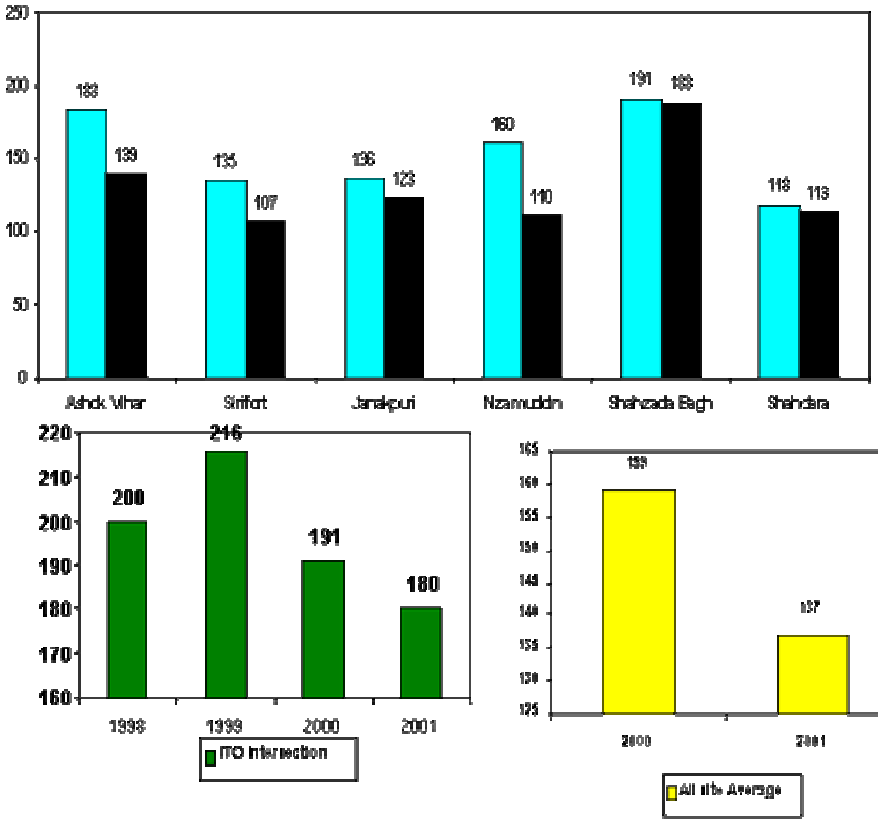
AIR QUALITY

Ambient Air Quality in Delhi

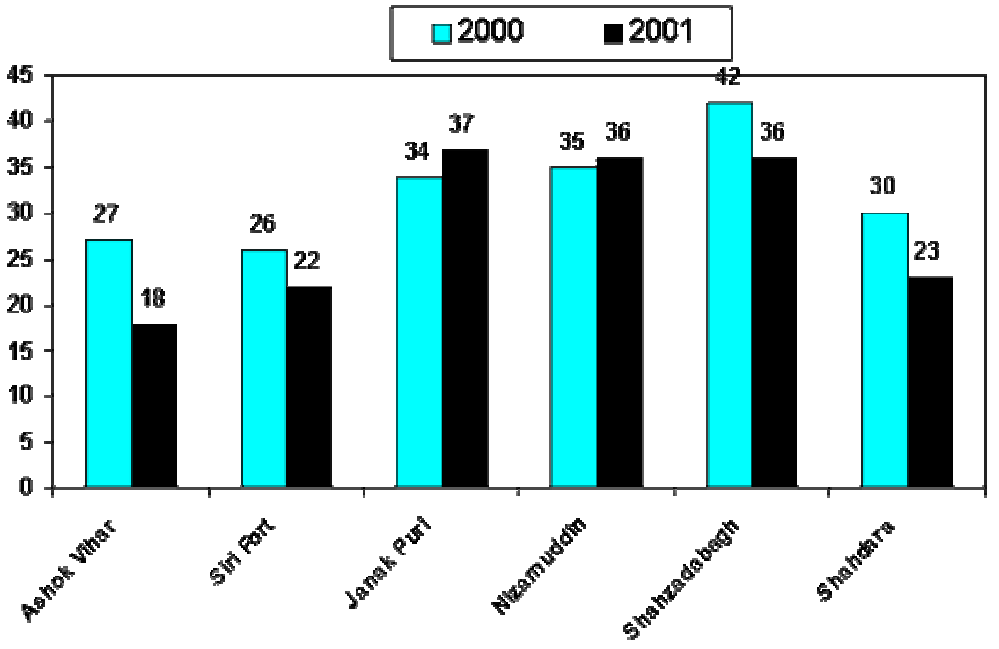
The Central Pollution Control Board has been conducting ambient air quality monitoring at seven locations in Delhi. The locations have been categorised based on land use, i.e. residential, industrial and traffic intersection. The comparison of ambient air quality data for the years 2000 and 2001 reveal that:

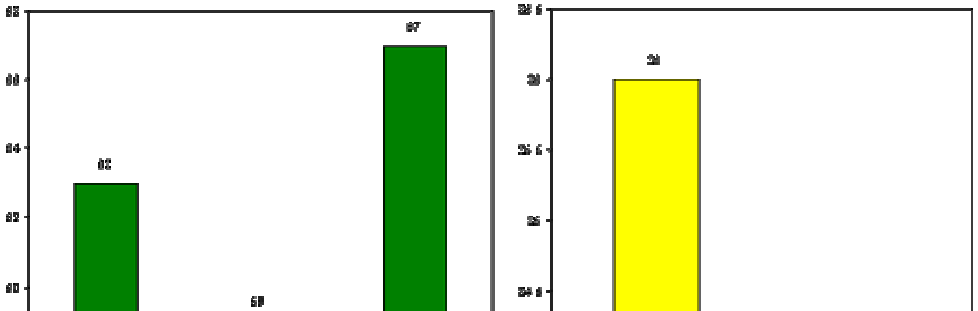
- Concentrations of all regulatory pollutants in ambient air have reduced. This may be attributed to the increased use of cleaner fuels like low sulphur diesel and compressed natural gas (CNG) in motor vehicles.
- Annual average SPM concentration for all monitoring sites in Delhi came down to 347 $\mu g/m^3$ in 2001 from 405 $\mu g/m^3$ in the previous year.
- Annual average value of RSPM for all monitoring sites came down to 137 $\mu g/m^3$ in 2001 from a value of 159 $\mu g/m^3$ in 2000.
- Concentration of annual average value of sulphur dioxide and nitrogen dioxide in ambient air of Delhi decreased to 14 $\mu g/m^3$ from 18 $\mu g/m^3$ and 34 $\mu g/m^3$ from 36 $\mu g/m^3$ respectively. However, at ITO traffic intersection the values of NO_2 increased as compared to the previous years.

Trends of Respirable Suspended Particulate Matter (RSPM) in Ambient Air of Delhi



Trends of NO_2 in ambient air of Delhi





VEHICULAR POLLUTION

Automobiles constitute a major source of air pollution in the urban areas. Several initiatives have been taken to reduce vehicular emissions. In recent years, the impacts of pollution control initiatives are reflected on the air quality. Ambient air quality in metro cities especially in Delhi indicates decreasing trends with respect to the regulatory pollutants over the years. Important steps taken for vehicular pollution control during the year are as follow:

Vehicle Technology & Emission Norms

- Bharat Stage-II emission norms for new private non-commercial vehicles were made effective in Mumbai from 01.01.2001 and in Chennai and Kolkata from 01.07.2001
- Bharat Stage-II emission norms for new commercial vehicles implemented in NCT-Delhi, Mumbai, Kolkata and Chennai from October 2001.
- Introduction of 4-stroke two wheelers replacing 2-stroke two wheelers increased in 2001.

Fuel Quality

- Gasoline sulphur content reduced to 0.05% from 0.1% max. in Greater Mumbai from 01.01.2001 and in Chennai from 01.07.2001.
- Diesel sulphur content reduced to 0.05% in NCT-Delhi from 01.03.2001, in NCR from 30.06.2001, in Greater Mumbai from 01.01.2001, in Kolkata and Chennai from 01.07.2001.

Alternative Fuels & Vehicles

· Emission norms for CNG & LPG powered vehicles notified during 2001.

· Number of CNG dispensing stations increased to 87 in Delhi.

· Number of registered CNG vehicles in Delhi increased during the year.

Auto Fuel Policy

- Gasoline sulphur content reduced to 0.05% from 0.1% max. in Greater Mumbai from 01.01.2001 and in Chennai from An Inter-Ministerial Task Force on Vehicular Emission Norms & Fuel Quality, headed by the Chairman, Central Pollution Control Board, submitted its report in March 2001. The Task Force recommended that Bharat Stage-II emission norms to be implemented all over the country and Bharat Stage-III norms to be implemented in seven mega cities by 2005. Also, the Task Force recommended that time limit for extending Bharat Stage III (EURO-III equivalent) norms throughout the country may be decided within one year.
- An Expert Committee on "Auto-Fuel Policy" was constituted during November 2001 under the Chairmanship of Director General, Council of Scientific & Industrial Research. The Committee submitted its interim report on 31.12.2001. The Committee recommended that Euro-II/Bharat Stage-II norms to be implemented throughout the country and Euro-III norms to be implemented in seven mega cities from 2005 and Euro-III norms to be enforced all over the country by 2010.

WATER QUALITY

Water Quality Criteria & Water Quality Management

Central Pollution Control Board promulgates water quality criteria/standards on the basis of which nationwide pollution control programmes are implemented. The water quality criteria evolved in the country during late seventies were based on "Designated Best Use" concept of water. According to this concept, out of several uses a water body is put to, the use which demands highest quality of water has been recognised as designated best use. Over a period, it has been realised that there are some practical problems in its implementation. To overcome these problems, the concept is being revised, with following main features:

In addition to use based classification of waters, a concept of basic water quality is introduced, which is applicable to all water resources in the country irrespective of their uses;

· The criteria values were adopted from Water Quality Criteria/Guidelines of Bureau of Indian Standards, World Health Organisation, Indian Council of Medical Research, Indian Agricultural Research Institute, CPHEEO and other international sources; and,

· The management strategy has been identified including responsibility of different agencies/authorities.

Strategies for waste disposal especially in water scarce conditions have been identified.

Water Quality Trend

The water quality monitored in the country's water resources between 1990 and 2000 indicates that the organic and bacterial contamination continues to be critical, mainly because of the discharge of untreated or partially treated domestic wastewater from the urban centres. The increase in oxygen demand and bacterial pollution load is also attributed to inadequate flow in the water courses.

