5

PREVENTION AND CONTROL OF POLLUTION

[Industrial Pollution Abatement through preventive strategies, Development and Promotion of Cleaner Technologies, Taj Protection Mission, Environmental Health, Noise Pollution, Air Pollution, Vehicular Pollution Control, Industrial Pollution Control, Common Effluent Treatment Plants, Zoning Atlas, Establishment of Environment Protection Authority, Central Pollution Control Board, Hazardous Substances Management]

The enhanced pace of developmental activities and rapid urbanization have resulted in stress on natural resources and quality of life. The trend of increasing pollution in various environmental media is evident from the deteriorating air and water quality, higher noise levels, increasing vehicular emission etc. Realising the urgent need for arresting the trend, Ministry adopted policy for Abatement of Pollution which provides for several mechanisms in the form of regulations, legislation, agreements, fiscal incentives and other measures to prevent and abate pollution. Further, realizing that conventional pollution control approach by treatment at the end of the pipe is not delivering the desired benefits in terms of resource conservation, the thrust has been shifted to pollution prevention and control through promotion of clean and low waste technology, re-use and recycling, natural resource accounting, Environmental Audit and Institutional and Human Resource Development. To give effect to various measures and policies on ground, multi-pronged approach is adopted which includes stringent regulations, Development of Environmental Standards, Control of Vehicular Pollution, preparation of Zoning Atlas for Spatial Environmental Planning including Industrial Estates etc.

Major activities carried out under several programmes/schemes during the year are as follows:

**Industrial Pollution Abatement through preventive strategies**

This scheme is an amalgamation of the three on-going schemes viz. Environmental Audit, Adoption of Clean Technologies in Small Scale Industries and Environmental Statistics and Mapping, which have been continuing since eighth Five Year Plan. Due to encouraging results and benefits to various small scale units, these schemes are being continued during the 10th Five Year Plan also:
Environmental Statement (As a part of Environmental Audit)

Environmental audit is a management tool and provides a structure and comprehensive mechanism for ensuring that the activities and products of an enterprise do no cause unacceptable effects on the environment. Submission of an Environmental Statement by polluting units seeking consent either under the Water (Prevention and Control of Pollution) Act, 1974 or the Air (Prevention and Control of Pollution) Act, 1981 or both and the Authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 has been made mandatory through a Gazette Notification of April, 1993 under the Environment (Protection) Act, 1986. The Environmental Statement enables the units to undertake a comprehensive look at their industrial operations and facilities, understanding of material flows and focus on areas where waste reduction and consequently saving in-input cost if possible. The primary benefit of environmental audit is that it ensures cost effective compliance of laws, standards, regulations, company policies etc.

During the year, action has been initiated to evolve model environmental statements in various sectors for facilitating comparison in use of raw material, water conservation, energy consumption etc. A project has been sponsored to Central Pollution Control Board for evolving model environmental statement in the eight sectors viz. Sugar, Thermal Power Projects, Cement, Paper and Pulp, Pesticides, Bulk Drugs, Tanneries and Textiles Activities.

Waste Minimisation/Cleaner Production

Waste minimization is one of the strategies adopted for minimizing the industrial pollution. The objective of the scheme is to assist the small and medium scale industry in adoption of cleaner production practices. A project has been sponsored to National Productivity Council on “Waste Minimisation in Small Scale Industries” for establishment and running of waste minimization circles in clusters of small scale industries, capacity building in areas of cleaner production, establishment of demonstration units in selected industrial sectors etc. So far 115 waste minimization circles have been established throughout the country and a large number of Organizations and Institutions have been trained in waste minimization activities. The project was executed till November, 2002 under the World Bank project on Industrial Pollution Prevention (IPP) as Phase-I and Phase-II is now being continued with Ministry’s internal funds. Implementation of this project has helped in identification of more than 200 options for resource and energy conservation in various small scale industries.

Environmental Statistics and Mapping

For sound Environmental Management, reliable information base and the mapping of areas needing special attention for pollution prevention and control are a prerequisite. As a step in the direction, projects and pilot studies have been initiated through various research institutions and organizations. Under this program, following studies have been initiated and are in various stages of completion :

- GIS based Hydrological Modelling for Water Quality and Quantity in Cauvery River Basin by IIT, Delhi.
- Geochemical baseline Mapping for Environmental Management by National Geophysical Research Institute, Hyderabad.

Development and Promotion of Cleaner Technologies
Life Cycle Assessment (LCA)

Life Cycle Assessment is a decision cum management tool which provides information on the environmental effects of various products and processes so as to arrive at necessary corrective measures to make the entire process efficient with optimal utilization of resources and minimal wastes generation. LCA studies have been initiated in various sectors namely; Steel, Pulp and Paper and Thermal Power. The study in the Steel Sector was completed earlier and the report is under preparation. The study relating to the Thermal Power Sector has been completed during the year while the study in the Pulp and Paper Sector is progressing as per schedule.

Industrial Ecology Opportunities in Ankleshwar and Nandesari Industrial Estates, Gujarat

A study was undertaken to develop and implement Industrial Ecology Opportunities in Ankleshwar and Nandesari Industrial Estates of Gujarat. The study has examined technologies used by industries in this region and suggested possible approach to achieve eco-efficiency within the industrial estates to reuse and recycle wastes and effluents generated from different industrial units. The recommendations of the study have been discussed in a workshop with all stakeholders including State Government Agencies for their implementation and an Action Plan is being drawn up by them.

Development of Market Based Instruments for Regional Environmental Management in the Kawas-Hazira Region in Gujarat

The ongoing project on Development of Market Based Instruments for Kawas-Hazira Region of Gujarat has been completed. The study report has observed that the taxes and incentives based on efficiency improvements align the pollution control agencies better with the polluters than the Command and Control (CAC) regime. Such an instrument also facilitates prescribing incentives for achieving the triple bottom line, viz economic-efficiency, environment-responsibility, and social-relevance entitling the Corporate to Clean Development Mechanism (CDM) and other cleaner-production benefits. The recommendations of the study have been discussed in a workshop with all concerned.

Field Demonstration and Development of Bamboo Based Composites/Panels

The ongoing project on field demonstration and development of bamboo based composites/panels was continued during the year. Under this project, commercial production of horizontal and vertical laminates have been made using Bambusa bamboo Species. Construction of demonstration houses will be taken up during the current year.

Recycling of Marble Slurry in Udaipur, Rajasthan

A two years duration project has been sponsored for the manufacture of bricks and tiles from marble slurry in Udaipur, Rajasthan with the aim of utilizing wastes arising out of marble cutting and processing for the purpose of improving the local environment.

Bio-remediation of Railadevi Lake in Thane, Maharashtra

A project relating to cleaning of Railadevi Lake in Thane District in Maharashtra using bio-remediation technique has been sponsored to Thane Municipal Corporation.

Development of Natural Dyes from Forest Wastes
A three years duration project has been sponsored to Forest Research Institute, Dehradun for development of natural dyes from forest wastes.

**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 schemes 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 concerned State Government to implement various schemes in the Taj Trapezium Zone in the context of environmental protection of the Taj Mahal. In the first phase during the Ninth Five Year Plan, 10 projects were approved and are being implemented. 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
- Improvement of Master Plan of Roads of Agra City

The Mission Management Board of the Taj Protection Programme has approved another seven projects to be taken up during the Tenth Five Year Plan. These are :

- Taj Trapezium Zone Heritage Corridor covering the areas of Taj Mahal, Agra Fort, Ram Bagh, Emad-ud-Daula, Chinni-ka-Rauza and river Yamuna.
- Taj Trapezium Zone Authority Environmental Centre and Allied Schemes.
- Planning of Taj Trapezium Zone and Study of Taj Ecocity / Conceptual Plan / Master Plan.
- Common Treatment Facility for Treatment of Bio-medical Wastes at Agra, and
- Public Awareness Programme in Taj Trapezium

These projects have been reviewed and steps have been taken for clearance of the EFC Memo of these Projects.

**Environmental Health**
Environmental Health Cell of the Ministry has commissioned nine environmental health studies in the cities of Ludhiana, Delhi, Lucknow, Ahmedabad, Kolkata, Mumbai, Manali (Tamil Nadu), Bangalore and Trivandrum for documenting Environmental Health Profile so that necessary corrective measures could be evolved and addressed for pollution control and protection of public health. The Ministry in collaboration with the World Health Organisation, World Bank, the United States Environmental Protection Authority, United States AID and Confederation of Indian Industry organized a two-day Conference on Environmental Health at New Delhi on 20-21 November, 2002 to sensitize the issues among the Central and State Government and other stakeholders in the country but also to come up with the consensus on the issues to act upon and to evolve strategies for the protection of public health.

