CENTRAL POLLUTION CONTROL BOARD
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NATIONAL POLICY ON HAZARDOUS WASTE

(PREVENTION & CONTROL OF POLLUTION)

1 Preamble

The Hazardous Wastes (Management and Handling) Rules, 1989 were notified by the Ministry of Environment and Forests, Government of India, under the provisions of the Environment (Protection) Act, 1986. These rules were amended further to bring focused attention in the classification of hazardous wastes of diversified nature, including the trans-boundary movement of such wastes, mainly based on their characterization, after considering the objections and suggestions received from the public. The latest amendment is of 23 May 2003. The implementation of these rules by the concerned agencies, however, requires a base document at this stage with regard to 'National Policy on Hazardous Wastes: Prevention and Control of Pollution' in view of minimizing the facilities to be developed for treatment, storage and disposal of such wastes at the state level, which could turn-out to be foreseeable hot spots if uncared for, and also depending on the availability of adequate quantity of wastes to render operation of the facility economically viable.

2 Hazardous Wastes

Hazardous waste has been defined in Rule 3 of the Hazardous Wastes (Management and Handling) Amendment Rules, 2003 coming into force with effect from 20 May 2003 as any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include:

(a) wastes listed in Column 3 of Schedule-1(Annex- I) ;

(b). wastes having constituents listed in Schedule-2 (Annex- I), if their concentration is equal to or more than the limit indicated in the said schedule; and

(c). wastes listed in List 'A', and 'B' of Schedule-3 (Part-A) (Annex- I) applicable only in case(s) of import and export of hazardous wastes in accordance with to Rules 12, 13 and 14 if they possess any of the hazardous characteristics listed in Part-B of Schedule-3 (Annex- I).

3 Hazardous Wastes Management Scenario

Waste management systems involve a two-tier universal approach viz. (i) prevention and (ii) control of environmental pollution. The preventive approach aims at minimization of waste generation by all possible means of reduction through (i) improvement in process technology and equipment which may completely eliminate waste streams, (ii) improvement in plant operation, and (iii) promotion in use of process material and through recovery/recycling/reuse of waste. The approach for management of hazardous waste is also similar, but it has far reaching consequences if uncared for in view of its hazard potential.

The major obstacles in waste management in the country are more often institutional and behavioural rather than technical. The hazardous wastes are seldom segregated from the less-polluting/non-polluting/recyclable wastes, thus increasing the volume of waste as also increasing the cost of treatment depriving themselves of possible use of recoverables to minimize investment on raw materials.

3.1 The hazardous waste generated in the country **according to** the **provisions** of the Hazardous Wastes (Management and Handling) Rules, 1989 **was estimated at** about 4.4 million tonnes, out of which 38.3 percent was recyclable, 4.3 percent incinerable and the remaining 57.4 percent disposable in secured landfills. Twelve States of the country viz. Andhra Pradesh, Assam, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal, account for 97 percent of the

total waste generation. The top five waste generating States are Andhra Pradesh, Gujarat, Maharashtra, Orissa and Tamil Nadu. On the other hand, the States **of** Himachal Pradesh, Jammu & Kashmir and all the North-eastern States excepting Assam generate less than 20,000 tonnes per annum. **In** view of wide variation in the quantity and nature of waste generated across the States and also considering the wide variation in **geo-climatic and** hydrological conditions in different regions of the country, the approach **for** hazardous waste management has to be essentially State-specific.