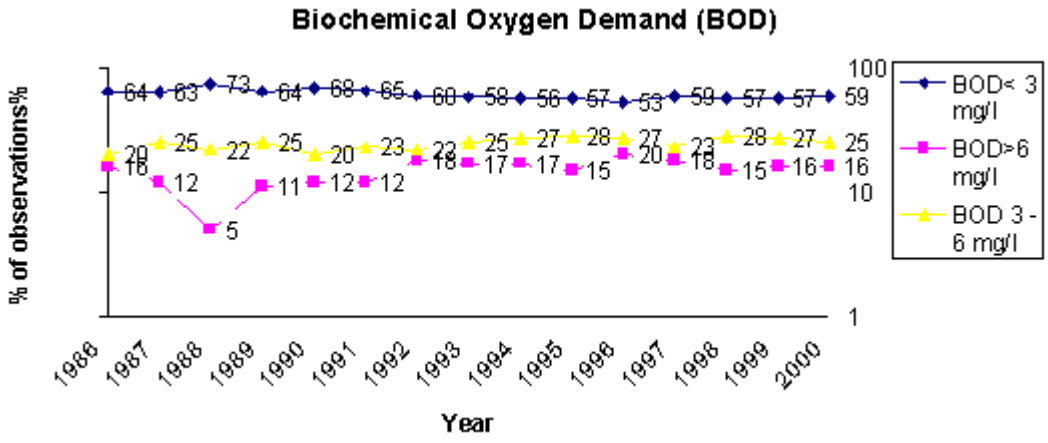
An attempt has been made to estimate year-wise percentage of observations falling under different levels of pollution in terms of BOD, total coliform and faecal coliform, out of more than 4,000 observations taken in a year. The data indicate that there are fluctuations in observations falling under different levels of pollution. However, the fluctuations are less in lower pollution ranges. This indicates that cleaner waters, like Himalayan rivers and groundwaters, are still maintaining their cleanliness. The fluctuations in the number of observations under higher pollution level can be attributed mainly to available dilution. Due to over-exploitation of ground and surface water, as also uneven distribution of rainfall the availability of dilution water is fluctuating year by year. A summarised statement on percentage of observations falling under different ranges of BOD, total coliform and faecal coliform is presented below:

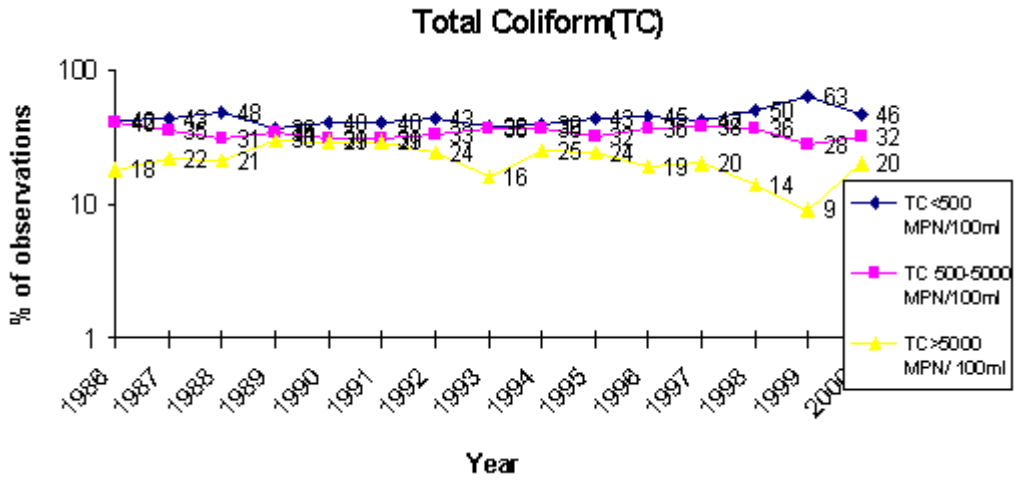
Water Quality Trend in Respect of Critical Parameters

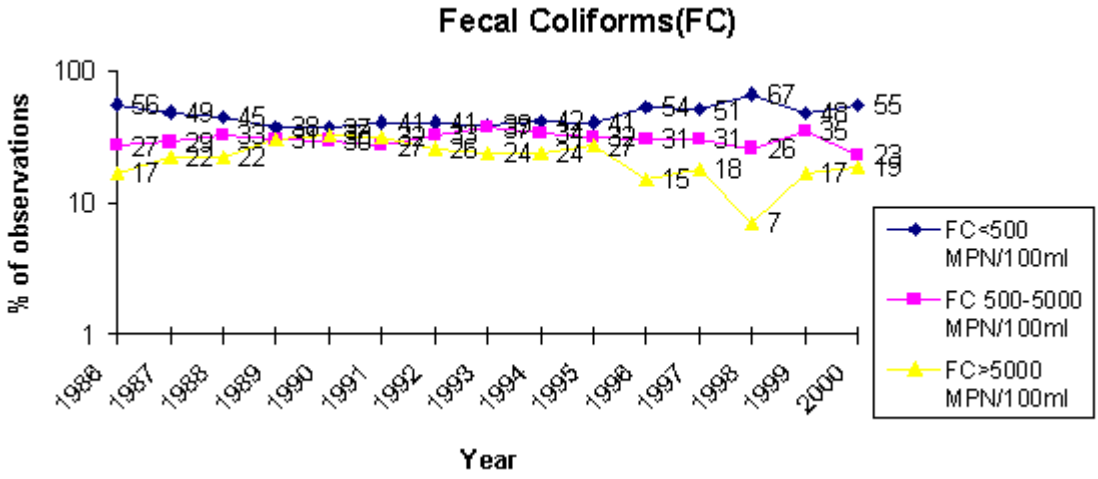
Critical Parameter	Range	Percent of Observations
BOD	<3 mg/l	53-73% during 1986 to 2000. Maximum observations 73% during 1988, during 2000 decreased to 59%
3-6 mg/l	20-25% during 1986 to 1993. Maximum observations 28% during 1995.	
>6 mg/l	5-20% during 1986 to 1995. Maximum observations 20% during 1996. During 2000 decreased to 16%.	
Total coliform	<500 MPN/100 ml.	36-50% during 1986 to 1998. Observations increased to 63% in 1999 & further decreased to

		46%.
500-5000 MPN/100 ml	31-40% during 1986 to 2000. Maximum observations 40% in 1986 decreased to 32% in year 2000.	
>5000 MPN/100 ml.	9-30% during 1986 to 2000. Maximum observations (30%) during 1989 decreased to 9% in 1999, increased to 20% in 2000.	
Faecal Coliform	<500 MPN/100 ml.	37-67% during 1986 to 2000. Maximum observations 67% during 1998, decreased to 48% in 1999 again increased to 55% in 2000.
500-5000 MPN/100 ml.	27-37% during 1986 to 2000. Maximum observations in 1993, decreased to 23% during year 2000.	
>5000 MPN/100 ml.	7-33% during 1986 to 2000. Maximum observations in 1990, decreased to 7% during 1998 again increased to 19% during year 2000.	

Year-wise Percentage of Observations falling under different levels of Pollution







Assessment of Water Pollution from Non-Point Sources

Over the years, reasonable baseline information on water pollution from point sources has been collected, but similar information on non-point sources is not available. During the year, an attempt was made to assess non-point sources of pollution in collaboration with the Punjab State Pollution Control Board. Main findings of the study are as follow:

· Non-point pollution contribution is significant particularly during rainy days when surface run-off occurs;

· Unsewered urban areas, solid waste dumps, industrial waste dumps, leakages and losses during handling of chemicals and other materials, application of fertilizers & pesticides in agriculture, mass bathing, disposal of human and animal dead bodies in the rivers are major contributors of non-point pollution; and,

· Level of pollution especially nitrate are increasing in groundwater in many parts of the country due to percolation of uncollected sewage and other wastes and application of fertilizers in agriculture.

Experiments are being conducted to quantify pollution load contributed by non-point sources.

Groundwater Quality Assessment

Central Pollution Control Board is monitoring water quality in country's water resources at 507 locations, out of which 25 locations are on groundwater. The groundwater is also monitored in problem areas. The salient findings are as follow:

· Deterioration of groundwater quality at many places is mostly due to increase in nitrate concentration; and,

· Increase in nitrate concentration in groundwater is attributable to large amount of uncontrolled sewage & solid waste spread over the urban areas, percolating to the ground water table.

Groundwater around CETP and Common Secured Landfill Sites

To assess the status of groundwater near the Common Effluent Treatment Plants (CETPs) and Common Secured Landfill (CSLF) sites, a study was conducted at five industrial estates in Gujarat. During the study, leachate and groundwater samples were collected. The salient findings are as below:

· The groundwater pH varied between 7.0 to 8.0 and total dissolved solids varied in the range of 586 to 4512 mg/l;

· At all the locations, the standards for alkalinity were violated and values of chlorides in groundwater near Odhav and Vapi were within the limits; and,

· Sulphate varied between 54 to 694 mg/l and total hardness between 69 mg/l to 577 mg/l.

The leachate samples contained high values of BOD, COD, conductivity, chlorides and hardness.

Environmental Study of Kumbh Mela 2001

Environmental Study of Kumbh Mela 2001 was undertaken in collaboration with the Pollution Control Research Institute, BHEL, Haridwar, and CPCB Zonal Office – Kanpur. The in-depth water quality monitoring at Allahabad was undertaken on five

important mass bathing days at Sangam every hour and five other locations at a frequency of 2 – 6 times a day. In addition, bio-monitoring studies were also undertaken during pre- Kumbh. The observations are as below:

· The dissolved Oxygen values were found fit for organized bathing throughout the Mahakumbh fare;

· BOD values exceeded the norms at Sangam and at d/s Allahabad (norm 3 mg/l); and,

· The total and faecal coliform exceeded the prescribed norms for organized bathing.

Kumbh 2001 : Water Quality in River Yamuna

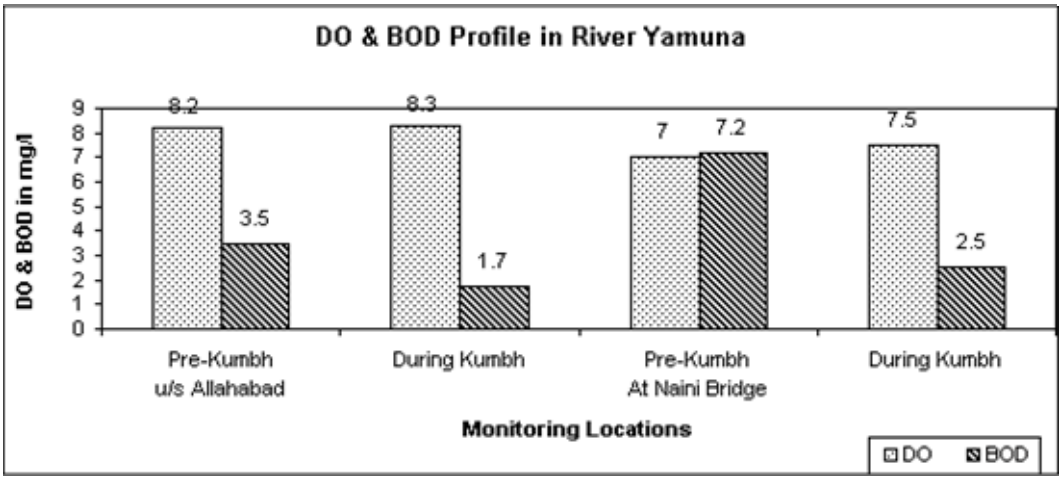
Location	**u/s Allahabad**		**at Naini Bridge**	
Parameters	**Pre-Kumbh**	**During Kumbh ***	**Pre-Kumbh**	**During Kumbh ***
pH	7.5	7.6	8.1	7.7
DO (mg/l)	8.2	8.3	7.0	7.5
BOD (mg/l)	3.5	1.7	7.2	2.5
Total Coliform (MPN/100 ml)	1800	1050	20000	11333
Faecal Coliform (MPN/100 ml)	700	600	8000	1700