The recommendations have been finalized and are to be implemented depending on availability of resources and infrastructure

Noise Pollution

An increasing trend of noise pollution has been observed in the major cities of the country. To regulate and control noise pollution, the Government has issued various notifications under the Environment (Protection) Act, 1986. During the year noise limits for diesel generator sets (upto 1000 KVA) manufactured on or after 1st July, 2003, were notified on 17th May, 2002. The maximum permissible sound pressure level for new diesel generator sets with rated capacity upto 1000 KVA shall not exceed 75 dB(A) at the distance of one metre from the enclosure surface. It has been made mandatory for the diesel generator sets to provide integral acoustic enclosure at the manufacturing stage itself. The State Pollution Control Boards and the Pollution Control Committees will regulate these limits.

A Notification on Noise Pollution (Regulation and Control) Rules, 2000 was issued vide S.O. 123(E) on 14th February, 2000 to curtail noise pollution in the country. Accordingly, the use of loudspeakers and public address systems were restricted during night between 10.00 p.m. and 6.00 a.m. except for the closed auditorium, banquet halls, etc. Owing to various representations received from State Governments, these rules have been amended vide Notification S.O. 1088(E) issued on 11th October, 2002 to permit the use of loudspeakers or public address system during night hours (between 10.00 p.m. to 12.00 midnight) on or during any cultural or religious festival for a limited duration not exceeding 15 days in all during a calendar year.

Noise limits for vehicles at manufacturing stage were notified vide GSR 7(E) on 25th September, 2000 which would be effective from 1st January, 2003. To make these standards commensurate with the emission standards for vehicles, the notified rules have been revised and are phased out in two stages. In the first phase, two wheelers, three wheelers, and passenger cars would comply with the notified norms from 1st January, 2003. A relaxation of 3dB(A) has been given to passenger and commercial vehicles of various categories and would become effective from 1st July, 2003. In the second phase, noise limits for vehicles at manufacturing stage would be applicable on and from 1st April, 2005 which would be at par with EC norms and based on engine power for various categories of vehicles.

Hon’ble Supreme Court, in September, 2001 has passed an interim order to comply with the notification of the Ministry issued on 5th October, 1999 to control noise from the bursting
of fire crackers, which shall not exceed 125 dB(A) and 145 dB(C) pk. The manufacture, sale and use of fire crackers should be restricted accordingly. While communicating this order to all State Governments and Union Territories, they have been requested to conduct the surveys to assess the noise pollution before and on Deepawali day. Some of the surveys have been conducted during the years of 2001 and 2002. The findings of the surveys indicate a decreasing trend of noise during the festive season.

For creating awareness and for effective implementation of the rules and regulations for control of noise, a workshop was organized at West Bengal Pollution Control Board on 4th and 5th December, 2002 to train the officials of State Pollution Control Boards and the officials of Police Department of Eastern States.

**Air Pollution**

With a view to ascertain the ambient air quality at various locations, a monitoring network has been established comprising of 295 stations covering 98 cities/towns in 29 States and three Union Territories under the Air (Prevention and Control of Pollution) Act, 1981, as amended in 1988. Under this programme, four criteria air pollutants viz. Sulphur dioxide (SO\textsubscript{2}), oxides of nitrogen (NO\textsubscript{x}), Suspended Particulate Matter (SPM) and Respirable Suspended Particulate Matter (RSPM) are regularly monitored at all the locations. Besides this, additional parameters such as respirable lead and other toxic trace matters and polycyclic aromatic hydrocarbons are also being monitored in 10 metro cities of the country. The ambient air quality is monitored by Central Pollution Control Board (CPCB) in coordination with the State Pollution Control Boards, Pollution Control Committees and some of the universities and research institutes. The data, thus generated, are transmitted to CPCB for scrutinisation, analysis, compilation and publication as a consolidated report. The monitoring results indicate that levels of Sulphur dioxide and Nitrogen dioxide are within the stipulated standards, whereas the levels of SPM and RSPM occasionally exceed, especially in Central and Northern parts of the country due to natural dust and vehicular emissions.

The air quality of different cities/towns for three critical pollutants has been compared with the respective national ambient air quality standards and has been classified into four broad categories based on an Exceedence Factor (EF) as calculated by the following ratio:

\[
\text{Exceedence Factor} = \frac{\text{Observed Annual mean Concentration of criteria pollutant}}{\text{Annual standard for the Respective pollutant and area class}}
\]

The four air quality categories are:

- **Critical pollution (C)** : When EF is more than 1.5
- **High pollution (H)** : When the EF is between 1.0-1.5
- **Moderate pollution (M)** : With and EF between 0.5-1.0
- **Low pollution (L)** : Where the EF is less than 0.5

Based upon the indicators stated above, a quarterly report is compiled by CPCB in some of the major cities. For real time data collection, automatic monitoring stations have also been
established. Under the Male declaration, 11 automatic monitoring stations are also planned at strategic locations to measure the trans-boundary movement of pollutants among the South Asia Association of Region Co-operations (SAARC) Countries. CPCB has also initiated in-depth studies in the cities of Delhi and Kanpur to measures the level of PM$_{10}$ and PM$_{2.5}$.

To regulate and control air pollution, the source specific standards are notified from time to time. During the year 2002, emission standards for new diesel generator sets upto 800 KW were notified on 17th May, 2002 vide GSR 371(E). These rules shall apply to all new diesel engines for Genets manufactured in India or imported into India after the effective date. All engines upto 20 KV shall carry ISI mark and meet the relevant BIS specifications. Emission standards for diesel generator sets of more than 800 KW had also been notified on 9th July, 2002 vide GSR 489(E). These standards shall be regulated by the State Pollution Control Boards or Pollution Control Committees as the case may be. It has also been made mandatory for all the diesel generator sets upto 800 KVA or more to use the liquid fuel specified for commercial. High Speed Diesel (HSD) applicable for diesel vehicles in the area from time to time.

**Vehicular Pollution Control**

The Ministry plays a coordinating role in the field of controlling of vehicular pollution with the concerned Ministries and its associated bodies/organizations including the Ministry of Surface Transport, the Ministry of Petroleum and Natural Gas and the Ministry of Industry for upgradation of automobile technology, improvement in fuel quality, expansion of urban public transport systems and promotion of integrated traffic management as the vehicular emissions is the major cause for deterioration of urban ambient air quality. The Gross Emission Standards for vehicles have been prescribed from time to time and a road map is prepared to improve the quality of the fuel.

The Ministry of Petroleum and Natural Gas also constituted an Expert Committee on Auto Fuel Policy under the Chairmanship of Dr. R. A. Mashelkar, Director General, Council of Scientific and Industrial Research (CSIR) to recommend an Auto Fuel Policy for the country together with a road map for its implementation. The Committee was represented by the Ministry and significant contribution was made in preparation of the Policy. The Committee has submitted its final report to the Government of India in August, 2002 and the recommendations of this Committee are under consideration for implementation.

As per the directions of the Hon’ble Supreme Court in W.P. No. 13029 of 1985 by M.C. Mehta vs. Union of India and others, the Ministry coordinated the preparation of action plans for control of vehicular pollution for compulsory switch over to CNG/LPG in the cities of Ahmedabad, Kolkata, Pune and Kanpur which were found to be equally or more polluted than Delhi. The implementation of the plan submitted for these cities is being reviewed.

Nine cities viz. Agra, Varanasi, Kanpur, Lucknow, Faridabad, Jharia, Jodhpur, Patna and Pune were also identified for improving air quality. Action plans for these cities are being coordinated by the Ministry.

Promotion of the Ethanol Blended Petrol and Bio-diesel have also been taken up and Ethanol Blended Petrol has been introduced in the selective States as a first phase.

**Industrial Pollution Control**

**Status of pollution control in 17 categories of Identified Polluting Industries**
The Central Pollution Control Board (CPCB) has identified 1551 large and medium industries in 17 categories of highly polluting industries, contributing maximum to the pollution load. They have been given time schedule to install necessary pollution control equipments to comply with the prescribed standards. The progress of compliance is monitored periodically and quarterly reports are given by CPCB based on the inputs received from the concerned State Pollution Control Boards (SPCBs). As on 31.12.2002, out of 1551 industries, 1351 industries have so far provided the necessary pollution control facilities, 178 industries have been closed down and the remaining 22 industries are defaulting. Legal action has been taken under the Environment (Protection) Act, 1986 in respect of all the defaulting units and in many cases, the matter is pending before the Hon’ble Supreme Court. Almost all the defaulting units are either in the advance stage of installing the pollution control measures or under legal action for default. A state-wise summary status of the pollution control in 17 categories of industries and a category-wise summary status are given in Table-9 and 10 respectively.

