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Abatement of Pollution

Control of Pollution

Introduction

The concern for environmental quality has been an issue of concern in the backdrop of increasing urbanization, industrial and vehicular pollution as well as pollution of water courses due to discharge of effluents without confirming to the environmental norms and standards. Realizing the trend of pollution in various environmental media like air and water, soil etc., Ministry adopted policy for abatement of pollution, which provides multi-pronged strategies in the form of regulations, legislations, agreements, fiscal incentives and other measures to prevent and abate pollution. To give effect to various measures and policies for pollution control, various steps have been initiated which include stringent regulations, development of environmental standards, control of vehicular pollution, spatial environmental planning etc.

Progress of Activities

Progress of activities under several programmes are as follows:

Development of Environmental Standards

In order to abate pollution from various sources, Ministry notifies general as well as industry specific emission and effluent standards for various categories of industries under the provisions of Environmental (Protection) Act, 1986. Based on development of new pollution control technologies and their feasibility, these standards are reviewed from time to time and new ones are notified. During the year, standards/ guidelines in respect of following have been notified:

- Small Pulp and Paper Industry;
- Large Pulp & Paper News Print/Rayon Grade Plants of capacity above 24,000 MT/Annum;
- Boilers using Agriculture Waste as Fuel;
- Coke Oven Plants (by Product Recovery Type);
- Asbestos manufacturing units;
- Cement plants;
- Aluminum plants;
- Pesticides manufacturing and formulation industry;
- Guidelines for disposal of Solid Waste, Drill Cutting and Drilling Fluids for Offshore and Onshore Drilling Operation; and
- Guidelines for Pollution Control in Ginning Mills.

Charter on Corporate Responsibility for Environmental Protection (CREP)

After a series of industry specific interaction meetings, the Charter on Corporate Responsibility for Environmental Protection (CREP) was adopted in March, 2003 for 17 categories of polluting industries and is a road map for progressive improvement in environmental management. For effective implementation of the Charter, eight task forces comprising of experts and members from institutions and industry associations have been constituted. These task forces are meeting regularly to monitor and to provide guidance to the industries for adopting necessary pollution abatement measures. A meeting of the Steering Committee was also held to review the progress of the work of the task forces, wherein it was resolved that it should be endeavour of the task forces to comply with the milestones through more regular meetings.

Environment Pollution (Prevention and Control) Authority for the National Capital Region

✦ The Environment Pollution (Prevention and Control) Authority (EPCA) for National Capital Region was constituted under Sub-section (3) of Section 3 of the Environment (Protection) Act on 29th January, 1998 vide S.O. No. 93(E) dated 29th January, 1998 under the chairmanship of Dr. Bhure Lal. The tenure of the EPCA was extended from time to time, and at present extended upto July, 2006 on 28th January, 2003 vide S.O. No. 99(E).

✦ The issues considered by the Authority include environment related matters covering vehicular pollution control, assessment of operations and handing over of Common Effluents Treatment Plants (CETPs) in NCR to the concerned societies, monitoring of action plans for improvement of air quality in seven metro cities etc. and in addition, the matters referred to it by Hon'ble Supreme Court in its various judgements.

✦ EPCA is reporting the compliance status and special tasks assigned to it to the Hon'ble Supreme Court from time to time.

National Environment Appellate Authority

The National Environment Appellate Authority (NEAA) was established under the National Environment Appellate Authority Act 1997 (22 of 1997) to hear appeals in regard to restriction of areas in which any industries, operations or class of industries, operations or process shall not be carried out or shall be carried out subject to certain safeguards under the Environment (Protection) Act 1986 and for matter connected therewith or accidental thereto. The authority is located in Jawahar Lal Nehru Stadium Complex, New Delhi and continued to function during the year.

Loss of Ecology (Prevention and Payments of Compensation) Authority for the State of Tamil Nadu

In compliance with the Hon'ble Supreme Court's order dated 28th August, 1998 in Writ Petition (Civil) No.914 of 1991 viz. Vellore Citizen's Welfare Forum versus Union of India and Others, the Ministry constituted the Loss of Ecology (Prevention and Payments of Compensation) Authority for the State of Tamil Nadu under the Chairmanship of a retired Judge of Madras High Court vide notification SO 671(E) dated 30th September, 1996, to deal with the situation created by the tanneries and other polluting industries in Tamil Nadu. The tenure of the authority has been extended up to 30th September, 2006 at present.

Recognition of Environmental Laboratory under Environment (Protection) Act, 1986

The Ministry recognizes the laboratories in exercise of the powers under the Environment (Protection) Act, 1996. The environmental laboratories carry out the functions entrusted to the laboratories under the said Act for the purpose of analysis of samples of air, water, noise and other related environmental parameters. During the year the Ministry recognized six laboratories in various places of the country.

Noise Pollution

✦ Noise levels have been a matter of concern due to various activities, religious functions, festivals and related celebrations. The main sources of noise pollution include industrial activities, use of public address system, construction activities, use of generator sets, pressure horns and fire crackers etc. Keeping in view the increasing trend in noise levels, Ministry has issued various regulations from time to time to control noise pollution in ambient air, at source and at manufacturing stage. To control community noise, Noise Pollution (Regulation and Control) Rules, 2000 were issued in February, 2000, which makes it mandatory for local authorities to control noise levels in their respective areas.

✦ In civil Writ Petition No. 72 of 1998 regarding noise pollution – implementation of laws for restricting use of loudspeakers and high volume producing sound system,

the Hon'ble Supreme Court in its judgement of July, 2005 has given detailed directions regarding implementation of laws for controlling noise. Subsequently, referring to the amendment of October, 2002 issued by the Ministry in respect of notification of February, 2000 permitting the use of loudspeaker or public address system during the night hours between 10.00 P.M. to 12.00 midnight on or during any cultural or religious festive occasions of a limited duration not exceeding 15 days in all during a calendar year, Hon'ble Supreme Court had further observed that a limited power of exemption from operations of noise rules granted by the Central Government in exercise of its statutory power cannot be held unreasonable.

Fig 45. Noise monitoring at Kota

- In pursuance of these judgements and to collect bench mark data, all the regulatory agencies of the State Government/Union Territories have been advised to comply with stipulated norms and to draw an Action Plan for ensuring the compliance of the directions. The concerned agencies have also been advised to strengthen/establish environmental cells at the State and district levels to check noise pollution an also to undertake surveys in major cities specially before and after the festivals to ensure compliance. Intensive campaigns were also launched in print and electronic media about deleterious effects of noise pollution. For creating awareness, most of the State Governments have sent their monitoring reports of survey undertaken before and on Diwali day and the reports reveal that there has been a reasonable success in arresting menace of noise pollution.
- The noise limits for Diesel Generator (DG) set up to 1000 KVA were notified in May, 2002. After review of the preparedness by the manufacturers to comply with the standards, the time for implementation was extended up to 1st January, 2005. While the emission norms for DG sets above 19 KW and up to 800 KW have been made operational since November, 2004, these norms for DG sets up to 19 KW have come into effect from 1st July, 2005.

Control of Air Pollution

- The air pollution and the resultant air quality can be attributed to emissions from vehicular, industrial and domestic activities. The air quality has been, therefore, an issue of social concern in the backdrop of various developmental activities. The norms for ambient air quality and industry specific emissions have been notified. For control of air pollution, with a view to initiate policy measures and to prepare ambient air quality management plans, 326 Air Quality Monitoring Stations have been installed covering 32 States and Union Territories. Out of these, on-line data display is available in respect of 215 stations. Presently, only the criteria pollutants namely; sulphur dioxide, oxides of nitrogen and respirable suspended particulate matter are monitored by Pollution Control Boards, Universities and Research Institutes. Besides this, additional parameters for other toxic trace matters and polycyclic aromatic hydrocarbons are also being monitored in selected cities of the country. For continuous air quality monitoring, Automatic Air Quality Monitoring Stations have been set up in four cities namely; Jodhpur, Patna, Pune and Sholapur. In addition such stations are also being provided in the cities of Kanpur, Varanasi, Jharia and Kolkata.

✦ Keeping in view the monitored data available on air quality, the Hon'ble Supreme Court in its various judgements have identified sixteen cities namely; Hyderabad, Patna, Ahmedabad, Faridabad, Jharia, Bangalore, Pune, Mumbai, Sholapur, Jodhpur, Chennai, Agra, Kanpur, Lucknow, Varanasi and Kolkata as equal to or more polluted than Delhi for which Action Plans for improvement of air quality have been drawn.

Fig 46. RSPM monitoring in operation at Taj Mahal

The CPCB has evolved a format for preparation of action plans, which has been circulated to all State Pollution Control Boards/Committees. The action plans emphasize identification of sources of air pollution, assessment of pollution load and adoption of abatement measures for identified sources. Setting up inter-departmental task force for implementation of city specific action plan has also been suggested. A Review Meeting for ascertaining implementation of these plans was held in the Ministry and the respective Boards have been advised to undertake bench marking of pollution levels and sources for evolving necessary plans.

Auto Fuel Policy

✦ In order to control vehicular pollution, a road map has been adopted as per the schedule proposed in Auto Fuel Policy, which includes use of cleaner fuels, automobile technologies and enforcement measures for in use vehicles through improved Pollution Under control (PUC) certification system. As per the Auto Fuel Policy, Bharat Stage-II norms for new vehicles have been introduced through out the country from 1st April, 2005. However, EURO-III equivalent emission norms for all new vehicles, except 2-3 wheelers, have been introduced in 11 major cities from 1.4.2005. To meet Bharat Stage-II, EURO-III and EURO-IV emission norms, matching quality of petrol and diesel is being made available.