*** Makar Sankranti 14.01.2001**

Kumbh 2001 : Water Quality in River Ganga

Location	**U/s Sangam (Shastri Bridge)**		**Sangam**		**D/s Sangam (Lavain Kala)**	
Parameters	**Pre-Kumbh**	**During Kumbh ***	**Pre-Kumbh**	**During Kumbh ***	**Pre-Kumbh**	**During Kumbh ***
pH	8.1	7.5	8.1	7.8	8.3	8.0
DO (mg/l)	8.0	7.5	7.5	5.8	7.8	8.2
BOD (mg/l)	5.0	3.5	5.8	6.2	6.0	2.7
Total Coliform (MPN/100 ml)	2000	91000	2400	223118	3000	257500
Faecal Coliform (MPN/100 ml)	900	-	1000	12179	1600	-

*** Makar Sankranti 14.01.2001**


DO & BOD Profile in River Yamuna
DO & BOD in mg/l
9
8
7
6
5
4
3
2
1
0
8.2
3.5
8.3
1.7
7
7.2
7.5
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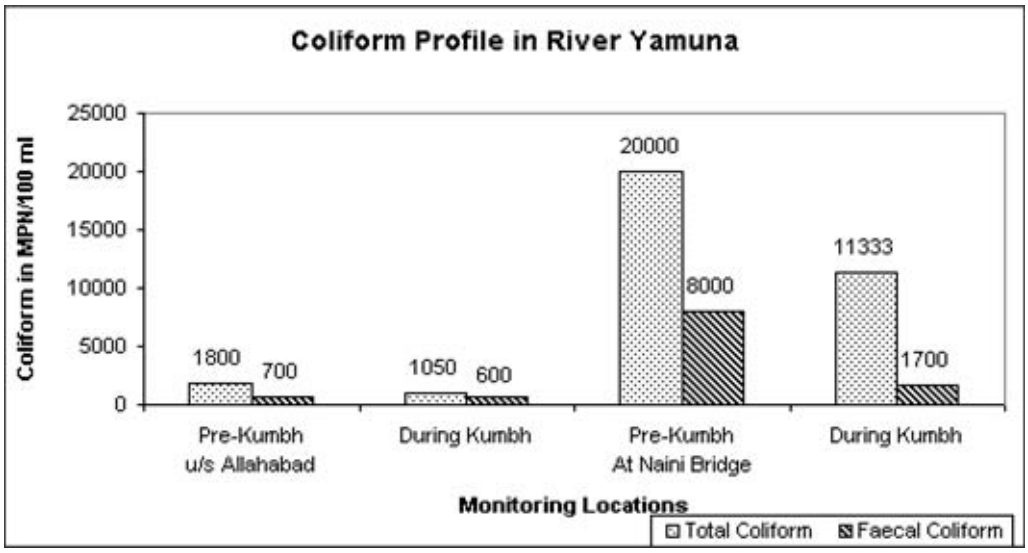
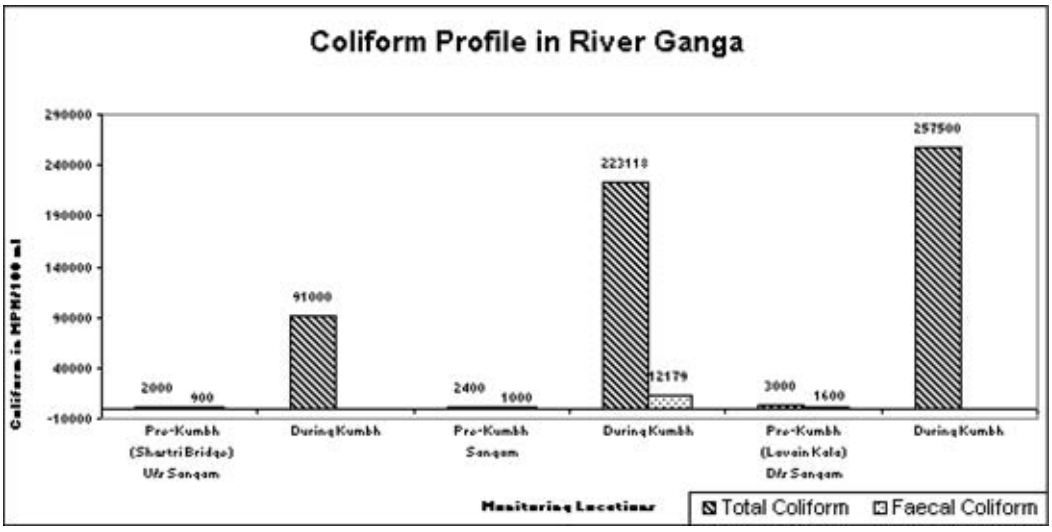
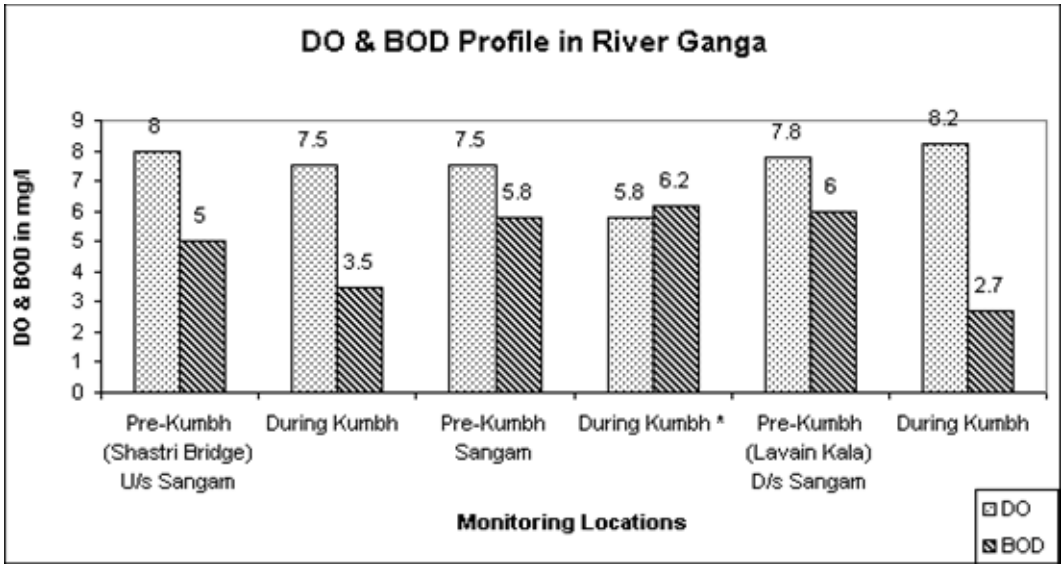
Pre-Kumbh
u/s Allahabad
During Kumbh
Pre-Kumbh
At Naini Bridge
During Kumbh
Monitoring Locations
DO
BOD


Coliform Profile in River Yamuna
Coliform in MPN/100 ml
25000
20000
15000
10000
5000
0
1800
700
1050
600
20000
8000
11333
1700
Pre-Kumbh
u/s Allahabad
During Kumbh
Pre-Kumbh
At Naini Bridge
During Kumbh
Monitoring Locations
Total Coliform
Faecal Coliform


Coliform Profile in River Ganga
240000
190000
140000
90000
40000
-10000
2000
900
91000
2400
1000
223110
12179
3000
1600
257500
Pre-Kumbh
(Shastri Bridge)
U/s Sangam
During Kumbh
Pre-Kumbh
Sangam
During Kumbh
Pre-Kumbh
(Lavain Kala)
D/s Sangam
During Kumbh
Monitoring Location
Total Coliform
Faecal Coliform


DO & BOD Profile in River Ganga
DO & BOD in mg/l
9
8
7
6
5
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8
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7.5
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5.8
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7.8
6
8.2
2.7
Pre-Kumbh (Shastri Bridge) U/s Sangam
During Kumbh
Pre-Kumbh Sangam
During Kumbh *
Pre-Kumbh (Lavain Kala) D/s Sangam
During Kumbh
Monitoring Locations
DO
BOD

MUNICIPAL SOLID WASTE MANAGEMENT

MSW Management in Delhi

Pursuant to an order of the Hon'ble High Court of Delhi, dated 28.04.1999, the Central Board is carrying out inspection and monitoring of MSW management in NCT-Delhi. During the year 2001, three rounds of inspection were carried out and reports submitted to the Hon'ble Court. Salient recommendations made in these reports are:

Ø A Master Plan for Improvement of MSW Management in accordance with the guidelines prescribed in the Municipal Solid Waste (Management & Handling) Rules, 2000, should be prepared; and,

Ø The Master Plan has to take into account all the aspects of MSW management including primary collection, storage, transfer, transport and disposal, as recommended by the Central Board in their inspection reports. Implementation of the Master Plan should be carried out in a phased manner with time targets. Measurable indicators to evaluate the improvements achieved by the civic authorities should be identified.

Study on Compost Quality and its Application in Agriculture

The organic matter which is a source of humus and plant nutrients, is comparatively less in cultivated soils in tropics. Therefore, soil humus has to be replenished through periodic addition of organic manure in the fields. The organic manure prepared from municipal waste not only provides the plant nutrients and humic materials but also result in hygienic disposal of the organic wastes.

The study covered the analysis of compost made up of municipal solid waste and the sewage sludge for their manure potential and toxicity due to heavy metals and pathogens, as well as their safe and economic application on agricultural land. The analysis of municipal waste compost has shown 1.26%N, 0.6%P and 0.29% K, and C/N ratio as 19.3 to 1. This compost was applied to supplement the inorganic nutrient requirement of maize crop and to replenish the organic matter content in cropped soils. Among 8 treatments each in three replicates on 5840 m 2 land at IARI, New Delhi, the treatment with 90 kg urea and 30 kg municipal waste compost/sewage sludge were found to be better in terms of yield. The harvest index was calculated as 45.63 and 45.03 from compost and sludge treated fields respectively in best found treatment with 90 kg urea and 30 kg municipal waste compost/sewage sludge. Similar experiments have also been conducted with wheat and pea as Rabi crops.

Assessment of Existing Municipal Solid Waste Dump Sites

The study on the assessment of existing municipal solid waste dumpsites started with the aim to establish the impact on water and air pollution due to municipal waste dumpsites located at Autonagar and Golconda in Hyderabad city.

Autonagar MSW Dumpsite is spread over an area of about 47 acres and receives an average of 800 MT garbage per day. About 8.7 lakh m 3 MSW has been dumped at this dumpsite, which weighs ~4.35 lakh tonnes. This dumpsite is in existence for more than 20 years.

Golconda MSW Dumpsite is spread over an area of about 36 acres and receives an average of about 340 MT/day of garbage. An approximate calculation shows that 6.67 lakh cubic metre MSW has been dumped at Golconda dumpsite, which weighs 3.3 lakh tonnes. This dumpsite is in existence for more than 40 years. The study reveals that:

§ Over a period of time, many residential colonies have come up in close vicinity to the dumpsite. The residents of these colonies face the problem of odour and suspended particulate matter due to dumpsite;

§ There are about 200 trucks/day/dumpsite for transportation of MSW;

§ The groundwater quality in surrounding area is deteriorating due to unscientific dumping on open land without any liner material to prevent leachates;

§ Around 30% of leachate infiltrates into groundwater regime below the dumpsite. The groundwater sample analysis and the leachate chemistry indicate seepage of leachate into groundwater;

§ Electrical conductivity, total dissolved solids, nitrates and hardness values of groundwater samples in the downstrean area of dumpsites are higher compared to upstream areas, indicating possible contamination due to leachate from the dumpsite; and,

§ Other sources like human and animal wastes, agricultural activities and polluted stretch of Musi river may also be contributing to the higher concentration of nitrate in the downstream of dumpsite.

