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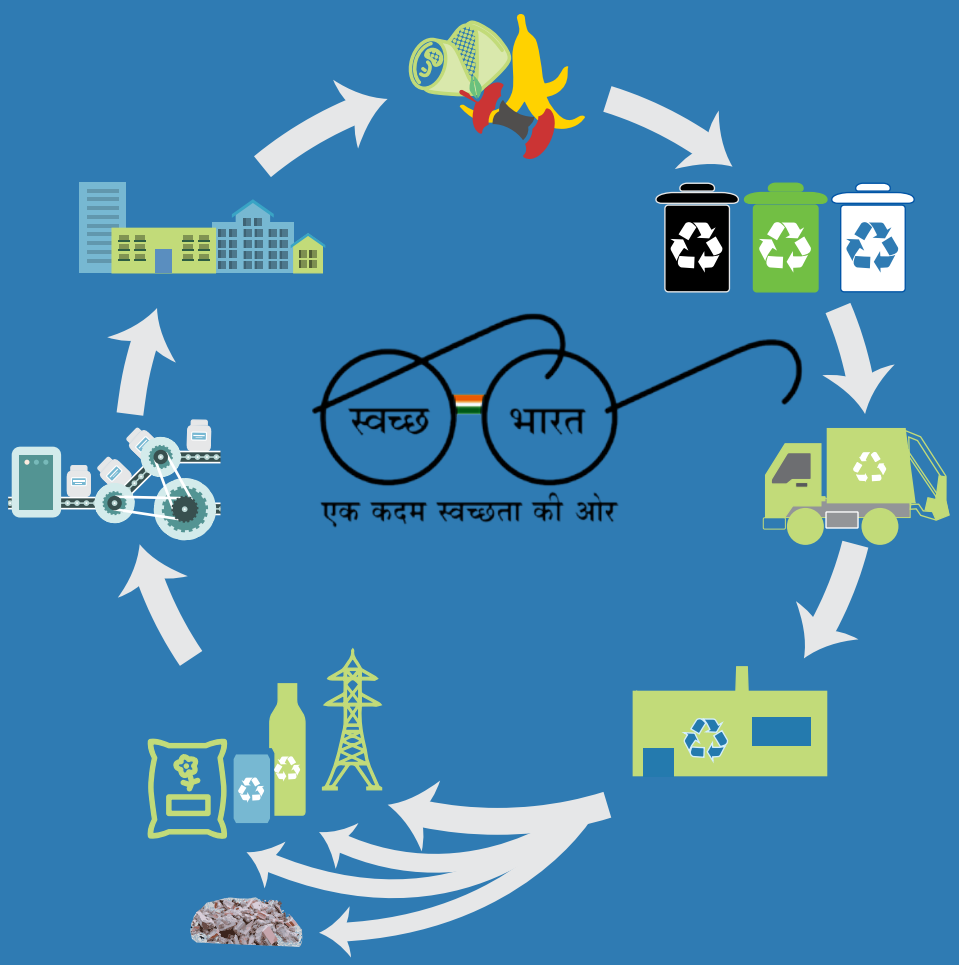
GOVERNMENT OF INDIA

SWACHH BHARAT MISSION

MUNICIPAL SOLID WASTE MANAGEMENT MANUAL

PART III: THE COMPENDIUM



Central Public Health and Environmental Engineering Organisation (CPHEEO)

MINISTRY OF URBAN DEVELOPMENT

www.moud.gov.in

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2016

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MUNICIPAL SOLID WASTE MANAGEMENT MANUAL

Central Public Health and Environmental Engineering Organisation (CPHEEO)

IN COLLABORATION WITH

german cooperation
DEUTSCHE ZUSAMMENARBEIT

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2016

In keeping with the advancements in this sector, updates as and when found necessary will be hosted in the Ministry website: http://moud.gov.in/ and the reader is advised to refer to these also.

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PART III:
The Compendium

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Annexure 1

FORMULATION OF ANDHRA PRADESH INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT STRATEGY, 2014

GOVERNMENT OF ANDHRA PRADESH

ABSTRACT

MA&UD Department – Municipal Solid Waste Management – Formulation of Andhra Pradesh Integrated Municipal Solid Waste Management Strategy 2014 approved - Orders – Issued.