✦ Due to multiplicity and complexity of air polluting sources, apportionment of contribution to ambient air pollution from these sources is important for planning cost effective pollution control strategies. In view of this, a study on "Air Quality Assessment, Emission inventory / Source Apportionment studies for Indian Cities" has been initiated for major Indian cities. In the first phase, the study would cover six cities viz; Delhi, Bangalore, Pune, Kanpur, Mumbai and Chennai with focus on apportionment of fine particulate matter (RSPM). A Steering Committee under the chairmanship of Secretary (E&F) for overall supervision and a Technical Committee under the chairmanship of Chairmanship, CPCB to look into and to guide on the technical aspects of the projects have been set up. A common methodology for conducting the study has been finalized with identification of technical institutions for completing the study.

Industrial Pollution Complaints

✦ During the year, the Ministry received about 150 complaints from various organizations, individuals and NGOs regarding air, water and noise pollution. Some

of the complaints were pertaining to discharge of effluents from industries like tanneries, pulp and paper, distillery etc. into water bodies without complying with environmental standards. Similarly, complaints of air pollution were received from people in the vicinity of cement plants, thermal power projects, brick kilns etc. These references were responded based on the environmental compliance status received from CPCB and State Pollution Control Boards (SPCBs). The SPCBs, in certain cases, were advised to regularly monitor the environmental compliance.

Capacity Building for Industrial Pollution Management Project

The Ministry with the assistance of the World Bank has initiated a Project on "Capacity Building for Industrial Pollution Management Project" (CBIPMP). The overall objective of the CBIPMP is to strengthen the capacity of National and State Level Institutions for effective environmental regulation, improved enforcement for pollution prevention and improved industrial compliance.

The objective of the project will be achieved through a combination of targeted capacity building interventions and demonstrative investments that would enhance the implementation capacity of responsible agencies. The project will promote comprehensive approach for area based pollution management which builds on a framework of incentives for pollution reduction and partnership between public and private entities.

Assistance for Abatement of Pollution

- Under this scheme grants are being provided to the State Pollution Control Boards/UT Pollution Control Committees, Environment Departments, Central/State Research Institutions, and other government agencies/organizations with the aim of strengthening their technical capabilities to achieve the objectives of the Policy Statement.
- During the year, financial assistance under the said scheme was extended to various State Pollution Control Boards/Pollution Control Committees. The Programme will continue for the whole of the Tenth Five Year Plan period.

Common Effluent Treatment Plant

This is a Centrally Sponsored Scheme undertaken by the Ministry, for enabling the small scale industries (SSI) to set-up new and upgrade the existing Common Effluent Treatment Plants in the country. The SSIs are polluting the environment through their effluents but some of them are unable to afford installation of pollution control equipment. In order to encourage use of new technologies for CETPs for existing SSI clusters of units a Scheme for financial assistance has been formulated as follows:

Pattern of Financial Assistance:

- State subsidy - 25% of the total project cost;
- Central subsidy - 25% of the total project cost;
- Entrepreneurs contribution - 20% of the total project cost;
- Loan from financial institutions - 30% of the total project cost;

  (e.g. IDBI, ICICI or any other nationalized Banks, State Industrial Financial Corporation etc.)

- During this year, an allocation of Rs.4.38 crores has been provided for providing financial assistance to the on-going CETP Plant project and for new projects. Financial assistance was provided for the on going projects namely- Roha, Mahad, Thane-Belapur-Maharashtra and Sanand-Gujarat. One new Project for setting up of CETP at Tarapur has been provided financial assistance during the year.

Eco-cities

✦ The Eco-cities Project aims to improve the exiting environment, changing those aspects that are causing environment damage. The focus of the project would be on protection of environmental resources like water bodies, forests, etc, improving infrastructure and sanitary conditions in the towns and creating aesthetic environs.

✦ The Eco-cities Programme was initiated under the Tenth Plan to bring in visible environmental improvement in the small and medium towns. The following towns have been taken under first phase of Eco-cities programme to bring in visible environmental improvement:

- ✧ 1. Vrindavan (Uttar Pradesh)
- ✧ 2.Tirupati (Andhra Pradesh)
- ✧ 3.Puri (Orissa)
- ✧ 4.Ujjain (Madhya Pradesh)
- ✧ 5.Kottayam (Kerala)
- ✧ 6.Thanjavour (Tamil Nadu)

✦ An Expert Committee has been constituted for the Identification of the projects and approval of Environmental Developed Plan (EDP) and Detailed Projects Reports. The Project in Kottayam is aimed at rejuvenating Mundar River and Kacherikadavu Boat Jetty and Canal that have severe siltation and pollution problems. The Project in Ujjain is aimed at improvement around Mahakal Temple and cleaning of Rudra Sagar Lake, which is highly silted and polluted with sewage. The project in Vrindavan is aimed at improvement of historic core of the town located around Rangnath Temple. The project in Tirupati is aimed at improvement of storm water drains in the northern, southern and western side of the Gobind Raja Swamy Temple. Similarly, project in Puri is to improve around Jagannath Temple, renovation of three of the religious ponds, shifting of garages and automobile workshop and improvement of existing solid waste disposal facility. In Thanjavur town, the activity on 'Renovation of old tanks ' has been proposed to be taken up to protect presently used and potentially useable aquifers from further degradation and to facilitates the rainwater harvesting system.

Industrial Pollution Abatement through Preventive steategics

✦ This Scheme is an amalgamation of the three on-going sub-scheme viz. (i) Environmental Audit; (ii) Adoption of Clean Technologies in small Scale Industries, and (iii) Environmental Statistics and Mapping.

The activities undertaken during the year under each component of this scheme are:

Environmental Audit

✦ Under this component, various studies relating to preparation of sector specific performa have been initiated. Project has been sponsored to the Central Pollution Control Board (CPCB) in this regard for development of environmental statements in the sectors of sugar, pesticide, thermal power, cement, textile, iron & steel, tanneries, petrochemicals, oil refineries, pulp & paper and bulk drug industries.

Environmental Statistics & Mapping

✦ Various studies under this component have been initiated through research institution, organisations, universities and State Pollution Control Broads, which are at various stages of completion. During the year, funds were released for the following projects under the scheme:-

- ✧ Techno-Economic suitability of Silt from Beas-Sutlej Link, Projects in the manufacture of ordinary Portland cement by National Council for Cement and Building, Materials, Ballabgarh(Haryana).

- Sector Specific Awareness Programmes on Environmental Statements including waste minimization, environmental audit and management system for the industries and regulatory agencies by CPCB.

Adoption of Cleaner Technologies

Introduction and objective

The grant-in-aid scheme on development and promotion of clean technology was initiated in 1994 with the following objectives:

- Development & Promotion of Cleaner Technologies
- Development of tools and techniques for pollution prevention
- Formulation of Sustainable Development Strategies

Activities undertaken

Since inception of the scheme in 1994, activities undertaken include:

- Carrying Capacity studies in various parts of the country namely Greater Kochi Region, Doon Valley, Damodar River Basin, Tapi Estuary and National Capital Region (NCR)
- Natural Resource Accounting Studies for Upper Yamuna Basin
- Life Cycle Assessment (LCA) Studies in Thermal Power Plants, Steel, Pulp and Paper and Cement; and
- Other pollution prevention and waste utilization and management studies.

Progress/Achievements made during the year

Life Cycle Assessment Studies

The Life Cycle Assessment (LCA) Study in four cement plants namely, Ambuja Cement, Kodinar, Distt Junagarh, Gujarat, ACC, Bilaspur, Himachal Pradesh, Rajshree Cement, Gulbarga, Karnataka and Ultratech Cements, Raipur, Chattisgarh continued during the year. A LCA Software namely "LCAiT 4.1.7" has been procured from Sweden and has been demonstrated at various locations identified for evaluation of different impact parameters. During the year, the Ministry has accepted the Study report concerning "carrying capacity based Developmental Planning for Damodar River Basin" conducted by the Central Mining Research Institute (CMRI), Dhanbad. CMRI has been requested to publicize the findings of study amongst all stake holders including the State Governments of the concerned States of Jharkhand and West Bengal. Besides, Final Technical Report of the study titled "Life Cycle Assessment for Pulp and Paper sector Industries" submitted by Indian Agro and Recycled Paper Mills Association (IARPMA) has also been accepted. Observations and key findings of this study have been placed on Ministry website.

Field Demonstration and Development of Bamboo Based Composites/Panels

The ongoing project on field demonstration and development of bamboo based composites/panels undertaken by the Indian Plywood Industries Research and Training Institute (IPIRTI), Bangalore was continued during the year. Under this project, commercial production of horizontal and vertical laminates have been made using *Bambusa bamboo* species. Construction of nine demonstration houses in north-east using these bamboo based composite panels has been completed.