Table-9
State-wise Summary Status of the Pollution Control in 17 Categories of Industries
(as per information available with CPCB as on December 31, 2002)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>State/UT</th>
<th>Total No. of units</th>
<th>Status (No. of units)</th>
<th>Defaults</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Andhra Pradesh</td>
<td>173</td>
<td>29</td>
<td>144</td>
</tr>
<tr>
<td>02.</td>
<td>Arunachal Pradesh</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>03.</td>
<td>Assam</td>
<td>15</td>
<td>03</td>
<td>11</td>
</tr>
<tr>
<td>04.</td>
<td>Bihar</td>
<td>44</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>05.</td>
<td>Chattisgarh</td>
<td>16</td>
<td>01</td>
<td>14</td>
</tr>
<tr>
<td>06.</td>
<td>Goa</td>
<td>16</td>
<td>00</td>
<td>06</td>
</tr>
<tr>
<td>07.</td>
<td>Gujarat</td>
<td>177</td>
<td>07</td>
<td>170</td>
</tr>
<tr>
<td>08.</td>
<td>Haryana</td>
<td>43</td>
<td>06</td>
<td>37</td>
</tr>
<tr>
<td>09.</td>
<td>Himachal Pradesh</td>
<td>09</td>
<td>00</td>
<td>09</td>
</tr>
<tr>
<td>10.</td>
<td>Jammu &amp; Kashmir</td>
<td>08</td>
<td>03</td>
<td>05</td>
</tr>
<tr>
<td>11.</td>
<td>Jharkhand</td>
<td>18</td>
<td>03</td>
<td>13</td>
</tr>
<tr>
<td>12.</td>
<td>Karnataka</td>
<td>85</td>
<td>09</td>
<td>76</td>
</tr>
<tr>
<td>13.</td>
<td>Kerala</td>
<td>28</td>
<td>06</td>
<td>22</td>
</tr>
<tr>
<td>14.</td>
<td>Madhya Pradesh</td>
<td>62</td>
<td>11</td>
<td>48</td>
</tr>
<tr>
<td>15.</td>
<td>Maharashtra</td>
<td>335</td>
<td>24</td>
<td>306</td>
</tr>
<tr>
<td>16.</td>
<td>Manipur</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>17.</td>
<td>Meghalaya</td>
<td>01</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>18.</td>
<td>Mizoram</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>19.</td>
<td>Nagaland</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>20.</td>
<td>Orissa</td>
<td>23</td>
<td>03</td>
<td>16</td>
</tr>
<tr>
<td>21.</td>
<td>Punjab</td>
<td>45</td>
<td>06</td>
<td>39</td>
</tr>
<tr>
<td>22.</td>
<td>Rajasthan</td>
<td>49</td>
<td>06</td>
<td>43</td>
</tr>
<tr>
<td>23.</td>
<td>Sikkim</td>
<td>01</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>24.</td>
<td>Tamil Nadu</td>
<td>119</td>
<td>02</td>
<td>117</td>
</tr>
<tr>
<td>25.</td>
<td>Tripura</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>26.</td>
<td>UT-Andaman &amp; Nicobar</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>27.</td>
<td>UT-Chandigarh</td>
<td>01</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>28.</td>
<td>UT-Daman &amp; Diu</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Having adequate facilities to comply with the standards
## Not having adequate facilities to comply with the standards

**Table-10**

Category-wise Summary Status of the Pollution Control in 17 Categories of Industries
(as per information available with CPCB as on September 30, 2002)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Category</th>
<th>Total No. of Units</th>
<th>Status (No. of units)</th>
<th>C#</th>
<th>Defaulters##</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Aluminium</td>
<td>07</td>
<td>01</td>
<td>06</td>
<td>00</td>
</tr>
<tr>
<td>02.</td>
<td>Castic</td>
<td>25</td>
<td>00</td>
<td>25</td>
<td>00</td>
</tr>
<tr>
<td>03.</td>
<td>Cement</td>
<td>116</td>
<td>08</td>
<td>108</td>
<td>00</td>
</tr>
<tr>
<td>04.</td>
<td>Copper</td>
<td>02</td>
<td>00</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>05.</td>
<td>Distillery</td>
<td>177</td>
<td>33</td>
<td>142</td>
<td>02</td>
</tr>
<tr>
<td>06.</td>
<td>Dyes &amp; D.I</td>
<td>64</td>
<td>08</td>
<td>56</td>
<td>00</td>
</tr>
<tr>
<td>07.</td>
<td>Fertilizer</td>
<td>110</td>
<td>12</td>
<td>97</td>
<td>01</td>
</tr>
<tr>
<td>08.</td>
<td>Iron &amp; Steel</td>
<td>08</td>
<td>00</td>
<td>04</td>
<td>04</td>
</tr>
<tr>
<td>09.</td>
<td>Leather</td>
<td>70</td>
<td>11</td>
<td>59</td>
<td>00</td>
</tr>
<tr>
<td>10.</td>
<td>Pesticide</td>
<td>71</td>
<td>07</td>
<td>64</td>
<td>00</td>
</tr>
<tr>
<td>11.</td>
<td>Petrochem</td>
<td>49</td>
<td>00</td>
<td>49</td>
<td>00</td>
</tr>
<tr>
<td>12.</td>
<td>Pharma</td>
<td>251</td>
<td>26</td>
<td>225</td>
<td>00</td>
</tr>
<tr>
<td>13.</td>
<td>Pulp &amp; Paper</td>
<td>96</td>
<td>20</td>
<td>76</td>
<td>00</td>
</tr>
<tr>
<td>14.</td>
<td>Refinery</td>
<td>12</td>
<td>00</td>
<td>12</td>
<td>00</td>
</tr>
<tr>
<td>15.</td>
<td>Sugar</td>
<td>392</td>
<td>49</td>
<td>342</td>
<td>01</td>
</tr>
<tr>
<td>16.</td>
<td>TPP</td>
<td>97</td>
<td>03</td>
<td>80</td>
<td>14</td>
</tr>
<tr>
<td>17.</td>
<td>Zinc</td>
<td>04</td>
<td>00</td>
<td>04</td>
<td>00</td>
</tr>
</tbody>
</table>

| Total  | 1551           | 178                  | 1351                 | 22 |               |

# Having adequate facilities to comply with the standards.
## Not having adequate facilities to comply with the standards
Under Sectoral approach for prevention and control of pollution in different sectors, Action Plan by the Working Group on Tanneries is being implemented. State Pollution Control Boards have been advised to follow the suggestions given by the working Group while dealing with tannery units. As regards distillery, the industries have been advised to follow the protocol developed by Indian Agricultural Research Institute and take necessary measures to comply with the prescribed standards.

At the request of All India Brick & Tiles Manufacturers’ Federation, the duration of installation of fixed chimneys in place of moving chimneys kilns was extended upto June, 2002. This was subject to the units providing the necessary bank guarantee to the pollution control agencies and the undertakings by the Federation that the conversion would be completed by 30th June, 2002. Despite several requests, no further extension has been granted for last date, i.e. 30th June, 2002 for implementation of standards for brick kilns. As per the directions given by the Ministry, almost all States have started implementing the standards.

**Industrial Pollution Control**

The National River Conservation Authority (NRCA) in its meeting held on July 12, 1997 under the Chairmanship of the Prime Minister, decided that the polluting industries which are directly discharging their effluents into rivers and lakes, without requisite treatment, should be asked to install the requisite effluent treatment systems within three months, failing which closure notices should be issued. Accordingly, the State Pollution Control Board (SPCBs)/Pollution Control Committee (PCCs) in Union Territories, were asked by the Central Pollution Control Board (CPCB) on July 14, 1997 to take necessary action and send the list of defaulting units. The criteria defined for the National River Conservation Plan (NRCP) was followed, and the identified industries include those which (i) discharge their effluents into a water course including rivers and lakes, and (ii) are either involved of hazardous substances or discharge effluents with a BOD of 100 kg/day or more, or both. The information received from the SPCBs/PCCs in respect of such industries were compiled and the position was also reviewed by the Hon’ble MEF in a meeting taken by him with the Chairman/Senior Officers of the Pollution Control Boards/Committees at Ministry of Environment and Forests on August 19, 1997. This resulted into identification of a total of 2026 defaulting industries from 15 States/UTs which included 1657 defaulters in the State of Tamil Nadu.

The programme was further intensified and four Regional Committees of experts were constituted to monitor the compliance of the directions issued by the CPCB to SPCBs/PCCs in this regard. A series of discussions have been held since then by the expert committees with the concerned SPCBs/PCCs to monitor the progress of implementation of the programme and to ensure issuance of appropriate directions to the defaulting industries by the concerned SPCBs/PCCs. The important decisions taken in these meetings are communicated to various Boards/Committees for implementation which include (i) the industries where the commissioning of ETPs are going on satisfactorily are to be given a reasonable time extension, (ii) the industries which have neither shown sufficient progress nor complying with the standards are to be issued closure notices, (iii) the industries which are closed are to be directed not to restart till they provide requisite ETPs, and (iv) the industries where there is no ETP are to be issued confirmed orders for their closure with immediate effect.

