to provide assistance to the public.

6) A high level conference on 'Strategies for control of air pollution in Mumbai' was organized in March, 2005.

7) Mass awareness activities were conducted in collaboration with NGOs: Commemoration of Ozone Day, Earth Day, World Environment Day, etc.

8) A quarterly magazine, 'Paryavaran Sevak' was produced in Marathi by the Board in collaboration with an NGO in Navi Mumbai.

MPCB posters warning against ozone depletion

9) 'Environment First – Maharashtra, 2004' was a mega event organized in September 2004 for mass awareness on the occasion of the Foundation Day of the Board.

10) A training programme for NGOs was held at Pune in collaboration with the CPCB to educate NGOs on environment related issues.

11) The Board has participated in five exhibitions:

a) India International Trade Fair in New Delhi, November, 2004.
b) Exhibition on Pollution Control at Navi Mumbai, November, 2004.
c) Exhibition and Students Rally for Environment Protection at Nagpur, December 2004.
d) International Exhibition on Environment held at Abu Dhabi, February, 2005.
e) Krishi Mela Pradarshan held at Latur in March 2005.

Hon'ble Shri Vilasrao Deshmukh, Chief Minister, visits an MPCB exhibition on the environment

12.2 Public Participation

As can be gathered from the previous chapters of this report, the main function of the Board is to enforce various environmental Acts and Rules as laid down by the law. In doing so, the Board recognizes that it is not possible to achieve the goal of environment protection without the co-operation and participation of the general public. This becomes possible only when the people are aware about the everyday environment-related issues affecting them, which in turn makes them conscious about trying to protect and preserve their environment.

The recently introduced Right to Information Act also makes it incumbent on the Board to make information available to the people regarding the causes and effects of pollution, need for pollution prevention and control, and other aspects of environmental protection (such as the importance of maintaining green spaces, habitat conservation, health and environmental issues, etc.). The courts have also directed the Board to plan and execute mass environmental awareness programmes for various issues.

Intensive efforts were made in this area in last year. Some of the important ones are discussed below:

Dr. D. B. Boralkar inaugurating a workshop on Ozone Day

Awareness programme on the management of hazardous wastes, April 2004

An awareness programme concerning the management of hazardous wastes was conducted by the Board for industries likely to generate or generating hazardous wastes in the MIDC industrial areas. This programme was in response to the Supreme Court directive dated 14 October 2003. Aspects touched upon included collection, transport, treatment and disposal of hazardous wastes. The programme was held at Mumbai, Navi Mumbai, Pune, Nashik and Aurangabad. Dr. D. B. Boralkar, Member-Secretary of the Board, explained the background of the orders passed by the Supreme Court and the need for the common treatment and disposal facilities (TSDFs) being established in the state.

Celebration of World Environment Day, 5 June, 2004

World Environment Day, falling on 5 June every year, is regarded as an excellent occasion to foster environmental awareness amongst the public. Every year, the Board commemorates the occasion by generating awareness about various aspects of the

Hon'ble Shri R.R.Patil, Dy. CM., Hon'ble Shri Ganesh Naik, Minister, Environment, and Hon'ble Shri Ravindra Patil, Minister of State (Environment) visiting the MPCB exhibition

environment. This year too, the Board organized environmental awareness programmes at Mumbai and at its regional offices. The theme for this year was *'Wanted Seas and Oceans – Dead or Alive?'*

The World Environment Day function at Mumbai was held in collaboration with the Indian Association for Environment and Management. About 150 industrialists, NGOs and members of the public participated in the programme. The Chairman of the Board, Shri Mushtaq Antulay, presided over the function. Dr. D. B. Boralkar, Member-Secretary, highlighted the importance of World Environment Day and presented details of action plans and programmes for protection of the environment during the year. Dr. Claude Alvares, a member of the Supreme Court Monitoring Committee, delivered a lecture in memory of Shri N.A. Lentin, the first member-secretary of the Maharashtra Board.

Similar programmes were also held at the regional offices of Nashik, Nagpur and Aurangabad.

Hon'ble Shri Sharad Pawar releasing a book on operation and maintenance of effluent treatment plants

34th Foundation day of MPCB, 7 September 2004

MPCB celebrated its 34th Foundation day on 7 September, 2004 at Buntara Bhawan, Chunabhatti, Mumbai. The theme of the programme was 'Environmental First Maharashtra (EFM)'. Sai Paranjape, noted film director, was the Chief Guest of the function. Shri Rajeshwar Neture and Shri Suresh Deshmukh, Board members, were guests of honour. Dr. D. B. Boralkar presided over the function.

Lifetime Achievement Awards were given to Shri K. H. Mehta, Ex-Member Secretary, Shri D. R. Rasal, Ex-Member Secretary and Shri S. D. Jogal, Ex-Head Accountant, cess wing of the Board. Staff members who had completed 25 years of continuous service with the Board were also felicitated. Cassettes and CDs on environmental awareness, directed by Shri V. M. Motghare, Regional Officer, Nagpur and produced by Dr. D. B. Boralkar were released by Ms Sai Paranjape. An information booklet on environmental awareness, **'**Environmental First Maharashtra**'**, containing environment related reports and MPCB's activities, edited by Prof. Sharad Chaphekar, was distributed by Shri Rajeshwar Neture and Shri Suresh Deshmukh.

Dr. D. B. Boralkar participating in a public awareness programme

International Ozone Day celebration, 16 September, 2004

The International Ozone Day was celebrated on 16 September, 2004 in the premises of the Board's head office. Prof. Rashmi Patil, Director, Environment, at the Indian Institute of Technology, graced the occasion. Dr. D. B. Boralkar highlighted the importance of Ozone Day and pointed out ways and means to reduce the consumption of ozone depleting substances. Shri P. P. Nandusekar, PSO and Shri Dinesh Sonawane, Statistical Assistant with the MPCB, organized a wall poster display depicting the 'story of ozone' from year 1977 to date.

Wildlife Week function, October 2004

MPCB observed Wildlife Week at Nisarg Udyan, Dharavi. Students from various schools participated in the programme by studying the various trees and birds in the garden. The event ended with a prize distribution ceremony.

India International Trade Fair, 14–27 November 2004

MPCB participated in the India International Trade Fair 2004 at Pragati Maidan, New Delhi. A special report by Shri P. P. Nadusekar concerning mass bathing and pollution problems during the

MPCB's annual day awareness programme

Kumbh mela was released by Hon'ble Chief Minister Shri Vilasrao Deshmukh during the fair. This was the first time that MPCB participated in a function of this nature, the aim being to spread awareness about the environment.

Environmental Mega Exhibition, December, 2004

The Board organized the 'Environmental Mega Exhibition' during December 2004 in Nagpur, with the aim of spreading environmental awareness among the general public. The exhibition involved local bodies, industries and NGOs and displayed various exhibits on environmental issues.

Environmental mass awareness rally, December, 2004

The Board organized a mass awareness rally in Nagpur in December 2004 in association with the Nisarg Vidhyan Mandal. 4,000 school children participated in the rally making it a grand success.

Water harvesting project at Udyog Bhavan, Vidarbha

The Board office at Vidarbha was responsible for the installation of a rainwater harvesting system at Udyog Bhuvan. At a project cost of Rs. 4

Dr. D. B. Boralkar hands over the prize to the winning entry of the poster competition

lakhs, the system is the first of its kind at a government office. About 8 lakhs litres of water can be conserved in one monsoon period. It is envisaged that the installation will go a long way towards increasing awareness about water conservation.

Environmental awareness at the Agriculture Exhibition, January, 2005

An exhibition concerning agricultural activities was held at Sangli in January 2005. MPCB participated in this exhibition by setting up a stall educating people about pollution control mechanisms in the agricultural sector. The exhibit was successful on account of the efforts of Shri G. S. Fulari, SRO and his staff.

Environment – 2005 Exhibition in Abu Dhabi, January–February, 2005

MPCB participated at the International Environment – 2005 Exhibition at Abu Dhabi in the early months of the year 2005. MPCB displayed various models, wall posters, etc., at the exhibition. This exhibition was successful on account of the efforts of Shri R. G. Pethe, WPAE, Shri P. P. Nandusekar, PSO, Shri S. S. Doke (RO-P and P) and Shri G. N. Mohite, I/C, RO, Mumbai.

Training course on hazaradous waste

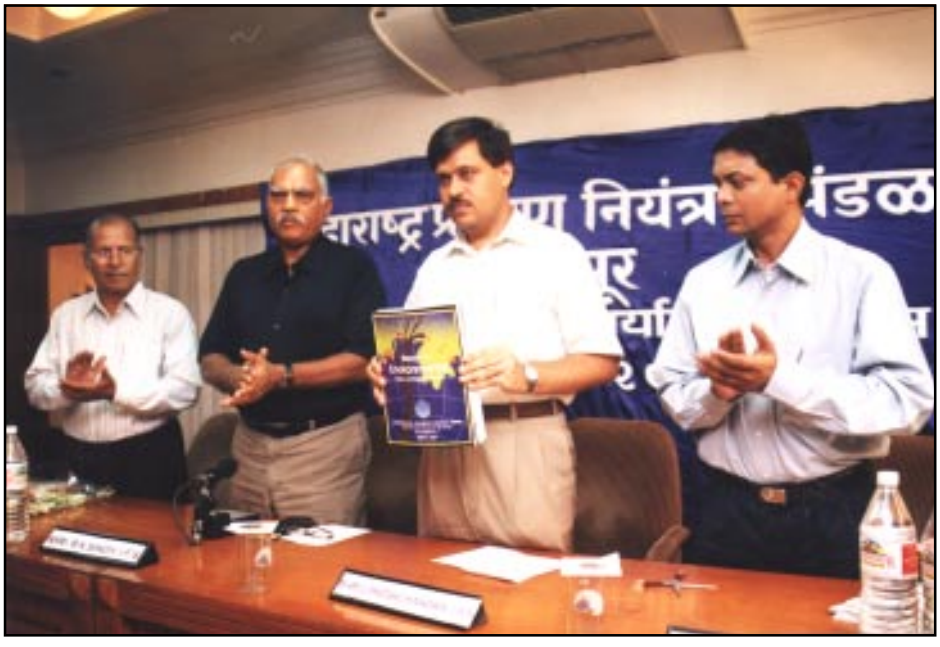
Workshop on utilization of fly ash, February 2005

A workshop concerning the utilization of fly ash generated as a by-product from thermal power stations was conducted by the Board office at Aurangabad for the farmers located in the vicinity of the thermal power station, Parli (V). Joint participants for the programme included TIFAC, New Delhi, DSR and MSEB at Parli (V), Tq. Parli, district Beed.

Display at Shri Siddheshwar Agrotech, 2005

MPCB was a participant at the Shri Siddheshwar Agrotech exhibition which was held at Latur. As a part of its agenda on increasing environmental awareness, MPCB staff displayed important information about bio-medical waste, municipal solid waste, noise pollution, hazardous waste, etc. A star attraction at the stall was the mobile van used for monitoring of air quality. Various booklets imparting information on environmental issues were also distributed.