Assessment of Impacts of Completed and Existing Landfill Site

Bangalore

Open dumping practice is commonly adopted for disposal of solid waste, which causes deterioration of environmental quality. To improve the status of solid waste management in the cities, CPCB with the assistance of NEERI, Nagpur, has undertaken study for development of criteria for selection of site for sanitary landfill with the following objectives:

· Development of criteria for selection of site for sanitary landfill compatible with Indian conditions;

· Application of criteria to a typical Indian city like Bangalore in the following manner;

· Macro-level study of waste management system in Bangalore so as to identify the land requirement for disposal of the solid waste generated in the city; and,

· Identification of appropriate landfill site from the available alternate candidate sites in and around the city.

Methodology for site selection is being developed and validity of selection criteria is being tested for Bangalore city. At present, there are no specific disposal sites in Bangalore city and waste is disposed haphazardly along the road-sides and other places. Initially, the prevailing system of solid waste management in Bangalore is studied and the landfill requirement for the next 10 years is esimated on the basis of waste generation, its composition and present and proposed processing methods. It is estimated that the total quantity of waste generated in Bangalore is 1896 MT/day and the land requirement for disposal for next 10 years is 295.62 hectares.

Bangalore Mahanagar Palike has identified 4 landfill sites - Kannahalli, Medhiagrahara, Gidennhalli and Seegehalli - for landfilling. Studies on various aspects like environmental parameter, hydrological status, soil characteristics, etc. have been conducted for these sites. The validity of the criteria will be tested and modified, for its adoption for other Indian cities.

Kanpur

CPCB has undertaken a study on Assessment of Impact of the Existing and completed Municipal Landfill Sites at Kanpur, with assistance from National Productivity Council. The objective is to assess the impact of landfills on the surroundings and to prepare an Environmental Management Plan (EMP) for these landfill sites. Major findings of the study carried out so far are as follow:

Ø The expected period of the operation of the landfills is 10-15 years;

Ø The organic content in the municipal solid waste is about 30-35%;

Ø All the landfill sites are surrounded by inhabited areas/villages and agricultural fields;

Ø At the active sites (Krishna Nagar and Panki), moderate to high levels of dusts and gases were found in ambient

air due to various landfilling activities, lighting of fire by ragpickers and also automobiles;

Ø Groundwater analysis around the site does not show any significant contamination. COD is in the range of 20-50 mg/litre and TDS is in the range of 300-2000 mg/litre;

Ø Major surface water bodies are away from landfill sites, therefore chances of their contamination is remote; and,

Ø Presence of methane in ambient air has been observed. Further studies are going on to determine the exact concentration level and flux.

NOISE POLLUTION

Fire Crackers

Noise Compliance testing of noise standards for fire crackers was carried out in association with the National Physical Laboratory, New Delhi. The test indicates that 87% of the results exceed the prescribed standards. CPCB directed the Department of Explosives to take steps to stop manufacture/sale of fire crackers exceeding the prescribed standards.

Noise Standards

- Revision of noise standards for stationary diesel generator sets was taken up. The revised norm recommends provision for acoustic enclosure at the manufacturing stage.
- Compliance procedure for noise standards for petrol/kerosene gensets, was prepared.

Noise Monitoring

- Noise monitoring was carried out around Netaji Subhash Chandra Bose International Airport, Kolkata, to assess the level of noise due to aircrafts.
- Noise monitoring around Indira Gandhi International Airport, New Delhi, was also initiated. These studies are aimed at framing policies for controlling the noise from airports.

BIO-MEDICAL WASTE MANAGEMENT

- CPCB is executing a project on Strengthening Hospital Waste Management Programme, with the financial assistance from the World Health Organisation.
- Based on information available with CPCB, a list of some defaulter hospitals in the country was prepared and the respective SPCBs/PCCs were asked to take necessary action.
- The status of Common Waste Treatment Facility for bio-medical waste and implementation of the bio-medical waste Rules in the country has been prepared.
- Based on the experience of the working of incinerators in the country, CPCB advised all SPCBs/PCCs to restrict the installation of incinerators by the individual healthcare facilities and to encourage installation of incinerators at common treatment facility equipped with adequate pollution control device.
- To check the performance of incinerators, CPCB carried out stack emission monitoring of incinerators installed at Batra Hospital, St. Stephen's Hospital, Moolchand Hospital and Dr. R.M.L. Hospital in Delhi.
- CPCB received three technologies for consideration and approval. Out of three technologies, LOGMED technology is under consideration.
- An indexing system was developed to quantify the compliance scenario at Bangalore city after in-depth study of bio-medical waste management in 9 hospitals at Bangalore.

COASTAL POLLUTION

Pollution Potential from Fishing Harbour

India's coastline is dotted with 6 major and 27 minor fishing harbours and 2271 fish landing centres. The harbour related activities have an impact to a certain extent on the quality of coastal waters and its environment. The Central Pollution Control Board has undertaken a study on the pollution related problems in the Veraval fishing harbour area. The preliminary survey indicates that this harbour was originally designed for 800 fishing vassels to operate. However, without further expansion, more than 3000 fishing vessels of different kinds are operating here at present. The domestic wastewater generated from Veraval town and effluents from fish processing units of nearby GIDC also finds its way into the harbour area. The industries Association of Veraval has recently undertaken the work of the construction of a CETP with designed treatment capacity of 5.0 MLD. Deatiled study is under progress.

Oil Pollution and the Marine Environment

Indian coastal waters are located at a vulnerable position to oil pollution, since 45% of the world's oil transport originates from Middle East countries and passes through India's Exclusive Economic Zone (EEZ). On an average, 40 super tankers pass through Indian coastal waters daily. In addition, Indian Ports and Harbours handle about 3810 tankers carrying about 84 million tonnes of petroleum/oil/lubricants every year. It is necessary to assess coastal areas with respect to oil pollution and our capability to combat the oil pollution. To evaluate the situation, relevant data/information have been collected from different government agencies and compiled as a Report on Oil Pollution and the Marine Environment.

HAZARDOUS WASTE MANAGEMENT

- Technical assistance was provided for setting up of common facility for treatment, storage and disposal of hazardous waste to the State Pollution Control Boards of Maharastra, Andhra Pradesh and Karnataka.
- According to the Schedule II & III of Hazardous Waste (Management & Handling) Rules 2000, the hazardous wastes are classified based on waste substance with concentration limits and waste characteristics. For the purpose of analysis and characterisation of hazardous waste, CPCB has prepared a manual on "Analysis and Characterisation of Hazardous waste" in collaboration with EPTRI, Hyderabad.
- CPCB has completed the study on Identification of Hazardous Waste Streams in Petrochemicals and Pesticides Sectors. The product-wise waste streams were identified and characterised for the purpose of classification of waste streams and suitable disposal options.
- Most of the hazardous wastes generated from the industries are required to be disposed in a secure landfill facilities so as to avoid groundwater contamination due to leachate. CPCB has completed a project on "Development of Standards for Leachate from Hazardous Waste Disposal Facilities" to provide detailed guidelines for collection of leachate, its treatment & environmentally safe disposal of leachate.
- The study reports on "Inventorisation and management of Hazardous Waste Generation" in the States of West Bengal and Tamilnadu have been completed based on Hazardous Waste Management Rules, 1989 while the inventory is completed for the State of Orissa based on amended Rules, 2000.

Hazardous Units in National Capital Region of Delhi

CPCB has taken up a project for safety audit of 16 identified major hazardous units in National Capital Region - Delhi, which includes water treatment plants involved in chlorine storage & handling, sewage treatment plants generating biogas, storage of motor spirits, liquefied gas & diesel and aviation turbine fuel. The objectives of the this study are:

i) to examine the potential hazard from each unit;
ii) to address various failure case scenarios;
iii) to evolve guidelines for disaster management plan; and
iv) to develop inspection procedure/regulatory approach.

All the identified units have been inspected for safety compliance and a rating system has been evolved considering their design, process, operation and maintenance, plant practices, fire prevention and fire fighting facilities. Recommendations for each unit have been drawn which are required to be implemented to ensure safety compliance.

Units	Rating	
Total Points	**Rank**	
BPCL Airport	84.5	1
BPCL Bijwasan	76.0	2
HPCL Shakurbasti	75.0	3
BPCL Shakurbasti	74.5	4
IOCL Madanpur Khadar	71.0	5
IOCL Bijwasan	70.0	6
IOCL Shakurbasti	69.0	7
IOCL Tikrikalan	68.5	8
Indraprastha GTPS	60.0	9
Badarpur TPS	51.0	10
Rithala STP	46.0	11
Wazirabad Water Works	44.8	12
Chandrawal Water Works	42.0	13
Haiderpur Water Works	38.3	14

Bhagirathi Water Works	38.0	15
Okhla STP	34.0	16

POLLUTION CONTROL IMPLEMENTATION

Highly Polluting Industries

The implementation of the action plan for pollution control in 1551 (which came into operation on or before December 31, 1991) medium and large scale units identified under the 17 highly polluting industrial sectors was continued. The follow-up of the action taken against the defaulting industries under Section 5 of the E (P) Act, 1986 was further intensified and as a result the number of defaulting industries has reduced from 67 in March 2000 to 25 in September 2001. The number of closed industries has increased from 164 to 177 and number of industries having requisite pollution control facilities increased from 1320 to 1349. The category-wise status of 1551 industries as on September 30, 2001 is presented ahead. The 25 defaulters mainly include thermal power plants of State Electricity Boards.

Industrial Pollution Control along the river Ganga (GAP Phase-I)

The follow-up programmes in respect of the 68 industries identified under Ganga Action Plan (GAP) Phase-I were initiated by CPCB soon after the introduction of GAP in 1985. The industrial pollution control programme further intensified with the launching of the Central Action Plan in August, 1997, for control of industrial discharges along the rivers and lakes in the country. This programme resulted in identification of 119 more industries along the river Ganga which required priority attention for the control of their effluent discharges. The pollution control status of these industries as on September 30, 2001 is presented below.

Category-wise Summary Status of Pollution Control In 17 Categories Of Industries

S.No.	Category	Total No. of Units	Status (No. of Units)		
			Closed	C#	Defaulters ##
01.	ALUMINIUM	07	01	06	00
02.	CAUSTIC SODA	25	00	25	00
03.	CEMENT	116	08	108	00
04.	COPPER	02	00	02	00
05.	DISTILLERY	177	33	142	02
06.	DYES & DYE INTERMEDIATE	64	08	56	00
07.	FERTILIZER	110	12	97	01
08.	IRON & STEEL	08	00	04	04
09.	LEATHER	70	11	59	00
10.	PESTICIDE	71	07	64	00
11.	PETROCHEMICAL	49	00	49	00
12.	PHARMACEUTICAL	251	26	225	00
13.	PULP & PAPER	96	20	76	00
14.	REFINERY	12	00	12	00
15.	SUGAR	392	48	341	03
16.	THERMAL POWER PLANT	97	03	79	15
17.	ZINC	04	00	04	00
TOTAL		**1551**	**177**	**1349**	**25**

Having adequate facilities to comply with the standards
Not having adequate facilities to comply with the standards

Summary Status of the 68 Industries Identified Under the Ganga Action Plan (Phase-I)

S. No.	Status	Number of Industries	Total
Uttar	Bihar	West Bengal	

Pradesh					
1.	Effluent Treatment Plant Installed	19	04	20	43
2.	Industries Closed	15	01	09	25
Total		**34**	**05**	**29**	**68**

Overall Progress of the Industries Along the River Ganga

S. No.	State	Total Units	No. of Units which have installed ETP	No. of Units Closed	No. of Units Defaulting
1.	Uttar Pradesh	83	59	24	00
2.	Bihar	03	03	00	00
3.	West Bengal	33	30	03	00
Total		**119**	**92**	**27**	**00**

Industrial Pollution Control along the Rivers and Lakes

851 defaulting grossly polluting industries located along the rivers and lakes in the country have been identified for priority actions under this programme which was started in August 1997. The follow-ups for the implementation of the programme, was intensified and this has resulted into reduction in the number of defaulting industries from 93 in March, 2000 to 5 in September, 2001. The Statewise status of the 851 industries as on September 30, 2001 is presented below.