The matter concerning the large number of defaulting industries i.e. 1657 in Tamil Nadu was also discussed in detail with the concerned SPCB to ensure whether these industries
really conformed to the above mentioned criteria or not. It was confirmed that these industries are actually those which have been identified by the SPCB in obedience of an order of the Hon’ble High Court requiring inventorisation of the polluting units located within one km of the water bodies in the State of Tamil Nadu. This inventory was, therefore, reviewed vis-à-vis the criteria fixed for the identification of the Grossly Polluting Industries discharging effluents into rivers/lakes. A total of 366 units out of the above mentioned 1657 units were accordingly found to be on conforming to this criteria. These 366 units have, therefore, been retained for further follow ups under the national programme and the remaining 1291 (1657-366) units through not polluting to the extend defined in the above criteria, still remains covered under implementation of the orders of the Hon’ble Court at the State level itself. Similar discussions in respect of the other States/UTs finally provided a total of 851 defaulters as on August 1997 instead of 2026 for reasons explained above. The status of these industries compiled on the basis of the discussions in the meetings of the Regional Committees and information received and from the SPCBs/PCCs till September 30, 2002 is given in Table-11. Accordingly, it can be summarized that the number of defaulters have reduced from 851 to five during the period of five years. This reduction is as a result of the closure of 238 industries and 608 industries having requisite Effluent Treatment Plants (ETPs).

<table>
<thead>
<tr>
<th>S.No.</th>
<th>State/UT</th>
<th>No. of defaulters as in August 1997</th>
<th>No. of Complying Industries after issuance of directions</th>
<th>No. of industries closed</th>
<th>No. of Defaulters</th>
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<td><strong>608</strong></td>
<td><strong>238</strong></td>
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* Covered under the separate Plan involving shifting/relocation of the units as per the orders of Honourable Supreme Court.

**Common Effluent Treatment Plants (CETPs)**

The Ministry has undertaken a Centrally Sponsored Scheme for enabling the small scale industries (SSI) to set-up Common Effluent Treatment Plants in the country. Since some of the polluting SSIs 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.

**The criteria for Consideration for Assistance**

- CETPs in industrial estates or in a cluster of Small Scale Industrial units are encouraged.
- Central Assistance will be available only for clusters of SSIs.
- Projects for assistance will be prioritized on the basis of:
  - Toxicity of pollutants
  - Pollution load being generated and to be treated; and
  - Number of units covered
- The CETPs are to be set up and managed by the State Industrial Infrastructure Corporation (by whatever name known) or through an appropriate institution including a cooperative body of the concerned units as may be decided by the State Governments/SPCBs concerned.
- The project should be self-supporting for repayment of the loan and meeting operation and maintenance costs.
- The project must formulate adequate institutional arrangements for cost sharing, recovery of dues and management and ensure observance of prescribed standards.
- The scheme must have the technical recommendation of the State Pollution Control Boards.

- The CETP project should have the conveyance system from the individual units to the CETP.

- Sludge characteristics (i.e. hazardous Vs. non-hazardous) from the primary and secondary treatment of the CETP should be estimated. Therefore, the CETP should have a sludge management plan which should be prepared based on the sludge characterization and be documented in the feasibility report of the CETP project.

- Possibility of recycling/reusing the treated effluent from the CETPs by the member units should be explored and be documented in the feasibility report of the CETP project.

- An environmental management and monitoring plan/programme to be prepared for the CETP and be documented in the feasibility report of the CETP project.

- A legal agreement between the CETP Co. and its member units to be executed be reflected in the feasibility report of the CETP project.

- The cost recovery formula developed for the CETP project should be ratified by all members and be documented in the feasibility report of the CETP project.

- Necessary clearance be obtained from the concerned State Pollution Control Board for discharging the treated effluent and be reflected in the feasibility report of the CETP project.

- All hazardous waste facilities associated with these CETPs should obtain clearance from the concerned State Pollution Control Board and be documented in the feasibility report of the CETP project.

- Pattern of Financial Assistance
  
  - State : 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 nationalised Banks, State Industrial Financial Corporation etc.)

- If the CETP Co. does not desire to have loans from financial institutions/Banks they may augment the same out of their own resources/contributions, i.e. the entrepreneurs would then contribute 50% of the project cost.

- Central assistance upto 25% of the total cost of the CETP would be provided as a grant to the Common Effluent Treatment Plant(s) on the condition that a matching grant is sanctioned and released by the State Government. The CETP company should meet the
remaining cost by equity contribution by the industries and loans from financial institutions.

- Central assistance will be provided only for the capital costs. No assistance will be provided for recurring costs. The assistance will be released in four equal installments. The first installment of 25% of the assistance will be released when a body has been identified for the purpose of implementing the project, financial arrangements have been obtained from the State Pollution Control Board and State Government has committed its contribution.

- The second installment of 25 per cent and the third installment of 25 per cent will be released after utilisation of the previous money released and adequate progress of work subject to release of their proportionate shares by the State Governments.

- The fourth and the last installments will be released only when utilisation certificates for the previous installments have been submitted and duly verified by the State Pollution Control Boards.

- It may be of advantage to combine some components of CETP with the municipal system. On such schemes, the municipalities have to pay their share of the cost.

- An assessment may be made about the present physical & financial status of the CETPs. Funds released for the CETPs should be utilised for the CETP only and not for payment for debts/banks loans etc.

- Large and medium scale industries other than 17 categories of heavily polluted industries may join the CETP after the primary treatment or as considered necessary by the State Pollution Control Board for the purpose of hydraulic load and for techno-economic viability of the CETP. The 17 categories of industries need to provide their own full-fledged effluent treatment facilities to confirm to the prescribed standards before the effluent is discharged. However, the large and medium scale industries would not be entitled for any subsidy meant for SSIs.

During the current financial year, financial assistance has been provided to the on-going eight CETP Plant project and for new plants which have been approved by the Appraisal Committee.

**Common Effluent Treatment Plant at Kolkata**

A 30 mld (six modules of five mld capacity each) capacity CETP (Common Effluent Treatment Plant) for treating the wastewater from the cluster of tanneries has been approved for Calcutta Leather Complex (CLC) at Kolkata for an amount of Rs.65 crore. The cost of the project is to be shared on 50:50 basis between Centre and the State Government. The Central Government’s share for the implementation of the project is interest free loan. The detailed project report for CETP (two modules of five mld capacity each) has been sanctioned at an estimated cost of Rs. 31.20 crore. In addition, the proposal for Effluent Transport System (ETS) for the CETP has also been sanctioned at an estimated cost of Rs. 11.59 crore. Central funds amounting to Rs. 17.985 crore have been released for execution of the scheme so far. The preliminary effluent treatment units of the CETP and ETS for CETP have been completed. The CETP is now equipped to offer the preliminary facilities to take care of the tannery wastes upto 10 mld as and when generated by the tanneries at CLC. None of the relocated tanneries or new tanneries have as yet started the tanning operation at CLC. The construction of the CETP is scheduled for completion by November, 2003.
Spatial Environmental Planning

Spatial planning is primarily used for land use plans, city planning, and is recently extended to regional planning as well. Environmental issues, generally, were not incorporated in the conventional town and country planning which has resulted in environmental degradation and deterioration of the urban landscape. The pollution load in ambient air, water and noise levels are also found to be higher in these areas. It is, therefore, imperative that the authorities should look into the remedial measures. In this context, spatial environmental planning has been initiated as a technique for conservation of the environmental resources and for achieving developmental targets in an environmentally sound manner.

To start with a nation-wide environmental planning and mapping programme is being executed in the form of Zoning Atlas at the district level. It is followed by Industrial Estate Planning and Development of Eco Industrial Estates, Environmental Management Plans, Regional/State Planning Studies and Mapping of Environmentally Sensitive Zones. Urban Environmental Information System is also evolved for collecting information about the basic demographic profile of the urban area and a comprehensive human resource development programme for providing training to various target groups. It is proposed to establish a “Centre for Spatial Environmental Planning” at the existing premises of the Central Pollution Control Board.

The details of these activities are given below:

Zoning Atlas for Siting of Industries

The project on Zoning Atlases for Siting of Industries has been initiated at District and Regional level for classifying the environmental status and to ascertain the pollution receiving potentials of various sites. The study also identifies the possible alternate sites for industries, through easy-to-be read maps (1:250,000 scale). Work for 63 districts was completed earlier. During the year, 73 districts covering 21 States and one Union Territory has been taken up. These include Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal, Goa and UT of Pondicherry.

Industrial Estate Planning & Development of Eco-Industrial Estates

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 suitable and acceptable sites for industrial estates. The study would also suggest infrastructure requirement for waste disposal systems and measures for controlling the surrounding land uses. Studies for nine sites have been completed and work for ten sites has been taken up.

It is contemplated to develop Eco-industrial estates in the country in order to ensure proper siting of industrial estates, planning of the pollution abatement infrastructure and regulating development around these sites. In the pilot phase, technical support of German Technical Cooperation (GTZ) will be taken under the Indo-German Bilateral Programme for developing five sites as Eco-Industrial Estates.