Public release of the Nagpur environment status report



Films released by the Board

The following films were assisted or endorsed by the Board as part of its agenda to foster environmental awareness and education:

- Feature Film: Technical and financial assistance was given to Smt. Sai Paranjape for the production of the feature film 'Chakachak'. The theme of the film is to promote the importance of proper management of domestic solid waste.
- Production and telecast of short films on themes of environment protection for mass awareness during Diwali (issues addressed – generation of noise and air pollution due to fire crackers) and Holi (issues addressed – avoiding use of chemical colours and plastic on account of the harm they can cause to your health). These films were telecast on cable TV channels during festivals.

Table 1: Pollution related complaints received and attended to by regional / sub-regional offices during the period April 2004 to March 2005

Region	Pollution complaints received and attended			
	Air	Water	Solid Waste	Noise Poll.
Mumbai	33	1	0	7
Navi Mumbai	30	44	1	3
Raigad	18	36	4	1
Thane	31	21	6	7
Kalyan	78	42	0	22
Pune	61	28	3	41
Nashik	0	22	12	9
Aurangabad	0	16	2	8
Nagpur	55	39	2	15
Amravati	0	8	0	5
Kolhapur	0	35	1	14
Total	**306**	**292**	**31**	**132**

12.3 Formation of an Environmental Information Centre

MPCB collects large quantities of environmental data in the form of water quality, air quality, soil characterisation, noise levels, etc. One of the important functions of the Board is to compile this data and disseminate it for public awareness and use.

Considering the importance of the availability of the data in the public domain, the Board decided to form a separate environmental information cell (EIC). Accordingly, the EIC was formed vide office order dated 13.7.04. The EIC was entrusted with the responsibility of compilation, collation and interpretation of the environmental data. The EIC is also entrusted with the responsibility of updating and improving the Board's website.

The MPCB website was redesigned and a new version was launched on 1.1.05. In the year 2004–05, the website was made more dynamic in nature. Important features of the site are noted below:

- Daily updating of the consent status, which shows detailed track movement of the consent applications received at HQ.
- Daily updating of the air quality data for five cities including Mumbai, Pune, Nagpur, Aurangabad and Nashik.
- Regular updating of the water quality data.
- All information related to the functioning of MPCB are now hosted on site including application forms, fees, delegation of powers, etc.
- Public awareness campaigns.

MPCB's stall at Pragati Maidan, New Delhi, January 2005

13. Matters Relating to Strengthing of the Board

THE MAHARASHTRA POLLUTION Control Board has its headquarters at Mumbai and its offices and laboratories in various cities across the state. These include:

- Regional offices at Aurangabad, Amravati, Kalyan, Kolhapur, Mumbai, Nagpur, Nashik, Navi Mumbai, Pune, Raigad and Thane.
- Sub-regional offices at 45 places which work under the supervision of regional officers.
- Central Laboratory, Navi Mumbai.
- Regional laboratories at Aurangabad, Nagpur, Nashik, Pune, Thane and Chiplun.

The total staff strength of the Board – which includes scientists, engineers and supporting ministerial staff – is 703.

13.1 Revenue generation

The activities of the Board are increasing day by day due to new legislations being promulgated by the central government. Recent directions of the High Court and of the Supreme Court of India have added fresh responsibilities. These new demands have created an urgent need to augment the resources of the Board.

Foundation laying of MPCB central laboratory at Mahape in the presence of Shri Sharad Pawar

The Board has not taken any financial contribution from the state government in the last several years even though there is provision made under the Water Act (1974) for government support for the Board's efficient working. The Board, in fact, has become self-sufficient through its own revenue collection, mostly from water cess, consent fees, analysis charges, etc.

Revenue generation activities were reviewed in February 2004 and it was decided to increase the consent fees @ 0.01% for all industries and development projects involving a capital investment of Rs.100 crores or above. Laboratory analysis charges, which had not been revised in the last ten years, were revised upwards by 40%. An intensive campaign was also undertaken to cover as many industries as possible in addition to efforts to collect arrears due from various agencies on account of cess owed to the Board. A target of Rs.20 crores was set for the year 2004–05, which was achieved. Revenue generation of the Board has gone up from Rs.22 crores in the year 2003–04 to Rs.34.7 crores in 2004–05.

13.2 Institutional capacity building

As stated earlier in this report, the MPCB was initially setup mainly for implementation of the Water Pollution Control Act. The composition of the Board is also oriented towards the environmental management of water and waste water. Today, however, the Board is responsible for the implementation of almost all the environmental laws in the state – about 20 in number.

In order to identify the Board's strengths and weaknesses and build its institutional capacity, a work study involving a performance evaluation of

Table 1: Cess assessed and collected during 2004-05

Cess Assessed	Rs. 61.79 Crs.
Cess Collected	Rs. 19.14 Crs.
Credited to Government of India	Rs. 20.09 Crs.
Amount of Reimbursement received from Government of India	Rs. 7.53Crs.

the organisation was carried out by engaging the services of M/s. CRISIL. The Supreme Court in its order dated 14.10.2003 has also directed the States to strengthen Pollution Control Boards so that the orders of the Supreme Court can be implemented more effectively. The study has been completed and is being submitted to the Supreme Court Monitoring Committee charged with monitoring implementation of the order..

13.3 Strengthening infrastructure

As stated earlier, the MPCB is responsible for enforcement of a plethora of laws regarding water pollution, air pollution, noise pollution, municipal solid wastes, biomedical wastes, hazardous wastes, hazardous chemicals, fly ash utilization, plastics recycling, chemical accidents and response, environmental impact assessment, coastal regulation zone, batteries collection and recycling, etc. The Board also covers pollution control, assessment, monitoring and surveys. The activities of the Board are science and technology based. In order to meet the requirements of these ever expanding activities, the Board has strengthened the infrastructure of its laboratories and enhanced the availability of field monitoring equipment and its transportation. These improvements have in fact contributed to efficient functioning of the Board and generated additional revenue. Environmental surveillance has also increased. About 25,000 environmental samples consisting of air, water, waste water, solids, etc., have been analysed in the last year, which is far higher than any in the previous years of the Board's existence.

13.4 Central laboratory

The Board's central laboratory is a premier institution in the state responsible for providing scientific services for programmes concerning prevention and control of pollution. Its programmes include undertaking state level activities related to pollution assessment, monitoring and surveys. This laboratory must be equipped with modern instrumentation and a realistic capacity to perform better coordination of the activities of regional laboratories in addition to improvement in quality assurance and quality control. The central laboratory at present is crammed on one floor at CIDCO Bhawan which is highly inadequate in terms of space and infrastructure. Considering the urgency, the Board has started construction of an independent building for the central laboratory at Navi Mumbai. The building will be eco-friendly and equipped with state-of-the-art facilities required for analysis of various parameters and undertaking R&D activities. These will include treatability studies, demonstration plants for effluent treatment, performance evaluation of pollution control systems, calibration, an environmental planning studio, exhibition gallery for informal education and mass awareness, training of scientists and engineers of the Board and industry, an EDP centre, etc.

During the year 2004–05, the following efforts at development and strengthening of the central laboratory were undertaken:

a) Laboratory instruments and equipment

A number of laboratory instruments and equipment are required to run the activities of the central laboratory. Already the laboratory has many sophisticated and semi sophisticated laboratory instruments and equipment. Due to its increased responsibilities, more laboratory instruments and equipment are to be procured and put into operation.

Laboratory instruments and equipment were procured and supplied to the regional laboratories at Chiplun and Thane as part of the programme of strengthening regional laboratories.

Table 1: Performance of central/regional laboratories (water) during the year 2004–05

Sr. No.	Regional / Central Lab	No. of samples received and analysed in during the year			Total no. of parameters analysed water
		JVS	ENV (water)	LES	
1	Thane	877	28	2	4013
2	Nagpur	1706	671	29	25057
3	Nashik	1630	526	7	14817
4	Chiplun	1635	602	7	18182
5	Pune	1847	572	8	14600
6	Aurangabad	1353	178	-	13627
7	Central Lab	5109	1562	15	37587
	Total	**14157**	**4139**	**68**	**127883**

Table 2: Performance of central/regional laboratories (air and hazardous waste) during the year 2004–05

Sr. No.	Regional / Central Lab	No. of samples received and analysed during the Year			Total no. of parameters analysed	
		Ambient	Stack	H.W.	Air	H.W.
1	Thane	613	155	-	9431	-
2	Nagpur	1096	258	481	5044	5499
3	Nashik	76	89	140	319	545
4	Chiplun	284	225	187	991	264
5	Pune	596	424	76	2719	615
6	Aurangabad	316	122	209	1010	1091
7	Central Lab	462	456	1358	5841	9701
	Total	**3443**	**1729**	**2451**	**25355**	**17715**

b) Development of hazardous waste section

Earlier, the central laboratory was analysing hazardous waste samples as per the scheduled parameters in the Hazardous Waste Rules, 1989 (as amended). Government of India amended these Rules in May 2003 and the whole scenario was thereby changed. The previous methods of analyses had to be changed as per the new amendment. The central laboratory with help from the Central Pollution Control Board developed new methods of analyses in line with the changed rules. The central laboratory also recommended the fees for the analyses to the Government of Maharashtra and got these approved.

These methods were developed for parameters under schedule 2, class A, B, C & D. Development

New equipment at the Board's laboratories

1. Acid dispenser (30 ml)
2. Auto burette
3. Centrifuge
4. Colour comparator
5. Conductivity meter
6. Filtration assembly
7. Flask shaker (rotary)
8. Fuming chamber
9. Muffle furnace 1000 °C
10. Oven (hot air)
11. PH meter (table model)
12. Turbidity meter.
13. Quartz distillation
14. Atomic absorption (spectrometer).
15. Bomb calorimeter
16. COD digester (micro)
17. Head space extractor
18. Karl Fisher titrator
19. Mercury analyser
20. Oil and grease analyser
21. Spectrophotometer UV vis
22. TKN analyser
23. Stack monitoring kit
24. High volume air samplers

of method for class E is under process. Methods have also been developed for parameters falling under schedule 5 & 6 which are for waste oil and recycled oil.

Many samples of oil received from the Commissioner of Customs for analyses under the Hazardous Waste Rules after the 2003 amendment have been successfully analysed

c) Project on monitoring of volatile organics (VOCs) in ambient air

The Board's central laboratory has undertaken a project of monitoring of VOCs in the ambient air of Mumbai, especially benzene, toluene and xylene (BTX). High volume traffic junctions were selected for collecting ambient air samples. Samples were collected by using especially designed handy pumps. These samples were then transported to the central laboratory for analysis. Samples so collected were analysed using HPLC. The following places were monitored for ambient air:

1) Hutatma chowk

2) Sion junction

3) Mulund junction

4) Bandra Mahim Express highway

5) Dahisar naka.

The results obtained were analysed and a paper on the results was prepared and presented at Delhi.

d) Training of laboratory staff

Learning of environmental subjects is a continuous process. The latest advancements in understanding environmental aspects are a provocation for continuous learning. To cope up with the increased responsibilities and to be aware of the latest developments in this field, training is inevitable. Various trainings and seminars were organized and attended by the staff of the central laboratory (Annexure 3). The following staff have been deputed to pursue higher studies leading to an M.