MUNICIPAL ADMINISTRATION & URBAN DEVELOPMENT (H1) DEPARTMENT

G.O.Ms.No.64. **Dated: 13.02.2014.**

Read the following:-

From the Commissioner & Director of Municipal Administration Lr.Roc.No.26062/2013/H1, Dt. 03-02-2014.

****

ORDER:-

Solid Waste Management is one of the top priorities of the Government of Andhra Pradesh. For effective implementation of the Municipal solid Waste Management Rules, 2000 in all the Urban Local Bodies, it is felt that there is every need to formulate appropriate Solid Waste Management Strategy to guide the ULBs for effective handling Solid Waste. Accordingly, the Commissioner & Director of Municipal Administration has been instructed to formulate a draft strategy and submit the same to the Government.

2. Accordingly, after consultation with the relevant experts, the Commissioner & Director of Municipal Administration has submitted a draft Strategy on **Andhra Pradesh Integrated Municipal Solid Waste Management, 2014** for approval.

3. Government, after careful examination of the Andhra Pradesh Integrated Municipal Solid Waste Management Strategy 2014, hereby approve the same to enable Urban Local Bodies in the State to implement Municipal Solid Waste Rules, 2000 in letter and spirit by achieving the vision " and to equip the ULBs with efficient, environmentally friendly and sustainable waste management system with complete safe collection, transportation, treatment and disposal facilities and achieve the service benchmarks".

4. The approved strategy is herewith enclosed to this order as annexure. Further, Managing Director, Andhra Pradesh Urban Finance & Infrastructure Development Corporation (APUFIDC) Hyderabad is designated as the nodal agency for providing necessary financial services for effective implementation of the Strategy.

5. The Commissioner & Director of Municipal Administration is requested to take further necessary action in the matter.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

Dr. S.K. JOSHI,
PRINCIPAL SECRETARY TO GOVERNMENT (UD)

To
The Commissioner & Director of Municipal Administration. Hyderabad,
Managing Director, Andhra Pradesh Urban Finance & Infrastructure Development Corporation (APUFIDC), Hyderabad
Copy to:
Director General & Special Chief Secretary to Government Environment Protection Training and Research Institute, 91/4, Gachibowli, Hyderabad
PS to Principal Secretary (MA) to Government MA&UD Department
The OSD to M(MA&UD)
SC/SF

//FORWARDED ::BY:: ORDER//

SECTION OFFICER

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ANNEXURE TO G.O.MS.No.64, MA &UD(H1) Dept., Dated: 13.02.2014.

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1. Background

Municipalities have overall responsibility for Municipal Solid waste Management. However most of them are unable provide proper system to tackle the current situation. Magnitude and density of urban population in India is increasing rapidly and consequently the Municipal agencies spend about 5-25% of their budget on MSWM. Despite of such heavy expenditure, the present level of service in many urban areas is so low that there is a threat to the public health in particular and the environmental quality in general.

Collection and transportation activities constitute approximately 80–95% of the total budget of MSWM. Hence, it forms a key component in determining the economics of the entire MSWM system. On the contrary, disposal and treatment of waste is an underinvested area and open dumping, uncontrolled and poorly managed landfills are a common feature across most Indian cities and towns. The results pose a serious threat to the underground water reserves and surface water bodies through run –offs.

The challenges of municipal solid waste management range from insufficient capital expenditure, non-affordability to meet the O&M, lack of technical know-how, lack of public awareness, non-availability of land and fighting the opposition from the neighborhoods where the MSW facility is located

Managing the problem of solid waste in a more integrated and comprehensive manner, makes it imperative for the state government to set forth a strategy to address the different aspects of sanitation management related tackling solid waste in a systematic, coordinated and time-bound manner

Though the MSW Rules 2000 make the ULBs responsible for management of wastes, ULBs have to partner with private waste management companies, NGOs and RWAs for various segments of the MSW value chain due to various capacity constraints. In order to implement and comply with the MSW Rules 2000 and overcome capacity constraints at the local level, some states have come up with centralized waste management systems at the city level or regional level either on Non PPP or PPP approach. Centralized waste management systems at the city level are being practiced in Guwahati, Hyderabad and Chennai, among others. Regional level MSW management facilities have come up in Tamil Nadu and Gujarat

The need of the hour is to devise an efficient solid waste management system where in decision-makers and waste management planners can deal with the increase in complexity, and uncertainty. The Municipal Solid Waste (Management and Handling) Rules, 2000 (the 'MSW Rules'), issued by the Ministry of Environment and Forests, Government of India, under the Environment (Protection) Act, 1986, prescribe the manner in which the Authorities have to undertake collection, segregation, storage, transportation, processing and disposal of the municipal solid waste (the 'MSW') generated within their jurisdiction under their respective governing legislation.

