

## WASTE MANAGEMENT

---

### MUNICIPAL SOLID WASTE MANAGEMENT

Due to growing population, not only in the urban areas but also in rural areas, the environmental problem arising from unscientific and indiscriminate disposal of municipal garbage is a real menace for the whole society. The Central Government notified the Municipal Solid Wastes (Management & Handling) Rules 2000 under Sections 3, 6 and 25 of the Environment (Protection) Act 1986 for the purpose of managing municipal and urban wastes/garbage in an environmentally sound manner. Every municipal authority is responsible to develop a system for scientific disposal of garbage through composting and engineered landfill. To develop the scientific disposal of municipal wastes, the municipal authorities introduced the door-to-door collection system, along with proper segregation at source, storage and transportation to the facility site for waste processing and disposal. The West Bengal Pollution Control Board (WBPCB) is the Prescribed Authority empowered only to

grant authorisation to the local bodies in the state of West Bengal. The Kolkata Metropolitan Development Authority (KMDA) and the Municipal Engineering Directorate (MED) under the Department of Municipal Affairs, Government of West Bengal are the nodal agencies for technical guidance and preparation of project report for the development of municipal solid waste management plan for the municipal authorities situated within Kolkata Metropolitan Area (KMA) and Non-KMA areas respectively. In spite of impressing upon the municipalities and district authorities repeatedly by the Board, a few municipalities have developed municipal solid waste processing facility (vermi-composting) only. Mechanical compost plant was developed earlier for processing part of compostable wastes generated in Kolkata Municipal Corporation (KMC) area.

The status of compliance with respect to the authorisation of municipal solid waste (MSW) of municipal corporations/municipalities in West Bengal as per provisions of the MSW Rules is given in Table 2.3.1.

TABLE 2.3.1

STATUS OF COMPLIANCE OF CORPORATIONS / MUNICIPALITIES IN 2005-2006

| KMA/<br>Non-KMA | No. of Corporations /<br>Municipalities | Total | Applied for<br>authorisation | Authorisation<br>granted |
|-----------------|---|-------|------------------------------|--------------------------|
| KMA             | No. of Corporations                     | 3     | 3                            | 1                        |
|                 | No. of Municipalities                   | 38    | 33                           | 17                       |
| Non-KMA         | No. of Corporations                     | 3     | 2                            | 2                        |
|                 | No. of Municipalities                   | 82    | 57                           | 14                       |
| Total           |   | 126   | 95                           | 34                       |

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

### Project of the Ministry of Environment & Forests, Government of India on 'Strengthening of the Infrastructure of SPCBs/PCCs'

Under this project, the WBPCB started inventorisation of municipal solid wastes and biomedical wastes in 126 municipal bodies of the state. The project team collected data for assessing their existing municipal solid waste management system, i.e. segregation, collection, transportation, storage and disposal of municipal wastes. From the field data, it was recorded that most of the municipal authorities situated within KMA started door-to-door collection of municipal solid wastes engaging their own staff or private agencies. Some of the municipalities were taking collection charges from the individual household @ Rs. 5/- to Rs. 10/- per house per month. In the non-KMA area, the door-to-door collection system had been introduced in a few wards of some municipalities.

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

It is a model project on municipal solid waste with financial support by the Central Pollution Control Board (CPCB) and KMDA on 50:50 cost sharing basis. The project is divided in two phases, namely Phase I and Phase II. Phase I is basically for designing and setting up of collection, segregation, storage and transportation system for MSW, and under

Phase II, the setting up of Common Compost Plant and Landfill Facility was done. The site has an area of 11.1 acres and is located at Mouza Fatullapur (J.L.No.3) P.S. Nimta, District 24 Parganas (N) within North Dum Dum Municipal area. The work under Phase I has been completed by both the municipalities. Moreover, the Airport Authority, Delhi has issued NOC (No Objection Certificate) for the site, where the compost as well as landfill facility will be developed. After obtaining approval from the CPCB, the work under Phase II will start. The project report of compost plant (vermi-composting) had been prepared by the Karnataka Compost Development Corporation (KCDC). The Project Report for the landfill facility had been prepared by the National Productivity Council (NPC).