Recycling of Marble Slurry

Under the ongoing project "Manufacture of Bricks and Tiles from Marble Slurry," Indian

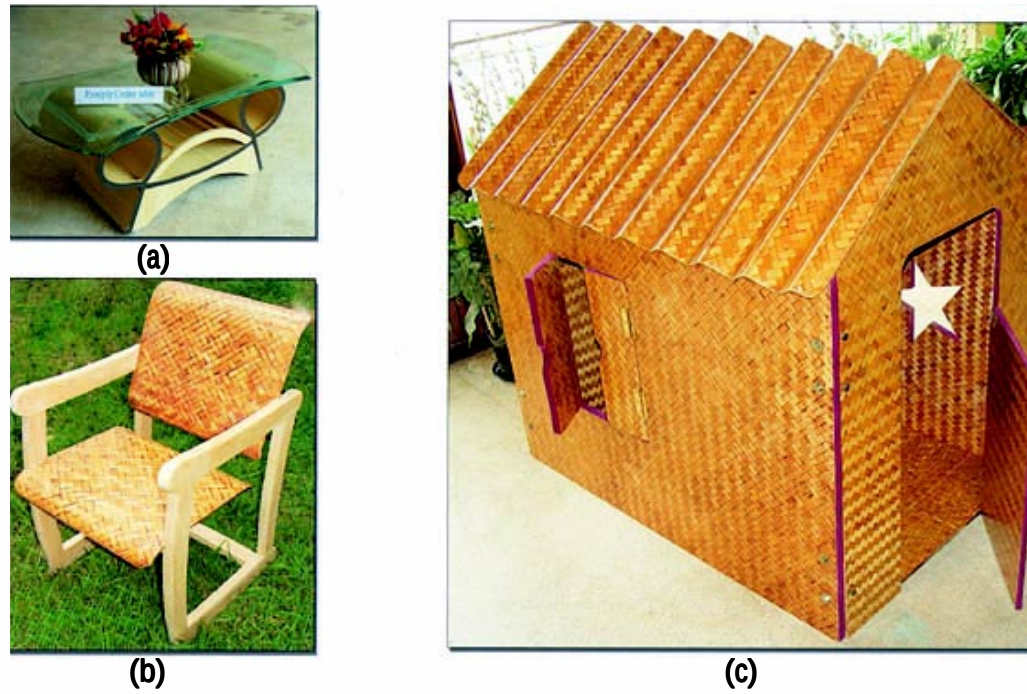


Fig 47. (a) Flexi-ply centre table, (b) Chair with moulded seat and backrest from bamboo mat, (c) Kids play house from bamboo composites

Environmental Society, New Delhi have setup two demonstration units at Udaipur and Rajsamand district of Rajasthan, with the aim of utilizing marble slurry wastes arising out of marble cutting and processing. Based on the successful demonstration of technology at the above two locations, the project proponents have been asked to set up brick and tiles manufacturing unit utilizing stone slurry at Kota also. Awareness workshops were also organized to promote the usage of bricks made out of marble slurry.

Bio-remediation of Railadevi Lake, Thane, Maharashtra

The ongoing demonstration project relating to cleaning of Railadevi Lake in Thane District in Maharashtra using bio-remediation technique has been continued during the year. Water quality of the lake is being continuously monitored by Thane Municipal Corporation and cross checked by Maharashtra Pollution Control Board.

Biodegradable Emulsion Technology for increasing Shelf Life of Fruits and Vegetables

This ongoing demonstration project titled "Development, Demonstration and Dissemination of Bio-degradable Emulsion Technology for increasing the Shelf Life of Fruits and Vegetables" taken up by Indian Institute of Technology (IIT), Delhi was continued during the year. The project has been sponsored jointly with Ministries of Science & Technology, Rural Development, and Food Processing Industries. Pilot Plant for treatment of fruits and vegetables with biodegradable emulsion has been set up at IIT, Delhi. They have completed the first phase of the project. The draft Final Technical Report has been submitted.

Utilization of Anode Mud and Chips

This study titled "Utilization of Anode Mud and Chips generated in Zinc Industry for making Value-added Products" has been sponsored to Regional Research Laboratory, Bhopal. The project is aimed at developing suitable process for making active chemical manganese dioxide from the wastes generated in the cell house in zinc plant and to separate lead from those wastes. Manganese dioxide so generated can be used by battery

manufacturers. Manganese recovery in leached sample is observed to be 82.35%. The separation of lead and manganese contents present in the anode mud sample is efficiently achieved by acid leaching. The results have indicated that 15% acid concentration and leaching at 100ºC is suitable for obtaining maximum manganese content in the leached solution.

Development of a domestic unit for removing Arsenic from Water

The study on the Development and Demonstration of Domestic Unit for Removing Arsenic(v) from Water undertaken by the Central Salt and Marine Chemicals Research Institute, Bhavnagar, Gujarat envisages development and testing of five portable units for scavenging arsenic from raw as well as chemically treated water to meet the drinking water needs of a small family of five for a period of one month. Performance of resin in the removal of arsenic under dynamic conditions has been evaluated for treating surface waters and deep well waters. Portable domestic units have been fabricated and are being installed at field location in West Bengal.

Development of Adhesive from Bio-material

The project has been sponsored to Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore for development of adhesive for use in the manufacture of plywood drawn from biological materials like tannin from tree bark, cashew nut shell liquid and lignin obtained from black liquor wastes generated by Pulp and Paper Industry. The material so developed will replace existing adhesives based on organic compounds like phenol formaldehyde and urea formaldehyde.

Implementing organizations of various programmes

The details of implementing organizations of various programmes under the scheme are as follows:

- Life Cycle Assessment Study in Cement Sector: National Council for Cement and Building Materials, Ballabgarh.
- Field Demonstration and Development of Bamboo Based Composites/Panels: Indian Plywood Industries Research and Training Institute, Bangalore.
- Recycling of marble slurry waste for environmental improvement in Rajasthan: Indian Environmental Society, Delhi.
- Bio-remediation of Railadevi Lake in Thane District, Maharashtra: Thane Municipal Corporation, Distt. Thane, Maharashtra.
- Development of Bio-degradable emulsions for increasing the shelf life of fruits and vegetables by Indian Institute of Technology, Delhi.
- Utilisation of Anode Mud and Chips – solid wastes generated in the zinc industry for making value added products by Regional Research Laboratory, Bhopal.
- Development of a point of use (POU) clean technology in the form of a domestic unit employing a complexing resin for removing arsenic(v) from water by Central Salt & Marine Chemicals Research Institute, Bhavnagar.
- Development of Adhesive from Bio-materials by Indian Plywood Industries Research and Training Institute, Bangalore.

The budget allocation of the scheme for the year 2005-06 was Rs.1.50 crore which was reduced to Rs.0.94 crore at RE stage.

Waste Minimization

- Industrial Pollution Prevention strategies include Waste Minimization with an objective to optimize the consumption of raw material, save energy requirement and reduce waste generation. This is

achieved by utilizing the existing production facility without changing the operations in small and medium enterprises in adoption of cleaner production practices. Financial assistance is also provided under this Scheme for waste minimization in small and medium scale industries for setting up of Waste Minimization Circles (WMCs).

- Phase III of the studies on Waste Minimization and establishment of WMCs has been approved and awarded to National Productivity Council (NPC) to take forward the activities in other parts of the country. Funds are also provided for conducting awareness programmes by the Development Commissioner on Small Scale Industries (DCSSI), Ministry of Commerce & Industry.
- The implementation of the scheme has helped in identifying the polluting small and medium industries, evaluating the causes of pollution and facilitating them to adopt cleaner production practices leading to preventive strategies. Also, it has provided a platform for creating awareness amongst the small and medium industries for adopting simple waste minimization principle.

Taj Protection Mission

As per the Hon'ble Supreme Court's Order, the protection of the Taj Mahal is a national priority for the country. In order to implement various scheme for the protection of the monument, the Planning Commission decided to provide additional funds to the State Government. The Planning Commission approved Rs.600 crores on a 50:50 cost sharing basis with the State Government to implement various schemes in the Taj Trapezium Zone for environmental protection of the Taj Mahal. In the first phase during earlier Plan Period, ten projects were approved and are being implement by the State Government of Uttar Pradesh. These are:

- Improvement in Electric Supply at Agra
- Improvement in Electric Supply in and around the rural areas of Agra and Fatehpur Sikri.
- Water supply (Agra)
- Water supply (Mathura – Vrindavan)
- Gokul Barrage
- Solid Waste Management
- Storm Water Drainage System(Agra)
- Construction of one part of Agra bye-pass
- Widening of Agra Bye-pass, and
- Improvement of Master Plan of Roads of Agra City

The Ministry has decided to have a post-evaluation study undertaken for 10 approved projects. It has been proposed to undertake the post-evaluation of phase I projects through the National Environmental Engineering Research Institute (NEERI), Nagpur. The State Govt. of U.P. has been asked to prode the Detail Project Reports and status of implementation of the projects to NEERI. No new proposal would be considered for financial assistance unless the post-evaluation study is undertaken by NEERI, Nagpur and their report submitted.

Central Pollution Control Board

Introduction

The Central Pollution Control Board (CPCB) undertakes functions as laid down in the Water (Prevention and Control of Pollution)Act, 1974 and the Air Pollution Control Board (SPCB's) Pollution Control Committees (PCC's) for enforcement and implementation of Rules framed under Environment (Protection) Act, 1986 such

as Hazardous Waste (Management and Handling) Rules, 1989 amended in 2000; Bio-Medical Waste (Management & Handling) Rules, 1998;Muncipal solid Waste (management & Handling) Rules, 2000 ; Manufacture Storage and Import of Hazardous Chemical Rules, 1989 amended in 2000 and Recycle Plastics Manufacture and Usage Rules, 1999 amended 2003. Besides, CPCB is also associated with and provides support to various committees and authorities constituted by the Government such as Environment (Prevention and Control) Authority for National Capital Region and the Water Quality Assessment Authority.