In this context, there is need to revisit, develop, and implement appropriate strategy framework to guide the urban local bodies for effectively handling MSW in order to comply with the MSW (Management & Handling) Rules 2000 notified by the Ministry of Environment & Forest, Govt of India and related regulations. The framework will guide and support the urban local bodies in the state for managing the solid waste scientifically and cost effectively.

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2. Municipal Solid Waste Management Scenario in India

The urban growth in India is faster than the average for the country and far higher for urban areas over rural. The proportion of population residing in urban areas has increased from 27.8 % in 2001 to 31.80 % in 2011 and likely to reach 50% by 2030. The number of towns has increased from 5,161 in 2001 to 7,935 in 2011. The rapid growth in urban areas has not been backed adequately with provisioning of basic sanitation infrastructure and thus leaving many Indian cities deficient in services as water supply, sewerage, storm water drainage, and solid waste management.

It is estimated that Urban India generates about 1.5 Lakhs Tonnes per day. The per capita waste generation in major cities ranges from 0.20 Kg to 0.6 Kg. Generally the collection efficiency ranges between 70 to 90% in major metro cities whereas in several smaller cities the collection efficiency is below 50%. The collection and disposal of municipal solid waste is one of the pressing problems of city life, which has assumed great importance in the recent past. Treatment of waste and scientific disposal of urban waste is not only absolutely necessary for the preservation and improvement of public health but it has an immense potential for resource recovery.

The composition of MSW at generation sources and collection points in India is observed to mainly consist of a large organic fraction (40–60%), ash and fine earth (30–40%), paper (3–6%) and plastic, glass and metals (each less than 1%). It is also estimated that the Urban Local Bodies spend about Rs.500 to Rs.1500 per tonne on solid waste for collection, transportation, treatment and disposal. About 60-70% of this amount is spent on street sweeping of waste collection, 20 to 30% on transportation and less than 5% on final disposal of waste, which shows that hardly any attention is given to scientific and safe disposal of waste. Landfill sites have not yet been identified by many municipalities and in several municipalities, the landfill sites have been exhausted and the respective local bodies do not have resources to acquire new land. Due to lack of disposal sites, even the collection efficiency gets affected.

Very few Urban Local Bodies in the country have prepared long term plans for effective Solid Waste Management in their respective cities. For obtaining a long term economic solution, planning of the system on long-term sustainable basis is very essential

As per the World Bank Statistics, incorporated by the High Powered Expert Committee in its Report on Indian Infrastructure and Services, the following is the report card on Solid Waste Management in Indian Cities:

- Primary collection – 38 per cent
- Segregation of recyclables – 33 per cent
- Street sweeping – 72 per cent
- Transportation – 52 per cent
- Processing – 9 per cent
- Disposal – 1 per cent

The Energy and Resources Institute (TERI) has estimated that by 2047, waste generation in Indian cities will increase five-fold to touch 260 million tonne per year (Asnani 2006). A study by the World Bank (2006) puts India's annual generation of municipal solid waste to be somewhat lower, i.e., in the range of 35 to 45 million tonne, amounting to about 100,000 to 120,000 metric tonne every day. It is also estimated that the annual increase in overall quantity of solid waste in India's cities will be at a rate of 5 % per annum.
The fact that a large part (over 60%) of India's waste is biodegradable, provides an opportunity for composting. While lifestyle changes, especially in the larger cities, are leading to increased use of packaging material, and per capita waste generation is increasing at about 1.3% per annum, the biodegradable component is still expected to be much higher than in industrialized countries.

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Even with **current levels** of highly inadequate service, solid waste management accounts for 25-50 % of a ULB's expenditure (World Bank2006), but cities recover less than 50 per cent of the O&M cost, according to a study by the Ministry of Urban Development, Government of India (2010b). The distribution of the expenditure is heavily loaded in favour of collection and transportation, and little attention is paid to processing and scientific disposal of the waste.