Summary Status of Pollution Control In Grossly Polluting Industries Discharging Their Effluents Into Rivers And Lakes

(As on September 30, 2001)

S. No.	Name of the State/UT	No. of defaulters as in August '97	No. of Industries Closed	No. of Industries which have provided requisite treatment/disposal facilities after issuance of directions	No. of defaulters
1.	Andhra Pradesh	60	18	42	00
2.	Arunachal Pradesh	00	00	00	00
3.	Assam	07	06	01	00
4.	Bihar	14	04	10	00
5.	Goa	00	00	00	00
6.	Gujarat	17	03	14	00
7.	Haryana	21	09	12	00
8.	Himachal Pradesh	00	00	00	00
9.	Jammu & Kashmir	00	00	00	00
10.	Karnataka	20	02	18	00
11.	Kerala	36	04	32	00
12.	Madhya Pradesh	02	01	00	01
13.	Maharashtra	06	03	03	00
14.	Manipur	00	00	00	00
15.	Meghalaya	00	00	00	00
16.	Mizoram	00	00	00	00
17.	Nagaland	00	00	00	00
18.	Orissa	09	03	04	02
19.	Pondicherry	04	00	04	00
20.	Punjab	18	01	16	01
21.	Rajasthan	00	00	00	00
22.	Sikkim	00	00	00	00
23.	Tamil Nadu	366	118	248	00
24.	Tripura	00	00	00	00
25.	UT-Andaman & Nicobar	00	00	00	00
26.	UT-Chandigarh	00	00	00	00

27.	UT-Daman & Diu, Dadra & Nagar Haveli	00	00	00	00
28.	Delhi	*CSP	-	-	-
29.	UT-Lakshadeep	00	00	00	00
30.	Uttar Pradesh	241	59	181	01
31.	West Bengal	30	07	23	00
Total		**851**	**238**	**608**	**05**

* CSP: Covered under the separate plan involving shifting, relocation etc. of the units as per the orders of Hon'ble Supreme Court.

State of the Environment : Chembur

A time targeted action plan was prepared for implementation to reduce the air pollution problems in the area. Detailed survey was conducted in Chembur to assess the present status of environment.

Highly contaminated effluents with oil and grease arise from condenser cooling of the oil refineries was joining the creek. The concentration of total dissolved solids in almost all the industrial effluent was quite high. Out of the nine large/medium scale industries located in the area, seven were found exceeding the stipulated standards with respect to one or the other parameters.

The results of the noise monitoring show that ambient noise levels are much more than the prescribed standards. The hydrocarbon odour near the boundary walls of the refineries were prominent, but not at far distance. The traffic density in the area is high and vehicular movement on badly maintained roads of Chembur area is contributing additional pollution load other than the industrial units.

Alternate Technologies in Vinyl Sulphone Industry

Vinyl sulphone, which is one of the largely used dye intermediate with export potential, is generally marketed as the sulphate ester and has the chemical formula H 2 N-C 6 H 4 -SO 2 -CH 2 -CH 2 -O-SO 3 -H. The molecular weight of the vinyl sulphone is 281 and nomenclature is 2-4-(amino phenyl)-sulphonyl ethanol hydrogen sulphate. A study was undertaken to establish alternative technologies which are less polluting in nature.

Vinyl sulphone manufacturers cannot continue with conventional manufacturing process and only primary effluent treatment. Incinerating the effluents is very

costly. If the process is modified, the liquid effluent can be sent to CETP provided it can tolerate high TDS. Otherwise, effluent can be treated in solar evaporation plant. It can also be spray dried in case land is not available. The modified process results in conservation of raw materials and recovery of by-products.

Zero Discharge in a Bulk Drug Industry

CPCB has successfully demonstrated waste management scheme, within the domain of best practicable technological means for complex waste in M/S Morepen Laboratories Limited, Himachal Pradesh. This exercise is an exemplary case for scientific approach to attain zero discharge in a typical medium scale bulk-drug industry, having maximum complexity in respect of waste management. The industry is involved in making of fine chemicals by employing several reactors to carry out number of unit operations to get desired final product. The quantity of waste emanated is of major concern in comparison to its quantum. In order to tackle this waste, it was suggested to have a three tier mechanism, incineration for all concentrated/ toxic wastes, forced evaporation for separation of salts and effluent treatment plant for treatment of bio-degradable wastewaters. Accordingly, the industry segregated the streams with respect to the treatment and installed water meters to account for the same. A new incinerator has been installed with all the accessories and tertiary treatment has been provided for wastewaters. This entire set-up is considered to be capable enough to handle the kind of wastewaters and emissions arising from the industry.

Assessment of Pollution Potential from Ship breaking activities

CPCB conducted an assessment study regarding pollution potential from ship breaking activities through MECON, Ranchi. Two ship breaking sites viz. Alang (Gujarat) and Kolkata (West Bengal) were selected for indepth study. This study included water quality monitoring of sea, sediment quality, biological characteristics, ambient air quality and work zone air quality of ship breaking yard.

Emission Standards for Diesel Generators

Emission standards for diesel generator sets upto 800 KW have been finalised. While the study on development of emission standards for liquid fuel based power plants/large gensets (>1000 KVA) has also been completed and the emission standards are under finalisation.

INDUSTRIAL POLLUTION

Pollution Control Status of Secondary Lead Smelters

Many secondary lead smelting units are operating in the country to recover and re-use lead from waste scrap. However, the process of secondary lead smelting itself generates lead bearing solid waste from which further lead recovery is not economical. It also generates lead-bearing emissions. Kolkata is one of the oldest and major manufacturing centres of unorganised automobile battery. Lead from lead plates in battery manufacturing units was sourced mainly from secondary lead smelting units located in various clusters in and around Kolkata. The study was aimed to ascertain the present pollution potential of these units. The major findings of the study are:

Ø All the units have installed adequate emission control facilities;

Ø The pollution control equipments are also economical, as further recovery of lead is possible from the dust arrested in these equipments; and,

Ø Most of the units are able to meet the standards as prescribed by the West Bengal Pollution Control Board.

Non-recyclable slag is the solid waste from secondary lead smelters. This waste is hazardous in nature and poses major problem due to non-availability of safe and notified hazardous waste disposal site. Presently, all the industries are collecting these wastes in a secure dump yard within their premises, from where the possibility of mishandling and disposing of solid waste to low lying area is very high.

Performance Study of Coke Oven By-product Plant

In an integrated steel industry, wastewater generated from Coke Oven By-product Plant (COBP) is a major polluting stream containing toxic chemicals like phenol, cyanide and ammonia. In recent times, COBP effluent is treated by biochemical oxidation of cyanide, ammonia and phenol at separate effluent treatment plants, commonly known as bio-chemical oxidation & dephenolisation plants (BOD plants). The treated effluent from BOD plant is recycled for use in quenching hot coke in coke-ovens. However, excess treated water has to be discharged into common outlet drain of steel plant. Almost all the integrated iron and steel units have installed BOD plants. Wastewater reduction in COBP involves reduction of pollution load in process wastewater and proper operation of BOD plant. Detailed study was conducted to evaluate the performance of BOD plants based on proper design, inlet concentration, type of treatment units, operation and maintenance and trained manpower.

Pollution control in Coal Based Thermal Power Plants

There are 81 coal based thermal power plants comprising total installed capacity of 60263.5 MW. Thermal Power plants are mainly responsible for air and water pollution besides problems related to solid waste (flyash) management. Out of 81 thermal power plants in the country, 42 plants comply with emission standards, 3 plants are closed and remaining 36 plants are in the process of installation/augmentation of pollution control systems. As regards water pollution prevention measures, 49 plants comply with ash pond effluent standards, 3 plants are closed and 36 plants are in the process of installation/augmentation of ash ponds. The main factors affecting the performance of Electrostatic Precipitators are:

· Low design efficiency of pollution control equipments installed in various thermal power plants;

· Inefficient operation;

· High ash content in supplied coal; and,

· High resistivity of fly ash

Constitution of National Task Force

A National Task Force has been constituted to assess the progress made in the implementation of the environmental standards and Rules, use of beneficiated coal and utilization of fly ash.

Use of Beneficiated Coal

Presently, beneficiated/blended coal is being supplied to Dadri (U.P.), and Badarpur (Delhi) Power Plants of National Thermal Power Corporation (NTPC), Dahanu (Maharashtra), of Bombay Suburban Electricity Supply (BSES) and Rajghat & Indraprastha (Delhi) Power Plants of Delhi Vidyut Board (DVB). However, other 26 plants have not yet indicated their plan for meeting the requirement of use of beneficiated coal. The implementation of provisions made under the above gazette notifications would be helpful in mitigating the problems of air pollution and management and handling of flyash disposal in environmentally acceptable manner in thermal power plants.

Utilization of flyash

Sixteen percent of total flyash generation (80 million tonnes) in the country is utilised mainly for manufacturing cement, bricks and construction of roads and embankments. However, in advanced countries like Germany, China, USA, European Union and Japan, the extent of utilisation of flyash is 100%, 42%, 65%, 80% and 85 % respectively.

The State Pollution Control Boards were required to identify the brick kilns located within 50 km radius of power plants and modify the consent conditions as per the directives. Though, Orissa and Gujarat Pollution Control Boards have identified the brick kilns but the status of flyash utilisation by these kilns is not yet available. Out of 81 thermal power plants, 46 power plants have submitted their action plan to achieve hundred percent flyash utilization within the stipulated time period.

Review of stack height regulations

A study on stack height regulation : "A state of art review through computer simulations and development of spacially meaningful regulations" was conducted by IIT Kanpur under a project sponsored by CPCB. The report includes basis for revision of stack height regulations, methodology for determination of minimum stack height and proposed stack height regulations for different zones of the country. The new stack height regulations will be finalized by a Working Group constituted by CPCB.

Assessment of requirement of Bag filter vis-a-vis ESP in Thermal Power Plants

A study has been undertaken with the following objectives:

· Evaluation of performance of ESPs in selected units of different capacities;

· Identification of reasons for poor performance of ESPs;

· Assessment of techno-economic feasiblity for installation of bag filter;

· Cost benefit analysis of ESPs vs. Bag filter in different unit sizes to comply with environmental standards for following scenarios;

· Retrofitting of Existing ESPs;

· Bag filter as a replacement of existing ESPs; and,

· Techno-economic feasibility for the installation of bag filters in new thermal power plants.