Objectives

Some of the important function of CPCB are:

- To plan an coordinate a nation wide programme for prevention, control or abatement of pollution;
- To provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water and air pollution, and for their prevention, control or abatement.
- To collect compile and publish technical and statistical data relating to water and air pollution and the measures devised for their effective prevention, control or abatement;.
- To prepare manuals, codes and guidelines relating to treatment and disposal of sewage and trade effluents as well as for stack gas cleaning devices, stacks and ducts;
- To disseminate information including mass awareness programme in respect of matters relating to pollution and their prevention and control.

Progress/achievements made under various programme during the year

Review of Ambient Air Quality Criteria/Standards

The CPCB has notified ambient air quality standards (AAQS) for various pollutants, The first set of AAQS was adopted in 1982. Subsequently, the revised standards were notified in the year 1994 and the standards for Ammonia were included in the year 1998. The CPCB has initiated a project on 'Review of ambient air quality criteria/standards' particularly with regard to inclusion of new parameters (e.g. Volatile Organic Compounds (VOCs), Benzene Soluble Fractions (BSF) for particulates, Formaldehyde, Benzene, Poly-aromatic Hydrocarbons (PAH), Arsenic, Nickel, Mercury and Vanadium), prescribing short and long-term limiting values considering health impacts, monitoring protocol, etc.

Development of industry specific standards

Oil refineries: Standards for discharge of effluent emission from oil refineries were notified under Environment (Protection) Act in the year 1986 and 1990, respectively. The emission standards have been revised, which include additional parameters viz. NOx, Nickel + Vanadium (Ni+V), Particulate matter (PM), etc. and higher efficiency for sulphur recovery unit. In addition a Leak Detection and Repair (LDAR) programme and specific requirement for minimizing vapour losses from storage tanks and product loading/unloading facilities are also include. In the revised effluent standards, additional parameters have been added and limiting values for existing parameter revised.

Sulphuric acid plants: Sulphuric acid ($H_2 SO_4$) plants emit oxides of sulphur and acid mist in the atmosphere. Presently, emission limits are prescribed as 4.0kg/tonne of concentrated (100%) acid produced for SO_x and 50 mg/Nm^3 for acid mist. In recent years, some large sulphuric acid plants have been established, which required further reduction in emissions of these pollutants. In addition, improved process and pollution control technologies are also available. Therefore, the existing standards for sulphuric acid plants were reviewed. The revised standards have been finalized which are linked to production

capacities.

Petrochemical Plants: There has been a phenomenal growth in petrochemical industry in India during the last decade. The air emission from petrochemical production plant is rather unique where the emission of Volatile Organic Compounds (VOCs) is the predominate pollutant. There is emission of conventional pollutants viz. SPM, SO_x, CO and also NO_x, which is the critical one from the point of view of formation of secondary pollutants. CPCB took up studies for development of National Air Emission Standards for Petrochemicals Industry.

Sponge Iron Plants: The CPCB is evolving environmental standards and code of practice for sponge iron plants. The environmental standards include stack emission standards for main plant, stack emission standards for de-dusting units, fugitive emission standards and code of practice for raw material handling and preparation, cooler discharges and product separation unit, effluent discharge standards, noise level standards, solid waste management and siting Guideline for Sponge Iron Plants

Environmental Data Bank (On-line Air and Water Quality data entry)

In order to have effective environmental management, it is essential that updated information on various environmental aspects is available at one place and could be retrieved easily and quickly. In view of this, CPCB initiated development of an Environmental Data Bank (EBD). The EBD is web-enable so that various users groups may access data/information on line. To begin with, on-line data entry has been initiated by SPCBs/PCCs in respect of 215 air quality monitoring stations covering 23 States under National Air Monitoring Programme and 444 water quality monitoring stations covering 20 States under GEMS/MINARS has been taken up. Data entered by SPCBs/PCCs in the EBD are verified centrally at CPCB and then linked to CPCB's website.

Research Activities

Co-incineration of high calorific value hazardous waste in cement kiln

High calorific value hazardous waste, internationally, is being co-incinerated in Cement Kiln. At a high temperature of 1400° the organic compound are likely to be destroyed and non-combustile part of the residue is incorporated into the clinker in a practically irreversible manner. It also helps in energy saving. Cement industries have expressed their interest in the matter and have come forward for co-incineration of high calorific value hazardous waste in cement kiln. The trial run was conducted in one of the cement industry in Gulbarga, Karnataka during which ETP sludge of BASF Indian Ltd, Mangalore was co-incinerated and extensive monitoring of expected air pollutants that are identified for hazardous waste incinerators was conducted. The products i.e. clinker was also tested for its quality as per BIS norms including leach ability and heavy metals content. One cement industries has been given permission for trial run by concerned SPCBs and CPCB to co-incinerate refinery sludge, paint sludge and used tyre chips and another to co-incinerate the CETP sludge generated at Pali, Rajasthan. If the results of studies on co-incineration of hazardous waste in cement kiln are favourable, co-incineration may emerge as a cost effective and environmental compatible option for disposal of high calorific value hazardous wastes.

Studies on colour removal in effluent of paper industry

The colour is a serious problem in the effluent from agro-based pulp and paper mills where the black liquor is discharged as effluent. The colour in the effluent is mainly caused by the presence of lignin. Large pulp and paper mills that have chemical recovery plant treat this black liquor for recovery of inorganic chemicals and lignin present is used as fuel in the recovery boiler. The major problem arises in the units with no chemical recovery plant. To address the issue of colour problem, CPCB has taken up study using electro-flocculation process, which involves the electrolysis of black liquor. The process is

flexible and when applied for any type of black liquor showed similar efficiencies for bagasse, rice straw, wheat straw and also for mixed black liquor. CPCB is taking up further study on pilot scale.

Hazardous Waste Management

Consequent to the directions of Hon'ble Supreme Court of India, in the matter of W.P. (Civil) No. 657 of 1995 dated October 14, 2003, CPCB has taken following action in hazardous waste management :

- Guidelines for transportation of hazardous waste were prepared.
- Check list for Issuance of Authorisation was prepared.
- Gaseous Emission Standards and Guidelines for Common Hazardous Waste Incinerators were finalized.
- Guidelines for Proper Functioning & upkeep of Disposal Sites were finalized.
- Draft National Policy Document on Management of Hazardous Waste was prepared.
- Random check of the inventory reports on HW generation in 14 States and three UTs was carried out.
- Draft Amendment to Schedule 3, 4 & 8 of the Hazardous Waste (M & H) Amendment Rules, 2003 was finalized.

Finalised guidelines on the 'Common Hazardous Waste Incinerators' have been published and the guidelines for rest of items will be published shortly.

Inventory of Hazardous Wastes (HW) generation as reported by the SPCBs/PCCs

As per the directives of Hon'ble Supreme Court, all the State Pollution Control Boards and Pollution Control Committees in the country are required to carryout the inventory on HW generation and the HW generating industries in the light of the Hazardous Waste (M & H) Rules, 1989 as amended. Subsequently, 22 State Pollution Control Boards and four Pollution Control Committees have completed the preliminary inventory on hazardous waste generating units. Based on the inventory reports on HW generation submitted by the SPCBs/PCCs to the Central Board, CPCB has completed random checks in 14 States and three UTs which are being reviewed.

Inventory of HQ dump sites as reported by the SPCBs/PCCs

As per the directives of Hob'ble Supreme Court, all the SPCBs/PCCs are required to carryout inventory on HW dumpsites and are required to make assessment with regard to the extent of soil or ground water contamination in and around such dumpsites. Based on the scientific assessment, rehabilitation plans are to be prepared and submitted to Central Board so as to prepare national plan. As per the information received, 12 States and four UTs have reported existence of no illegal dumpsites. The other States which reported illegal dumpsites of HW are given in Table-13.

Table-13. Illegal HW dumpsites

State	No of illegal sites	State	No of illegal sites
Punjab	14	Orissa	7
Rajasthan	1	Karnataka	18
UP	10	MP	4
Tamil Nadu	2	Gujarat	7
Maharashtra	10	Andhra Pradesh	42

In order to impart technical skills to the officials of SPCBs/PCCs particularly with regard to the assessment of identified HW dump sites and preparation of rehabilitation plans, Central Board organized

a workshop on "Assessment of Dumpsites and Preparation of Rehabilitation Plans" in association with GTZ-ASEM in the month of August, 2005.

Status of sewage treatment in the country

Disposal of domestic sewage from cities and towns is the biggest source of pollution of water bodies in India. There are 211 Sewage Treatment Plants(STPs) in 112 of the 414 Class I cities and 31 STPs in 22 of the 489 class 11 towns, besides, 27 STPs are in 26 other smaller towns. In all there are 269 STPs, including 231 operational and 38 under construction. The CPCB studied performance of 115 STPs operating throughout the country. It was observed that 45 STPs were operating at sub optimal efficiency, largely due to improper operation and maintenance. Performance Status of STPS Statewise is given in Table-14.