Specially designed metal containers are used for carrying MSW under the Model Facility Project in North Dum Dum and New Barrackpore municipal areas

### **MSW Management by Kanchrapara Municipality**

Kanchrapara municipality developed a pilot project for compost plant by applying effective micro-biotechnology. The municipality has now taken initiative to set up compost plant to process the compostable solid waste generated in the entire municipal area.

### **Common MSW Management Facility by Dumdum, South Dumdum & Baranagar Municipalities**

The integrated mechanical compost plant of 200 MT capacity for these three municipalities will be developed with the technical know-how of the Karnataka Compost Development Corporation. The Agency had been engaged by the KMDA. The construction work of the project would be commenced shortly.

### **Common MSW Management Facility by North Barrackpore and Garulia Municipalities**

The integrated compost plant for these two municipalities will be developed with the technical know-how of the Karnataka Compost Development Corporation. The Agency had been engaged by the KMDA.

### **MSW Management by Panihati Municipality**

The compost plant (vermi-composting) has already been developed with the technical know-how of the Karnataka Compost Development Corporation. The project report of sanitary landfill facility had been prepared by the National Productivity Council. Both the agencies had been engaged by the KMDA. The construction work for the sanitary landfill facility would be developed shortly.

### **MSW Management by Kalyani Municipality**

The municipality has already developed the compost plant (vermi-composting) in a small-

scale for utilising only market garbage at present. Apart from the local farmers, nurseries and residents, the municipality is also selling the compost to the other areas through distributors. For the development of the compost plant in a larger scale to process the compostable wastes generated in the entire municipal area, the municipality has also identified land. In this regard, the detailed project report had been prepared by the KMDA.

### **MSW Management by Bhadreswar Municipality**

The compost plant (vermi-composting) has been developed with the technical know-how of the Karnataka Compost Development Corporation and is already in operation. The municipality is selling the compost to the local farmers, nurseries etc. The construction work of sanitary landfill facility is yet to be started. The Karnataka Compost Development Corporation as well as the National Productivity Council engaged by the KMDA had prepared the detailed project report for compost plant and landfill facility respectively.



*Vermi-composting pits in Bhadreswar Municipality*

### **MSW Management by Chandernagore Municipal Corporation**

The development work of the compost plant for Chandernagore Municipal Corporation is

in progress with the technical know-how of the Karnataka Compost Development Corporation and the project report of sanitary landfill facility had been prepared by the National Productivity Council. Both the agencies were engaged by the Kolkata Metropolitan Development Authority.

### **MSW Management by Kolkata Municipal Corporation**

The Kolkata Municipal Corporation has submitted a detailed project report on the engineered landfill facility at Dhapa along with the rapid environmental impact assessment report and environmental assessment plan to the WBPCB. To develop the landfill facility, an area of 113 hectares has been identified near the existing MSW disposal site at Dhapa. The capacity of the landfill facility will be 25 years. This facility will be developed under the Kolkata Environmental Improvement Project with Asian Development Fund (ADB) fund. The construction of the landfill facility will start after getting the site clearance from the Government of West Bengal. The existing mechanical compost plant of 700 MT capacity under the name and style as M/s Eastern Organic Fertilizer will be utilised to process the compostable wastes. This compost plant with reduced capacity is being operated by the said private agency since 2000 at the existing MSW disposal site at Dhapa.

### **Common MSW Management Facility by Asansol Municipal Corporation, Durgapur Municipal Corporation, Raniganj Municipality, Jamuria Municipality**

The land has been identified by the Asansol-Durgapur Development Authority (ADDA) at Mouza Mangalpur, Raniganj for the development of the shared landfill facility as well as compost plant for three municipalities. The National Productivity Council has prepared a detailed project report for the

compost plant and landfill facility. The capacity of the shared compost plant will be 125 MT/day.