Tech degree in environmental engineering:

1. Shri Mane P. R.
2. Shri Jadhav M. N.
3. Shri D. B. Patil
4. Shri Killedar V. V.
5. Shri Adkar S. J.

e) Analytical quality control

To improve and maintain the quality of analytical work it is necessary to be very alert during the analysis. To keep the scientific staff alert, the central laboratory management introduced AQC samples in the stream of regular water samples as unknown samples. The samples were prepared by adding known quantities of pure chemicals for various parameters. The results obtained were quite satisfactory and attested to the alertness of the staff and to the analytical quality of the laboratory.

13.5 Environmental training

It is one of the functions of the MPCB to plan and organize training in various aspects of prevention, abatement and control of pollution.

The Board deputes its staff for training so that they may acquire knowledge in the various topics

MPCB's laboratory for analysis of hazardous waste

related to the environmental field, to equip them adequately to discharge their duties efficiently. Before deputing staff to any course, the nature of work and duties performed by them and the need for training is considered.

Training is recognized as an essential ingredient for the effective implementation of the stipulated pollution control norms. Thus, training is imparted not only to personnel of the Board, but also to workers in industries and local municipal bodies. Common topics for training include:

- Planning, funding and execution activities for state Board personnel;
- Upgrading the knowledge and capacity of state Board personnel as and when new advancements are made in the field from time-to-time;
- Efficient operation and maintenance of industrial effluent treatment plants and sewage treatment plants operated by industries and municipal bodies respectively.

Additionally, with new environmental norms coming into force recently, such as the BMW Rules, 1998, the MSW Rules, 2000 and the HW Rules, 1989/2000, it has become imperative to impart

Training for police officers on how to use equipment to measure noise pollution

special training to the operators of these facilities for the correct treatment, storage and disposal of such wastes. Training is also needed to upgrade the knowledge and capability of officials already working in the Board and related fields.

A number of guest lectures and training programmes were also arranged by the Board at its regional office in Aurangabad for training for the current report year. These are listed below:

1) A 3-day training programme was held at the regional office, Aurangabad, on the topic 'Monitoring and management of emissions from industries and mining.' The programme was organized by Envirotech Centre for Research and Development, New Delhi, for officers of MPCB, various industries and environmental consultants. Topics touched upon included the various aspects of collection, retrieval, analysis of samples while monitoring for ambient air quality, fugitive and stack emissions and meteorology.

2) Lectures on 'Air Quality Management' by Dr. G. D. Agrawal and Dr. Dipankar Saha were held at the regional office, Aurangabad. The audience included educational institutes, various industries, environmental consultants and the general public from Aurangabad city.

3) A guest lecture on 'Bio-Medical Waste (Management and Handling) Rules, 1998' was given at the Government Hospital, Ghati, Aurangabad for doctors.

4) A guest lecture on 'Stack Monitoring and Mathematical Models' for students pursuing an M.Sc. degree in Environmental Science was held at S.B.E.S. College of Science, Aurangabad.

5) A one-month long in-plant training programme was arranged at the regional office Aurangabad for students pursuing an M.Sc. degree in Environmental Science.

MPCB's regional office laboratory at Aurangabad

13.6 Computerization of activities in MPCB

The Board undertook computerization of various activities at its offices in order to enhance efficiency in its work, as well as bring transparency in its operations. MPCB is responsible for the implementation of several environmental laws and regulations. It is also required to sanction/grant various clearances for development projects based on environmental considerations. Laboratories are required to provide services for sample analysis, monitoring and survey. The process is sometimes lengthy and cumbersome due to the multi-disciplinary nature of work. Since Maharashtra is a highly developed state, the volume of work is also very large. In order to keep pace with its development and expectations of the public, it is necessary to expedite the process of grant of clearances. To achieve this, it is necessary to establish a wide area network with connectivity among MPCB headquarters, regional offices, and also with CPCB and MoEF.

There is also a need to modify the existing website of the Board and upgrade the information displayed there on a regular basis. The Board is considering handling applications for consent management via e-mail, i.e., the granting of e-consents. On-line monitoring of the progress of various applications is also being considered seriously. The major time delay in the consent granting procedure occurs during the time gap between the receipt of application and verification/visit report by the concerned officer of the Board. For this purpose, it is proposed to involve chartered engineers for processing applications. It is planned that the applications, along with the report of the chartered engineer in the prescribed format, will be submitted to the Board through the Internet. The Board will then consider grant of consent accordingly. Further compliance monitoring/surveillance shall be made by field officials from the Board. It is estimated that this change alone could reduce the time factor for consents by three months. Software similar to that used by the MoEF for the grant of environmental clearances will be developed for the functioning of the MPCB.

To make these changes a reality, a system requirement study is being undertaken. The expenditure in this regard can be covered by cess funds. The work need not start from scratch – currently most of the information/ correspondence required for office management purposes is already being handled through computers. The capacity of the Board's website has also been increased and information is routinely uploaded to grant access to the public in general. Consents/authorizations/clearances are regularly uploaded to the website of the Board. Water and air quality data for select cities in Maharashtra is also regularly updated on-line. After the completion of the system requirement study and its implementation, the Board will be able to respond in a more efficient and transparent manner.

13.7 Properties of the Board

Residential quarters repair work

For the convenience of employees working in C.B.D. Belapur, Navi Mumbai, Thane and Mumbai area, the Board had purchased residential quarters from CIDCO in the year 1983, at Belapur and Nerul, Navi Mumbai, details of which are as follows:

1. Two BHK flats – 3 units at C-6-18/19, sector 6, C.B.D. Belapur, Navi Mumbai.

2. One BHK flats – 20 units at C-5-35, sector 5, C.B.D. Belapur, Navi Mumbai. (Independent building G+4.)

3. One Room Kitchen flats – 12 units at NL-4/13, sec 15, Nerul, Navi Mumbai. (Independent building G+2.)

Existing condition of residential quarters

All the above residential quarters were built by CIDCO and from 1983 the maintenance part has been lacking due to the absence of available infra-

structure. The Board, from 1998, had a full time civil engineer in the post of deputy engineer. One post of executive engineer has been created and is being operated on *ad hoc* basis. At the present, the condition of the residential quarters is not at all good. In the last twenty years, the drinking water line has not been changed, the external plaster is damaged, the structural steel is rusted, the terrace water proofing is damaged. In addition, internal, external painting, electrical wiring/fittings, internal water storage tank, internal flooring, etc., require immediate work. The Board in its 142nd meeting held on 10 August, 2004 decided to take these repair works in hand.

Construction of central laboratory building

The Maharashtra Pollution Control Board purchased a plot (P-3 at TTC Mahape) measuring 2000 sq. mts. in the year 1992, and an adjacent piece of land admeasuring 928 sq. mts. in August 1994 from MIDC to construct a central laboratory. It was then decided that the project would be executed on behalf of MPCB through the MIDC with the assistance of the World Bank. As per the decision, MIDC then agreed to implement the project as per the MOU signed between the MPCB and MIDC. Subsequently MIDC completed the work up to the stage of selecting the contracting agency, after inviting tenders.

Due to some administrative reasons and unavoidable circumstances, however, the work of construction of the laboratory building could not be started and was kept in abeyance. In its 139th meeting held on January 22, 2004, the Board now decided to take up construction of the building for the central laboratory at TTC, Navi Mumbai, as per the existing terms and conditions of the MOU signed between the MIDC and the MPCB on 'term deposit basis' for a total project cost of Rs.8.4 crores. The chairman and member-secretary were authorized to take further necessary steps in the matter. The decision of the Board was conveyed to the MIDC. MIDC gave its confirmation and requested the Board to release the payment of Rs.8.4 crores and a sum of Rs.1.26 crores as payment of ETP charges at the rate of 15%, vide its letter dated 17.02.2004.

The Board requested MIDC that initially 50% payment would be released and accordingly, the Board vide its letter no MS/B-773, dated 17.5.2004, released the payment of Rs. 4 crores towards part payment of the subject matter. But MIDC vide letter no CE (HQ) 1404, dated 18.5.2004, refused to undertake the construction of the building, and suggested an alternative arrangement of getting the work executed.

The Board finally decided to undertake the construction of the building for the central laboratory at TTC Navi Mumbai departmentally. It also decided that the architect M/s. ARK Design, Mumbai, who was working on this project through MIDC since the beginning, should be engaged by entering into a fresh agreement with the MPCB on the terms of the MOU signed between MIDC and the architect. The professional fee charges of the architect (M/s. ARK Design, Mumbai) are 4.5% of the total project cost. The architect has prepared layout plans of the building from ground floor to fifth floor and submitted these to the deputy engineer's office (SPA) MIDC, at Mahape, TTC, Navi Mumbai for technical approval.

The Board instructed the architect to go for prequalification of contractors. The work requires multidisciplinary capacities and involves proper planning of supply and procurement of materials, employment of skilled and unskilled labour and a lot of co-ordination and interaction between various agencies. To manage all the work of this magnitude requires considerable experience and infrastructure in executing similar type of works.

In response to the advertisement published in the newspapers dated 21.06.2004, architect M/s. ARK Design, Mumbai received 21 applications.

The architect checked and scrutinized all the applications thoroughly and a comparative chart was prepared on the basis of the checklist of the following eight agencies who had above 60% rating and then submitted with recommendations for issuing the tender document. The tender document was issued to the eight short listed/pre-qualified contractors as listed below:

1) M/s. Godrej Boyce Mfg. Co. Ltd.

2) M/s. Advance Construction Co. Pvt. Ltd.

3) M/s. Lanco Infraprojects Ltd.

4) M/s. B.G. Shirke Construction Technology Pvt. Ltd.

5) M/s. Unity Infraprojects Ltd.

6) M/s. Reliance construction Co.

7) M/s. Golani Brothers

8) M/s. K. J. Construction Co.

A pre-bid meeting was held on 29.7.2004 for clarification and queries raised by contractors like service tax, escalation/price variation clause. Accordingly, addenda nos.1 and 2 were issued to all the agencies and they were asked to incorporate necessary changes in the tender before submission. Also the agencies were asked to submit the tender unconditionally and inclusive of all taxes, duties etc., as applicable.

Architect Shri Madhav Ambekar, M/s. ARK Design, Mumbai vide his letter dated 10.8.2004, suggested that the Board should consider the factor of *price variation clause* due to which an additional expenditure of Rs.10 lakhs will be incurred only on the item of interior work as this item shall be implemented only after six or seven months after the commencement of actual work. He also suggested that to avoid unfruitful expenditure of around Rs.10 lakhs (at the rate of inflation @5% on Rs. 2.0 crores [approx.], cost of interior work) the Board may consider omitting the interior work from the contractor's scope at the initial stage.

The Board decided to omit the scope of interior work from the tender – approximately Rs.2 crores – invited in two envelops (bids) from the eight short listed/prequalified contractors. Out of the eight agencies, five agencies (listed below) submitted the tenders on the scheduled date of 13.08.2004.

1) M/s. Godrej Boyce Mfg. Co. Ltd.

2) M/s. Advance Construction Co. Pvt. Ltd.

3) M/s. Reliance construction Co.

4) M/s. Golani Brothers

5) M/s. K. J. Construction Co.