3. Current Status of SWM in ULBs of Andhra Pradesh

Urban Population in Andhra Pradesh is growing at 33.49% compared to the Country's 31.16%, in 2011. As per 2011 Census, total Population of Andhra Pradesh, which is 8.46 Crore, 2.8 Crore live in Cities and Towns. The overall decadal growth rate of Urban population in the State is 36.26 percent as compared to the 14.93 in 2001 and as against India's 31.80 percent as per the 2011 census. The total census town have increased from 210(2001) to 353(2011) with more than eight (8) districts have witnessed a growth of more than 50 % in its urban population. The urban population in Andhra Pradesh is projected to increase to 45.5 million or 4.55 Crores by the year 2030 constituting 46 percent of total population. Including GHMC, there are about 182 ULBs comprising of 19 Corporations, 113 Municipalities (of all grades), 50 Nagar panchayaths. The Class-1 towns in state have increased from 39 (2001) to 46 (2011).

The ULBs in the Andhra Pradesh state on an average generates about 9754 MT of wastes per day and in terms of the per capita of waste generation in the ULBs ranges from 0.2-0.4 kg/per day. The quantities of waste are growing 5% annually with the increasing per capita generation and change in living standards especially in the class-1 cities. Therefore, there is need to enhance waste management and handling capacity. ULBs in state spend around Rs. 500 - 1500 per tonne/day being paid from Municipal budget. Of which, 60-70% on collection alone, 20-30% on transportation, Less than 10% or less on Processing and Disposal activities. Low investments with majority of the ULBs lack proper treatment and disposal facility. The NUSP rating of the class-1 cities in state in 2009 indicates have poorly rated the cities and have recommended for immediate need for improvement in sanitation situation.

Government of Andhra Pradesh has taken a proactive interest in encouraging ULBs in the state to comply with the MSW rules 2000 and has spent entire allocation of 374 Crores under the 12th Finance Commission grants for development of the solid waste infrastructure and services. The mission mode program was conceptionalized and implemented with the support and involvement of the community based organizations. Despite of the efforts, the success has been limited to primary collection and transportation but a great deal is still to be achieved to comply with the MSW Rules in totality especially in relation to the treatment and disposal of waste.

Andhra Pradesh is one of the fore-runner in initiating 'Regional Cluster Based approach' for the MSW based Integrated Waste to Energy plants on PPP basis by grouping the then 124 ULBs into 19 clusters in the year 2004., however, the results have not delivered performance as anticipated. Presently, only one WTE plant is running its operations and the quantity of waste that has been actually processed in the plant is not monitored. The main reasons were over estimation of revenues, lack of viable business models and the inability to raise the required funds by the WTE plant developer and may not be attributed to the very concept of 'Regional MSW Facility. In addition to this, independent WTE plants stared of in Vijayawada and Hyderabad have closed their operations due to the technical reasons.

Apart from this, a very few smaller ULBs in the state have attempted the composting, vermin- composting plants for processing of organic waste in smaller scale through involvement of NGOs and CBO's have seen some degree of success but the same have failed due to lack of sustained interest. The key issues associated with composting are lack of segregation, marketing and quality of the compost. Moreover, till now no city across all class of cities in the state has set up

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the scientific landfill expect the cities OF Hyderabad, Vishakapatanam & Vijayawada where the developed the landfill under JNNURM are under process.

4. Approaches for Solid Waste Management

4.1. Decentralized vs. Centralized approach

MSW Management project can be centralized or decentralized waste management system depending upon the profile of the locality in terms of composition of waste, availability of land for processing waste, market linkages, health risks and extent of in formalization of the waste management system.

Centralized PPP models are suitable for urban areas where significant economies of scale are possible and the composition of waste allows for greater extraction of value from the waste through technological solutions. Health hazards due to inefficient waste disposal and non-availability of land in close proximity of localities are other two important factors to be considered while choosing a centralized waste management system. Centralized waste management systems at the city level are being practiced in Guwahati, Hyderabad and Chennai, among others. Regional level MSW management facilities have come up in Tamil Nadu and Gujarat.