3.2 **The afore-referred assessment of hazardous waste generation was based on the eighteen categories of wastes specified in the Hazardous Wastes (Management and Handling) Rules, 1989. Subsequent amendments made in the Hazardous Wastes (Management and Handling) Rules, 1989 in the year 2000 and 2003 for focussed attention and distinct categorization based on characterization of the waste, therefore, necessitated reinventorization of the hazardous waste by the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs), which is on-going. The current exercise will bring out more detailed information in terms of the total quantum of waste generated vis-a-vis its composition in terms of recyclable/reusable, landfillable and incinerable components, which is expected to undergo substantial changes from the earlier assessment. However, the scenario with respect to geographical distribution of waste generated in the States is unlikely to show a major change.**

3.3 While it is **implied** that inventorization has to be reviewed and updated periodically to account for growing industrialisation, it is necessary to prepare a reliable inventory as this forms the basis for planning treatment and disposal facilities to be developed. While field verification supplemented by stoichiometric assessments would be the ideal way forward, **the process would be time-consuming**. **However, reasonably reliable estimates based on process- and product-wise generation of waste can be prepared by expert institutions for planning the type of on-site and off-site treatment to be provided before disposal of waste in an environment friendly manner depending on the waste streams generated and quantities therein.**

3.4 Bulk of the waste currently generated is accounted for by industries in the small and medium scale sectors. In the absence of common disposal facilities, the waste generators have been accorded temporary permission to store waste in their premises except in areas serviced by common facilities that have come up in the States of Andhra Pradesh, Gujarat and Maharashtra. The lack of common facilities has been a major factor in mushrooming of illegal dump-sites since most of the units in the small and medium sector do not have adequate space within their premises to arrange for storage over several years, **after rendering the pollutants immobile or taking necessary precautions to make it environmentally safe, and hence they develop the tendency to somehow get rid of the waste by dumping elsewhere.**

3.5 There has been considerable delay in notifying sites for hazardous waste disposal. Of the 93 sites identified so far, only 30 have been notified. **There is an urgency that the State Governments expedite notification of sites based on environmental impact assessment and also play a catalytic role in persuading the industry associations to set up common waste disposal facilities.** Such common facilities need to be planned based on reliable estimate of the current waste generation and projections for the future.

4 The Basel Convention

4.1 India is a **signatory** to the Basel Convention on trans-boundary movement of hazardous wastes. The basic objectives of the Basel Convention are to control and **reduce** trans-boundary movements of hazardous and other wastes subject to the **proceedings of the Convention in terms** of prevention and minimization of their generation, environmentally sound management of such wastes and active promotion of the transfer and use of cleaner technologies.

4.2 As a Party to the Convention, India is obliged to regulate and minimize the import of Hazardous Waste or other wastes for disposal or sham re-cycling and also to prohibit export of waste to Parties, which have prohibited the import of such wastes. As a Party India is also required to minimize generation of hazardous waste taking into account social, technological and economic aspects. Further, hazardous waste generated in the country also

requires to be managed in an environmentally sound manner. India, as a Party, can prevent the import of hazardous waste or other wastes if it has reason to believe that the waste in question will not be managed in an environmentally sound manner.

5 Regulatory Frame Work

5.1 In order to manage hazardous waste (HW), mainly solids, semi-solids and other industrial wastes which do not come under the purview of the **Water (Prevention and Control of Pollution) Act and the Air (Prevention and Control of Pollution)** Act, and also to enable the authorities to control handling, treatment, transport and disposal of waste in an environmentally sound manner, **the** Ministry of Environment & Forests, Government of India, notified the Hazardous Waste (Management & Handling) Rules on July 28, 1989 under the provisions of the Environment (Protection) Act, 1986 which was further amended in the year 2000 and 2003.

5.2 Amendments to the Rules were made in 2000 and 2003 to identify hazardous wastes by means of industrial processes and waste streams in Schedule **-1** and also by way of concentrations of specified constituents of the hazardous waste in Schedule **-2.** Categories of wastes banned for export and import have also been defined (Schedule -**3**). The procedure for registration of the recyclers / reprocessors with environmentally sound management facilities for processing waste categories, such as used lead acid batteries, non-ferrous metal and used oil, as contained in Schedule -4 and **S**chedule -5 respectively, has also been laid down **(Annex-I).** Further, separate Rules have also been notified for specified wastes in continuation of the above Rules, for Bio-medical wastes as well as used lead acid batteries.