All the technical bids were opened on the same date of submission i.e. 13.8.2004, in the presence of the representative of the contracting agencies. It was found that some agencies had submitted the tender 'conditionally'. All the agencies were asked to submit a declaration that 'the tender submitted is strictly as per tender format and unconditional.' Except M/s. Advance Construction Co. Pvt. Ltd., the other four agencies submitted the declaration. The price bids (envelope-2) were opened on 26 August 2004 for four agencies (except M/s. Advance Construction Co. Pvt. Ltd.) in the presence of architect Shri Madhav Ambekar, contractors' representatives Shri Krishnan, and Board officials, i.e., Member Secretary, chief accounts officer, water pollution abatement engineer and deputy engineer. All the price bids were handed over to architect Shri Madhav Ambekar for further scrutiny, arithmetical checking, detailed item-wise comparative statement, and for submission of the detailed report with recommendations to the Board.

The architect finally recommended that M/s. Golani Brothers, 303, Dalamal Chambers, 29, New Marine Lines, Mumbai, had quoted the lowest rate i.e. Rs. 7,75,02,096 (Rupees seven crores, seventy five lakhs, two thousand ninety six only) and proposed to award the work of construction of the central laboratory on the plot no P-3, TTC, Mahape,

Navi Mumbai to the agency. The Board issued a letter of intent (LOI) to M/s. Golani Brothers, 303, Dalamal Chambers, 29, New Marine lines, Mumbai on 16.9.2004.

The auspicious foundation laying programme of the project was held on 21 November 2004 in the presence of Shri Sharad Pawar, Hon'ble Agriculture Minister, Government of India; Shri R. R. Patil, Dy. Chief Minister, Maharashtra and Shri Ganesh Naik, Minister of Environment, Government of Maharashtra. Construction work on the building has commenced in full swing.

E Governance – computerisation

Having purchased its own premises and furnished them as per the requirements, the Board decided on the entire computerization of the offices and laboratory. In this regard, the Board had provided a number of computers with laser printers. Also provided were scanner and pen drives and a LAN networking facility to every office of the board. The Board has provided video conferencing facility to some offices like HQ and regional office, Nashik.

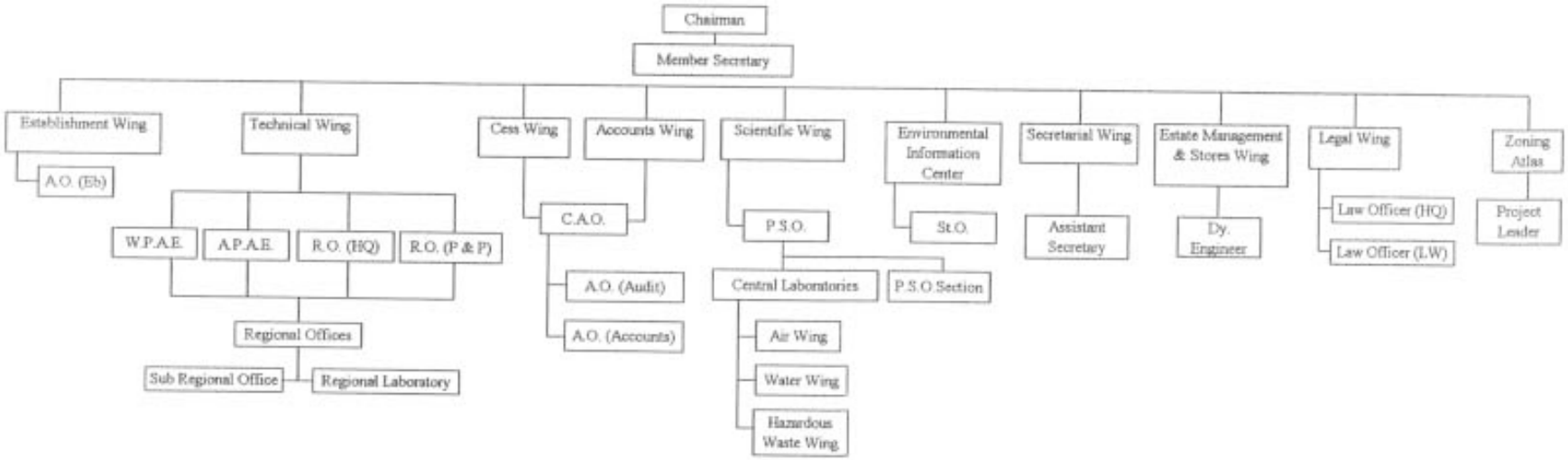
D. G. set installation

Laboratory equipment requires power. Some of the sophisticated instruments are computerized and very costly and require air conditioning as well. In some cases, samples are kept at a certain temperature before analysis. All these instruments need regular electricity supply. Nowadays, in all the rural areas of Maharashtra, load shedding or power cut problem arises frequently. In some of the cities, Friday is a holiday for industries and on that day the power to the industrial area is cut. The Board has some of its offices in MIDC areas. Hence the requirement of electric supply at the time of power cut or load shedding is necessary for office and laboratory functioning. To meet the above requirement, D. G. sets should be installed for power requirement.

After discussion and due deliberation, assessing the feasibility and requirement from the regional offices, it was decided to purchase D. G. sets for regional offices at Nashik, Aurangabad, Nagpur and Lote Parshuram. The Board in its 141st meeting held on 8 July 2004 decided to install at each of these places 50 KVA D.G. sets including panel board, electrification, wiring, foundation, sound insulation, etc.

ANNEXURES

Organisational structure of M.P.C.B. – 1



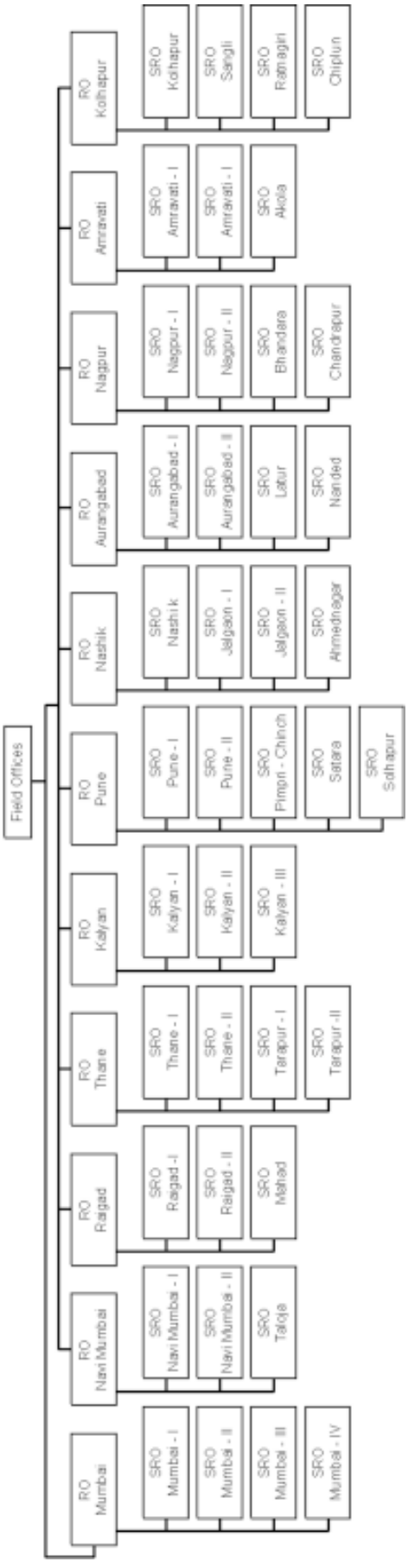
Abbrievations Used :-

WPAE - Water Pollution Abatement Engineer
APAE - Air Pollution Abatement Engineer
RO (HQ) - Regional Officer (Head Quarter)
RO (P & P) - Regional Officer (Project & Planning)
St.O. - Statistical Officer

AO (EB) - Administrator Officer
CAO - Chief Accounts Officer
AO (Audit) - Accounts Officer (Audit)
AO (Accts.) - Accounts Officer (Accounts)
AO (Accts.) - Accounts Officer (Accounts)

Organisation structure of M.P.C.B. – 2

Field Officers Chart



ANNEXURE-2

Staff strength as on 31 March 2005

SR. NO.	CADRE	SANCTIONED	FILLED IN	VACANT
I	A - TECHNICAL			
1.	Air Pollution Abatement Engineer	1	1	0
2.	Water Pollution Abatement Engineer	1	1	0
3.	Regional Officer	13	13	0
4.	Sub-Regional Officer	53	51	2
5.	Deputy Engineer	1	1	0
6.	Field Officer	96	94	2
7.	Statistical Officer	1	1	0
8.	Statistical Asst.	1	1	0
9.	Draughtsman	1	1	0
10.	Field Inspector	8	5	3
11.	Asst. Draughtsman	2	2	0
12.	Field Asst.	42	42	0
13.	Tracer	7	7	0
14.	Electrician	2	2	0
15.	Instrument Fitter	1	1	0
	Total	**230**	**223**	**7**
II	**B-LEGAL**			
1.	Law Officer	2	2	-
2.	Asst. Law Officer	2	2	-
3.	Legal Asst.	4	4	-
	Total	**8**	**8**	**-**
III	**C-SCIENTIFIC – A**			
1.	Principal Scientific Officer	1	1	0
2.	Senior Scientific Officer	3	2	1
3.	Scientific Officer	9	8	1
4.	Junior Scientific Officer.	26	21	5
5.	Junior Scientific Asst.	36	36	-
6.	Laboratory Asst.	7	7	-
	Total	**82**	**75**	**7**
IV	**D- ACCOUNTS AND ADMINISTRATION**			
1.	Chief Accounts Officer	1	1	-
2.	Accounts Officer	2	2	0
3.	Administrative Officer	1	1	0
4.	Asst. Secretary	1	1	0
5.	Asst. Accounts officer	2	2	0
6.	Head Accountants	20	19	1
7.	Library Asst.	1	1	0
8.	Senior Steno	5	5	0
9.	Junior Steno	26	25	1
10.	First Clerk / Store Keeper	17	17	0
11.	Senior Clerks	50	50	0
12.	Junior clerks /Cashier/Store clerk	63	63	0
13.	Daftari	2	2	0
14.	Drivers	54	49	5
15.	Roneo Operator	1	1	0
16.	Naik	2	2	0

SR. NO.	CADRE	SANCTIONED	FILLED IN	VACANT
17.	Chowkidar	20	19	1
18.	Peons	111	105	6
19.	Sweeper	3	3	0
	Total	381	367	14
	A B S T R A C T S			
A	Technical	230	223	7
B	Legal	8	8	0
C	Scientific	82	75	7
D	Accounts and Administration	381	367	14
	Total	701	673	28

ANNEXURE-3

Seminars, workshops and training courses attended by the Board's staff and by the Board's officers (2004-05)