The decentralized method of managing a city's waste involves management of municipal waste by various small waste management centers within the locality. This allows PPPs at the unit level where micro-entrepreneurs can work with the ULBs to produce compost or other value added products from the waste and the ULBs either on its own or through a bigger private partner manages the collection of refuse and maintenance of landfill sites. .

Decentralized process of collection and processing of wastes, avoids the carting of wastes too far off dumping sites. It reduces the expenditure of imported diesel, consequent traffic congestions, air pollution and road maintenance costs. It also reduces the contamination of ground water through the seepage of leachate. Cities like Namakkal and Trivandrum, among others, have engaged SHGs and NGOs for (decentralized) management of waste.

4.2. Management of Multiple Solid Waste streams

Municipal Solid Waste consists of Household Waste, Construction and Demolition Debris, Horticulture, and Waste from Streets. Municipal Solid Waste to be segregated into groups of bio –degrables , recyclables and hazardous waste. Bio-degradables like organic waste from kitchen, market and abattoir to be converted into rich organic manure or energy. Plastics, papers, glass; metals are to be recycled into new products. The construction & demolition waste to be used as landfill cover. "Segregation" shall remain to be centric approach solution. These further creates an opportunity to order the sequence of collection and processing of waste – for instance - vegetable market waste which is high on organic content can be collected and processed on a daily basis and on a decentralized model with the facilities being set up at the markets itself or at centralized processing unit. In case of recyclables or dry wastes, segregation by sorting them further into plastics, paper, metal, glass, and fuel (coco nut shells) and rubber. Bio-medical, hazardous and e -Waste to be managed by concerned authorities as per the existing legislations. The road sweepings, construction and demolition and the horticulture debris are to be collected separately and processed with. The non-recyclable waste components and inert would finally to be dispose off into scientifically designed sanitary landfills.

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4.3. Hierarchy of Waste Management – 5Rs (Reduce, Reuse, Recycle, Recover and Remove)

The framework proposes to have a multipronged approach that includes the 5Rs principle Reduce, Reuse, Recycle, Recover and Remove.

The first choice of measures in waste management, is avoidance and waste reduction. This step aims for goods to be designed in a manner that minimises their waste components. Also, the reduction of the quantity and toxicity of waste generated during the production process is important

Re-using an article removes it from the waste stream for use in a similar or different purpose without changing its form or properties. The recycling of waste, which involves separating articles from the waste stream and processing them as products or raw materials. This approach seeks to recycle a product when it reaches the end of its life span.

Recycling is process of transforming materials into secondary resources for manufacturing new products. Promotion of waste recycling sector and providing that with an institutional support can and motivating all the stakeholders to segregate at source of generation

Recovery involves reclaiming particular components or materials, or using the waste as a fuel. Material recovery involves a variety of mechanical or biological processes that remove a variety of materials from the waste stream.

Remove refers to residuals management or the management of materials which remain after the previous 4Rs have been applied.The last step of the waste management whern the quantity of waste cannot be reduced during production, the purpose of implementing the waste management hierarchy is to use waste as a resource and divert these potential resources from dumpsites / landfill.

5. Vision:

The Municipal and Urban Development Department, Government of Andhra Pradesh, have initiated several Institutional reforms, like establishment of AP Solid Waste Management Board under the Chairmanship of Honorable Chief Minister, State Level Official Committee and Expert Committee to address the issues relating to Solid Waste Management in ULBs of Andhra Pradesh. The entire 12th Finance Commission Grants of around 375 Crores were earmarked to Solid Waste Management which is unique in the Country has been effectively utilized in strengthening the SWM infrastructure and service delivery. 'Cheta Pai Kotha Samaram' – 'New War on Waste' was program based initiative launched on state wide scale has successful in creating participatory based innovative approaches. Under the 13th Finance Commission Utilization of grants, Integrated SWM has been included as one of the admissible components for utilization of grants by ULBs for improvement of Urban Services.