Mapping of Environmental Sensitive Zones and Industrial Sites – State-wise

The maps on Environmentally Sensitive Zones and Industrial Sites present the Information on National Parks, Reserved Forests, Protection Forests and Industrial Sites.
These maps were earlier completed for 12 States and in the current year, work is in progress for Punjab, Maharashtra, Madhya Pradesh, Tamil Nadu, West Bengal, Uttar Pradesh and Rajasthan.

**Preparation of Environmental Management Plans**

The activities for preparation of Environmental Management Plans (EMPs) have been undertaken by urban areas, mining blocks, tourism sites and Environmentally fragile areas. As a priority project, EMP was initiated for Agra city during 2000-2001 and completed in January, 2002 at an investment of Rs. 350 crores. Outcome of the study suggests need for massive face-lift programme in the city of improving the physical infrastructure and urban management. The study for preparation of EMP for Panchmarhi Biophere Reserve located in Madhya Pradesh has also been completed and report is under finalization.

**Eco-cities**

Eco city is a city which is economically vibrant, socially equitable and environmentally supportive. Such cities ensure environmentally compatible and energy efficient development providing clean, pollution free surroundings and conservation of natural resources for higher quality living. An eco city project for Kottayam Kumarakom region was initiated, which was extended for the Taj Eco city covering an area of 30 sq. km. around Taj Mahal to achieve visible environmental improvement.

Under the Tenth Plan, the project has been extended to small and medium towns in the country. The towns selected for coverage in the first phase of the Eco city programmes are Mathura (UP), Puri (Orissa), Vapi (Gujarat), Thanjavour (Tamil Nadu), Bharatpur (Rajasthan), Rishikesh (Uttaranchal), Tirupati (A.P.), Shillong (Meghalaya), Baidhyanath Dham (Deogarh, Jharkhand), Kottayam (Kerala) and Vrindavan (U.P.). The Municipalities of these towns have submitted proposals for financial assistance. An Eco city Advisory Committee has been constituted for guiding the Programme and two meetings of the Committee have so far been held.

**Spatial Environmental Planning Network**

A comprehensive human resource development programme has been developed for providing training to various target groups in the field of spatial environmental planning. The training programmes are being conducted through a network of institutions, called SEP-NET (Spatial Environmental Planning Network). The institutes included in the SEP-NET are: Tata Energy Research Institute (TERI) - Delhi, Centre for Environment Planning & Technology – Ahmedabad, Environment Protection Training and Research Institute - Hyderabad, Environmental Training Institute – Chennai, National Productivity Council – Delhi, Disaster Management Institute – Bhopal, School of Planning & Architecture – New Delhi and Steel Authority of India Ltd. – Ranchi. The programme is supported by CDG with grants.

In addition to a number of awareness programmes conducted at District level and hands-on-training to the pollution control board personnel the training programmes were also organized on themes such as Incorporation of EIA in Spatial Environmental Planning, Spatial Environmental Planning in Emergency Planning, Regional Watershed Management in Spatial Environmental Planning. Two overseas training programmes on “Spatial Environmental Planning:- Introduction and Curriculum Development” were held and a website of HRDP (www.cpcb-hrdp.com) has been launched. An evaluation manual has been finalized to achieve the quality assurance. The training institutes in the Spatial Environmental Planning Network (SEP-Net) and CPCB have started conducting training programmes.
Urban Environmental Information System

To provide information to the public in the form of a local environmental report to be prepared by the Municipalities on the status of socio-economics, development and environment of the towns and cities, “Urban Environmental Information System” is being introduced in a few volunteering towns. The Memorandum of Understanding has so far been signed in this regard with the municipalities of Agra, Kanpur, Patna and Bhubaneswar.

Industrial Pollution Complaints

During the year, Ministry has received more than 250 complaints regarding pollution caused by industries. The complaints were mostly related to pollution being caused in air, water, land and noise resulting in degradation of the eco-system. Some of the complaints were also related to discharge of untreated or partially treated effluent thereby contaminating water bodies, land and ground water. These complaints were attended to by calling reports along with the exact status and comments from the State Pollution Control Boards / Pollution Control Committees.

Establishment of Environment Protection Authorities

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 with respect to restriction of areas in which any industries, operations or processes of class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards under the Environment (Protection) Act, 1986 and for matters connected therewith or accidental thereto.

The NEAA was established vide Notification S.O. 311 (E) dated 9th April, 1997. The Authority consists of a Chairperson (retired Judge of the Supreme Court or the Chief Justice of a High Court), a Vice-Chairperson and such other members not exceeding three as the Central Government deem fit.

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

In compliance with Hon’ble Supreme Court’s order dated 28.8.1996 in Writ Petition (Civil) No. 914 of 1991, namely, Vellore Citizens Welfare Forum versus Union of India and others, this Ministry had constituted vide Notification S.O. 671(E) dated 30.9.1996 the Loss of Ecology (Prevention and Payments of Compensation) Authority for the State of Tamil Nadu to deal with the situation created by the tanneries and other polluting industries in Tamil Nadu. The tenure of the Authority has been extended upto 30.9.2004 vide Notification S.O. 1044(E) dated 27.9.2002.

The Authority consists of a retired Judge of the High Court and two members and one Member Secretary.

Environment Pollution (Prevention and Control) Authority for the National Capital Region
The Central Government had vide Notification S.O. 93(E) dated 29.1.1998 constituted the Environment Pollution (Prevention and Control) Authority for the National Capital Region. The Authority is headed by Shri Bhure Lal, Secretary to the Government of India with three other members and Chairman, CPCB as the convener. The tenure of the authority has been extended by three years upto January, 2006 with inclusion of two additional members.

The Authority is empowered to exercise the powers under Section 5 of Environment (Protection) Act, 1986 for issuing directions for compliance relating to violation of standards for quality of environment, emission or discharge of pollutants and to take all necessary steps to control vehicular pollution, restriction of industries causing environmental pollution and monitor the progress of action plan drawn up by the Ministry on Pollution in Delhi as contained in the “White Paper on Pollution in Delhi with an Action Plan”.

Central Pollution Control Board

The Central Pollution Control Board (CPCB) is an autonomous body of the Ministry set up in September, 1974, under the provisions of the Water (Prevention and Control of Pollution) Act, 1974. It coordinates the activities of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs), and also advises the Central Government on all matters concerning the prevention and control of environmental pollution. The CPCB, SPCBs and PCCs are responsible for implementing the legislation relating to prevention and control of pollution; they also develop rules and regulations which prescribe the standards for emissions and effluents of air and water pollutants and noise levels. The CPCB also provides technical services to the Ministry for implementing the provisions of the Environment (Protection) Act, 1986.

During the year, special thrust was given to nation-wide pollution prevention plan, particularly with reference to combating vehicular pollution, pollution control in 17 categories of highly polluting industries, implementation of action plans for restoration of environmental quality in critically polluted areas, noise pollution control, municipal solid wastes and hazardous wastes.

The Annual Action Plan (AAP) for 2002-2003 is an attempt towards the target set in the Coimbatore Charter on Environment and Forests and to observe the effects of implemented programs for development of environment. During the year, following activities received major emphasis in preparation of inventory of polluting sources, Preparation of State of Environment Reports of State/major cities, epidemiological studies, performance evaluation of CETP/STP, Solid Waste Management (municipal, Biomedical and hazardous), plastic waste management, Vehicular and noise pollution control, Prevention and control of pollution in small scale industries, augmentation of existing air and water quality monitoring, network monitoring of updating of Action Plan for identified problem areas. In addition, emphasis has been given for bio-monitoring of national aquatic resources, monitoring of specific pollutant in ambient air, updating of information on web-site, participation of NGOs/public in various pollution abatement programs and to effectively carryout mass awareness program. Proposals for strengthening of Zonal Offices with respect to building construction on acquired land have been made.

Water Quality Monitoring

National Water Quality Monitoring Programme
The water quality monitoring results obtained during 2001 indicated that faecal pollution, indicated by high BOD and high coliform density, continue to be the predominant source of pollution. This is mainly due to the large quantity of domestic wastewater being discharged. An attempt is made to classify the observations under different levels of pollution with respect to most critical parameters i.e. BOD, total & faecal Coliform. It is observed that 59% of the total 4119 observations taken on BOD during 2001 has BOD less than 3 mg/l, which is same as observed during the previous year. However, number of observations with BOD more than 6 mg/l has increased from 16% during the year 2000 to 18% during 2001 indicating that pollution load is on the increase and water bodies are further being polluted. This can be attributed to water scarcity due to over-abstraction, low rainfall in many parts of the country and increasing pollution load. However, the number of observations having high coliform density have somewhat reduced.

State-wise number of observations falling under different BOD levels, total coliform and faecal coliform, the data indicate that Maharashtra has highest pollution level in terms of organic pollution which is mainly industrial in nature followed by Delhi, Uttar Pradesh, Gujarat, Andhra Pradesh and Tamil Nadu. Similarly, Coliform levels were found highest in Uttar Pradesh.

The water quality trend based on Biochemical Oxygen Demand, total Coliform and faecal Coliform of past several years is presented in Fig 44 to Fig 46.