6 Priorities in Hazardous Waste Management

Ranking of options in Hazardous Wastes Management follows the widely accepted hierarchical preference for waste management in general. Accordingly, waste avoidance and minimization ranks the highest followed by recycling, treatment and safe disposal of waste generated.

6.1 Waste Avoidance and Waste Minimization

6.1.1 **Being apprised of** the difficulties in handling of the hazardous wastes and the serious adverse impacts that result from improper management of such wastes, waste avoidance and minimisation is called for added significance. Unlike other sectors of industrial activity, it is necessary to have a close look at the processes generating hazardous wastes rather than leave technological options entirely to the entrepreneur. Such an assessment of the avenues for waste avoidance/minimization shall naturally be industry-specific and product-specific.

6.1.2 On priority, it would be necessary to identify for action industry sectors, which continue to adopt out-dated and highly polluting technology generating significant quantities of hazardous wastes. A case in point is the pulp and paper industry, which continues with the elemental chlorine-based bleaching process, whereas there has been a major shift the world over to elemental chlorine-free bleaching. Similarly, the conversion of mercury cell-based caustic soda manufacturing to membrane cell process needs to be expedited. **Economic incentives in the form of tax exemptions for switch over to cleaner production processes shall have to be made financially attractive to imbibe initiatives among the industries to accept financial burden.**

6.1.3 **The entire chemical industry sector needs industry-specific assessments of cleaner technology options leading to waste avoidance / minimization and resource recovery**. **Even** within the chemical industry **sector**, major segments, such as pesticides & pesticide intermediates, dyes & dye intermediates and bulk drugs & intermediates, require special focus. In these industry categories, wherever laboratory scale demonstrations have been completed, **like** H-acid manufacture, wherein suitability of catalytic hydrogenation has been well-established, pilot plants need to be set up to enable speedier adoption **of the technology** by the industry. In cases **where** techno-economic feasibility of cleaner production process has been well-established and already adopted by some units, such as adoption of cyanide-free electroplating, a dialogue shall be initiated forthwith with the concerned industry associations for switch-over to cleaner production options within a specified time period. In the petrochemicals, pesticides and dye & dye intermediates sectors, product-wise opportunities available for recovery of resources, such as solvents, other reagents and by-products as well as re-

generation of spent catalysts, have been well documented. This exercise needs to be followed up by setting up dedicated Task Forces under the guidance of the concerned laboratories of the Council of Scientific and Industrial Research (CSIR) and such Task Forces could serve as an inter-face between industry associations and CSIR laboratories to carry the work forward for actual application in field conditions.

6.2 Recycling of Hazardous Waste

6.2.1 Recycling of non-ferrous metallic wastes, such as zinc dross, brass dross, used lead acid batteries, copper oxide mill scale and used lubricating oil, offer attractive options for resource recovery in an environmentally sound and techno-economically feasible manner. Current gap between demand and supply of lead, zinc and copper as well as the projected widening of the gap due to rapid **increase** in demand arising **out of the growth in** automobiles sector etc. serve as incentives for recycling of wastes. As compared to primary production of metals, recycling is energy efficient and environment-friendly subject to careful selection of the processing technology and disposal of wastes generated, and hence to be promoted.

6.2.2 At present, there are about 200 recyclers of non-ferrous metallic wastes/used oil/waste oil registered under the **Hazardous Waste (Management and Handling) Rules**. Registrations have been granted based on their possessing facilities for environmentally sound re-processing and suitable facilities for disposal of wastes generated. However, **except** for a few exceptions, almost the entire recycling takes place in the un-organized small-scale sector. As such, there are serious limitations on technology up-gradation, which would be necessary to ensure that re-processing is done in consonance with the guidelines evolved by the Basel Convention.