Alternate flysah disposal technologies

Through IIT Delhi, a project has been taken up to study the following:

Ø Evaluation of existing conventional practices of coal ash disposal based on dilute slurry disposal taking into consideration the water and energy requirements per tonne of flyash disposal. Since the distance of the ash pond

from the plant would vary from one location to another, typical cases would in terms of conveying distance would be considered. This would also include the cost of the installation of the systems;

Ø Evaluation of alternative ash disposal systems such as: disposal of ash in dry form as mound and disposal of ash into the ash pond in the form of high concentration slurry;

Ø Comparison of dilute slurry system with alternate ash disposal system. This would include the cost factors relevant in each case and any other facts that need to be considered;

Ø Cost related to operation, maintenance and environmental aspects of ash ponds/ash mounds for various disposal systems; and,

Ø Combination of slurry disposal alternatives.

CETP for Sago Industries

Sago industries in Tamilnadu (around 1000 units) are based on tapioca roots and mostly under small scale industries (SSI) sector. The treatment plants set up by individual units are not being properly operated. It is therefore proposed to set up a CETP for the sago industries located along Thirumanimuttar river. The wastewater from sago industries located along Thirumanimuttar riverbanks will be collected and treated at the CETP. Tamil Nadu Pollution Control Board has been requested to carry out the inventory of starch and sago industries in Salem town.

Common Chrome Recovery Plant

In Jajmau area of Kanpur, more than 300 tanneries of varying capacity are in operation. Many of the large and medium tanneries have installed the chromium recovery plant at the individual level. For small tanneries, CPCB has taken up a project to recommend cost-effective possibilities for installation of common chrome recovery plant.

Inventory and Pollution Control Measures in Lime Kiln Units

In order to prepare an inventory of lime kiln units, all the SPCBs/Uts were requested to provide the updated list of lime kiln units operating in their States/UTs as well as the information regarding implementation of pollution control measures taken up by these units. The information is required to finalise inventory of lime kiln units being operated all over the country and to assess the magnitude of pollution load generated from these units.

Pollution Control In Small Scale Industries

The small scale industries (SSI) covering a wide spectrum of industries in small, tiny and cottage sector account for 40% of total industrial production in the country, 35% of total exports, manufactures more than 7,500 products and employ about 16.7 million person. However, unplanned, uncontrolled and haphazard growth of these industries have resulted in aggravating pollution problems. CPCB has undertaken an exercise to estimate the pollution load from industrial sources and to assess the status of pollution control in various sectors of small scale industries.

Human Risk Assessment in Asbestos Industries

Asbestos is a proven carcinogen and its exposure is associated with the development of lung cancer and mesothelioma. CPCB initiated human risk assessment studies in asbestos industries in collaboration with the Industrial Toxicology Research Centre, Lucknow. The study includes environmental monitoring of asbestos based industries, detailed medical examinations of industrial

workers, geno-toxicological evaluation of asbestos exposed population and recommendations for preventive measures in industrial units. The study at two asbestos plants has been completed.

Oil Drilling Units

Preliminary survey and inventorization of the oil-drilling units has been carried out in Upper Assam. The oilfields of Upper Assam, owned by Oil India Limited and Oil & Natural Gas Commission Limited, were visited to study the pollution aspects and also groundwater quality monitoring was conducted in the surroundings of injection wells.

DEVELOPMENT OF STANDARDS

Under the World Bank funded Environmental Management Capacity Building Technical Assistance Project (EMCBTA) the Central Pollution Control Board (CPCB) has been allocated fund of US $ 1.00 million by the Ministry of Environment & Forests for the sub-component: "Development of Standards". The projects have been identified under the Sub-component for execution in phases till March, 2003.

In order to focus the efforts to micro-level and address the issues for effective environmental pollution control, CPCB has classified the organic chemicals processing/manufacturing industry into various segments, and policies/standards are developed industry-sector wise, which are recognised as industry specific standards.

Emission Standards for Pesticides Manufacturing Industry

Pesticides industry being critical in terms of raw material usage and final products/by-products, requires special attention. It is well established that the process of development of industry-specific-standards considers techno-economic feasibility as the criteria. The criteria demands the review of technologies for control of pollutants emanating from the industries and cost implications due to such pollution control equipment and bearing on health & environment. Therefore, looking at the complexity, local environmental consultant was engaged to provide basic information/data. The findings of the study conducted indigenously was reviewed by international consultant to suggest the best practices being followed in advanced countries, and options for improvement in terms of technologies (*best available & best practicable*) suitable to Indian pesticides industries. CPCB officials along with foreign consultant visited various pesticides industries and conducted workshop to share the experience in control of pollution in pesticides industry. The exercise will yield the national emission standards for pesticides manufacturing industries.

Emission Standards for Petrochemical Industries

Petrochemical plants involve cracking of different feedstock to separate various petrochemicals. These petrochemicals are further reformed to get desired end-use products. As a number of petrochemicals are being produced in India in varying capacities, the emissions arising from the processes are also varying in characteristics and in general the process-vents are either let-out or subjected to flaring or incineration depending upon the pressure. Besides these process-vents, considerable amount of emissions escape the system in the form of fugitive emissions. The process equipment can be modified to restrict the fugitive emissions and the process-vents can be collected to box-flaring/incineration. The project involves a review of process technologies, equipment besides conventional approach of providing End of the pipe pollution control equipment, their efficiencies, monitoring *etc* . Environmental consultants have been engaged for assessing the status of indigenous petrochemical plants and to explore the options for equipment modifications, control of emissions etc. and retrofitting of developed criteria. The exercise will facilitate development of national emission standards for petrochemical plants.

Standards for Total Dissolved Solids in Industrial Effluents

Detailed studies have been conducted by engaging the National Chemical Laboratory (NCL), Pune, to identify i) sources of TDS in industrial effluents; ii) alternative options to eliminate/minimise TDS in effluent; and iii) techno-economic feasibility of the available control technologies for small to medium-scale industries.

To accomplish the task, selected industries in each sector *viz* . pesticides, bulk-drugs, tanneries and dye & dye intermediate, have been studied by CPCB & NCL teams. It is noticed during the industrial visits that TDS is a critical problem, which demands not only feasible control system but also process modifications to avoid or reduce the generation of TDS.

Prescribing Location Specific Standards

CPCB has studied various means of approaches in order to prescribe the location specific stringent standards. The possible approaches are:

· BATNEEC, Best Available Technology not entitling Excessive Costs

· ALARA, As Low as Reasonably Achievable

· BAT, Best Available Technology

CPCB has engaged, EPTRI as a consultant to study the existing practices for prescribing location specific standards.

ENVIRONMENTAL RESEARCH

Recovery of Silver and Mercury from COD Waste

Chemical Oxygen Demand (COD) is an important parameter for determining the pollution potential of domestic and industrial wastewater. During the course of its analysis, silver sulphate is added as catalyst while mercuric sulphate is added to overcome the interference from halides. After analysis, the COD waste containing the compounds of silver and mercury are disposed off. Considering the hazardous nature and cost factor, an effort was made to recover silver as metallic silver and mercury as mercuric iodide.

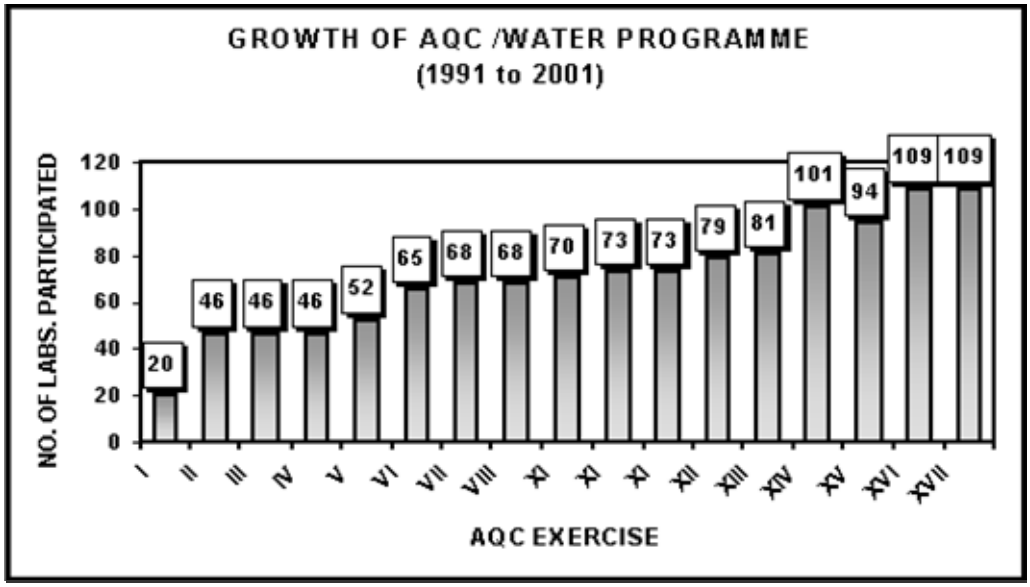
The COD waste was treated with dilute HCl to precipitate silver as silver chloride. The silver chloride was dissolved in dilute ammonia and sodium sulfide was added to precipitate silver as silver sulfide. The silver sulfide was mixed with flux material and ignited to 1200 0 C to separate silver metal and slag material.

The waste after recovery of silver, contains mercury in its compound form. Potassium iodide can precipitate mercury as mercuric iodide. But excess addition of potassium iodide will dissolve the precipitate. Hence, calculated amount of 10% potassium iodide was added to precipitate all mercury as mercuric iodide.

As much as 18 grams of silver were recovered from 15 litres of COD waste. The recovery percent for both silver and mercury was found to be more than 95%.

Analytical Quality Control (AQC/Water) for the Laboratories of Pollution Control Boards/Committees and EPA Recognised Laboratories

Analytical Quality Control (AQC) is one of the main tools by which the performance of a laboratory can be assessed in terms of accuracy and reliability of analytical data generated by the laboratory. The Central Pollution Control Board is monitoring 507 water quality monitoring stations under GEMS, MINARS, GAP and YAP Programmes comprising rivers, lakes, wells, and ground waters spread over 23 states and 5 Union Territories through various State Pollution Control Boards. In order to obtain reliable and accurate analytical data, CPCB had started regular and organized Analytical Quality Control (AQC) exercise for laboratories of SPCD/PCC, E.P. Act recognized laboratories Under this project, 8 th rounds of AQC exercises covering 21 physico-chemical parameters were carried out for 109 laboratories during 2001. The year wise growth in terms of number of participating laboratories under the scheme is presented In Figure below.



The overall performance of the laboratories was assessed with respect to following parameters. Ammonical Nitrogen, Chloride, Chromium, Calcium, Boron, Total Hardness, Potassium, Total Dissolved solids, Conductivity, Chemical Oxygen Demand, Sodium, Magnesium, Fluoride, Sulphate, Total Kjeldahl Nitrogen, Nitrate-N, Biochemical Oxygen Demand, Fixed Dissolved solids, Total Suspended Solids, Phosphate-P, pH .