**Fig. 44.** Water Quality Trend based on Bio-chemical Oxygen Demand

**Fig. 45.** Water Quality Trend based on total Coliform
**Status of Wastewater Generation and Treatment**

It is estimated that 22,900 MLD of domestic wastewater is generated from urban centres against 13000 MLD industrial wastewater. The treatment capacity available for domestic wastewater is only for 6,000 MLD, against 8,000 MLD of industrial wastewater. Thus, there is a big gap in treatment of domestic wastewater. Government of India is assisting the local bodies to establish sewage treatment plants under the Ganga Action Plan and subsequently under the National River Action Plan.

**Monitoring of Yamuna River for Assessment of Water Quality**

The Central Pollution Control Board is regularly monitoring Yamuna river on monthly basis in Delhi segment at three locations i.e. Palla, Nizamuddin barrage and Okhla barrage. In addition, monitoring of 22 drains, which are the major source of pollution in the river are also being undertaken regularly. The water quality of river Yamuna in Delhi stretch is depicted in Table-12. The total calculated discharge of these 22 drains is approx. 46.30 m$^3$/sec, which contributes 311.05 tonnes of BOD load per day. From the total discharge of these drains Yamuna receives more than 90% wastewater discharge and rest wastewaters contributed by two drains joining canals. Similarly out of 311.05 tonnes of BOD load, Yamuna receives 283.98 tonnes of BOD load per day and rest received by canals.

The Delhi segment of river Yamuna has oligotrophic head with saprobic tail end, and characterized by high bacterial load (except at Palla) having high BOD with strong disagreeable odour. The anaerobic condition in river is frequently reflected by masses of gaseous sludge rising from the bottom and floating at the surface of water.

**Bio-monitoring of rivers/water bodies**

The importance and use of biological monitoring system, as a cost-effective tool, has been realized in recent past to maintain and restore the wholesomeness of water quality in terms of ecological sustainability of various designated best-uses of water bodies. It has been observed that the desired quality levels are quite often delinked with the observed water quality of water bodies for designated best uses due to number of integrated environmental management problems as a result of rapid industrialization and urbanization. On the basis of environmental status, twenty four problem areas have been identified in the country. The
recipient water bodies of these problem areas are bearing the affect due to environmental degradation.

The bio-monitoring studies in water bodies existing in problem areas have been undertaken at nineteen problem areas in the country in order to make an integrated approach toward environmental management. The identified nineteen problem areas are Ambedkar Nagar (Tamil Nadu), Angul, Talcher (Orissa), Ankleshwar (Gujarat) Bhadravathi (Karnataka), Dhanbad (Jharkhand), Durgapur (West Bengal), Howrah (West Bengal), Jodhpur (Rajasthan), Kochi (Kerala), Kala Amb (Himachal Pradesh), Manali (Tamil Nadu), Nagda, Ratlam (Madhya Pradesh), Najafgarh Drain Basin (Delhi) Pali (Rajasthan), Parwanoo (Himachal Pradesh) Singrauli (Uttar Pradesh and Madhya Pradesh) and Vapi (Gujarat). The main objective of the studies are:

- Biological assessment of water quality of surface water bodies existing in problem areas.
- To evaluate the improvement in water quality as a result of action taken for pollution control in problem areas.

**Bio-mapping of River Ramganga**

Monthly monitoring of river Ramganga has been undertaken at ten locations during the year. From data, it is evident that as long as the river passes through the hills and reserve forests (Jim Corbett National Park) the deterioration of biological water quality is negligible. The deterioration of water quality starts in Bijnor district as some industries dispose their waste into the river. At downstream of Moradab, where drain and river Dhela joins the river, the river stretch is affected. The river itself a bit but sudden load from Rampur deteriorates its quality to class D. Further downstream, it slowly recovers its biota and maintains Class C till it joins the river Ganga.

**Air Quality Monitoring**

The air quality of different cities/towns with respect to three criteria pollutants has been compared with the respective National Ambient Air Quality Standards and categorized into four broad categories based on an Exceedence Factor.

The analysis contains the air quality assessment of 155 monitoring locations (in 64 cities/towns), out of which 81 are in residential, 71 in industrial and three in sensitive areas. At 49 locations (27 residential and 22 industrial), data are insufficient (< 50 monitoring days in the year) with respect to gaseous pollutants and at 56 locations (36 residential, 19 industrial and one sensitive) with respect to SPM. Such locations have not been considered for air quality assessment.
### Classification of Monitoring Stations

<table>
<thead>
<tr>
<th>Area Type</th>
<th>Number of monitoring stations with adequate data</th>
<th>Number of locations with inadequate data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of monitoring stations with adequate data</td>
<td>Number of locations with inadequate data</td>
</tr>
<tr>
<td>Residential</td>
<td>81</td>
<td>27</td>
</tr>
<tr>
<td>Industrial</td>
<td>71</td>
<td>22</td>
</tr>
<tr>
<td>Sensitive</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>155</strong></td>
<td><strong>49</strong></td>
</tr>
</tbody>
</table>

### Table-12

**Water Quality of River Yamuna in Delhi Stretch (22 Kms.)**
(Chapter - December 2001)

<table>
<thead>
<tr>
<th>S.N. Parameters</th>
<th>Monitored Location</th>
<th>Palla</th>
<th>Nizamuddin Bridge</th>
<th>D/s Okhla Barrage</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Min</td>
<td>7.18</td>
<td>6.94</td>
<td>6.91</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>8.42</td>
<td>7.55</td>
<td>7.43</td>
</tr>
<tr>
<td></td>
<td>Av</td>
<td>7.76</td>
<td>7.22</td>
<td>7.22</td>
</tr>
<tr>
<td>Dissolved Oxygen mg/l</td>
<td>Min</td>
<td>5.9</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>9.8</td>
<td>3.7</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Av</td>
<td>8.5</td>
<td>0.80</td>
<td>0.40</td>
</tr>
<tr>
<td>Bio-chemical Oxygen Demand mg/l</td>
<td>Min</td>
<td>1.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>3.0</td>
<td>54.0</td>
<td>77.0</td>
</tr>
<tr>
<td></td>
<td>Av</td>
<td>1.5</td>
<td>22.7</td>
<td>41.3</td>
</tr>
<tr>
<td>Total Coliforms Nos./100 ml</td>
<td>Min</td>
<td>600</td>
<td>80,000</td>
<td>88,000</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>69,000</td>
<td>7,00,00,000</td>
<td>7,00,00,000</td>
</tr>
<tr>
<td></td>
<td>Av</td>
<td>22,662</td>
<td>88,89,166</td>
<td>1,02,53,166</td>
</tr>
<tr>
<td>Faecal Coliforms Nos./100 ml</td>
<td>Min</td>
<td>34</td>
<td>500</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>5,000</td>
<td>1,41,00,000</td>
<td>57,00,000</td>
</tr>
<tr>
<td></td>
<td>Av</td>
<td>882</td>
<td>26,23,075</td>
<td>21,37,216</td>
</tr>
</tbody>
</table>

Min = Minimum; Max = Maximum; Av = Average

### Respirable Suspended Particulate (RSPM) Monitoring

RSPM levels were measured in various cities and towns in India Fig.47 and 48. RSPM levels exceeded the NAAQS (annual average) in residential areas of Hyderabad, Visakhapatnam, Delhi, Ahmedabad, Parwanoo, Bangalore, Cochin, Dehradun, Tiruvananthapuram, Mumbai, Nagpur, Pune, Solapur, Angul, Rourkela, Jaipur, Chennai, Kanpur, Lucknow and Kolkata. RSPM levels also exceeded the NAAQS (annual average) in
industrial areas of Ahmedabad, Dehradun, Thiruvananthapuram, Solapur, Jaipur, Kanpur and Kolkata.

RSPM levels were within the NAAQS (annual average) in residential areas of Kozhikode and Shillong and industrial areas of Hyderabad, Visakhapatnam, Bangalore, Mysore, Cochin, Kotayam, Koshokode, Palakkad, Mumbai, Nagpur, Pune, Rourkela and Chennai. These results indicate that NAAQS (annual average) were not exceeded in above mentioned cities. Fig.49 and 50 shows number of cities with critical, high, moderate RSPM levels in residential and industrial areas.

**Air Quality Non-attainment Cities**

CPCB has identified list of cities in India based on ambient air quality data obtained under National Air Quality Monitoring Programme (NAMP) for the period 1995 to 2001.