6.2.3 In order to promote technology up-gradation, it would be necessary to make a distinction between re-processors with state-of-the-art facilities which meet the Basel Convention guidelines and those which do not. The current import regime needs to be re-examined to give access to imports of non-ferrous metallic wastes to only to the recyclers employing state-of-the-art facilities from a prospective date. In fact, such units could also be given preferential access to wastes generated within the country. **Other economic**

incentives also need to be evolved to offset additional burden on the industry arising out of the enhanced capital investment and recurring expenditure on pollution prevention and control and for safe waste disposal.

6.2.4 While the traditional approach to pollution control in India has been to stipulate industry-specific standards and leave the choice of technology to the entrepreneur, **a shift** from the convention was made in the case of used oil re-processing units, and **a specific** technology up-gradation was legally mandated from a prospective date. Such an approach needs to be examined for its usefulness and relevance in recycling of non-ferrous metallic wastes **and for such other wastes**.

6.2.5 Despite the registration scheme for recyclers, the menace of recycling in the unorganized sector with all its attendant environmental and health hazards still continues. This underscores the importance of channelization of wastes generated. While the **Battery (Manufacturing & Handling) Rules, 2001,** mandate return of used lead acid batteries, compliance remains unsatisfactory. It would be necessary to look into the causes thereof and devise suitable economic incentives such as advance recycling tax which is suitably structured to provide adequate incentive for the battery users to return used batteries to the authorized dealers. Simultaneously, an organized drive will be necessary to break the nexus between scrap dealers, backyard smelters and those engaged in battery re-conditioning.

6.2.6 At present, there are no re-processing facilities in the country to recover toxic metals, such as mercury from thermometers, fluorescent tube-lights etc. and cadmium from batteries etc. Considering the potential for serious health impacts posed by co-disposal of such hazardous wastes with municipal solid wastes, development of a system for channelization of such wastes and their re-processing facilities deserves to be accorded high priority.

6.3 Safe Disposal of Hazardous Waste

The third and the last option **on the HW management is to treat and/or dispose off the waste safely**. Depending on the waste category, land disposal or incineration could be adopted. Design and **operational** norms of such

facilities, either captive or common, should strictly adhere to the guidelines. Supervision of such facilities during construction stage is of paramount importance. Common facilities shall invariably be equipped with laboratory facilities to verify waste categorisation.

7 Setting up of Common Treatment, Storage and Disposal Facilities

7.1 **At present, there are three integrated Treatment, Storage and Disposal Facilities (TSDF) for Hazardous Waste in the States of Andhra Pradesh, Gujarat and Maharashtra.** States are currently at various stages of planning their common facilities. Common facilities including integrated facilities have to be planned following the polluter-pays principle although at the initial stages a certain level of assistance from the State Governments could significantly accelerate the process of setting up of these facilities and also ensure their viability in the initial years which is vital**.** Currently, several State Governments have made available land at concessional rates for setting up of these facilities, which are part of the state's industrial infra-structure, on the lines of Common Effluent Treatment Plants (CETP). For economic viability of such common facilities, waste assurance is undoubtedly the single most important factor. Considering the urgency to set up common facilities and also the imperative to make them viable in view of the dire consequences to human health and environment the absence of such facilities could lead to, setting up of common facilities calls for scientific planning backed by sound economic rationale. Transportation costs could account for a significant portion of total treatment costs particularly in the case of landfillable wastes.

7.2 An integrated waste management facility shall be designed to handle at least 1 lakh tonne/annum of hazardous wastes; such a facility should comprise a secured landfill, intractable waste stores, incinerator, reuse/recycling facility, **a** laboratory capable of comprehensive analysis, **and** arrangement for transportation and handling of wastes including supporting infrastructure. Such a facility shall be permitted one per State (until provision for interstate movement of hazardous waste comes into force).

7.3 The integrated facility as indicated above shall in general have a Zone of coverage of **300 km** radius from the facility.