Sr. No.	Name and designation	Training programme	Place	Period
1	Shri S. R. Bande, SO Shri A. P. Khole, JSA	A comprehensive course on 'Ambient air quality monitoring'	Delhi	5 – 9 April 2004 and 10 – 14 May 2004
2	Shri G. N. Mohite, SRO Shri A. D. Saraf, RO Shri D. K. Khedkar, SRO, Pimpri-Chinchwad Shri S. C. Kolur, SO	Training programme on application of GIS in the management of aquatic pollution ICMAM-PD	Chennai	12 – 21 April 2004
3	Shri R. Bandappa, SRO Shri B. G. Aradwad, SRO Shri A. T. Phulmali, SRO Shri Sangewar, SRO Shri N. N. Gurav, SRO Shri P. P. Dhaigude	Training on 'Beach cleaning technique'; Coast Guard Pollution Response Team (W) shed No.3, New Ferry Wharf. M-99	Mumbai	16 April 2004
4	Shri A. V. Mandavkar Shri Joy Thakur, FO Shri D. M. Sonawane, FA	Training on the use of software for creation of an environmental data bank.	Delhi	12 – 14 May 2004
5	Shri A. D. Saraf, RO	Awareness programme on environmental statements including waste minimisation, environmental auditing and management system.	BHEL, Haridwar	26 – 28 April 2004
6	Shri P. B. Barbole, SRO	Training programme on control of volatile organic compounds (VOCs).	Vadodara	28 – 30 April 2004
7	Shri M. N. Jadhav, FO Shri P. V. Patil, FO	Awareness programme on environmental statements including waste minimisation, environmental auditing and management system for oil refineries.	New Delhi	5 – 7 May 2004.
8	Mrs. N. N. Chaphekar, Legal Asst. Mrs. Vaishali Sadhale, Legal Asst.	Training programme on environmental law in India – Rules and regulations.	Hyderabad	25 – 27 May 2004
9	Shri D. M. Choukande, SRO, P&P	Training of engineers on 'Integrated solid waste management and designing of sanitary landfills for the disposal of municipal solid waste.'	Dona Paula Goa.	24 – 28 May 2004
10	Shri A. T. Fulmali, SRO	Training on rationale for prescribing location specific standards.	Hyderabad	14 – 18 June 2004
11	Shri G. N. Mohite, SRO Shri A. F. Deshmane, SRO	Urban drainage management: State of the art, 2004	Head Office, Sion	26 – 27 July 2004
12	Kum. V. Shirsat, FO Kum. R. Sayama, FO Kum. Meena K. Mohite, FO Mrs. V. S. Mane, FO Kum. M. Pawar, FO Mrs. S. Saswade, FO Mrs.Yogini Balankhe, FO Kum. Sidhu Kapare, FO Mrs. K. Kulkarni, FO Mrs. J. Jonojkar, FO Shri. D. K. Devkamble, FO Shri S. L. Tope, FO Shri S. P. Kavare, FO	Environmental pollution control and office administration.	Pune	5 – 23 July 2004

Sr. No.	Name and designation	Training programme	Place	Period
13	Shri N. B. Chaudhari, SRO	Air quality management	Delhi	26 – 30 July 2004
14	Shri B. S. Fule, SO	Estimation of measurement uncertainty at ESCI	Hyderabad	3 – 5 August 2004
15	Shri P. M. Patil, SRO	Fly ash utilization: Advancements in technology and opportunity.	Bangalore	18 – 20 August 2004.
16	Shri V. P. Shirure, SRO	Watershed and drought management ESCI	Hyderabad	24 – 27 August 2004
17	Shri V. B. Waghzale, RO Shri S. K. More, RO Shri S. Y. Yavale, SRO Shri G. S. Bawne, SRO Shri V. P. Shirure, Solapur Shri N. R. Shinde, FO Shri M. A. Moiz, SRO Shri S. R. Patil, SRO Shri B. L. Dhumal, FO Shri J. A. Kadam, SRO Shri P. L. Mihire, FO Shri N. S. Aavtade, FO Shri C. N. Shinde, FO Shri N. D. Toke, FO Shri S. L. Bhad, FO Shri A. S. Nandavate, FO	One week training programme in solid waste management at AIILSG Mumbai	Andheri	23 – 27 August 2004
18	Shri S. R. Bhosale, FO	Inventory and management of stockpiles of banned and obsolete pesticides.	Delhi	23 – 27 August 2004
19	Shri P. B. Barbole, SRO Shri A. P. Surye, SRO Shri S. R. Patil, SRO Shri R. A. Rajput, SRO Shri P. M. Bhosale, SRO Shri A. D. Chavan, SRO Shri S. S. Kendule, SRO Shri R. V. Patil, SRO Shri S. S. Misal, JSA Shri M. R. Sonawane, JSA	International conference on enviro- vision, 2004	Pune	2 – 4 September 2004
20	Shri A. N. Katote, FO Shri R. Dafade, FO Shri Raju Wesave, FO Shri A. Jadhav, FO Shri Sanjay Jarapure, FO Shri Sanjay Mamavare, FO Shri Deepak Bansode, FO Shri S. Redasani, FO	Environmental pollution control and office administration.	Pune	11 – 24 September 2004
21	Shri A. V. Rathode, FO Shri A. M. Durgule, FO Shri K. S. Langote, FO Shri R. D. More, FO Shri U. G. Mane, FO	Environmental pollution control and office administration	Pune	11 – 24 September 2004
22	Shri S. C. Kollur, SO Shri R. D. Nandgaonkar, HA	Eco-intensive coaching course	Ahmedabad	15 Nov 2004 – 4 Dec 2004
23	Shri C. A. Sawant, JSA	Environmental monitoring and assessment for urban area.	New Delhi	15 Nov 2004 – 4 Dec 2004
24	Shri D. M. Sonawane, SA	Advanced diploma course on computer software system, analysis and applications.	Chembur	Oct 2004 – April 2005
25	Shri A. S. Nandavate, FO Shri Pravin Patil, FO	Hazardous chemical to HRD foundation	New Delhi	29 Nov 2004 – 30 Nov 2004

Sr. No.	Name and designation	Training programme	Place	Period
25	Shri A. S. Nandavate, FO Shri Pravin Patil, FO	Hazardous chemical to HRD foundation	New Delhi	29 Nov 2004 – 30 Nov 2004
26	Shri A. R. Supate, project leader	Hazard identification and risk assessment in isolated storage facilities at DMI Bhopal	Bhopal	6 Dec 2004 – 10 Dec 2004
27	Shri B .D. Kude, RO	Education for a sustainable future	Ahmedabad	18 – 20 Jan 2005
28	Shri Ravindra Andale, FO	Training programme on BENMAP international software by USEPA at CPCB Delhi	New Delhi	29 Nov 2004 – 2 Dec'04
29	Shri V. L. Korde, SSO Dr. J. P. Trukrue, scientific advisor	International Conference on Better Air Quality -2004	Agra	5 – 8 Dec 2004
30	Shri S. A. Deshpande, SRO Shri A. M. Kare, FO Shri P. D. Wankade, FO	Certificate course on management of chemical and hazardous waste.	Hyderabad	28 – 31 Jan 2005
31	Mrs. R. P. Padval, SO Shri Padmanabh Khadkikar, SO	Training of laboratory managers in lab management and quality control	Delhi	24 – 25 Jan 2005
32	Shri B. R. Jagtap, Deputy engineer, Shri J. H. Patil, SRO	Urban rain water harvesting	Delhi	27 – 31 Jan 2005
33	Shri A.V. Madavkar, SO	Hospital / clinical waste management and infection control organised by M/s. Indian society of Health Administration.	Bangalore	17 – 19 Feb 2005
34	Shri S. R. Banate, AO Shri P. D. Brahme, OS	Reservation policy	Pune	21 – 24 Feb 2005
35	Mrs. S. S. Bhasarkar, SO Shri K. P. Pusadkar, FO	Sampling, analysis and characterisation of hazardous waste and its management	Nagpur	21 – 25 Feb 2005
36	Shri A. B. Jain, Sr. Law Officer Shri D. T. Devale, Sr. Law Officer	Law relating to hazardous waste and its management	Bangalore	March 2005
37	Shri P. K. Mirashe, RO	Attitudinal development and stress management	Yashada, Pune	21 Feb 2005 – 5 March 2005
38	Kum. Viju Shirsat, FO Kum. S. Gaikwad, LA Shri P. G. Arulekar, FA	Environment planning, impact assessment and legal requirement for process industries.	Hyderabad	2 and 3 March 2005
39	Shri V. N. Munde, RO Shri N. B. Choudari, SRO	Mitigation of vehicular pollution (CIRT)	Pune	5 – 26 May 2005

the organisation was carried out by engaging the services of M/s. CRISIL. The Supreme Court in its order dated 14.10.2003 has also directed the States to strengthen Pollution Control Boards so that the orders of the Supreme Court can be implemented more effectively. The study has been completed and is being submitted to the Supreme Court Monitoring Committee charged with monitoring implementation of the order..

13.3 Strengthening infrastructure

As stated earlier, the MPCB is responsible for enforcement of a plethora of laws regarding water pollution, air pollution, noise pollution, municipal solid wastes, biomedical wastes, hazardous wastes, hazardous chemicals, fly ash utilization, plastics recycling, chemical accidents and response, environmental impact assessment, coastal regulation zone, batteries collection and recycling, etc. The Board also covers pollution control, assessment, monitoring and surveys. The activities of the Board are science and technology based. In order to meet the requirements of these ever expanding activities, the Board has strengthened the infrastructure of its laboratories and enhanced the availability of field monitoring equipment and its transportation. These improvements have in fact contributed to efficient functioning of the Board and generated additional revenue. Environmental surveillance has also increased. About 25,000 environmental samples consisting of air, water, waste water, solids, etc., have been analysed in the last year, which is far higher than any in the previous years of the Board's existence.

13.4 Central laboratory

The Board's central laboratory is a premier institution in the state responsible for providing scientific services for programmes concerning prevention and control of pollution. Its programmes include undertaking state level activities related to pollution assessment, monitoring and surveys. This laboratory must be equipped with modern instrumentation and a realistic capacity to perform better coordination of the activities of regional laboratories in addition to improvement in quality assurance and quality control. The central laboratory at present is crammed on one floor at CIDCO Bhawan which is highly inadequate in terms of space and infrastructure. Considering the urgency, the Board has started construction of an independent building for the central laboratory at Navi Mumbai. The building will be eco-friendly and equipped with state-of-the-art facilities required for analysis of various parameters and undertaking R&D activities. These will include treatability studies, demonstration plants for effluent treatment, performance evaluation of pollution control systems, calibration, an environmental planning studio, exhibition gallery for informal education and mass awareness, training of scientists and engineers of the Board and industry, an EDP centre, etc.

During the year 2004–05, the following efforts at development and strengthening of the central laboratory were undertaken:

a) Laboratory instruments and equipment

A number of laboratory instruments and equipment are required to run the activities of the central laboratory. Already the laboratory has many sophisticated and semi sophisticated laboratory instruments and equipment. Due to its increased responsibilities, more laboratory instruments and equipment are to be procured and put into operation.

Laboratory instruments and equipment were procured and supplied to the regional laboratories at Chiplun and Thane as part of the programme of strengthening regional laboratories.