![Fig. 47. RSPM Levels measured in Residential Areas during the year 2000](image)

![Fig. 48. RSPM Levels measured in Industrial Areas during the year 2000](image)

**Ambient Noise Level and Air Pollution in Delhi during Deepawali**
Ambient noise level monitoring was carried out at various locations in Delhi, i.e. all India Institute of Medical Sciences (AIIMS), Lajpat Nagar, New Friends Colony, East Arjun Nagar, Connaught Place, India Gate, Mayur Vihar, Patel Nagar and Kamla Nagar on the occasion of Deepawali festival. At Kamla Nagar noise monitoring was conducted from 18.00 hrs to 24.00 hrs., while at other locations, short duration (half hourly) noise level monitoring was conducted between 18.00 hrs and 24.00 hrs. The average Leq noise level for short duration at 8 monitored locations ranged between 73 dB(A) and 80 dB(A). The minimum instantaneous value, recorded at Kamla Nagar, was 47 dB(A) (between 18.30 hrs. and 19.00 hrs) and the maximum value, recorded was 101 dB(A) (between 19.30 hrs and 20 hrs.). The ambient noise levels were above the prescribed limit at all the locations but did not indicate much variation as compared to the previous year’s data.

Ambient air quality monitoring was also carried out at ITO Intersection and Ashok Vihar using manual monitoring techniques and at East Patel Nagar (Pusa Road) using the mobile monitoring van. The Respirable Suspended Particulate Matter (RSPM) were high in the evening hours on Deepawali day. The concentration of Sulphur dioxide (SO₂), Oxides of Nitrogen (NOₓ) and Carbon monoxide (CO) indicated a mixed trend which may be because of varying traffic density.

Efficiency testing of Autoclaves used for hospital waste treatment by spore testing methodology

Bio-medical waste generation and its safe disposal has become a matter of serious concern due to increasing health facilities & increase in number of hospitals, nursing homes in metropolitan cities. The Biomedical Waste (Management & Handling) Rules, 1998 notified by Government of India, has stipulated rules for proper collection, storage, transportation, treatment and disposal of bio-medical waste. As per Bio-medical Waste Rules, 1998 the hospitals have to install treatment facilities like incinerators, autoclaves, etc. for treatment of bio-medical wastes generated to ensure safe treatment & disposal of infectious hospital waste. These treatment facilities should operate at designed efficiency level.

A project has been undertaken by Central Pollution Control Board for assessment of efficiency of autoclaves used in hospital waste treatment based on standardized spore testing methodology, for In-situ assessment of the efficiency of autoclaves installed at various hospitals within NCT-Delhi using biological indicator to ascertain 4 Log 10 reduction of Bacillus Stereothermophilus indicator.

During first phase of the project, the standardization of spore testing methodology has been undertaken using Bacillus Stereothermophilus as biological indicator with a view for its application for efficiency testing of autoclaves used for hospital waste treatment. The standardized methodology has been used at autoclaves installed at various hospitals within NCT-Delhi for testing their efficiency during the reporting year. The results indicate that the Bio-medical waste treatment autoclaves installed at various hospitals are satisfactory with respect to sterilization of bio-medical waste undertaken at these autoclaves.
Development of Guidelines/Rational for Prescribing Location Specific Standards

The Central Board is involved in developing Minimal National Standards (MINAS), which are applicable for entire nation considering techno-economic feasibility of control equipment. However, considering the location specific sensitivity, the State Pollution Control Boards can make the national standards stringent. For example, in critical areas, where single or cumulative effect of emissions/wastewater discharges exceed the ambient air/water quality requirement, a rational/structurised approach shall be followed in order to avoid bias in granting permit conditions to individual industries, which are often challenged on the basis.

Under this programme, efforts have been made to set approach for assessment of assimilative capacity and fine tuning of the standards considering health protection, environment protection, availability of technology and economic feasibility. With the association of indigenous and expatriate consultants, an approach has been made which is being debated among the experts for finalization. Besides, the approach is being applied in selected study area for fine-tuning. These studies include inventorization of air and water pollution sources, existing level of control technologies, application of air quality models (ISCST3) and concepts of zone of initial dilution and mixing zones in respect of water quality in surface water bodies.
Control Technologies for Volatile Organic Compounds in Industrial Emissions

One of the common air pollutants emanating from the chemical industries is volatile compounds. As it is well known that if emissions are emanating from a point source can very well be controlled absorption, condensation, adsorption, thermal destruction etc. whereas, due to volatile nature of various solvents and process fluids used in chemical sectors, the fugitive emissions will arise from valves, flanges, pumps, storing units, effluent treatment plants etc. In order to address the volatile organics, a project has been taken-up for studying oil refineries and petrochemical plants in India. Possibilities of application of general VOC’s and hazardous air pollutants on the lines of developed countries is being discussed and their adoptability in terms of monitoring equipment, control equipment, investment on equipment modifications, establishing emission factors etc. are being studied.

Review of Control Technologies for Total Dissolved Solids (TDS) in Industrial Effluents

Feasible disposal specific TDS limits have been developed and same have been endorsed by the Expert Committee and are being considered by the Central Board. Under capacity building programme, five days training programme on “Management of TDS in Industrial Effluents” has been arranged through Environment Protection Training and Research Institute, Hyderabad for 15 States and Central Board officers.

Pollution Control Implementation

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 in reduction in the number of defaulting industries from 93 in March, 2000 to 5 in September, 2001.

Environmental Surveillance Squad (ESS)

Environmental Surveillance Squad in an important project undertaken by CPCB as per the direction of Hon’ble Supreme Court. The main objective of the squad is to identify the willful defaulter through surprise visits. Suitable action is also being taken against the erring industries either directly by CPCB or through State Pollution Control Board under various Environmental Acts.

Under this project more than 50 industries have been visited and on the basis of the recommendations, the competent authority of CPCB has issued closure notice to the defaulters.

Hazardous Substances Management

The Hazardous Substances Management Division (HSMD) is the nodal point within the Ministry for management of chemical emergencies and hazardous substances. The main objective of the Division is to promote safe management and use of hazardous substances including hazardous chemicals and hazardous wastes, in order to avoid damage to health and environment. The activities of the division can be grouped under three main thrust areas, viz., Chemical Safety; Hazardous Wastes Management and Solid Waste Management. The Division is also the nodal point for the following three International Conventions.
- The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal
- The Stockholm Convention on Persistent Organic Pollutants (POPs).

Salient details of the programmes and activities carried out during the year are:

**Chemical Safety**

- It has been decided to bring the entire gamut of activities relating to hazardous substances under the frame-work of a comprehensive National Chemical Profile, which is proposed to be prepared based on the UNITAR guidance document. The report will assess the existing institutional, administrative, technical and legal infrastructure vis-à-vis the requirement of safe handling of chemicals in the country. This activity is being supported under the Canada-India Environmental Institutional Strengthening Project.

- The Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules, 1989 and the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 are the main instruments for ensuring chemical safety in the country. Implementation of both the Rules by the State/UTs governments is constantly pursued and monitored. As on date, there are 1460 Major Accident Hazard Units (MAH) in 19 states of the country. As per the latest reports, 1395 on-site Plans and 118 Off-site plans have been prepared. All the states except Bihar and Jammu & Kashmir have constituted State Level Crisis Groups.

- A country report on “Status of Emergency Preparedness and Response in MAH Districts in the Country” has been prepared. The study was undertaken to assess the Emergency Preparedness and Response Systems existing in the country. The study has observed that the status of Emergency Preparedness in the country needs improvement at different levels. Immediate upgradation of availability of information, availability of resources to respond to Fire Emergencies, availability of hospitals with poison treatment facilities and other responses has been recommended for those districts having maximum MAH units.

- A pilot study was initiated earlier to develop GIS based Emergency Planning and Response System in four identified States namely – Gujarat Maharashtra, Tamil Nadu and Andhra Pradesh. It has been decided to install the system consisting of a software package and database at the district level. Training will also be provided to enable the usage of this package along with district off-site emergency plans to improve emergency management at the district level. Districts with a large number of Major Accident Hazard Units namely-Bharuch, Valsad, Ahmedabad, Vadodara, Kutch and Surat in Gujarat; Thane, Mumbai, Nasik, Pune, Raigad and Ratanagiri in Maharashtra; Tiruvallur, Cheenai and Salem in Tamil Nadu; Rangareddy, Medak, East Godawari, West Godawari and Visakhapatnam in Andhra Pradesh have been included in this project so far.

- A Sub-Scheme entitled ‘Industrial Pocket-wise Hazard Analysis’ has been in operation since the Eighth Five Year Plan. Out of 180 Hazard prone industrial pockets, Hazard Analysis studies have been initiated for 75 pockets. Out of these 75 studies, 69 have
been completed. Based on the recommendation of the study reports, preparation of off-site plan for Kota has been initiated.

- Several cases of chemical accidents involving isolated storages have come to light in the recent past. In this regard, lack of inventorization of such storages and poor enforcement of legal provisions have been identified as the major factors. An inventorisation study for the “Isolated Storage” in the country carried out last year has identified 347 Isolated Storages. The distribution of such storages is as follows: Gujarat (41), Uttar Pradesh (38), Tamil Nadu (32), Andhra Pradesh (31), Karnataka (25), West Bengal (24), Maharashtra (23), Orissa (22), Rajasthan (22), Madhya Pradesh and Punjab (17), Delhi (14), with the others being distributed all over the country.