The Government of West Bengal constituted a Solid Waste Management Mission in the form of a registered society styled as “West Bengal Solid Waste Management Mission” (WBSWMM) under the chairmanship of the Chief Secretary, Government of West Bengal. The office of the Mission is situated in the Municipal Affairs Department, Government of West Bengal, Writers’ Buildings, Kolkata. The ten-member Committee under the Chairmanship of the Chief Secretary, Government of West Bengal has been formed. The Secretary of the Department of Municipal Affairs will act as its Member Secretary. Apart from these, there is a five-member Technical Advisory Committee under the Chairmanship of the Secretary of the Department of Environment, Government of West Bengal. The Member Secretary of the West Bengal Pollution Control Board is a member of the Committee. The objectives of the WBSWMM are as follows:

- To make West Bengal cleaner, greener and environment-friendly;
- To contribute towards the protection and management of environment and ecology through scientific, technical, research and other activities;
- To promote, facilitate and advise on scientifically-sound and technologically-proven solid waste management by the municipal bodies, Panchayet Raj Institute or other statutory bodies;
- To coordinate between and advise the various government departments, municipal authorities, Panchayet Raj Institute and other local bodies on the scientific management of solid waste;
- To support training and capacity-building of various categories of municipal staff, non-governmental organisations (NGOs) and staff of various government

departments on solid waste management including organising seminars and workshops on various aspects of solid waste management;

- To facilitate generation of awareness by participatory process involving the municipal bodies, Panchayati Raj Institutions, government departments, other statutory bodies and NGOs etc;
- To support research & development activities on solid waste management including policy research by reputed academic and research institutions. Research on hygienic processing of waste shall also be taken up;
- To act as a facilitator for modernisation of collection, transportation, treatment and disposal of solid wastes in municipal areas, Panchayat areas or areas under statutory bodies and making of recycled wastes including composts;
- To evaluate the environmental status and impact assessment of solid waste disposal and management;
- To facilitate setting up of regional or common solid waste management facilities under joint partnership mode, provide scientific and technological support and channelise seed capital for the purpose;
- To give policy guidance on management of solid waste as well as Integrated Waste Management of biomedical waste, hazardous waste and solid waste;
- To advise the state government and act as a referral institute, on introduction of users' charges for the solid waste management facility, financial mechanisms for giving performance based grants, or subsidies to the municipal bodies, statutory bodies or Panchayati Raj Institutions;
- To promote and support the NGOs and community based organisations (CBOs) working on urban waste management and ensure community participation;
- To receive contribution or fund by way

of grants-in-aid and subsidies from the Government of India, State Government or from any other national/international agencies or organisations;

- To take up the activities under the externally aided and funded agencies, provided they are not inconsistent with the policies and guidelines of the Central and State Government;
- To utilise the income and properties of the Mission, whatsoever derived or obtained solely towards promotion of the objective of the Mission and no portion thereof shall be paid to or divided amongst the members by way of profits; and
- To do all such lawful acts as are conducive and incidental to the attainment of the Solid Waste Management Rules and programmes.

The Financial Institution Reforms and Expansion (Debt) Project (FIRE-D) of the United States Agency for International Development (USAID) is providing technical support to the Government of West Bengal for making the West Bengal Waste Management Mission operational, and developing projects in Asansol, Durgapur and Siliguri. FIRE-D has appointed Infrastructure Development Finance Co. Ltd. (IDFC) to assist in the above-mentioned activities.

### **HAZARDOUS WASTE MANAGEMENT**

The Ministry of Environment & Forests (MoEF), Government of India (GoI) notified the Hazardous Waste (Management & Handling) Rules in 1989. Thereafter, the Rules were amended twice in 2000 and 2003. According to the latest amendment Rules of 2003, the WBPCB had made an inventory of hazardous waste generating industries in West Bengal.