Table 1: Performance of central/regional laboratories (water) during the year 2004–05

Sr. No.	Regional / Central Lab	No. of samples received and analysed in during the year			Total no. of parameters analysed water
		JVS	ENV (water)	LES	
1	Thane	877	28	2	4013
2	Nagpur	1706	671	29	25057
3	Nashik	1630	526	7	14817
4	Chiplun	1635	602	7	18182
5	Pune	1847	572	8	14600
6	Aurangabad	1353	178	-	13627
7	Central Lab	5109	1562	15	37587
	Total	**14157**	**4139**	**68**	**127883**

Table 2: Performance of central/regional laboratories (air and hazardous waste) during the year 2004–05

Sr. No.	Regional / Central Lab	No. of samples received and analysed during the Year			Total no. of parameters analysed	
		Ambient	Stack	H.W.	Air	H.W.
1	Thane	613	155	-	9431	-
2	Nagpur	1096	258	481	5044	5499
3	Nashik	76	89	140	319	545
4	Chiplun	284	225	187	991	264
5	Pune	596	424	76	2719	615
6	Aurangabad	316	122	209	1010	1091
7	Central Lab	462	456	1358	5841	9701
	Total	**3443**	**1729**	**2451**	**25355**	**17715**

b) Development of hazardous waste section

Earlier, the central laboratory was analysing hazardous waste samples as per the scheduled parameters in the Hazardous Waste Rules, 1989 (as amended). Government of India amended these Rules in May 2003 and the whole scenario was thereby changed. The previous methods of analyses had to be changed as per the new amendment. The central laboratory with help from the Central Pollution Control Board developed new methods of analyses in line with the changed rules. The central laboratory also recommended the fees for the analyses to the Government of Maharashtra and got these approved.

These methods were developed for parameters under schedule 2, class A, B, C & D. Development

New equipment at the Board's laboratories

1. Acid dispenser (30 ml)
2. Auto burette
3. Centrifuge
4. Colour comparator
5. Conductivity meter
6. Filtration assembly
7. Flask shaker (rotary)
8. Fuming chamber
9. Muffle furnace 1000 °C
10. Oven (hot air)
11. PH meter (table model)
12. Turbidity meter.
13. Quartz distillation
14. Atomic absorption (spectrometer).
15. Bomb calorimeter
16. COD digester (micro)
17. Head space extractor
18. Karl Fisher titrator
19. Mercury analyser
20. Oil and grease analyser
21. Spectrophotometer UV vis
22. TKN analyser
23. Stack monitoring kit
24. High volume air samplers

of method for class E is under process. Methods have also been developed for parameters falling under schedule 5 & 6 which are for waste oil and recycled oil.

Many samples of oil received from the Commissioner of Customs for analyses under the Hazardous Waste Rules after the 2003 amendment have been successfully analysed

c) Project on monitoring of volatile organics (VOCs) in ambient air

The Board's central laboratory has undertaken a project of monitoring of VOCs in the ambient air of Mumbai, especially benzene, toluene and xylene (BTX). High volume traffic junctions were selected for collecting ambient air samples. Samples were collected by using especially designed handy pumps. These samples were then transported to the central laboratory for analysis. Samples so collected were analysed using HPLC. The following places were monitored for ambient air:

1) Hutatma chowk

2) Sion junction

3) Mulund junction

4) Bandra Mahim Express highway

5) Dahisar naka.

The results obtained were analysed and a paper on the results was prepared and presented at Delhi.

d) Training of laboratory staff

Learning of environmental subjects is a continuous process. The latest advancements in understanding environmental aspects are a provocation for continuous learning. To cope up with the increased responsibilities and to be aware of the latest developments in this field, training is inevitable. Various trainings and seminars were organized and attended by the staff of the central laboratory (Annexure 3). The following staff have been deputed to pursue higher studies leading to an M.

Tech degree in environmental engineering:

1. Shri Mane P. R.
2. Shri Jadhav M. N.
3. Shri D. B. Patil
4. Shri Killedar V. V.
5. Shri Adkar S. J.

e) Analytical quality control

To improve and maintain the quality of analytical work it is necessary to be very alert during the analysis. To keep the scientific staff alert, the central laboratory management introduced AQC samples in the stream of regular water samples as unknown samples. The samples were prepared by adding known quantities of pure chemicals for various parameters. The results obtained were quite satisfactory and attested to the alertness of the staff and to the analytical quality of the laboratory.

13.5 Environmental training

It is one of the functions of the MPCB to plan and organize training in various aspects of prevention, abatement and control of pollution.

The Board deputes its staff for training so that they may acquire knowledge in the various topics

MPCB's laboratory for analysis of hazardous waste

related to the environmental field, to equip them adequately to discharge their duties efficiently. Before deputing staff to any course, the nature of work and duties performed by them and the need for training is considered.

Training is recognized as an essential ingredient for the effective implementation of the stipulated pollution control norms. Thus, training is imparted not only to personnel of the Board, but also to workers in industries and local municipal bodies. Common topics for training include:

- Planning, funding and execution activities for state Board personnel;
- Upgrading the knowledge and capacity of state Board personnel as and when new advancements are made in the field from time-to-time;
- Efficient operation and maintenance of industrial effluent treatment plants and sewage treatment plants operated by industries and municipal bodies respectively.

Additionally, with new environmental norms coming into force recently, such as the BMW Rules, 1998, the MSW Rules, 2000 and the HW Rules, 1989/2000, it has become imperative to impart

Training for police officers on how to use equipment to measure noise pollution

special training to the operators of these facilities for the correct treatment, storage and disposal of such wastes. Training is also needed to upgrade the knowledge and capability of officials already working in the Board and related fields.

A number of guest lectures and training programmes were also arranged by the Board at its regional office in Aurangabad for training for the current report year. These are listed below:

1) A 3-day training programme was held at the regional office, Aurangabad, on the topic 'Monitoring and management of emissions from industries and mining.' The programme was organized by Envirotech Centre for Research and Development, New Delhi, for officers of MPCB, various industries and environmental consultants. Topics touched upon included the various aspects of collection, retrieval, analysis of samples while monitoring for ambient air quality, fugitive and stack emissions and meteorology.

2) Lectures on 'Air Quality Management' by Dr. G. D. Agrawal and Dr. Dipankar Saha were held at the regional office, Aurangabad. The audience included educational institutes, various industries, environmental consultants and the general public from Aurangabad city.

3) A guest lecture on 'Bio-Medical Waste (Management and Handling) Rules, 1998' was given at the Government Hospital, Ghati, Aurangabad for doctors.

4) A guest lecture on 'Stack Monitoring and Mathematical Models' for students pursuing an M.Sc. degree in Environmental Science was held at S.B.E.S. College of Science, Aurangabad.

5) A one-month long in-plant training programme was arranged at the regional office Aurangabad for students pursuing an M.Sc. degree in Environmental Science.

MPCB's regional office laboratory at Aurangabad

13.6 Computerization of activities in MPCB

The Board undertook computerization of various activities at its offices in order to enhance efficiency in its work, as well as bring transparency in its operations. MPCB is responsible for the implementation of several environmental laws and regulations. It is also required to sanction/grant various clearances for development projects based on environmental considerations. Laboratories are required to provide services for sample analysis, monitoring and survey. The process is sometimes lengthy and cumbersome due to the multi-disciplinary nature of work. Since Maharashtra is a highly developed state, the volume of work is also very large. In order to keep pace with its development and expectations of the public, it is necessary to expedite the process of grant of clearances. To achieve this, it is necessary to establish a wide area network with connectivity among MPCB headquarters, regional offices, and also with CPCB and MoEF.

There is also a need to modify the existing website of the Board and upgrade the information displayed there on a regular basis. The Board is considering handling applications for consent management via e-mail, i.e., the granting of e-consents. On-line monitoring of the progress of various applications is also being considered seriously. The major time delay in the consent granting procedure occurs during the time gap between the receipt of application and verification/visit report by the concerned officer of the Board. For this purpose, it is proposed to involve chartered engineers for processing applications. It is planned that the applications, along with the report of the chartered engineer in the prescribed format, will be submitted to the Board through the Internet. The Board will then consider grant of consent accordingly. Further compliance monitoring/surveillance shall be made by field officials from the Board. It is estimated that this change alone could reduce the time factor for consents by three months. Software similar to that used by the MoEF for the grant of environmental clearances will be developed for the functioning of the MPCB.

To make these changes a reality, a system requirement study is being undertaken. The expenditure in this regard can be covered by cess funds. The work need not start from scratch – currently most of the information/ correspondence required for office management purposes is already being handled through computers. The capacity of the Board's website has also been increased and information is routinely uploaded to grant access to the public in general. Consents/authorizations/clearances are regularly uploaded to the website of the Board. Water and air quality data for select cities in Maharashtra is also regularly updated on-line. After the completion of the system requirement study and its implementation, the Board will be able to respond in a more efficient and transparent manner.

13.7 Properties of the Board

Residential quarters repair work

For the convenience of employees working in C.B.D. Belapur, Navi Mumbai, Thane and Mumbai area, the Board had purchased residential quarters from CIDCO in the year 1983, at Belapur and Nerul, Navi Mumbai, details of which are as follows:

1. Two BHK flats – 3 units at C-6-18/19, sector 6, C.B.D. Belapur, Navi Mumbai.

2. One BHK flats – 20 units at C-5-35, sector 5, C.B.D. Belapur, Navi Mumbai. (Independent building G+4.)

3. One Room Kitchen flats – 12 units at NL-4/13, sec 15, Nerul, Navi Mumbai. (Independent building G+2.)

Existing condition of residential quarters

All the above residential quarters were built by CIDCO and from 1983 the maintenance part has been lacking due to the absence of available infra-

structure. The Board, from 1998, had a full time civil engineer in the post of deputy engineer. One post of executive engineer has been created and is being operated on *ad hoc* basis. At the present, the condition of the residential quarters is not at all good. In the last twenty years, the drinking water line has not been changed, the external plaster is damaged, the structural steel is rusted, the terrace water proofing is damaged. In addition, internal, external painting, electrical wiring/fittings, internal water storage tank, internal flooring, etc., require immediate work. The Board in its 142nd meeting held on 10 August, 2004 decided to take these repair works in hand.

Construction of central laboratory building

The Maharashtra Pollution Control Board purchased a plot (P-3 at TTC Mahape) measuring 2000 sq. mts. in the year 1992, and an adjacent piece of land admeasuring 928 sq. mts. in August 1994 from MIDC to construct a central laboratory. It was then decided that the project would be executed on behalf of MPCB through the MIDC with the assistance of the World Bank. As per the decision, MIDC then agreed to implement the project as per the MOU signed between the MPCB and MIDC. Subsequently MIDC completed the work up to the stage of selecting the contracting agency, after inviting tenders.

Due to some administrative reasons and unavoidable circumstances, however, the work of construction of the laboratory building could not be started and was kept in abeyance. In its 139th meeting held on January 22, 2004, the Board now decided to take up construction of the building for the central laboratory at TTC, Navi Mumbai, as per the existing terms and conditions of the MOU signed between the MIDC and the MPCB on 'term deposit basis' for a total project cost of Rs.8.4 crores. The chairman and member-secretary were authorized to take further necessary steps in the matter. The decision of the Board was conveyed to the MIDC. MIDC gave its confirmation and requested the Board to release the payment of Rs.8.4 crores and a sum of Rs.1.26 crores as payment of ETP charges at the rate of 15%, vide its letter dated 17.02.2004.

The Board requested MIDC that initially 50% payment would be released and accordingly, the Board vide its letter no MS/B-773, dated 17.5.2004, released the payment of Rs. 4 crores towards part payment of the subject matter. But MIDC vide letter no CE (HQ) 1404, dated 18.5.2004, refused to undertake the construction of the building, and suggested an alternative arrangement of getting the work executed.