Development, Standardization and Preparation of AQC Samples for Total Coliform and Faecal Coliform for Conducting AQC Exercises

CPCB is conducting AQC exercises covering various physico-chemical parameters. In the AQC exercises, bacterial parameters like Total Coliform and Faecal Coliform are not yet included because of constraints in preparation of bacterial AQC samples and their preservation and despatch under ice-cold condition. To overcome these problems it was decided to prepare lyophilized bacterial samples in solid form like the one developed for BODSEED in collaboration with the Centre for Biochemical Technology(CBT), CSIR, Delhi. The main objectives of the proposed project are:

Ø To introduce the bacteriological parameters like Total Coliform and Faecal Coliform in AQC scheme;

Ø To improve the analytical efficiency of concerned laboratories with reference to bacteriological parameters; and,

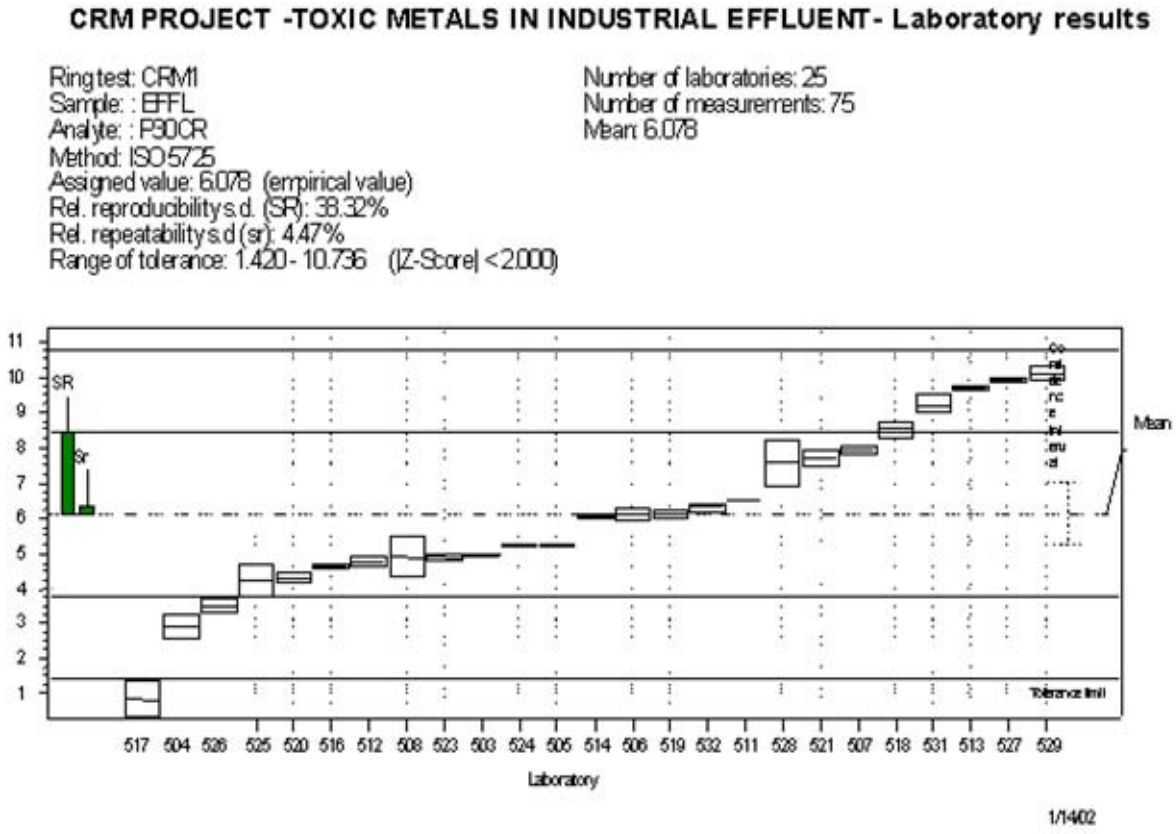
Ø To get accurate and reliable data on total coliform and Faecal coliform.

The microbial samples developed were tested in CPCB laboratory to assess the precision and accuracy of the test results. It is planned to introduce Bacterial samples in AQC Inter-laboratory Proficiency Testing (PT) programme in the forthcoming exercises.

Development of Certified Reference Material (CRM) of Toxic Metals using Industrial Effluents

The need for accurate analytical measurements of metals during environmental monitoring is well recognized and accomplished with use of reference material. Standard Reference Materials (SRM`s) are well characterized materials used to maintain the quality of measurements. The use of Certified Reference Material (CRM) during routine measurement of trace metals is expensive. Therefore, it has become necessary to develop economical and indigenous Certified Reference Material (CRM). CPCB has undertaken a project for preparation of Reference Materials for toxic metals in industrial effluents under sponsorship of the Department of Science & Technology (DST).

The Certified Reference Materials for toxic metals like Chromium Copper and Nickel in Electroplating industrial effluent were selected and the homogeneous samples were distributed to 32 reputed environmental and R&D laboratories in the country for analysis. The analytical data as obtained from 32 laboratories have been compiled, statistically analysed and computed in order to certify its use as reference material. The statistically processed data are graphically presented ahead:



Development and Standardization of Soil and Solid Waste Analysis for Analytical Quality Control (AQC)

A project was taken up to standardize the analysis of soil (polluted) and solid waste with a focus on conducting AQC exercises to the laboratories of SPCB/PCC and also laboratories recognized under E.P Act. In this project, different polluted soil, industrial solid waste, Hazardous wastes and Municipal Solid Waste are to be analysed.

Samples of Municipal Solid Waste (MSW) from New Delhi Municipal Corporation Compost plant were collected, homozinised and analyzed for various physico chemical parameters and standardization of methodology was completed. The analytical procedure will be provided to all the laboratories for developing the analytical facilities. After fulfilling the preliminary requirements, AQC samples of these types of waste will be distributed and Inter laboratory Proficiency testing will be conducted in phased manner. The outcome of the project work will be helpful in development of the facilities for analyzing solid wastes for various laboratories of SPCB/PCCs and to improve the analytical capabilities.

Monitoring of Ground Water Quality around Municipal Solid Waste (MSW) Disposal Sites in Delhi

Delhi is one of the largest Municipal solid Wastes (MSW) generating cities. The quantity of wastes is more than 7000 metric tonnes per day. The wastes are disposed mainly on land at three landfill Sites (LFS), namely Ghazipur (East), Okhla (South) and Bhalswa (North). The wastes include mainly organic materials (60%) obtained from various sources like domestic, vegetable markets, hotels, commercial areas etc. These sites are not provided with any lined materials for avoiding percolation of leachate from the solids and possibility of contamination of groundwater. In order to estimate the levels of groundwater contamination in these localities, a project on the monitoring of ground water quality around solid waste disposal sites in Delhi has been taken up.

Two rounds of groundwater samples numbering 31 in around the three sites have been collected and analyzed for various physico-chemical parameters (23) including heavy metals (9), pesticides (5), and bacteriological parameters (2). One round of Air borne microbial counts (Total Coliforms and Fungi) was also carried out in November, 2001. The outcome of the project work will be helpful for assessing the impact of MSW sites on Ground water quality, air quality, air borne microbial organisms and to formulate strategic plans for selecting MSW land fill sites.

Technology Development of Specific Microbial Packages for Treatment of Paper & Pulp Industrial Wastewater

The efficiency of treatment of industrial wastewater depends upon the composition of chemicals and their reaction with microbial action on the wastes. There are specific groups of bacteria, which act effectively with specific types of waste and degrade the waste in a fast and efficient manner. Keeping this fact in view, a project was taken up in collaboration with the Centre for Biochemical Technology (CSIR), and Delhi with sponsorship from the Department of Biotechnology, New Delhi.

Samples from Paper mill were collected and analyzed and characterization has been made for screening the suitable and efficient bacterial composition. Trial runs were made to find out the degradation rate of the microbial package using the effluent. The outcome of the project work will be helpful in development of special microbial package which will treat the paper & pulp wastes in effective manner in terms of time and pollutants like BOD, Lignin, colour, AOX, TDS etc.

ENVIRONMENTAL PLANNING AND MAPPING

The spatial environmental planning activities has been conceived as a tool for the protection of the environmental resources and for achieving developmental targets in an environmentally sound manner. The nation-wide environmental planning and mapping programme "Zoning Atlas" is being executed by the Central and State Pollution Control Boards and other executing agencies under the World Bank funded 'Environment Management Capacity Building Technical Assistance Project'. The following are significant achievements under the programme:

Zoning Atlas for Siting of Industries

The study on Zoning Atlas for siting of industries taken up District-wise, zones and classifies the environment and presents the pollution receiving potential of various sites/zones in the district and identifies the possible alternate sites for industries, through easy-to-read maps (1:250,000 scale). Work was earlier completed for 60 districts.

The work is in progress for 61 more districts covering eighteen States and one Union territory. These states are J&K, Goa, Andhra Pradesh, Assam, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Tamilnadu, Uttar Pradesh, Himachal Pradesh, Kerala, Karnataka, West Bengal and UT of Pondicherry. "ZASI -ENVIS" (Environmental Information System on Zoning Atlas for Siting of Industries) has been developed which will help in enhancing the scope of existing Zoning Atlases.

Several State Boards including Bihar, Orissa, Himachal Pradesh, Kerala, Uttar Pradesh, Karnataka, Maharashtra, Tripura and Madhya Pradesh has issued internal orders for using the Atlases for site clearances. A review meeting was taken with Chairmen/Member Secretaries of all the participating States Boards to improve usage of the Atlases for decision-making on siting of industries.

Industrial Estate Planning

In continuation of the Zoning Atlas studies, the Industrial Estate Planning studies have been taken up at micro-level (1:50,000 and lower) to identify environmentally acceptable sites for industrial estates, and also to suggest wastewater disposal points and to provide suggestions on control of surrounding land uses.

Study for six sites have been completed, while study for nine sites is under final stage of completion. A manual has been developed for undertaking these studies in other parts of the country.

Mapping of Environmentally Sensitive Zones and Industrial Sites (ESZIS) - State-wise

The activity presents information on environmentally sensitive zones viz. National Parks, Reserve Forests, Protected Forests etc. and industrial sites, state-wise, in the form of maps. The work has been taken up through the National Atlas & Thematic Mapping Organisation, Kolkata. The work has been completed for six States while it is in progress for another six States.

Environmental Management Plans for Urban Areas, Mining Areas, Environmentally Fragile Areas, Tourism Areas

Using the experiences gained from the studies conducted for the Kanpur Urban Area, preparation of environmental management plans has been taken up for Taj Trapezium Zone (Uttar Pradesh), Agra (Uttar Pradesh), Bhubaneshwar (Orissa), Vadodara (Gujarat), Agartala (Tripura), Chennai (Tamil Nadu), Indore (Madhya Pradesh), mining areas in Dhanbad (Jharkhand), Korba (Madhya Pradesh) and Satna (Madhya Pradesh), residential township of Vasai Virar sub-region of Thane district (Maharashtra), tourism area of Bakel Fort (Kerala), river basin of Cauvery and biosphere reserve of Panchmarhi (Madhya Pradesh). These pilot studies will help in developing methodologies for application to more areas in the country. The work for Agra has been completed

"The specific recommendations made in the plan (Environmental Management Plan prepared by CPCB) have been duly accommodated in the final short term and long term development plan of the city by the task force led by Kanpur Development Authority. This has started reflecting in all round development of Kanpur, in a short span of couple of months". Shri Satish Mahana, the Hon'ble Minister of State, Urban Development, Government of Uttar Pradesh

and the work for other cities is in progress.

To give impetus to the environmental improvement programme, a pilot project on Kottayam-Kumarakom Eco-city Project was conceived for achieving significant environmental improvements through comprehensive urban improvement system by public/private partnerships.

Additionally, submission of “Urban Environmental Statement” by the municipalities each year has also been conceived and the discussions with the municipalities are in progress for introduction on voluntary basis. The statement will specify the environmental problems in the municipality (ward-wise) and state the actions already taken in the reporting year and the actions proposed to be taken in coming years.

Environmental Atlas of India

In collaboration with the National Atlas & Thematic Mapping Organisation (NATMO), CPCB has brought out an Environmental Atlas of India has been finalized and published. It is a compilation of various environmentally related information presented in the form of maps and text including statistical data. The information on maps presented in 1:12 million and 1:2 million scales.