**TABLE 2.3.2**  
INVENTORY OF HAZARDOUS WASTE GENERATING UNITS IN WEST BENGAL

|   |   |
|---|---|
| <b>Total Units identified</b>   | 620                                       |
| <b>Total Hazardous Waste generation in West Bengal</b>                            | 2,36,000 MTPA<br>(Metric Tones per annum) |
| Incinerable   | 3,500 MTPA                                |
| Recyclable  | 1,47,000 MTPA                             |
| Disposable  | 85,500 MTPA                               |
| <b>Units closed for not complying the directions of the Hon'ble Supreme Court</b> | 110                                       |

**Common Storage, Treatment and Disposal Facility (CSTDF) for Hazardous Waste at Haldia, District East Midnapore**

The first Common Storage, Treatment and Disposal Facility (CSTDF) for hazardous waste under the Public Private Partnership (PPP) has been developed at Haldia. It is a joint venture project of Haldia Development Authority (HDA) and M/s Ramky Enviro Engineers Limited.

In April 2003, the HDA and M/s Ramky Enviro Engineers Limited formed a joined venture company under the name and style as M/s West Bengal Waste Management Limited to develop and operate the integrated waste management complex for taking care of the industrial hazardous wastes for West Bengal. Apart from these, the facility will also deal with the biomedical waste as well as municipal solid wastes for the adjacent municipal areas.

The land for the Common Storage, Treatment and Disposal Facility (CSTDF) for Hazardous Waste with an area of 70.46 acres is being developed at Mouza Purba Srikrishnapur, J.L. No. 103, P.S. Sutahata, District Purba Medinipur. The valuation of the land is

Rs.1.52 crores (actual land acquisition cost @ Rs. 2,15,699 /acre). The total land requirement is 200 acres for Phases I and II. Out of this, 70.46 acres has been acquired and is being utilised for the development of landfill facility (at present first cell), temporary storage facility, laboratory and other infrastructure under Phase I and to install incinerator under Phase II. The life of the landfill facility is 30 years.

The HDA acquired 70.46 acres of land for the development of CSTDF for hazardous wastes and ten acres of land for the approach road. The WBPCB issued NOC for the facility on April 28, 2004. After the public hearing held on July 30, 2004, the Department of Environment, Government of West Bengal issued environmental clearance on October 18, 2004. Site notification was done by the Government of West Bengal on October 18, 2004.

The total amount of hazardous wastes to be handled at the site is 1,20,000 tones per annum for secured landfilling, 60,000 tones per annum for stabilisation and treatment and 20,000 tones per annum for incineration. The total proposed cost for the site is given in Table 2.3.3.

**TABLE: 2.3.3**  
TOTAL PROPOSED PROJECT COST FOR CSTDF AT HALDIA

| Item                               | Total Rs. (in Crores) |              |
|------------------------------------|-----------------------|--------------|
|                                    | Phase-I               | Phase-II     |
| <b>Land &amp; Land Development</b> | 7.50                  | —            |
| <b>TSDF Components</b>             |                       |              |
| Weigh Bridge                       | 0.50                  | —            |
| Electrical installation            | 2.00                  | —            |
| Crane Mounted/Hooklift Trucks      | 2.50                  | —            |
| Containers                         | 5.25                  | —            |
| Landfill                           | 11.00                 | —            |
| Buildings                          | 1.00                  | —            |
| Other fixed assets                 | 3.00                  | —            |
| Laboratory Equipment               | 2.10                  | —            |
| Pre-operative expenses             | 2.45                  | —            |
| Contingencies                      | 1.00                  | —            |
| Preliminary Expenses               | 0.07                  | —            |
| Working Capital Margin             | 0.48                  | —            |
| Diesel Generator Set               | 0.15                  | 0.35         |
| Incinerator                        | —                     | 5.00         |
| Civil Works in Incinerator         | —                     | 9.65         |
| <b>Total</b>                       | <b>39.00</b>          | <b>15.00</b> |
| <b>Grand Total</b>                 | <b>54.00</b>          |              |

**TABLE: 2.3.4**  
PROPOSED SOURCE OF FINANCE FOR CSTDF AT HALDIA

| Source  | Amount        |
|---|---------------|
| <b>Promoters equity</b>                       | Rs. 20 crores |
| M/s. Ramky Enviro Engineers Ltd.              | Rs. 10 crores |
| HDA   | Rs. 32 lakhs  |
| Others  | Rs. 32 lakhs  |
| Deposits                                      | Rs. 936 lakhs |
| <b>Grant</b>                                  | Rs. 11 crores |
| MoEF  | Rs.2 crores   |
| State Government                              | Rs.2 crores   |
| HDA   | Rs. 7 crores  |
| <b>Term loans from financial institutions</b> | Rs. 23 crores |