The Department has regularly conducted workshops, seminars and meetings involving Municipal Functionaries, other related Departments, Civic Societies, and institutions partnering in technical matters such as GIZ, ASCI based on which, the following vision has been formulated:

"to equip the AP cities with efficient, environmentally friendly and sustainable waste management system with complete safe collection, transportation, treatment & disposal facilities and achieve the service benchmarks "

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5.1. Goals and Service outcomes

The overall goal is to ensure 100% compliance to the MSW (Management and Handling) Rules 2000 and related legislations w.r.t to municipal solid waste in all the cities and towns through multi stakeholder partnership approach. The specific goals are:

- 100% Door to Door collection and Source Segregation
- Efficient collection and safe transportation of wastes generated in the cities
- 100% treatment and scientific disposal facility & cost recovery
- Better awareness among the urban population and community mobilization participation
- Capacity Enhancement and Optimization of the human resources in SWM
- Strengthen the existing bye-laws for better regulation and user charges
- Encourage PPP in developing integrated treatment and treatment on Regional approach

6. Key Issues of Solid Waste Management

- ULBs lack resources, systems and capacity for development of treatment and disposal of solid waste
- Lack of substantial capital and O&M expenses without corresponding and matching revenues
- Lack of support in financial, technical and project development at state level to ULBs in identifying right technologies, processes, structuring projects and implementation. The role of the technical and advisory agencies like the APPCB, NREDCAP APTDC and PPP cell, APIA has been limited.
- Lack of awareness about the importance of good SWM practices especially about waste segregation
- Lack of policy framework in operationalizing PPP in MSWM and contract competence
- Not in my backyard (NIMBY) phenomenon, land acquisition is major issue in SWM projects and is a major cause of delay; especially in processing & landfill facilities
- Lack of technical expertise and institutional arrangements
- Inadequate equipment and inappropriate technology choices
- Lack of willingness to charge user fees provisions in Municipal Acts for levy of user charges
- Lack of Capacity in ULBs with reference to the processing technologies and scientific landfills even after a decade.

6.1. Guiding Principles of the SWM Strategy

- Defining the roles and responsibilities of various stakeholders and putting in place an operating framework

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- Greater emphasis on civic engagement by involving NGOs, women community groups, Ward Committees/Sabhas, Area Sabhas, etc., in awareness generation
- Establishing Institutional mechanism at State Level for planning, technical, financial and implementation support
- Promoting PPP investments for developing treatment and final disposal facilities on Regional level on Cluster based approach

7. Strategic Interventions

The proposed Strategy employs the six main elements

1. Door to Door Collection of Waste generated
2. Waste minimization and promotion of recycling of waste
3. Engaging stakeholders in implementation
4. Processing, Treatment and Disposal of Waste
5. Strengthening the capacities of the ULBs
6. State Level Institutional arrangements & Program support

7. 1. Door to Door Collection and Transportation of Waste generated

1. Organizing door-to-door collection of waste to be the irreversible strategic approach to prevent residents from dumping their garbage out. The waste collected from door-to-door should be source segregated and collected separately in wet and dry waste from all sources. Community level large and unsightly garbage bins to be withdrawn from streets and ' Litter Bins' to be limited to busy commercial areas and public places.

2. ULBs to encourage decentralized, community-managed primary collection system preferably managed by CBOs such as residents' associations, and welfare societies and Slum Level Federations that will be financially assisted and equipped for the purpose.

3. Route mapping of door to door collection activities on City Wide Scale for improved coverage. Primary vehicles to be used to collect and transport waste from lanes and by- lanes to the main roads synchronizing with bulk transportation vehicles.
4. The waste should be transported in a segregated form (wet and dry) by vehicles, at the primary collection and secondary/ bulk collection systems.

5. Waste to be handled mechanically across the MSW value chain with minimum human contact with waste. Modernize fleet management services with covered transportation system to be adopted for transportation of the waste.

7.2. Waste minimization and promotion of recycling of waste

1. Municipal Solid waste to be managed in accordance with the 5R Principle(Reduce, Reuse, Recycle, Recover and Remove) with special emphasis on waste prevention approaches.

2. Promotion of biodegradable and recyclable substitutes for non-biodegradable materials like plastics and develop systems for their recycle, reuse, through promotion of relevant technologies, and use of incentive based instrument, and developing and implementation of measures for reduce and remove of non-biodegradables through participatory approaches.