- Under the Public Liability Insurance Act, 1991 as amended in 1992, all the MAH units handling chemicals in excess of the threshold quantities referred to in the Schedule, are mandated to take an insurance policy and deposit an equal amount in the Environment Relief Fund (ERF) to ensure immediate payment to the chemical accident victims. It has been decided to entrust the administration of the ERF to the United India Insurance Company. Modalities are being worked out regarding service charges payable to this company.

- During the year, Phase-I of the study entitled “Development and Demonstration of Process Technology for Remediation of Polychlorinated Biphenyls (PCBs) in Oils and Paints by Radiolysis” has been completed. The study has identified the types of PCBs, their concentrations in oils, capacitors and paints scrapings, collected from different sections of twenty seven ships and thirty plots/shipyards at Alang (Gujarat). Phase-II of the study has also been initiated during the current year to develop and optimize a radiolytic process for the decomposition of PCBs in oils, capacitors and paint scrapings.

### Hazardous Waste Management

As per current assessment, 4.4 million tonnes of hazardous wastes are being generated by 13011 units spread over 373 districts of the country. The states of Maharashtra, Gujarat and Tamil Nadu account for over 63% of the total hazardous wastes generated in the country. This data, which is based on the waste categories indicated in the Hazardous Wastes (Management and Handling) Rules, 1989, is being revised in the light of the amendments carried out in January, 2000 and further amendments being carried out during the year.

The legal instruments for management of hazardous wastes are the Hazardous Wastes (Management & Handling) Rules, 1989, as amended in 2000 and 2002, the Biomedical Wastes (Management & Handling) Rules, 1998/2000 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) and also with the State Departments of Environment. The status of implementation of all these rules is regularly monitored.

The fifth meeting of the Steering Committee for the management of Biomedical Wastes was held during the year. It was decided that the Guidelines for Management and Handling of Bio-medical Wastes shall be finalized after incorporating the comments of the members of the Steering Committee. Certain amendments to the Bio-medical Rules are also proposed.

The Batteries (Management & Handling) Rules, 2001 were notified in May, 2001 to regulate the collection, channelization and recycling as well as import of used lead acid batteries in the country. 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 ones sold as per a schedule defined in the rules. Such used lead acid batteries can be auctioned/sold only to recyclers registered with the Ministry on the basis of their possessing environmentally sound facilities for recycling/recovery. During the year implementation of these rules was monitored which indicated that the status of implementation of these rules, especially relating to collection of old batteries needs improvement. Following steps have been taken during the year to ensure effective implementation of the Battery Rules :-

- Creation of awareness among all stake holders about management of lead acid batteries through the print and electronic media. Issues relating to the management of lead acid batteries are proposed to be covered in one of the episodes of the environmental serial ‘Bhoomi’.

- 100% monitoring of all the lead acid battery recycling/reprocessing units registered with the MoEF has been launched.

- Action is underway to put in place a mechanism for organized collection of used lead acid batteries in the country.

- Directions have been issued to all the SPCBs/PCCs to check and close down backyard lead smelters/fly-by-night operators.

An Inquiry Committee was constituted during the year on the directions of the Hon’ble Supreme Court in the matter of Writ Petition No. 657 of 1995 filed by the Research Foundation for Science, Technology and Natural Resource Policy against the Union of India and others, to verify the inventory of hazardous wastes such as waste oil, lead acid batteries and other non-ferrous metal wastes lying in various ports and Inland Container Depots of the country. The Committee has submitted the final report and findings have been submitted to the Supreme Court.

The W.P.No. 967/89 filed by Indian Council for Enviro Legal Action against UoI and Others on Groundwater Pollution and Soil Degradation in Bichhri Village, Udaipur (Rajasthan) due to indiscriminate disposal of Toxic Wastes, is being heard in the Supreme Court. The Final Report of the ‘Remediation/Reclamation of Hazardous Waste Contaminated Areas in Bichhri Village, Rajasthan’ has been submitted to the Ministry after incorporating the comments of the Advisory Technical Review Committee.

As per the Hazardous Wastes (M&H) Rules, 1989 and 2000, all hazardous wastes are required to be treated and disposed off in the manner prescribed. In the absence of common disposal facilities in the country, permission has been granted to the hazardous waste generating units in the small scale sector, for storing their wastes temporarily in a secure, lined pit/facility within their premises. During the Tenth Plan Period it has been decided to focus on the setting up of common TSDFs in different parts of the country. While support would be provided for setting up two such common facilities in major hazardous waste generating states, one facility would be supported in other states. The Ministry has so far supported the setting up of common TSDFs at Maharashtra (TTC-Belapur) and Andhra Pradesh (RR District). During the year, financial support has been provided to three more TSDFs in the country – two in the state of Gujarat (Ankleshwar and Surat) and one in Maharashtra (Taloja).

The scheme for “Registration of Recyclers/Reprocessors of Wastes as Actual Users having Environmentally Sound Management facilities” initiated in 1999, was continued
during the year and two meetings of the Registration Committee were held. A total of 130 proposals were considered in these meetings. Registration was approved to 103 units, applications of 4 units were rejected and the rest were deferred. As on date, 234 units have been registered with the Ministry, out of which 78 are used/waste oil reprocessors, 71 are lead scrap processing units while the remaining 83 are non-ferrous metal waste processing units. During the year registration was also renewed in respect of 53 units whose registration had expired. The list of registered recyclers/reprocessors is posted on the web-site of the Ministry and is updated regularly. Rigorous monitoring of the registered units has been initiated during the year to ensure that all the conditions included in the Registration Letter are complied with by the units. In case of lead acid battery recycling units 100% monitoring of registered units has been undertaken. The Regional Offices of the Ministry have been entrusted with the monitoring work.

Solid Waste Management


- Committee on Plastic Waste Disposal constituted under the Chairmanship of Shri Ranganath Mishra, former Chief Justice of the Hon’ble Supreme Court has submitted its report containing recommendations for the management of plastic wastes in the country. Draft amendments to the Recycled Plastics Manufacture and Usage Rules, 1999, have been issued during the year. The proposed amendments include, inter-alia, a ban on manufacture of plastic carry bags less than 8 inches X 12 inches in size and a provision for registration of recyclers of plastic with the SPCBs/PCCs. Objections/comments/suggestions received in response to the draft amendments are being examined.

- During the year, guidelines for use of fly ash have been formulated and circulated to the State Governments. The guidelines cover use/disposal of fly ash by road and building construction agencies, local bodies, State Pollution Control Boards and Thermal Power Plants.

- A High Level Committee under the chairmanship of Secretary (E&F) has been constituted during the year with representatives from concerned Ministries, Technical Institutions and All India Brick and Tile Manufacturers Federation to review the implementation of the provisions of fly ash notification dated 14th September, 1999. Besides monitoring the implementation of the provisions of the Notification, the Committee will also provide policy guidance on utilization of fly ash in various sectors/developmental activities including incentives/disincentives required therefore.
International Conventions/Protocols

Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal

- India is a signatory to the Basel Convention, which requires countries to ensure that hazardous wastes and hazardous recyclable materials are managed in an environmentally sound manner.

- During the year, the Ministry participated in the 5th and 6th meetings of the Expanded Bureau of Conference of Parties (COP) 5 and the 20th meeting of the Technical Working Group, the Legal Working Group meeting etc. of the Basel Convention. The Ministry also participated in COP 6 of the convention held in Geneva in December, 2002. The four major issues discussed during COP 6 were the strategic plan for implementation of the Basel Convention, the establishment of Basel Convention Regional Centres, Mechanism for effective implementation of convention and partnership with industry and multilateral environmental agreements.


- The Ministry participated in the 3rd Session of the Interim Chemical Review Committee Meeting under the Convention.

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. A project titled “Preliminary assessment to identify the requirements for developing a National Implementation Plan in India as a first step to implement the Stockholm Convention on POPs” has been initiated during the year with support from GEF.

Legislations relating to Hazardous Substances Management
One of the recommendations of the High Powered Committee constituted under the Chairmanship of Prof. MGK Menon in the matter of W.P.No.657 of 1995 being heard in the Hon’ble Supreme Court, was that the Hazardous Wastes (Management and Handling) Rules, 1989/2000 should be amended urgently based on waste prevention and clean production, waste minimization and recovery prior to consideration of options dealing with disposal of hazardous wastes. Accordingly, the Hazardous Wastes (Management & Handling) Amendment Rules, 2002 have been notified on 21st May, 2002. A Technical Expert Committee constituted during the year to finalise the amendments has examined over 250 objections/comments/suggestions received from concerned institutions/organizations. Based on this and the inputs given by the CPCB and SPCBs, the amendments have been finalized and are expected to be notified shortly.

During the year draft amendments to the fly-ash notification of 1999 have also been notified. Use of fly-ash in construction, laying of roads and reclamation of low lying areas has been made mandatory in the amendments. Objections/comments/suggestions received in response to the draft amendments are being examined.

**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.