**TABLE: 2.3.5**  
**PROPOSED COST FOR TREATMENT AND DISPOSAL OF ONE TONNE**  
**OF WASTE AT THE HALDIA CSTDF**

| Type of treatment | Cost  |
|-------------------|---|
| Landfilling       | Rs. 990/-   |
| Stabilisation     | Rs. 1597/- (Chemical fixation, encapsulation, solidification, etc. prior to disposal into landfill) |
| Incineration      | Rs. 18,500/-  |

*Transportation cost as proposed is Rs. 4/km. Hazardous waste generating industries may transport their hazardous waste to the facility by their own transport, provided it is authorised by the WBPCB*

Out of the financial assistance of Rs. 4 crores, the MoEF, GoI would grant Rs. 2 crores and the State Government would grant Rs. 2 crores. A Memorandum of Understanding was signed on January 31, 2006 between MoEF, GoI, WBPCB and M/s West Bengal Waste Management Limited. Accordingly, both the WBPCB and the MoEF had released Rs. 80 lakhs each to the West Bengal Waste Management Ltd. as the first installment.

The first cell of the landfill facility with an area of 1.96 acres has already been developed and is ready to treat the disposable hazardous waste. The life of the first cell will approximately be one year and construction for the development of the Second Cell will start after September 2006. Installation work of incinerator under Phase II will be undertaken in May 2006 and will be completed within six months thereafter.

The West Bengal Pollution Control Board had constituted a committee comprising of the representatives of the various industry



*First Cell of the Landfill facility of Common Treatment, Storage and Disposal Facility for hazardous waste at Haldia 1*

associations, engineering institutions, Environment Department, Government of West Bengal etc., to review the cost analysis for the treatment and disposal of the hazardous wastes to be taken by the facility operator of the CSTDF. The Committee recommended the cost structure, as given Table 2.3.5.

#### BIOMEDICAL WASTE MANAGEMENT

The Central Government notified the Biomedical Waste (Management & Handling) Rules, 1998 in exercise of powers conferred under Sections 6, 8 and 25 of the Environment (Protection) Act 1986. It regulates the appropriate scientific disposal of biomedical wastes (BMW) and prescribed the procedures for collection, treatment, disposal and compliance of standards. According to the Rules, the onus of treatment of biomedical waste squarely lies with the occupier who is generating the waste. The mode of treatment of BMW depends upon the nature of waste, which may be incinerating, microwaving, autoclaving, disinfecting by chemical treatment and deep burial. Mutilator / needle cutter are essential instruments to be used by individual health care establishments to stop the recycling of disposable syringes.

The WBPCB, being the 'Prescribed Authority' for implementation of the Biomedical Waste (Management & Handling) Rules, 1998 facilitates by setting of common treatment systems and is constantly pursuing the private and public sector healthcare establishments to

develop adequate biomedical waste treatment facilities. The status of compliance of the healthcare units in West Bengal during the year 2005-2006 is given in Table 2.3.6.

TABLE: 2.3.6

## STATUS OF COMPLIANCE OF HEALTHCARE UNITS IN WEST BENGAL IN 2005-2006

| Sl no | Healthcare Facilities  | Total no. of units | Total no of beds | Total amount of biomedical waste generated (kg/day) | Total amount of biomedical waste treated (kg/day) | Total no. of units that have obtained authorisation |
|-------|--|--------------------|------------------|---|---|---|
| A.    | Healthcare Units in towns having population of 30 lakhs & above          | 353                | 25640            | 6410  | 6341  | 347   |
| B.    | Healthcare Units in towns having population below 30 lakhs.              |                    |                  |   |   |   |
|       | i) With 500 beds & above   | 18                 | 11532            | 2883  | 1762  | 17  |
|       | ii) With 200 beds & above but less than 500 beds                         | 53                 | 14711            | 3678  | 667   | 45  |
|       | iii) With 50 beds & above but less than 200 beds                         | 167                | 13829            | 3456  | 955   | 103   |
|       | iv) With less than 50 beds   | 2917               | -                | 7489  | 958   | 1017  |
| C.    | Healthcare units generating biomedical waste but not included in A or B. | 2651               | -                | -   | -   | 36*   |