7.4 This facility shall be located close to the major waste generation area.

7.5 Beyond the Zone of coverage (where transport cost plays a major role), **smaller facilities comprising only a secured landfill including waste stabilization/solidification facility**, a laboratory capable of Finger Printing Analysis, mechanized operation of transportation and handling of wastes and/or satellite transfer stations shall be established, where feasible.

7.6 The facilities **shall** be linked with the integrated facility of the State for comprehensive analysis of wastes, storage of intractable wastes, incineration and such other services.

7.7 **The distance between two transfer stations-cum-landfill facilities shall not be more than 300 km from each other and the integrated facilit**y.

7.8 All liability for these facilities shall rest with the integrated waste management facility.

7.9 After the first integrated facility reaches satisfactory level of capacity utilization (50% of estimated waste) further integrated facilities **shall** be planned.

7.10 New bio-medical waste treatment facilities, both common and individual, shall not be allowed within forty km of an integrated facility since bio-medical wastes can also be handled at the integrated facilities.

8 Interstate Transportation of Hazardous Wastes

8.1 Interstate movement of hazardous wastes will be required when (a) landfillable waste generated by a State is less than the pre-determined level of 20,000 **tonne per annum**, (b) for a company with units located in several States and wishing to incinerate wastes at one facility, and (c) for incineration purposes when incinerable waste generation in a State is not adequate to support 3,000 **tonne per annum** of incineration. Facilities for landfilling / incineration shall be set-up within one year.

8.2 In some of the States/Union Territories, like Himachal Pradesh, Kerala and the Northeastern States, and Delhi, Chandigarh etc., efforts for development of hazardous waste disposal facilities are still in progress. **In these cases, there are either difficulties in terms of identifying sites as the quantity of waste generation is low and hence not viable for disposal by landfilling, or the water table is very close to the surface of the ground, or the area has high annual rainfall, or high transportation cost.** In case of Delhi, Kerala, Himachal Pradesh, Chandigarh and North Eastern States etc., combined facility with neighboring state including inter-state movement is required due to various factors, such as land availability and the amount of waste generated suitable for landfilling / incineration.

8.3 Based on mutual consultations and agreement between the State Governments, the system of interstate movement of hazardous wastes shall have to be permitted/allowed for the Units in States, where common facilities for the interim period (say, one year) are yet to be developed, and the differential rates to be charged for wastes coming from other States arrived at.

8.4 **For proper tracking of HW disposal in an environmentally sound manner by the State Pollution Control Boards (SPCBs) / Pollution Control Committees (PCCs) in the Union Territories, the Manifest System of HW transportation shall be followed. Five percent of disposal charges shall be made available to concerned SPCBs / PCCs where the wastes are proposed to be disposed in satellite facilities by the occupier/operator of a facility**.

9 Use of Cement Kilns for Hazardous Waste Incineration

9.1 Incineration of high calorific value hazardous wastes in cement kilns is one of the safe alternatives **for** conventional disposal in dedicated waste incinerators. **Sludge** from petrochemical industry, oil refinery and paint industry as well as spent solvent from pesticide industries are particularly suitable. **However, sulphur-containing wastes shall be regulated in the cement kiln to control emission of sulphur dioxide, and the cement plants shall have trial runs with the waste in small quantities before taking a**

final decision, and such operations shall have authorization from the concerned State Pollution Control Board / Pollution Control Committee under intimation to the Central Pollution Control Board.

9.2 In the cement kilns, the high flame temperature of around 2,000 ^{0} C, high material temperature of around 1,400 ^{0} C and large residence time of around 4-5 seconds ensure complete combustion of all organic compounds. Acid gases formed during combustion are neutralised by the alkaline raw material. **The non-combustible residue including heavy metals gets trapped / embedded into the clinker in an irreversible manner.**

9.3 **The spread of cement industry in the country across the States makes this option particularly attractive**. That about 250 cement works in Europe utilize about 3 million tonnes of hazardous wastes indicates the potential that this option holds for India **as well since our country also has over 200 cement kilns and the incinerable hazardous wastes generated is considerably low. Trial runs need to be taken up to study suitability of this option under Indian conditions in all major HW generating States.**