Table -14. State wise summary of performance status of STPs

State	STPs studied by CPCB	STPs achieved norms during the study	STPs did not achieve norms during the study
Bihar	3	3	0
Chandigarh	2	1	1
Chhattisgarh	3	2	1
Delhi	26	20	6
Gujarat	9	6	3
Haryana	7	2	5
Himachal Pradesh	5	5	0
Karnataka	4	2	2
Madhya Pradesh	2	1	1
Maharashtra	4	0	4
Punjab	4	4	0
Rajasthan	1	0	1
Uttar Pradesh	25	8	17
Uttaranchal	2	1	1
West Bengal	18	15	3
Total	115	70	45

Solid Waste Management in Metro Cities and State Capitals

The CPCB in collaboration with National Environmental Engineering Research Institute (NEERI), Nagpur has undertaken a detailed survey of 59 cities in the country to assess the existing status of solid waste management in these cities. Objective of the survey was to assess the compliance status of 59 cities with Municipal Solid Wastes (Management and Handling) Rules, 2000 and initiatives taken for improving solid waste management practices. The 59 cities selected for study cover 35 metro cities. It has been observed that initiatives for collection of waste from house-to-house and waste segregation

has been undertaken in only seven cities, privatization of transportation of waste has been done in 11 cities and waste processing facilities have been set up in 15 cities. Ten waste processing facilities are based on composting; one of these composting facilities has provision for energy recovery also, four are based on vermin-compositing, and one facility employs pelletisation and energy recovery technology.

Fig 48. Solid waste menace in Mumbai after flood in

Performance evaluation of Common Effluent Treatment Plants (CETP) and Common Bio-medical Waste Treatment Facilities (CBWTF)

- The CPCB studied performance of 78 CETPs operating throughout the country. It is observed that out of the total 78 CETPs studied, only 20 complied with the prescribed limits for general parameters pH, BOD, COD but 15 of these were not able to comply with prescribed limit for TDS. Thus, only five (i.e. 6.4%) CETPs were complying all general parameter including TDS. In general, the performance of CETPs has been found very unsatisfactory, largely because of poor operation and maintenance. Therefore, the State Pollution Control Boards have been advised to conduct regular monitoring of CETPs, persuade the operating agencies for proper operation and maintenance and initiate actions against negligent agencies and willful defaulters.

- High TDS in treated effluent is observed a widespread problem as, in all, 69 out of the 78 CETPs did not comply with TDS standards. Reduction in release of TDS contributing chemicals from problem industries by adopting cleaner production technologies and recovery and recycling of chemicals from the waste streams is the most important action required to tackle this problem. State Boards may consider prescribing location specific regulations for the control of TDS at the industry level.

- The Bio-medical Waste (Management & Handling) Rules notified in July 1998 under the Environment (Protection) Act, 1986, makes mandatory for all healthcare facilities irrespective of their size to treat bio-medical waste generated by them. In order to comply with the provisions of the Rules, some of the healthcare facilities have installed their own treatment facilities and others are availing services of Common Bio-medical Waste Treatment Facilities (CBWTF). There are 126 CBWTF, including 13 under installation, in the country as on March 2005 as compared to 85 in the previous year. In order to help CBWTF operations in complying various provisions of the Bio-medical Waste (Management & Handling) Rules and other minimum requirements such as efficient treatment equipment, required infrastructure, proper transportation system, proper recording system, environmentally sound methods of disposal of treated bio-medical waste etc. The CPCB has prepared "Guidelines on Bio-medical Waste Treatment Facilities"

Fig 49. Road side disposal of municipal solid waste

and the same have been circulated to all SPCBs/PCCs and also displayed on website for dissemination.

National Air Quality Monitoring Programme (NAMP)

Air quality status and actions initiated in non-attainment cities

✦ The CPCB is executing a nation-wide programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The network consists of 326 monitoring stations covering 116 cities/towns in 28 States and four Union Territories of the country. The objectives of the NAMP are to determine status and trends of ambient air quality; to ascertain whether the prescribed ambient air quality standards are violated; to assess health hazard and damage to material; to continue ongoing process of producing periodic evaluation of air pollution situation in urban and industrial areas of the country; to obtain the knowledge and understanding necessary for developing preventive and corrective measures; and to understand the natural cleansing process undergoing in the environment through pollution dilution, dispersion, wind based movement, dry deposition, precipitation and chemical transformation of pollutants generated.

✦ Under the NAMP, four air-pollutants viz., Sulphur Dioxide (SO_2), Oxides of Nitrogen as NO_2 and Suspended Particulate Matter (SPM) and Respirable Suspended Particulate Matter (RSPM) or PM_{10}), have been identified for regular monitoring at all the locations. The monitoring of meteorological parameters such as wind speed and direction, relative humidity and temperature was also integrated with the monitoring of air quality. The monitoring of pollutants is carried out for 24 hours (four hourly sampling for gaseous pollutants and eight hourly sampling for particulate matter) with a frequency of twice a week, to have 104 observations in a year. The monitoring is being carried out with the help of State Pollution Control Boards/ Committees, National Environmental Engineering Research Institute (NEERI) and other research institutions/ universities. CPCB co-ordinates with these agencies to ensure the uniformity, consistency of air quality data and provides technical and financial support to them for operating the monitoring station.

✦ Annual average SO_2 levels were within the prescribed National Ambient Air Quality Standards (NAAQS) at almost all the locations. Annual average NO_2 levels were also within NAAQS at most of the locations. However, annual average levels of RSPM and SPM exceeded the NAAQS in most of the cities.

✦ Lower levels of RSPM and SPM were observed during monsoon months and higher levels of RSPM and SPM were observed during winter months. CPCB had identified a list of 72 polluted cities in which the prescribed National Ambient Air Quality Standards (NAAQS) were violated. Action plans are being formulated and implemented to control air pollution in non-attainment cities by respective states.

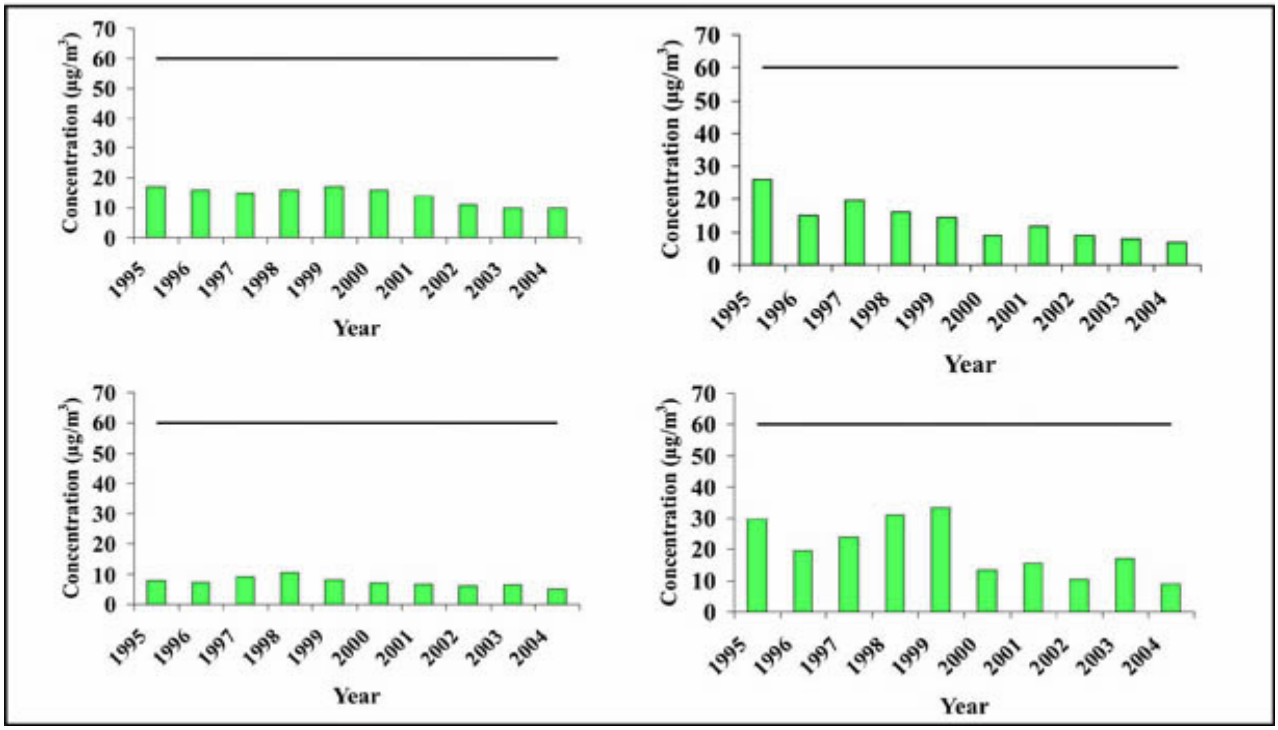
Trend analysis of air quality in metro cities

✦ A decreasing trend has been observed in annual average SO_2 levels in Delhi, Lucknow, Bhopal, Bangalore, Hyderabad, Faridabad and Dhanbad during last few years. In Nagpur and Jabalpur, levels of SO_2 have stabilized. The decreasing trend in sulphur dioxide(SO_2) levels may be due to various measures taken such as reduction of sulphur in diesel and use of cleaner fuel in industries.

✦ A decreasing trend has been observed in NO_2 levels in residential areas of Madurai, Jabalpur and Bhopal during last few years. In metropolitan cities of Mumbai, Bangalore, Hyderabad, Kanpur and Lucknow, fluctuating trends have been observed in annual average concentration on NO_2. The decreasing trend in NO_2 levels observed in some cities may be due to various measures taken for vehicular pollution control such as stricter vehicular emission norms etc.