\*Most of the healthcare units have exempted from applying for authorisation

TABLE: 2.3.7

## BIOMEDICAL WASTE TREATMENT AND DISPOSAL FACILITIES IN WEST BENGAL

| Total no. of beds in the health care units | 97,000 (approx.) [without considering pathological labs and diagnostic centers] |               |               |
|--|---|---------------|---------------|
|  | District  | Govt. Bed     | Pvt. Bed      |
| Kolkata                                    | 16,280  | 9,314         | 25,594        |
| Howrah                                     | 3,230   | 1,468         | 4,698         |
| 24 Pgs.(N)                                 | 4,842   | 3,870         | 8,712         |
| 24 Pgs.(S)                                 | 2,924   | 1,374         | 3,298         |
| Hooghly                                    | 3,539   | 2,643         | 6,182         |
| Nadia                                      | 4,834   | 823           | 5,657         |
| East Midnapore                             | 1,366   | 969           | 2,335         |
| West Midnapore                             | 3,423   | 1,317         | 4,740         |
| Burdwan                                    | 6,603   | 2,818         | 9,412         |
| Bankura                                    | 2,692   | 745           | 3,437         |
| Birbhum                                    | 2,153   | 415           | 2,568         |
| Murshidabad                                | 3,919   | 636           | 3,655         |
| Purulia                                    | 1,642   | 702           | 2,344         |
| Malda                                      | 1,302   | 333           | 1,635         |
| North Dinajpur                             | 619   | 191           | 810           |
| South Dinajpur                             | 810   | 88            | 898           |
| Coochbehar                                 | 1,385   | 317           | 1,702         |
| Darjeeling                                 | 3,286   | 1,359         | 4,645         |
| Jalpaiguri                                 | 1,755   | 907           | 2,662         |
| <b>Total</b>                               | <b>66,604</b>   | <b>30,289</b> | <b>96,893</b> |

Common biomedical waste treatment and disposal facilities are being operated by private operators in West Bengal. This caters to 80,000 beds and 80 per cent of the total capacity is being utilised. These facilities are as follows:

- **Howrah** (existing): M/s SembRamky Environmental Management Pvt. Ltd. (capacity 30,000 beds/day);
- **Kalyani** (existing): M/s Medicare Incin Pvt. Ltd. (capacity 30,000 beds/day);
- **Haldia** (proposed): M/s West Bengal Waste Management Ltd. (capacity 10,000 beds/day). It will become operational from August 2006; and
- **Asansol** (proposed): M/s Medicare Incin Pvt. Ltd. (capacity 30,000 beds/day). It will become operational from December 2006.

Common biomedical waste treatment and disposal facilities are being operated under the West Bengal Health System Development Project (WBHSDP), Health Department, Government of West Bengal, which are as follows:

- **Kalyani** (existing): J.N.M. Hospital, Kalyani (Autoclave: capacity 50 kgs./cycle) catering 998 beds within Kalyani Municipal areas; and
- **Diamond Harbour** (existing): Diamond Harbour Sub-Divisional Hospital (Microwave) catering 200 beds within Diamond Harbour Municipal areas.