10 Illegal Dumpsites and Remediation

10.1 In the absence of common facilities, illegal and clandestine dumping of HW is a common sight in almost all the States. Even after waste disposal facilities have become operational in some States, the problem persists since illegal dumping helps avoid costs of transportation, treatment and disposal. **To prevent the problem from growing beyond control, surveillance both by the enforcement agency and the industry associations shall have to be made effective.**

10.2 Remediation/rehabilitation of dumpsites shall be based on scientific assessment of contamination of soil and groundwater, **and the projected future damage it may cause after dumping is discontinued, through modelling**. The strategy for intervention, whether the focus should be on excavation of waste at site to the nearest TSDF and measures to prevent further spread of contamination through containment measures would suffice or whether site remediation should be taken up and, if so, the approach

therefore, would vary from site to site depending on the nature of pollutants, **future damage potential, remediation costs and the benefits expected to accrue thereof.** In any case, the 'Polluter Pays' Principle has to be the basis for cost sharing unless it becomes impossible to identify the polluter through finger printing of contaminants and tracing the wastes back to the producer.

10.3 In cases, where it becomes impossible to track down the **polluter**, a dedicated fund needs to be created at the State level to which mandatory contributions from all producers of hazardous wastes **need to be** prescribed. For removal of HW from premises of Units to the nearest TSDF, the individual producers shall also be levied a fine for indiscriminate disposal within their premises in violation of the conditions of authorisation for secured on-site storage for a temporary period.

10.4 The problem of hazardous wastes and chemicals lying in industrial units, which have been closed, shall also be tackled strictly based on the 'Polluter-Pays' Principle.

11 Incentives, Disincentives, and Clean-up Fund

11.1 To encourage industries developing TSDF or incineration facility for of their HW as per norms, providing of incentives in the form of 'investment allowance' and 'depreciation allowance' shall be considered by the Government. Such incentive, if provided, shall also be extended to the entrepreneurs developing 'Integrated Waste Management Facility' in the respective States.

11.2 Industries generating HW in excess of the quantity declared through the Environmental Audit Statement each year or in the Manifest System for disposal of HW shall be penalized to pay fines, for which the Government has to fix some norms, so that it acts as a deterrent to submission of false information.

11.3 There is a need for development of an 'Environment Clean-up Fund' at the State/National level for which industries and municipalities have to make mandatory annual contributions, so that the Government takes up clean-up/remedial actions for the protection of the environment

wherever required. The contributions may be collected on the lines of 'Water Cess' following some norms as to be decided by the Government.

12 Customs Departmental Laboratory Strengthening

12.1 Customs **Department** plays an important role in regulating import of hazardous wastes into the country. Cases of illegal imports of hazardous wastes have clearly indicated the need to plug existing loopholes. **Priority areas for action include training of customs staff engaged in inspection and sampling and also up-gradation of customs department's laboratories.**

12.2 Appraisers carrying out inspection of goods received and having discretion to pick up samples need to be trained to pick up representative samples to achieve the best results. In addition to sampling techniques, assessors **shall** be made aware of current hazardous wastes regulations, documentation requirements etc. Equally important is the need to upgrade laboratory facilities at all major ports of entry. Difficulties faced recently by customs authorities in distinguishing between used oil and waste oil serves as a case in point to identify the gaps. Lack of laboratory facilities for analysis of trace organics, such as PCBs**,** could either result in holding up of supplies for long periods of time merely on grounds of suspicion or lead to illegal imports of waste oil under the garb of **furnace oil**/ **fuel oil**. As the first step, a thorough assessment of laboratory facilities available at all the ports, in particular, facilities available both in terms of equipment and trained man-power and equipment for analysis of all important heavy metals and trace organics, shall be taken up and a time-bound plan prepared for their up-gradation. Till such time all the ports are upgraded both in terms of equipment and training of laboratory personnel, **it is** necessary to consider channelization of all hazardous wastes through selected ports equipped to handle them. **For this purpose, ports shall be categorized suitably**. As an interim measure, outsourcing of laboratory related work to laboratories recognized under the **E (P) Act** in respect of all relevant parameters may be considered**.**