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3. Municipal Solid Waste to be segregated at source into groups of organic, inorganic, recyclables and hazardous waste. MSWM constituents like metal, plastics, glass and paper wastes are to be segregated and recycled. Each ULB to identify land to establish Dry Waste Sorting facilities (Material Recovery Facilities) wherever possible through social entrepreneurs, common interest groups of informal sector like rag pickers associations and cooperatives in lines with Swach, Pune, CBOs like Women Self Help Groups(SHGs),Slum Level Federations(SLFs), Apartment Societies, Resident Welfare Associations (RWA) and NGOs to be involved.

4. Encourage individual households/ apartment complexes for setting 'source composting options' like vermin composting/ composting at households level, portable new age small scale bio gas units for kitchen waste, and Small scale decentralized units for treating of organic waste fraction to the places like community level, large hotels, marriage halls, hostels, organized colonies and slums having strong RWAs and SLFs respectively.

5. ULBs to set up community-based composting yards on suitable road-side locations, institutional campuses and public parks for horticulture waste or leaf litter and encourage interested sweeper groups, apartment societies, resident welfare associations or CBOs to maintain them and use the proceeds from the sale of manure produced by them.

6. Phasing out and upgrading old open dumps in the ULBs and reclamation of the dumpsites through recovery of the decomposed matter through 'Bio- mining' and capping of the non-bio degradables in scientific manner as per the MSW (Management& Handling)Rules 2000 .

7. Landfill sites to be used sparingly and only as a last resort in waste management hierarchy and shall not exceed 20% of the total municipal solid waste generated. Organic material and recyclables to be recovered fully prior to land filling of only inerts.

7.3. Engaging stakeholders in implementation

1. Encourage sound contracting practice begins with setting operational goals, defining performance or service benchmark standards and specifications and producing a document that communicates these to private, semi-private, NGO, CBO or other economic actors who would like to participate as service providers.

2. Awareness among stakeholders on SWM is important and continuous process. There need to intensify extension activities so as to continuously motivate and educate the stakeholders through effective IEC programs. ULBs to raise the awareness of city stakeholders through regular meetings with (households, establishments, industries, elected representatives municipal functionaries, media, etc) since improved sanitation can ensure improved public health and environmental outcomes only if considerable changes in behavior and practice take place across the spectrum of the society.

3. ULBs to adapt mechanism for enforcement, supervision and monitoring the Pin Point System for optimum utilization of manpower resources through social audit mechanisms. The Pin Point System implementation shall involve the Resident Welfare Associations, Community Based Organization and other stakeholders in the process of monitoring of SWM services for improved accountability.

4. ULBs may formulate strategy to organize and strengthen CSOs (Civil Society Organizations-RWAs) in Non Slum Areas for effective democratic and participatory functioning devising methodologies on the lines of CBOs like SHGs/SLF/TLF in the Slum Areas to ensure Community participation and ownership of Solid Waste Management on sustainable mode.

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5. ULBs to disseminate relevant information on waste quantities and characteristics; waste treatment, recovery and disposal; the costs of providing the waste management services; the sources of funding used to finance the services in public domain. Publication of reports on Annual report of the Service Levels.
6. ULBs to constitute City Sanitation Task Force involving the stakeholders in Planning, Implementation and Monitoring of the City Sanitation Plans.

7.4. Processing, Treatment and Disposal of Waste:

1. ULBs to adopt a mix of multiple of options of centralized (city & regional level) and decentralized options for treatment and scientific disposal.

2. Waste treatment and disposal may need to be organized on a unified basis across the metropolitan areas as a whole, landfills and other waste management facilities to be regionally shared, clubbing of multiple municipalities and creation of clusters, accompanied by regional cooperation and fair cost-sharing arrangements.

3. Decentralized processing units at community level and city level in case of municipalities considering the quantities of waste generated, economics of clustering them into regional facilities.

4. Development of State level MSWM project for operationalizing and scaling up the strategy covering either the PPP and Non PPP approaches or combination of both in all the ULBs in the state. The Collection, Transportation components to be implemented on Non PPP approach as ULBs have the required experience and expertise whereas PPP approach may be confined to for setting up of transfer stations, Processing and Landfill projects. In case of outgrowths, expanded areas, and agglomerations the Integrated SWM PPP based approach for the entire MSWM value chain operations may be adopted with highest level of transparency.