*Incinerator of the Common Biomedical Waste Treatment and Disposal Facility at Howrah*



*BMW carrier van working at the Common Biomedical Waste Treatment and Disposal Facility at Howrah*

## PLASTIC WASTE MANAGEMENT

### Financial Assistance Programme for plastic waste reprocessing units

About 400 plastic recycling units are operating in and around Kolkata. These small-scale manufacturing units pose severe emission problems. Plastic waste, as we know, endangers both public health and the worker's right to a clean environment. Toxic gases like sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), acid vapours and formaldehyde (HCHO) from the plastic reprocessing units result in serious health impacts on the workers, especially the women and children. Most of these units belong to the unorganised sector, with no valid certificates of 'Consent for Operation' from the State Pollution Control Board. The Board was in a dilemma to impose stringent regulatory actions like closure against such units, as it would lead to mass unemployment and subsequent socio-economic crisis. These small units are not in a position to install such device without any financial assistance. Framing a code of environmental discipline for the units of this sector was deemed necessary.

Given the success of pollution prevention programme in the ceramic and small coal fired boiler-operating units under the India-Canada Environment Facility (ICEF) Project, the WBPCB intended to provide financial assistance to the plastic reprocessing sector through similar partial reimbursement programme. Jadavpur University has

developed a model pollution control device for installation in the extruder machines of these waste plastic re-processing units, under a project sponsored by the Central Pollution Control Board. This particular pollution control device has been adopted for the project. The Board has announced about this programme through paper notifications stating that 50 per cent of the cost of installation would be reimbursed towards installation of pollution control device in plastic recycling units in and around the Kolkata metropolis area. However, as a pre-condition it has been declared that these industries should obtain 'Consent for Operation' and install adequate emission control device, failing which the Board would initiate proper regulatory action against the defaulting units.

#### Restriction on plastic carry bags

The Government of West Bengal and the West Bengal Pollution Control Board have issued a series of directions imposing blanket ban on plastic carry bags at various sites in the state. On March 7, 2006, the WBPCB issued a circular restricting plastic carry bags in specific areas in the state. All manufacturers, stockists and users were directed to comply with the guidelines of the Board regarding use of plastic carry bags to avoid regulatory order as provided under Section 5 of the Environment (Protection) Act, 1986, and also legal actions as warranted under Section 15 of the Environment (Protection) Act, 1986. All concerned persons and authorities were asked to ensure strict compliance of this circular.

- *Manufacture, sale and use of plastic carry bags banned in ecologically fragile areas*
  1. Entire Sundarban area;
  2. Coastal Regulation Zone areas (like Digha, Sankarpur, Frazerganj, Sagar, Bakkhali etc);
  3. Hilly areas of Darjeeling district;
  4. The entire Siliguri Subdivision and the area under Siliguri Municipal Corporation which lies in Jalpaiguri District of West Bengal; and
  5. The entire forest areas of the State.

- *Entry, use and sale of plastic carry bags within the campus of Viswa Bharati Viswa Vidyalaya, areas under Sriniketan-Santiniketan Development Authority and areas under Bolpur Municipality in Birbhum district of West Bengal.*

- *Entry, use and sale of plastic carry bags banned in 39 heritage/tourist sites:*

1. Indian Botanic Gardens (Shibpore)
2. Zoological Garden
3. Subhas Sarobar
4. Rabindra Sarobar
5. Victoria Memorial Hall
6. National Library
7. Bandel Church
8. Belurmath
9. Hazarduari Palace (Murshidabad)
10. Millennium Park
11. Science City Complex
12. Nicco Park
13. Nalban Boating Complex
14. Swabhumi
15. Indian Museum
16. Birla Planetarium
17. Eden Garden
18. Nehru Children's Museum
19. Birla Industrial and Technological Museum
20. Barrackpore Gandhi Ghat (Barrackpore)
21. New Digha Paryatan Kendra (Hooghly)
22. Soakhal Energy Park (Hooghly)
23. Energy Education Park
24. Strand Road (including Church Road, Chandannagar, Hooghly)
25. Chhuti Amusement Park (Chandannagar, Hooghly)
26. KMDA Park (Chandannagar, Hooghly)
27. Banabitan (Salt Lake)
28. Citizen's Park
29. Deshapriya Park
30. Paddapukur (Lansdowne, Kolkata)
31. Allen Park
32. Macpherson Park
33. Victoria Park
34. Leonard Square
35. College Square
36. Hedua
37. Deshbandhu Park
38. Shradhanand Park
39. Talla Park