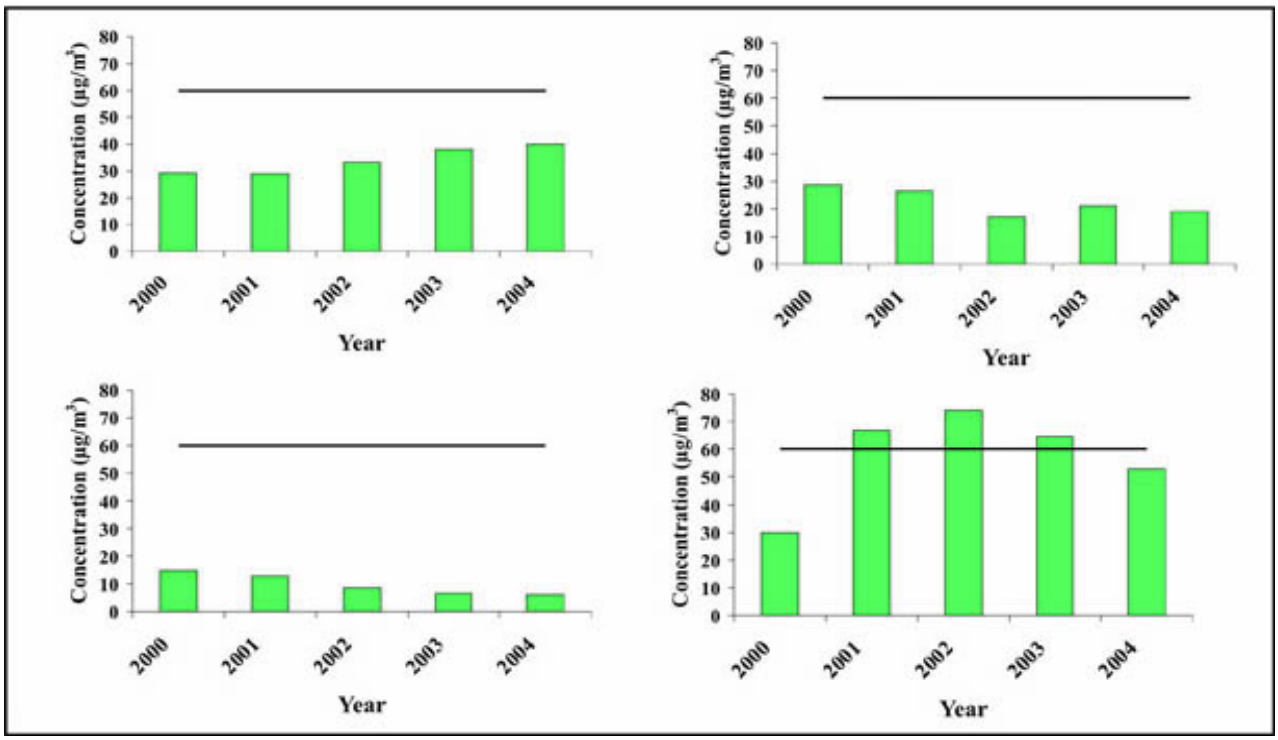
✦ A decreasing trend has also been observed in RSPM levels in Solapur, Lucknow and Bhopal during last few years. In metropolitan cities of Mumbai, Hyderabad, Kanpur, Ahmedabad, Nagpur and Nashik, fluctuating trends have been observed in annual average concentration of RSPM. Decreasing trend in RSPM levels observed in some cities may be due to various measures taken such as reduction of sulphur in diesel, stringent standard of particulate matter in diesel vehicles etc. One of the major sources of RSPM and NO_2 is vehicles and number of vehicles is increasing exponentially in many cities.

The trends in respect of Annual Average Concentration of SO_2, NO_2 and RSPM in residential areas vis-à-vis National Ambient Air Quality Standards for four metropolitan cities are shown in the Figures 50, 51, and 52 respectively.



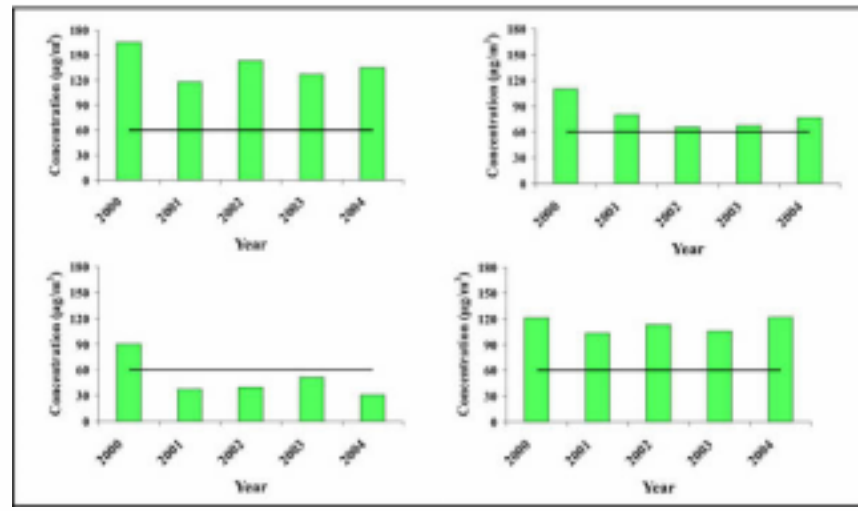
——— National Ambient Air Quality Standards

Fig 50. Trends in Annual Average Concentration of SO_2 in residential areas of Delhi, Mumbai, Chennai and Kolkata.



——— National Ambient Air Quality Standards

Fig 51. Trends in Annual Average Concentration of NO_2 in residential areas of Delhi, Mumbai, Chennai and Kolkata.



——— National Ambient Air Quality Standards

Fig 52. Trends in Annual Average Concentration of RSPM in residential areas of Delhi, Mumbai, Chennai and Kolkata.

Strengthening of NAMP and Improving Quality of Data

As per recommendations of Auto Fuel Policy report, NAMP was strengthened in terms of parameters and coverage. Monitoring stations were sanctioned in cities like Khajuraho, Gwalior, Tirupati, Vijayawada, Asansol and Ranchi etc. A project on calibration of equipments and evaluation of monitoring stations was initiated. Monitoring stations were inspected through Zonal Offices of CPCB and suggestions for improving quality of data were communicated. Training programmes on air quality monitoring were also organized.

Setting up of Continuous Air Quality Monitoring Stations in 16 cities

Hon'ble Supreme Court of India identified sixteen cities where air pollution is high and directed respective State Govt./State Pollution Control Boards to prepare action plan to control air pollution. Accordingly, the Ministry and CPCB decided to set up of 16 Continuous Air Quality Monitoring Stations in these 16 cities to see the impact of implementation of Action Plan on Air Quality. The capital cost of the station, Rs.80.00 lacs will be borne by CPCB and the concerned SPCB on 50:50 basis. The annual Operation & Maintenance cost of each station (Rs 10.00 Lacs) will be borne by the respective SPCBs and networking cost of all the 16 stations will be borne by CPCB. Parameters like Carbon Monoxide, Sulphur Dioxide, Oxides of Nitrogen, Benzene, Toluene & Xylene, Ozone, Particulate Matters (TSP & PM_{10}) and meteorological parameters will be monitored continuously at these stations.

National Water Quality Monitoring Programme

✦ In order to perform the functions specified under the Water (Prevention and Control of Pollution) Act, 1974, the CPCB and State Pollution Control Boards/Pollution Control Committees (SPCBs/PCCs) need adequate knowledge on nature and extent of pollution control required in different parts of the country. Realising this, the CPCB in collaboration with the concerned SPCBs/PCCs established a wide network of water quality monitoring, comprising of 870 stations in 26 States and five Union Territories, spread over the country. Monitoring is done on monthly or quarterly basis in surface waters and on half yearly basis in case of ground water. The monitoring network covers 189 rivers, 53 lakes, four tanks, two ponds, three creeks, three canals, nine drains and 218 wells. Among the 870 stations, 567 are on rivers, 55 on lakes, nine on drains, 12 on canals, four on tank, three on the creeks, two on pond and 218 are groundwater stations.