The Board finally decided to undertake the construction of the building for the central laboratory at TTC Navi Mumbai departmentally. It also decided that the architect M/s. ARK Design, Mumbai, who was working on this project through MIDC since the beginning, should be engaged by entering into a fresh agreement with the MPCB on the terms of the MOU signed between MIDC and the architect. The professional fee charges of the architect (M/s. ARK Design, Mumbai) are 4.5% of the total project cost. The architect has prepared layout plans of the building from ground floor to fifth floor and submitted these to the deputy engineer's office (SPA) MIDC, at Mahape, TTC, Navi Mumbai for technical approval.

The Board instructed the architect to go for prequalification of contractors. The work requires multidisciplinary capacities and involves proper planning of supply and procurement of materials, employment of skilled and unskilled labour and a lot of co-ordination and interaction between various agencies. To manage all the work of this magnitude requires considerable experience and infrastructure in executing similar type of works.

In response to the advertisement published in the newspapers dated 21.06.2004, architect M/s. ARK Design, Mumbai received 21 applications.

The architect checked and scrutinized all the applications thoroughly and a comparative chart was prepared on the basis of the checklist of the following eight agencies who had above 60% rating and then submitted with recommendations for issuing the tender document. The tender document was issued to the eight short listed/pre-qualified contractors as listed below:

1) M/s. Godrej Boyce Mfg. Co. Ltd.

2) M/s. Advance Construction Co. Pvt. Ltd.

3) M/s. Lanco Infraprojects Ltd.

4) M/s. B.G. Shirke Construction Technology Pvt. Ltd.

5) M/s. Unity Infraprojects Ltd.

6) M/s. Reliance construction Co.

7) M/s. Golani Brothers

8) M/s. K. J. Construction Co.

A pre-bid meeting was held on 29.7.2004 for clarification and queries raised by contractors like service tax, escalation/price variation clause. Accordingly, addenda nos.1 and 2 were issued to all the agencies and they were asked to incorporate necessary changes in the tender before submission. Also the agencies were asked to submit the tender unconditionally and inclusive of all taxes, duties etc., as applicable.

Architect Shri Madhav Ambekar, M/s. ARK Design, Mumbai vide his letter dated 10.8.2004, suggested that the Board should consider the factor of *price variation clause* due to which an additional expenditure of Rs.10 lakhs will be incurred only on the item of interior work as this item shall be implemented only after six or seven months after the commencement of actual work. He also suggested that to avoid unfruitful expenditure of around Rs.10 lakhs (at the rate of inflation @5% on Rs. 2.0 crores [approx.], cost of interior work) the Board may consider omitting the interior work from the contractor's scope at the initial stage.

The Board decided to omit the scope of interior work from the tender – approximately Rs.2 crores – invited in two envelops (bids) from the eight short listed/prequalified contractors. Out of the eight agencies, five agencies (listed below) submitted the tenders on the scheduled date of 13.08.2004.

1) M/s. Godrej Boyce Mfg. Co. Ltd.

2) M/s. Advance Construction Co. Pvt. Ltd.

3) M/s. Reliance construction Co.

4) M/s. Golani Brothers

5) M/s. K. J. Construction Co.

All the technical bids were opened on the same date of submission i.e. 13.8.2004, in the presence of the representative of the contracting agencies. It was found that some agencies had submitted the tender 'conditionally'. All the agencies were asked to submit a declaration that 'the tender submitted is strictly as per tender format and unconditional.' Except M/s. Advance Construction Co. Pvt. Ltd., the other four agencies submitted the declaration. The price bids (envelope-2) were opened on 26 August 2004 for four agencies (except M/s. Advance Construction Co. Pvt. Ltd.) in the presence of architect Shri Madhav Ambekar, contractors' representatives Shri Krishnan, and Board officials, i.e., Member Secretary, chief accounts officer, water pollution abatement engineer and deputy engineer. All the price bids were handed over to architect Shri Madhav Ambekar for further scrutiny, arithmetical checking, detailed item-wise comparative statement, and for submission of the detailed report with recommendations to the Board.

The architect finally recommended that M/s. Golani Brothers, 303, Dalamal Chambers, 29, New Marine Lines, Mumbai, had quoted the lowest rate i.e. Rs. 7,75,02,096 (Rupees seven crores, seventy five lakhs, two thousand ninety six only) and proposed to award the work of construction of the central laboratory on the plot no P-3, TTC, Mahape,

Navi Mumbai to the agency. The Board issued a letter of intent (LOI) to M/s. Golani Brothers, 303, Dalamal Chambers, 29, New Marine lines, Mumbai on 16.9.2004.

The auspicious foundation laying programme of the project was held on 21 November 2004 in the presence of Shri Sharad Pawar, Hon'ble Agriculture Minister, Government of India; Shri R. R. Patil, Dy. Chief Minister, Maharashtra and Shri Ganesh Naik, Minister of Environment, Government of Maharashtra. Construction work on the building has commenced in full swing.

E Governance – computerisation

Having purchased its own premises and furnished them as per the requirements, the Board decided on the entire computerization of the offices and laboratory. In this regard, the Board had provided a number of computers with laser printers. Also provided were scanner and pen drives and a LAN networking facility to every office of the board. The Board has provided video conferencing facility to some offices like HQ and regional office, Nashik.

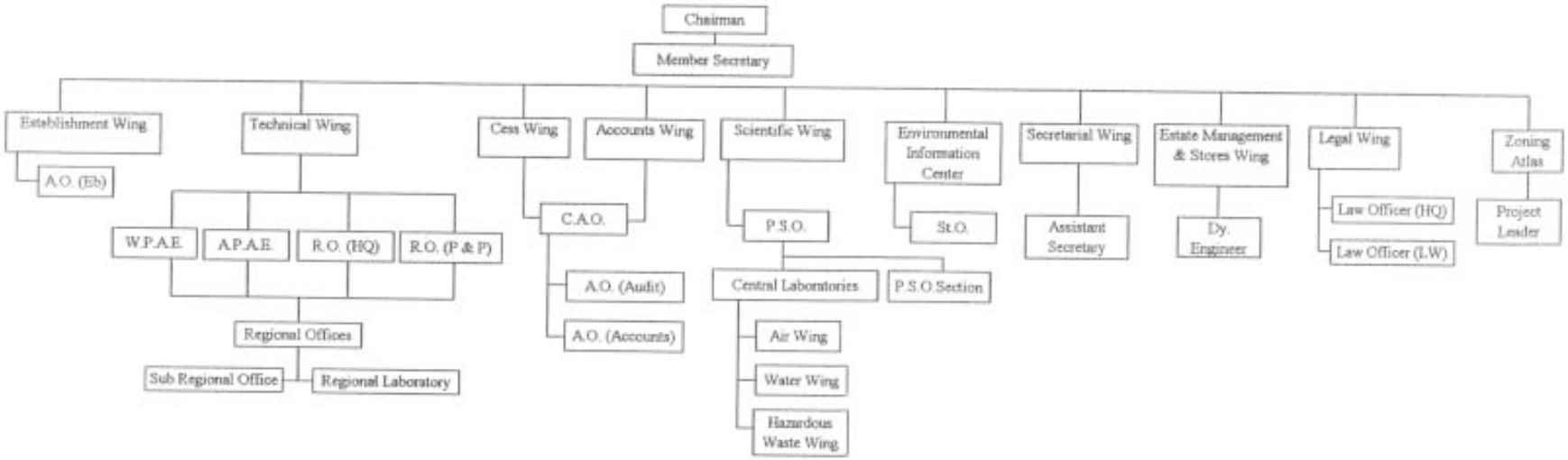
D. G. set installation

Laboratory equipment requires power. Some of the sophisticated instruments are computerized and very costly and require air conditioning as well. In some cases, samples are kept at a certain temperature before analysis. All these instruments need regular electricity supply. Nowadays, in all the rural areas of Maharashtra, load shedding or power cut problem arises frequently. In some of the cities, Friday is a holiday for industries and on that day the power to the industrial area is cut. The Board has some of its offices in MIDC areas. Hence the requirement of electric supply at the time of power cut or load shedding is necessary for office and laboratory functioning. To meet the above requirement, D. G. sets should be installed for power requirement.

After discussion and due deliberation, assessing the feasibility and requirement from the regional offices, it was decided to purchase D. G. sets for regional offices at Nashik, Aurangabad, Nagpur and Lote Parshuram. The Board in its 141st meeting held on 8 July 2004 decided to install at each of these places 50 KVA D.G. sets including panel board, electrification, wiring, foundation, sound insulation, etc.

ANNEXURES

Organisational structure of M.P.C.B. – 1



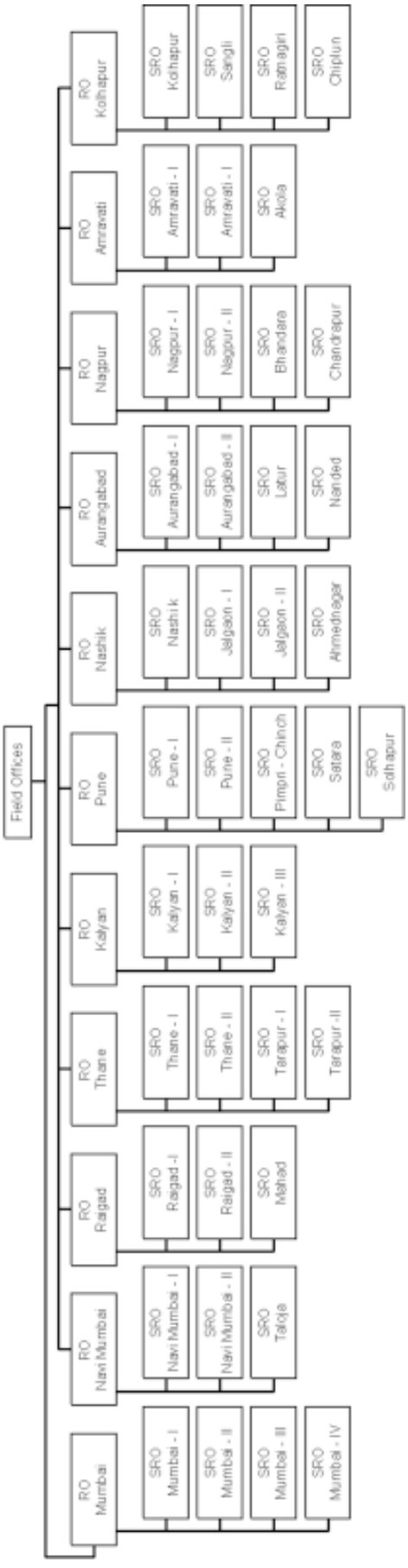
Abbrievations Used :-

WPAE - Water Pollution Abatement Engineer
APAE - Air Pollution Abatement Engineer
RO (HQ) - Regional Officer (Head Quarter)
RO (P & P) - Regional Officer (Project & Planning)
St.O. - Statistical Officer

AO (EB) - Administrator Officer
CAO - Chief Accounts Officer
AO (Audit) - Accounts Officer (Audit)
AO (Accts.) - Accounts Officer (Accounts)
AO (Accts.) - Accounts Officer (Accounts)