Regional Planning

In continuation of the District-wise Zoning Atlas studies, pilot studies on regional planning had been taken up for Jalpaiguri district of West Bengal and for the entire state of Tripura. These studies are targeted for demonstrating the utility of environmental planning tool for achieving overall development of the district/region in a sustainable manner. Both these studies are in advanced stage of completion.

The study on Tripura was presented before the state government officials in the presence of the Hon'ble Chief Minister of Tripura. The study received a favourable response and the results are expected to find an important place in the sustainable development of Tripura.

Capacity Building in the field of spatial environmental planning

A Centre for Spatial Environmental Planning has been set up at CPCB for undertaking various environmental planning and mapping tasks. Construction of new building for housing the Centre for Spatial Environmental Planning, within the premises of CPCB, is contemplated. The preparatory work has already been commenced. Strengthening of staff under the project is in progress at eighteen SPCBs/Executing Agencies.

Shri N. Raghu Babu, Project leader (Zoning Atlas) was awarded Vishisht Vaigyanik Puraskar by the Ministry of Environment & Forests, Government of India, in recognition of his outstanding contributions in the field of environmental planning and management.

 Contant Page 

SOFTWARE DEVELOPMENT FOR e-GOVERNANCE

A project has been initiated for shifting towards e-governance. Various applications of information technology are being developed for effective processing and quick retrieval of information. The development of softwares with modules on public complaints, legal cases, parliament questions and finance and accounts are under progress.

Creation of Environmental Data Bank

Creation of an environmental data bank has been taken up. The data structure for various environmental parameters has been designed considering the requirement and availability of data. Necessary software is being developed for creation of environmental data bank.

Upgradation of Web site

The web site of CPCB is continuously upgraded and updated. The list of recognised environmental laboratories, report of High Powered Committee on hazardous waste management, Taj Mahal court case, Newsletters of CPCB, training programmes under Zoning Atlas Project, daily air quality levels in metropolitan cities, new publications etc. have been added. In order to make it more interactive and rich in information, the web site is also being redesigned.

IMPORTANT LEGAL MATTERS

Ban on the Import of Toxic Wastes

Writ Petition(Civil)No.657/1995 (Research Foundation for Science, Technology & Natural Resource Policy Vs. UOI & Others)

The Writ Petition was filed in public interest in 1995 seeking Hon'ble Court's intervention to impose ban on the import of toxic wastes from the industrialized countries into India.

1. On 12.2.2001, the Hon'ble Court after hearing the matter, passed an order that report of the High Power Committee headed by Prof. M.G.K.Menan has been received. The High Power Committee has been appointed by the Hon'ble Court vide order, dated 13.10.1997 to look into various aspects of hazardous wastes and suggest measures. The Union of India has been directed to file their response thereafter other respondents also file their response.

2. On 12.2.2001, the Hon'ble Court also considered the report relating to the hazardous wastes off loaded at Alang in Gujarat, the said reports have been filed by the Central Pollution Control Board vide its affidavits, dated 29.2.2000 and 10.8.2000 in compliance of Hon'ble Court's order. The Hon'ble Court has directed that since, there is no specific finding by the National Institute of Oceanography, Goa, the Union of India shall file an affidavit indicating whether the material imported is hazardous or not.

Taj Pollution Matter

Writ Petition (Civil) No. 13381/84 (M.C.Mehta Vs UOI & Ors.) –

In compliance of Hon'ble Supreme Court's direction, dated 7.11.2000 regarding installation of four air quality monitoring stations in Agra region. The Central Pollution Control Board submitted before the Hon'ble Supreme Court, a detailed proposal for setting up of the ambient air quality monitoring stations in Agra. According to the direction of the Hon'ble Court, the four air quality monitoring stations are to be run continuously for one year, all the seven days in a week by CPCB.

The Hon'ble court has considered the proposal of CPCB and accepted the recommendations of the Mahajan Committee on 4.5.2001 and directed that the full cost of Rs.1,20,50,000/- towards the hardware for monitoring stations and hardware for Central Laboratory would be provided by the Mission Management Board and with regard to the remaining amount of operational cost of Rs. 49.45 lacs would be made available by the Central Government to the Central Pollution Control Board within four weeks from the date of this order. The Hon'ble Court further directed that CPCB shall use these funds for the purpose for which they are provided as stated in their proposal. The Central Board is in the process of establishing these four air quality monitoring stations in Agra region.

Ganga Pollution Matter

Writ Petition (Civil) No. 3727/1985 (M.C.Mehta Vs UOI & Ors.) –

The Central Pollution Control Board has filed an Interlocutory Application (IA) before the Hon'ble Supreme Court seeking directions from the Hon'ble Court in respect of the municipalities/Nagarpalikes/local bodies located in the State of Uttar Pradesh, Uttaranchal and Bihar to maintain sewage treatment plant/ sewerage systems, pumping stations, crematoria, low cost toilets or any other assets or infrastructure created under the Ganga Action Plan (GAP). The Hon'ble Court on 28.3.2001 after consideration of the replies of the States of Uttar Pradesh, Bihar and West Bengal directed that it is appropriate that the Central Pollution Control Board jointly with the respective State Pollution Control Boards, examine and inspect the functions of the aforesaid assets/infrastructure created under the Ganga Action Plan in the State of Bihar, West Bengal, Uttar Pradesh and Uttaranchal and submit a comprehensive report indicating to what extent the orders of this court have been complied with by the respective authorities. The Hon'ble court has further directed that each of the State shall deposit a sum of Rs.1.5 lacs each to

meet the expenses of the inspection. The Central Board after carrying out in-depth inspection in each of the State, jointly with the concerned State Pollution Control Board, has submitted its report before the Hon'ble Court. The Hon'ble Court has accepted the report and directed the concerned State Governments to submit their comments on the said report.

Pollution By Industries In NCT- Delhi

Writ Petition (Civil) No. 4677/85 (M.C.Mehta Vs UOI & Ors.) –

Special Leave Petitions were filed by the Delhi Pollution Control Committee (DPCC) against the order of the High Court of Delhi passed on 1.11.1999. The DPCC earlier identified these industries as 'H' Category under the Master Plan of Delhi-2001. These industries are manufacturing plasticizers Di-butyl Phthalate (DBP) by using chemical (N-Butyl alchohal and Pthalic anhydride) as raw material. Against the categorization, these industries got stay orders from the High Court of Delhi. On 13.12.2000, the Hon'ble Court after consideration of the joint inspection report of the Central Pollution Control Board and the DPCC, vacated the stay granted by the Delhi High Court and directed that the manufacturing activities of both the industries shall be closed within ten days from the date of the order. The Hon'ble Court with the above mentioned directions finally disposed off the matter.

Generator Sets Case

The United Communist Party of India has filed a writ petition in 2001 against the Union of India, in the High Court of Delhi at New Delhi. Central Pollution Control Board is Respondent No.2. The Petitioner has alleged that there are more than 1000 big and medium size hotels in Delhi using generator sets of 100 kVA and above ranging upto 3000 kVA and one generator of 2000 kVA create more pollution than 30 passenger buses at a time. Combustion system including boilers and big size gas burners are being operated in the kitchens and also for the health clubs of these hotels are major sources of pollution in the city of Delhi and no action is being initiated against these multinationals and against big hotels at the cost of poor person who reside in open and inhale toxic cancer causing polluted air.

The Hon'ble High Court of Delhi directed the following on 10.12.2001:

· Ministry of Environment & Forests, Government of India, shall notify the Emission Standards for Diesel Generator Sets (up to 800 kw) with in four weeks (i.e. by 7.1.2002).

· The Central Board has to handle objections from concerned parties in relation to emission standards for DG sets (above 800 kw) and draft standards are to be communicated to the Ministry of Environment & Forests, Government of India.

CPCB PUBLICATIONS DURING 2001

1. Environmental Risk Analysis of Hazardous Chemicals
2. Development of Emission Factors for Cement Industry
3. Status of Pollution and Environment at Ports and Harbors
4. Pollution Assessment of River Kosi
5. Biological Treatment of Textile Mill Effluent
6. Prevention & Control of Marine Pollution
7. Human Exposure to Air Pollution in Industrial Area
8. Criteria for Hazardous Waste Landfills
9. Ambient Noise Level Status in Delhi
10. Air Quality in Delhi
11. Annual Action Plan 2001-2002
12. Transport Fuel Quality for 2005
13. Water Quality Status & Statistics 1998
14. Noise Pollution Regulation in India
15. Biotechnology for Treatment of Waste
16. The Status of Coastal Sea of West Bengal
17. System & Procedure for Compliance - Generator Sets
18. Water Quality Status of Lakes & Reservoirs in Delhi
19. Rationalization & Optimization of Water Quality Monitoring Network
20. Guidelines for Management, Operation and Maintenance of Common Effluent Treatment Plants
21. Guidelines for Health & Safety of Workers in Wastewater Treatment Facilities
22. Noise Pollution around Netaji Subhash Chandra Bose International Airport
23. Respirable Particulate Matter and its Health Impact
24. Decentralised Sewage Treatment Systems

25. Pollution Control Acts, Rules and Notifications (Revised)

26. Constructed Wasteland for Wastewater Treatment

27. Concepts and Practices for Rainwater Harvesting

28. Pollution Statistics - Bhopal

29. Status Report on Dinapur Sewage Treatment Plant & Surroundings

30. Vehicular Pollution Control in Delhi

31. Environmental Status of Nicobar Islands

32. Environmental Status & Statistics of Sundarbans - A Fragile Ecosystem

33. Pollution Control in Small Scale Industries

34. Management of Distillery Wastewater

35. Environmental Atlas of India

36. Zoning Atlas of Medak District

37. Zoning Atlas of Rangareddy District

38. Environmental Improvement of Waterways in Chennai

39. Comprehensive Industry Document for Large Pulp & Paper Industry

40. Guidelines for Duckweed Based Wastewater Treatment System

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NGO'S MASS AWARENESS ACTIVITIES

- An interaction meet has been conducted in October 2001 at Auroville, Tamilnadu for the NGOs located in Southern region.
- Three days training has been provided to NGOs of Uttar Pradesh, Punjab, Haryana, Himachal Pradesh, Chandigarh and Jammu & Kashmir in November 2001.
- Financial assistance of Rs. 45,000 has been provided to nine NGOs for organising mass awareness programmes on pollution control. A sum of Rs. 1,00,000 was provided to National Science Centre, Delhi, for celebrating World Environment Day, 2001.

Awareness about ill Effects of Fire Crackers

A campaign was launched in Bangalore to create awareness among school students about ill effects of fire crackers. 20,000 pamphlets were printed and distributed among the students.

Eco-Friendly Schools in Bhopal

Twelve schools participated in a competition to select Eco-friendly schools in Bhopal. The Carmel Convent School, BHEL, Bhopal secured first place for the second consecutive year.

FEEDBACK

"The newsletter (Parivesh on Air Pollution and Human Health) contains some useful information which may be of help to various organisations ensuring suitable environment, and also good health."

Mohd. Fazal Governer of Goa.

"I found it very informative and educative as well. I like to thank CPCB for such a good publication."

Syeed M. Lutfullah Joint Secretary, M/O. Environment & Forests Govt. of Bangladesh.

"I find it excellently informative and I learnt so many things out of it. I have placed it in our library for wider appreciation of these facts."

Prof. P.K.Sikdar Director, CRRI, New Delhi