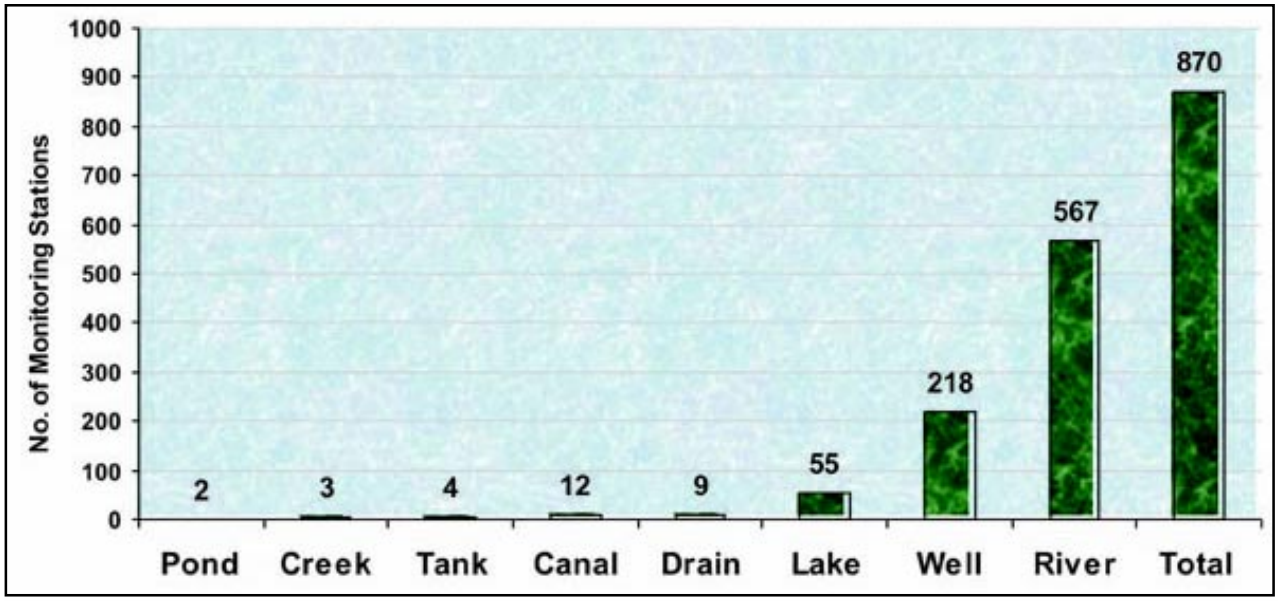


Fig 53. National Water Quality Monitoring Network

- Presently the inland water quality-monitoring network is operated under a three-tier programme i.e. Global Environmental Monitoring System (GEMS). Monitoring of Indian National Aquatic Resources System and Yamuna Action Plan. Water samples are being analysed for 28 parameters consisting of physico-chemical and bacteriological parameters for ambient water samples apart from the field observations. Besides this, nine trace metals and 15 pesticides are analysed in selected samples. Biomonitoring is also carried out on specific locations. In view of limited resources, limited numbers of organic pollution related parameters are chosen for frequent monitoring i.e. micro pollutants (Toxic Metals & POP's) are analysed once in a year to keep a track of water quality over large period of time.

Establishment of National Reference Laboratory for Persistent Organic Pollutants (POPs)

The CPCB took important steps for establishing National Reference Laboratory for analysis of Trace Organic and Persistent Organic Pollutants (POP's) at CPCB Headquarters Laboratory in association with GTZ-ASEM. Supply work order/Letter of Awards have been placed for procurement of the laboratory equipment/instruments including High Resolution Gas Chromatograph-High Resolution Mass Spectrometer (HRGC/HRMS) under Japanese Debt Relief Grant Assistance. The detailed specifications and tender documents related with civil, electrical, fire prevention, air handling and air conditioning system were prepared by the Consultant engaged by GTZ-ASEM.

Fig 54. Biomonitoring of water quality undertaken by CPCB.

Quality Assurance System in CPCB laboratories

The CPCB laboratory, which is having the accreditation in the field of Chemical & Biological Analysis as per ISO-17025(1999) through National Accreditation Board for Laboratories (NABL), Department of Science

& Technology, New Delhi took up following activities during the year as a part of implementation of Quality Assurance System as per ISO 17025.

- ✦ Meetings organized from time to time for periodical review of activities in laboratories.
- ✦ Internal Quality audit of the HQs laboratories as per ISO/IEC 17025.
- ✦ Verification of corrective actions taken on Non Confirmations observed during Internal Audit.
- ✦ Surveillance Audit at HQs laboratories by the assessor from NABL.

Participation of CPCB laboratories in international Proficiency Testing (PT) programme

To ensure analytical quality, CPCB laboratories at HQs Zonal Office, Kolkata and Zonal Office, Kanpur have participated in Proficiency Testing Programme organized by Environmental Laboratory Approval Programme, Wadsworth Centre, New York State Dept. of Health, Albany, New York for PT samples related with Portable Water Chemistry, Non Portable Water Chemistry, Solid and Hazardous Waste and Water Bacteriology. Baring two parameter, viz., total cadmium and total chromium, the laboratories results were within acceptable limits for all the 27 parameters.

Spatial Environmental Planning Programme-Revision of Zoning Atlas

✦ The criteria for preparation of Zoning Atlas Programme were revised to ensure better usage of results. The revised criteria were discussed and generally agreed in the 50th Conference of Chairmen and Member Secretaries of Pollution Control Boards/Committees held on 8-9th March, 2004 at Delhi. In accordance with the decision the conference, all State Pollution Control Boards/Executing Agencies participating in the programme agreed to undertake the following activities under Spatial Environmental Programme:

- ✧ State Environmental Atlas
- ✧ State Level Industrial Siting Guidelines
- ✧ District Environmental Atlas
- ✧ District Wise Zoning Atlas for Siting of Industries
- ✧ District Specific Industrial Siting guidelines

✦ Reports for seven State Environmental Atlas were received at CPCB and are under finalization. State Environmental Atlas for other twelve States are under preparation. Draft report of State Level Industrial Siting Guidelines for the State of Madhya Pradesh was received and is being finalized at CPCB. District Environmental Atlases for 55 districts, at eleven District Wise Zoning Atlas for Siting of Industries and seven District Specific Industrial Siting guidelines were received at CPCB and are being finalized.

Study on Water Treatment Plants (WTPs)

✦ Environmental concerns relating to water treatment include recovery and safe disposal of sludge from clarifiers and filter backwash water. The Central Board in this regard accomplished a study on water treatment plants, which include questionnaire survey, field visits to water treatment plants and sampling of clarifier sludge and backwash waters at water treatment plants. Under this programme, 52 water treatments plants (WTPs) have been studied for collection of information and samples have been collected from 30 WTPs which include Fluoride and Arsenic removal plants. Study includes concerned facets of water treatment i.e. raw water quality, general water treatment sequence, treatment unit specific

observations, backwashing of filters, chemical consumption, operation & maintenance of WTPs, treated water quality, specific water treatment methods for fluoride affected areas and arsenic affected areas etc.

- One of the important findings of the study is that the clarifier sludge and filtration backwash water are invariably discharged without any treatment and without obtaining consent, even though these require treatment to meet the discharge standards. Volume of waste generated in the form of clarifier sludge and filtration backwash water during treatment of surface waters for city supplies may be five to 10 percent of total supply and thus is a significant source of pollution of receiving waters. Recycling of filtration backwash water is recommended in the report of the study. Dewatering of clarifier sludge through vacuum filter or any other mechanical sludge-dewatering technique, recycling of the separated water and land disposal of dewatered sludge is a solution to prevent pollution of receiving streams.

Management of Hazardous Substances

Introduction & Objectives

The Hazardous Substances Management Division (HSMD) in the Ministry is responsible for planning, overseeing and implementation of the policies and programmes on the management of hazardous substances and chemical emergencies. The mandate of this Division is to promote safety in the management and use of hazardous substances including hazardous chemicals and hazardous wastes with an objective to prevent and mitigate damage to health and environment due to hazardous chemicals and wastes. The activities of the division can be grouped under three main thrust areas, viz., Chemical Safety; Hazardous Wastages Management and Solid Waste Management. The Division is also a nodal point for the following three International Conventions.

- The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal.
- The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for certain Hazardous Chemicals & Pesticides in International Trade.
- The Stockholm convention on Persistent Organic Pollutants (POPs).

Progress / Activities undertaken under various programmes during the year

The programmes and activities carried out during the year are as follows:

Chemical Safety

- The Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules, 1989 and the Chemical Accident (Emergency Planning, Preparedness and Response) Rules, 1996 are the main instruments for ensuring chemical safety in the country. As on date , there are 1633 MAH units in 245 Districts 19 States/UTs(17 states & 2UT's) of the country . As per the latest report 1556 On-site Plan and 185 Off site Plans have been prepared. State level Crisis Group have been constituted by all States/UTs except Andaman & Nicobar , Arunachal Pradesh, Daman & Diu, Dadar & Nagar Haveli, Jammu & Kashmir, Jharkhand, Lakshadweep, Mizoram, Nagaland Uttranchal , Himachal Pradesh and Manipur have constituted State Level Crisis Groups.
- A Sub-Scheme entitled" Industrial Pocket-wise Hazard Analysis" has been in operation since the

Eight Five Year Plan . Out of 236 districts having Major Accident Hazard (MAH) units, Hazard Analysis studies have been initiated for 107 districts. Out of these , 85 studies have been completed.

✦ A Feasibility study on Vulnerability and Risk Assessment of Transportation of Dangerous Chemicals has been completed for four States having a large number of MAH units namely- **Gujarat, Maharastra, Andhra Pradesh and Tamil Nadu** with a limited scope (two stretches in Gujarat and Maharastra and one stretch in Andhra Pradesh and Tamil Nadu which are having maximum congested traffic for transportation of Hazardous chemicals) The objective was to identify the major highways in the respective states where the bulk of hazardous materials get transported , identification of risk, consequences, mitigation measures including preparation of Disaster Management Plan, assess the status of compliance of the provisions laid down in the Motor Vehicle Act,1988 sections on hazardous materials transportation and to develop emergency response procedure for accidents during transportation of hazardous chemicals. The studies have been extended to cover two more stretches each in Gujarat, Maharashtra and Tamil Nadu.

✦ Financial assistance for conducting training programmes on Emergency Preparedness, Accident Prevention and Hazardous Waste Management has been provided to National Safety Councils, Disaster Management Institute (DMI), Bhopal, Federation of Indian Chambers of Commerce and Industry , Associated Chambers of Commerce and Industry and other state run institutions. The main objective of the programme is to effectively prepare, prevent and mitigate emergencies arising due to chemical and to impress upon the concerned people the necessity of emergency preparedness and response.