Organisation structure of M.P.C.B. – 2

Field Officers Chart



ANNEXURE-2

Staff strength as on 31 March 2005

SR. NO.	CADRE	SANCTIONED	FILLED IN	VACANT
I	A - TECHNICAL			
1.	Air Pollution Abatement Engineer	1	1	0
2.	Water Pollution Abatement Engineer	1	1	0
3.	Regional Officer	13	13	0
4.	Sub-Regional Officer	53	51	2
5.	Deputy Engineer	1	1	0
6.	Field Officer	96	94	2
7.	Statistical Officer	1	1	0
8.	Statistical Asst.	1	1	0
9.	Draughtsman	1	1	0
10.	Field Inspector	8	5	3
11.	Asst. Draughtsman	2	2	0
12.	Field Asst.	42	42	0
13.	Tracer	7	7	0
14.	Electrician	2	2	0
15.	Instrument Fitter	1	1	0
	Total	**230**	**223**	**7**
II	**B-LEGAL**			
1.	Law Officer	2	2	-
2.	Asst. Law Officer	2	2	-
3.	Legal Asst.	4	4	-
	Total	**8**	**8**	**-**
III	**C-SCIENTIFIC – A**			
1.	Principal Scientific Officer	1	1	0
2.	Senior Scientific Officer	3	2	1
3.	Scientific Officer	9	8	1
4.	Junior Scientific Officer.	26	21	5
5.	Junior Scientific Asst.	36	36	-
6.	Laboratory Asst.	7	7	-
	Total	**82**	**75**	**7**
IV	**D- ACCOUNTS AND ADMINISTRATION**			
1.	Chief Accounts Officer	1	1	-
2.	Accounts Officer	2	2	0
3.	Administrative Officer	1	1	0
4.	Asst. Secretary	1	1	0
5.	Asst. Accounts officer	2	2	0
6.	Head Accountants	20	19	1
7.	Library Asst.	1	1	0
8.	Senior Steno	5	5	0
9.	Junior Steno	26	25	1
10.	First Clerk / Store Keeper	17	17	0
11.	Senior Clerks	50	50	0
12.	Junior clerks /Cashier/Store clerk	63	63	0
13.	Daftari	2	2	0
14.	Drivers	54	49	5
15.	Roneo Operator	1	1	0
16.	Naik	2	2	0

SR. NO.	CADRE	SANCTIONED	FILLED IN	VACANT
17.	Chowkidar	20	19	1
18.	Peons	111	105	6
19.	Sweeper	3	3	0
	Total	381	367	14
	A B S T R A C T S			
A	Technical	230	223	7
B	Legal	8	8	0
C	Scientific	82	75	7
D	Accounts and Administration	381	367	14
	Total	701	673	28

ANNEXURE-3

Seminars, workshops and training courses attended by the Board's staff and by the Board's officers (2004-05)

Sr. No.	Name and designation	Training programme	Place	Period
1	Shri S. R. Bande, SO Shri A. P. Khole, JSA	A comprehensive course on 'Ambient air quality monitoring'	Delhi	5 – 9 April 2004 and 10 – 14 May 2004
2	Shri G. N. Mohite, SRO Shri A. D. Saraf, RO Shri D. K. Khedkar, SRO, Pimpri-Chinchwad Shri S. C. Kolur, SO	Training programme on application of GIS in the management of aquatic pollution ICMAM-PD	Chennai	12 – 21 April 2004
3	Shri R. Bandappa, SRO Shri B. G. Aradwad, SRO Shri A. T. Phulmali, SRO Shri Sangewar, SRO Shri N. N. Gurav, SRO Shri P. P. Dhaigude	Training on 'Beach cleaning technique'; Coast Guard Pollution Response Team (W) shed No.3, New Ferry Wharf. M-99	Mumbai	16 April 2004
4	Shri A. V. Mandavkar Shri Joy Thakur, FO Shri D. M. Sonawane, FA	Training on the use of software for creation of an environmental data bank.	Delhi	12 – 14 May 2004
5	Shri A. D. Saraf, RO	Awareness programme on environmental statements including waste minimisation, environmental auditing and management system.	BHEL, Haridwar	26 – 28 April 2004
6	Shri P. B. Barbole, SRO	Training programme on control of volatile organic compounds (VOCs).	Vadodara	28 – 30 April 2004
7	Shri M. N. Jadhav, FO Shri P. V. Patil, FO	Awareness programme on environmental statements including waste minimisation, environmental auditing and management system for oil refineries.	New Delhi	5 – 7 May 2004.
8	Mrs. N. N. Chaphekar, Legal Asst. Mrs. Vaishali Sadhale, Legal Asst.	Training programme on environmental law in India – Rules and regulations.	Hyderabad	25 – 27 May 2004
9	Shri D. M. Choukande, SRO, P&P	Training of engineers on 'Integrated solid waste management and designing of sanitary landfills for the disposal of municipal solid waste.'	Dona Paula Goa.	24 – 28 May 2004
10	Shri A. T. Fulmali, SRO	Training on rationale for prescribing location specific standards.	Hyderabad	14 – 18 June 2004
11	Shri G. N. Mohite, SRO Shri A. F. Deshmane, SRO	Urban drainage management: State of the art, 2004	Head Office, Sion	26 – 27 July 2004
12	Kum. V. Shirsat, FO Kum. R. Sayama, FO Kum. Meena K. Mohite, FO Mrs. V. S. Mane, FO Kum. M. Pawar, FO Mrs. S. Saswade, FO Mrs.Yogini Balankhe, FO Kum. Sidhu Kapare, FO Mrs. K. Kulkarni, FO Mrs. J. Jonojkar, FO Shri. D. K. Devkamble, FO Shri S. L. Tope, FO Shri S. P. Kavare, FO	Environmental pollution control and office administration.	Pune	5 – 23 July 2004

Sr. No.	Name and designation	Training programme	Place	Period
13	Shri N. B. Chaudhari, SRO	Air quality management	Delhi	26 – 30 July 2004
14	Shri B. S. Fule, SO	Estimation of measurement uncertainty at ESCI	Hyderabad	3 – 5 August 2004
15	Shri P. M. Patil, SRO	Fly ash utilization: Advancements in technology and opportunity.	Bangalore	18 – 20 August 2004.
16	Shri V. P. Shirure, SRO	Watershed and drought management ESCI	Hyderabad	24 – 27 August 2004
17	Shri V. B. Waghzale, RO Shri S. K. More, RO Shri S. Y. Yavale, SRO Shri G. S. Bawne, SRO Shri V. P. Shirure, Solapur Shri N. R. Shinde, FO Shri M. A. Moiz, SRO Shri S. R. Patil, SRO Shri B. L. Dhumal, FO Shri J. A. Kadam, SRO Shri P. L. Mihire, FO Shri N. S. Aavtade, FO Shri C. N. Shinde, FO Shri N. D. Toke, FO Shri S. L. Bhad, FO Shri A. S. Nandavate, FO	One week training programme in solid waste management at AIILSG Mumbai	Andheri	23 – 27 August 2004
18	Shri S. R. Bhosale, FO	Inventory and management of stockpiles of banned and obsolete pesticides.	Delhi	23 – 27 August 2004
19	Shri P. B. Barbole, SRO Shri A. P. Surye, SRO Shri S. R. Patil, SRO Shri R. A. Rajput, SRO Shri P. M. Bhosale, SRO Shri A. D. Chavan, SRO Shri S. S. Kendule, SRO Shri R. V. Patil, SRO Shri S. S. Misal, JSA Shri M. R. Sonawane, JSA	International conference on enviro- vision, 2004	Pune	2 – 4 September 2004
20	Shri A. N. Katote, FO Shri R. Dafade, FO Shri Raju Wesave, FO Shri A. Jadhav, FO Shri Sanjay Jarapure, FO Shri Sanjay Mamavare, FO Shri Deepak Bansode, FO Shri S. Redasani, FO	Environmental pollution control and office administration.	Pune	11 – 24 September 2004
21	Shri A. V. Rathode, FO Shri A. M. Durgule, FO Shri K. S. Langote, FO Shri R. D. More, FO Shri U. G. Mane, FO	Environmental pollution control and office administration	Pune	11 – 24 September 2004
22	Shri S. C. Kollur, SO Shri R. D. Nandgaonkar, HA	Eco-intensive coaching course	Ahmedabad	15 Nov 2004 – 4 Dec 2004
23	Shri C. A. Sawant, JSA	Environmental monitoring and assessment for urban area.	New Delhi	15 Nov 2004 – 4 Dec 2004
24	Shri D. M. Sonawane, SA	Advanced diploma course on computer software system, analysis and applications.	Chembur	Oct 2004 – April 2005
25	Shri A. S. Nandavate, FO Shri Pravin Patil, FO	Hazardous chemical to HRD foundation	New Delhi	29 Nov 2004 – 30 Nov 2004

Sr. No.	Name and designation	Training programme	Place	Period
25	Shri A. S. Nandavate, FO Shri Pravin Patil, FO	Hazardous chemical to HRD foundation	New Delhi	29 Nov 2004 – 30 Nov 2004
26	Shri A. R. Supate, project leader	Hazard identification and risk assessment in isolated storage facilities at DMI Bhopal	Bhopal	6 Dec 2004 – 10 Dec 2004
27	Shri B .D. Kude, RO	Education for a sustainable future	Ahmedabad	18 – 20 Jan 2005
28	Shri Ravindra Andale, FO	Training programme on BENMAP international software by USEPA at CPCB Delhi	New Delhi	29 Nov 2004 – 2 Dec'04
29	Shri V. L. Korde, SSO Dr. J. P. Trukrue, scientific advisor	International Conference on Better Air Quality -2004	Agra	5 – 8 Dec 2004
30	Shri S. A. Deshpande, SRO Shri A. M. Kare, FO Shri P. D. Wankade, FO	Certificate course on management of chemical and hazardous waste.	Hyderabad	28 – 31 Jan 2005
31	Mrs. R. P. Padval, SO Shri Padmanabh Khadkikar, SO	Training of laboratory managers in lab management and quality control	Delhi	24 – 25 Jan 2005
32	Shri B. R. Jagtap, Deputy engineer, Shri J. H. Patil, SRO	Urban rain water harvesting	Delhi	27 – 31 Jan 2005
33	Shri A.V. Madavkar, SO	Hospital / clinical waste management and infection control organised by M/s. Indian society of Health Administration.	Bangalore	17 – 19 Feb 2005
34	Shri S. R. Banate, AO Shri P. D. Brahme, OS	Reservation policy	Pune	21 – 24 Feb 2005
35	Mrs. S. S. Bhasarkar, SO Shri K. P. Pusadkar, FO	Sampling, analysis and characterisation of hazardous waste and its management	Nagpur	21 – 25 Feb 2005
36	Shri A. B. Jain, Sr. Law Officer Shri D. T. Devale, Sr. Law Officer	Law relating to hazardous waste and its management	Bangalore	March 2005
37	Shri P. K. Mirashe, RO	Attitudinal development and stress management	Yashada, Pune	21 Feb 2005 – 5 March 2005
38	Kum. Viju Shirsat, FO Kum. S. Gaikwad, LA Shri P. G. Arulekar, FA	Environment planning, impact assessment and legal requirement for process industries.	Hyderabad	2 and 3 March 2005
39	Shri V. N. Munde, RO Shri N. B. Choudari, SRO	Mitigation of vehicular pollution (CIRT)	Pune	5 – 26 May 2005