12.3 Synchronising Customs **departments'** categorization of wastes with amendments in the **Hazardous Wastes (Management and Handling) Rules** shall be made automatic, so that the Customs department's lists need not be amended every time there is a change in the lists of various waste categories in the Rules. Incidentally, this will also help in eliminating the time gap between amendments in the HW (M&H) Rules and the Customs department's waste lists, which presently causes avoidable confusion. Harmonisation of Customs codes with the international system as amended from time to time shall also be accorded high priority.

13 Disposal of Date-expired and Banned Pesticides

There are significant quantities of date-expired pesticides lying in various States, and the concerned departments are looking for safe disposal methods. The options available are (i) to have these reprocessed wherever possible by the industry who has supplied earlier; (ii) to appropriately incinerate either through dedicated incinerators of individual industries or through **incinerators** available with common integrated facilities **(TSDF).** In order to deal with such hazardous wastes, interstate transportation shall be permitted by the concerned State Governments and also its disposal in a facility as per above-stated options available.

14 Waste Information Exchange *

14.1 Information on industrial waste exchange is a direct service to industry that puts waste producers in touch with the waste users for the purpose of recycling/reusing these materials back into manufacturing processes. The goal of the Exchange is to minimize waste disposal expenses and maximize the use of such by-products with reuse value.

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* Based on the Report of the Sub-Group II on 'Industrial Waste Management' constituted by the Waste Management Council, Ministry of Environment and Forests, August 1990.

14.2 Under the 'Waste Information Exchange Programme', if instituted, it is important to have information on total quantum of liquid/solid industrial hazardous/non-hazardous wastes generated monthly with their source of generation. It should also have information on location, treatment and the disposal system established, so that the category of wastes to be treated at a particular facility is known to the generator. The information on treatment and disposal technology on utilization of wastes shall be made available through such windows. Such system shall also have information on generation of wastes by industries, as a feed back for other industries.

14.3Institutions, like the Federation of Indian Chambers of Commerce & Industry (FICCI), Confederation of Indian Industry (CII), and Associated Chambers of Commerce & Industry of India (ASSOCHAM) shall develop ' Waste Exchange Windows', collectively or individually, for the benefit of their member industries through their regional/state centers.

15 Industrial Waste Management Institute *

15.1 There is a need for development of professional support for the industries. The government shall establish an institute, called 'Industrial Waste Management Institute' –

(1) to advice on technical, legal, financial, social aspects, and implementation strategies for reducing waste in the industry as well as managing inevitable wastes in an environmentally compatible manner.
(2) to support industrial establishments at unit and sectoral levels through consultancy and training activities on waste reduction, minimization and management aspects.
(3) to launch publicity / awareness campaign and maintain a data bank on different wastes generated by the industry so as to promote waste exchange and reuse in the industry.

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* Based on the Report of the Sub-Group II on 'Industrial Waste Management' constituted by the Waste Management Council, Ministry of Environment and Forests, August 1990.

The Industrial Waste Management Institute shall be an autonomous institute under the administrative control of the Ministry of Environment and Forests.

15.2 Industrial waste management shall form a part of the curricula in the post-graduate courses on Environmental Science and Engineering offered by Technical Institutions and Universities, like all the Indian Institute of Technology (IITs), Jawaharlal University-Delhi, Jadavpur University-Kolkata, Banaras Hindu University (BHU)-Varanasi etc. The Government shall ask the University Grants Commission to provide directives to such institutions in the country for incorporating Waste Management Courses in their syllabi.

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Annexure
(Schedule 1, 2 & 3 of HW (M & H) Rules, 2003.