✦ Ministry has initiated a project on developing the National Chemicals Management Profile for India by UNITAR under the Indo-Canada Environment Management initiative. The main objective of the project is to develop a national profile to assess India's national infrastruce for managing chemicals, as an important first step to strengthen national capacities and capabilities for the sound management of chemicals. Central Pollution Control Board was entrusted to implement the project. Draft National Profile have been prepared and discussed in two regional workshops held at New Delhi and Mumbai during October 2005. Suggestions made by stake holders have been incorporated and final draft is being prepared for review and finalization by National Coordination Committee.

✦ A pilot study entitled " GIS based Emergency Planning and Response System with respect to chemical accidents in Major Accident Hazard(MAH) installations in major industrial clusters in four identified industrial States namely Gujarat , Maharashtra, Tamil Nadu and Andhra Pradesh" has been completed. The system should be able to help response agencies mainly Central Crisis Group CCG). District Crisis group (DCG) and Local crisis Group(LCG), during pre-emergency state for planning and rehearsing response to major chemical disasters and also during actual emergency situations so that a well planned response can contain the damage to the minimum. To ensure proper implementation of the software at district level, training programs have been conducted involving the members of the State Crisis Group , District Crisis Group of the districts covered under this project. This project extended to cover Delhi-NCT, Rajasthan, Uttar Pradesh, Haryana , Karnataka, Kerala, West Bengal, Assam ,Madhya Pradesh and Punjab has been completed.

✦ Ministry initiated an Enabling Activity Project to identify the requirements for developing National Implementation Plan (NIP) as a first step to implement the Stockholm Convention on POPs with UNIDO as an Executing Agency under GEF

funding and has entrusted Indian Toxicological Research Centre (ITRC), Lucknow to implement the project in the capacity of a national executing organization to provide the services and perform the work related to the project. Final Project Brief has been prepared.

- India has deposited its instrument of Ratification on 13th January, 2006, of the Stockholm Convention on Persistent Organic Pollutants (POPs) . The Convention shall enter into force for India on the ninetieth day after the date of deposit of its instrument of ratification.

Hazardous Waste Management

- The legal instruments for management of hazardous wastes are the Hazardous Wastes (Management & Handling) Rules (HW Rules), 1989, as amended in 2000, 2003 and 2004, the Biomedical Wastes (Management & Handling) Rules, 1998 as amended in 2000 and 2003 and the Batteries (Management & Handling) Rules, 2001. Major responsibility for implementing these rules is with the Central Pollution Control Board and State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs). State Departments of Environment have been entrusted with the responsibilities of implementation of these rules. The status of implementation of all these rules is regularly monitored by the Ministry.

- The HW Rules provide for a control on generation, storage, transportation, treatment and disposal of hazardous wastes, both indigenously generated as well as imported. The Rules were amended in May 2003 with the view to streamline the implementation of these Rules.

- According to rule 8 of the HW Rules, the hazardous wastes are required to be treated and disposed off in secured landfills in a environmentally sound manner as prescribed. During the Tenth Plan period, setting up of common Treatment, Storage and Disposal Facilities (TSDFs) in different parts of the country have given priority.

- The Ministry has so far supported four common TSDF one in Maharashtra (TTC-Belapur), two in Gujarat (Anklesher and Surat), and one in Andhra Pradesh (Ranga Reddy District). During the current year financial assistance has been provided for setting up a TSDF in West Bengal (Haldia District). The other states viz. Karnataka, Tamil Nadu, Orissa, Goa, Delhi and Haryana are in the process of setting up such facilities. The TSDF projects are regularly monitored.

Fig 55. Common Hazardous Waste Treatment Storage Disposal Facility (TSDF) at Talaja Maharashtra - Landfill

- The Batteries (Management and Handling) Rules, 2001 were notified in May, 2001 to regulate the collection, channelization and

recycling of used lead acid batteries. These rules *inter-alia* make it mandatory for consumers to return used batteries. All manufacturers/ assemblers /reconditioners/importers of lead acid batteries are responsible for collecting used batteries against new one sold as per a schedule defined in the rules. As per the rules the importers of new lead acid batteries are required to take 'one time registration' and 184 importers have been registered with the Ministry till date. The list of registered importers of new lead acid batteries could be accessed through in the web site of the Ministry (envfor.nic.in) and is updated regularly. The importers have been directed to file the returns on the collections of used batteries to the concerned SPCBs/PCCs.

✦ The Core Group for Batteries had been revived and a meeting of the Core Group was held on 20th October 2005. The Core Group would facilitate the Ministry in the implementation of the rules by involving various stakeholders in the process and creating awareness among the public encouraging the environmentally sound recycling of the lead acid batteries.

✦ Comprehensive directions on hazardous wastes management have been given by the Hon'ble Supreme Court on 14th October 2003, in the matter of W.P. No 657/95 filed by the Research Foundation for Science Technology and Natural Resource Policy, against Union of India and others. Major directions relate to immediate closure of industries operating in violation of HW Rules, preparation of a National Inventory on hazardous wastes by CPCB based on State Inventories to be prepared by all SPCBs, inventorisation of illegal dump sites of hazardous wastes and preparation of rehabilitation plans for the same, disposal of hazardous wastes lying at various Parts/ICDs/Docks of the country, rationalization and amendment of hazardous Wastes Rules 2003, strengthening of SPCBs, CPCB and HSM Division of the Ministry etc. Action has been initiated to comply with these divisions during the current year.

✦ A Supreme Court Monitoring Committee (SCMC) on Hazardous Waste Management constituted by the Ministry in November 2003, in accordance with the directives of the Supreme Court, oversees the compliance to directions of the Court. During the year, six meetings of the SCMC have been held. Based on the discussions of the Committee and inputs provided by the CPCB and other SPCBs/PCCs, six quarterly Monitoring Reports have been filed to the Hon'ble Court.

✦ Hearing in respect of W.P.(C) No. 967/89 filed by Indian Council for Enviro Legal Action against Union of India and Others on ground water pollution and soil degradation in Bichhri Village, Udaipur (Rajasthan) due to indiscriminate disposal of toxic wastes are still continuing in the Supreme Court.

✦ The Biomedical Wastes (Management and Handling) Rules first notified in 1998 seek to regulate the management of wastes generated by Health

Fig 56. Disposal of municipal solid waste in the vacant place outside the city limits

Care Establishments in the country. The Ministry, through the network of CPCB and SPCBs/PCCs, ensures strict implementation of the Rules.

- The project on the monitoring and analysis of Dioxins /Furans emissions from the Bio-medical Waste Incinerators has progressed satisfactorily and has been extended during the year.

Solid Waste Management

- The Municipal Solid Wastes (Management and Handling) Rules, 2000, the Fly Ash Notification, 1999 as amended in September 2003 and the Recycled Plastics Manufacture and Usage Rules 1999 as amended in June 2003 constitute the regulatory framework for the management of solid wastes in the country. The utilization of fly ash by Thermal Power Plants is being continuously monitored. The total ash generation by Thermal Power Plants including Captive Power Plants was reported as 106 million tones in the year 2003-04. Of this, about 31 million tones have been utilized by different sectors which include cement, road embankments, fly ash bricks and products and back filling of mines.
- During the year, the status of implementation of the Municipal Solid Waste (Management and Handling) Rules was reviewed. All the SPCBs/PCCs have been requested to take up the matter with the relevant local authorities / civic bodies for preparation of time bound action plans for management of Municipal Solid Waste in accordance with the rules. The Hon'ble Supreme Court also, in the matter of W.P. No. 888/96 filed by Ms. Almitra H. Patel against the Union of India and others, has given directions regarding preparation of action plans for metro cities and State capitals for proper management of municipal solid waste. The project relating to development of a model system on solid waste management being implemented in Kozhikode city in Kerala was reviewed during the year.
- The Ministry is regularly following up the implementation of the Recycled Plastics Manufacture and Usage Rules, 1999/2003 with the SPCBs/PCCs, who have been empowered to register the manufacturers of carry bags or containers of virgin/recycled plastics.

Institutional Strengthening

- The scheme for strengthening the manpower and infrastructure of the SPCBs/PCCs to ensure effective implementation of various Rules relating to Hazardous Substances Management was continued during the year.

International Conventions/ Protocols

Basel Convention on the Control of Trans-Boundary Movement of Hazardous Wastes and their Disposal

- India is a signatory to the Basel Convention since 1992, which requires countries to ensure that hazardous wastes are managed in an environmentally sound manner and tranboundary movement of such wastes are reduced to a minimum.
- An Indian delegation participated in the Open Ended Working Group Meeting held in Geneva during 4-8th July, 2005.

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

- The Ministry participated in the 11th Session of the Inter Governmental Negotiating Committee Meeting as well as in the first Conference of Parties held in September, 2004. A high level official

delegation participated in these meetings. Action has been initiated to ratify and accede to this Convention, which has come into force in February, 2004.

Stockholm Convention on Persistent Organic Pollutants (POPs)

✦ India has signed the Stockholm Convention on POPs in May 2002. The convention seeks to eliminate production, use, import and export of 12 POPs wherever techno-economically feasible and in the interim period restrict the production and use of these chemicals. This Convention has come into force in May 2004. Ministry has assigned Industrial Toxicology Research Centre (ITRC), Lucknow the study on "A preliminary Enabling Activity Project to prepare a National Implementation Plan (NIP)" as a first step to implement the Stockholm Convention on POPs with UNIDO as an Executing Agency, under GEF assistance. Under this study, 10 interactive workshops were organized in different cities to collect and collate POPs related data. Based on the studies, ITRC has prepared the Final Project Brief. The Inter-ministerial Steering. Committee has reviewed the report and further follow up actions on the recommendation and findings of the study are being taken up.