5. Treatment of segregated waste to be done through appropriate technologies based on the feasibility, characteristics and quantities of waste. The technology options could be Composting, Biomethanation, Waste to Energy, RDF, Co-Processing of dry segregated rejects in cement/ power plants, which also includes utilization of construction and demolition debris and any other options as endorsed by the Central Pollution Control Board.
6. Treatment and Scientific disposal is net cost based and recovery of O&M cost is technology dependent. Tipping / Processing Fee is the mechanism to compensate the in PPP projects developed for treatment and disposal.

7.5. Strengthening the capacities of the ULBs

1. State Government to guide ULBs to draft model byelaws and legislations to facilitate levying user charges, penalties for violators and explore revenue options like revenues from sale of waste and by products, CDMs, SWM Cess, Landfill tax or Processing fee etc., to achieve financial sustainability.
2. Set out operational guidelines for the procurement of equipment and services based on the size of the town and population. Emphasis to mechanization for segregated collection, segregated transportation, processing, treatment and scientific disposal to reduce the manual and multiple handling of garbage.

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3. Provide incentives and market linkages for the byproducts like compost and other recyclables. Ex. Creation of market avenues through involvement of the Department of Agriculture, Horticulture, Forests and Fertilizer companies as well as other agencies in the farm sector to ensure effective marketing of the compost as well as its by-products.

4. MSWM plan as part of the City Sanitation Plan and City Development Plan to cover the baseline data assessment, current practices, gaps in terms of manpower and infrastructure, existing facilities of treatment & disposal, current revenue and expenditure.

5. In compliance to the State Sanitation Strategy and National Urban Sanitation Policy (NUSP) all the ULBs in the State to prepare the City Sanitation Plan for addressing the issues short, medium and long terms actions in addressing the issues.

6. Data on quantities of waste generated is inconsistent in the ULBs. All the Class-1 cities in the state shall establish weigh bridge facilities for quantifying the solid waste generated in the city on daily basis prior to its treatment and disposal.

7. Formulate and implement state and ULB level capacity building programs on SWM topics based on contract management & monitoring, environmental compliance and complaint redressal& monitoring systems including attitude and behavior change and creation of platforms for field based interactive learning and exposure visits.

8. Formulate and implement state and ULB level for capacity building programs to the field staff, supervisory staff, contract employees, officers, civil society organizations, Community Based Organizations, on SWM topics based on the responsibilities including attitude and behavior change and creation of platforms for field based interactive learning and exposure visits.

9. ULBs to provide adequate protection and health care facilities to its workers. The local body, as a policy, should provide adequate protective clothing and health check up from time to time to the staff to ensure that their health is not adversely affected on account of their handling of solid waste. Free medical services and insurance to be made available to those whose health is affected on account of handling solid waste

10. Strengthen the institutional capacities of the ULBs as per the size of the ULB. The ULBs to have dedicated technical staff within the SWM department (Environmental Engineer) who should be responsible for the SWM activities within the city.

7.6. State Level Institutional Arrangements & Program support

1. Recognize and establish Regional MSW Project approach in case of smaller ULBs, Metropolitan Level Approach for integrated treatment and disposal of MSW and reorganize the existing clusters more comprehensively.

2. State to designate a nodal agency as company or state-level utility (which may be called the '**State MSW Management Company Limited/Utility'—the 'Company/Utility**') for the purposes of identifying and enabling the development of **Regional MSW Projects** within the state. Each such project should be of 300 TPD of MSW or more.

.....13

3. Setting up a Technical Cell with experts to extend support to the ULBs. The Technical cell would support in identifying sites for processing, treatment and landfill facilities (both individual and regional), PPP models, technologies, structuring and financing of projects including implementation and monitoring of the Mechanical Composting, Waste to Energy and Bio- Methanization, Co-Processing in cement/ power Projects.

4. State Level Sanitation Committee set up to review the progress of MSW management in ULBs across the state on regular basis and provide necessary advice in upscaling.

5. State to appoint an empowered committee for speedy and justified recommendations under "Andhra Pradesh Land Management Act 2013" for allotment of Government land for treatment and disposal of waste free of cost or on nominal lease rental basis for setting up treatment plants and sanitary landfill sites in land use plans keeping in mind requirements for the next 33 years and fast tracking the process under the provision of the Act.

6. Encourage ULBs to perform better in all aspects of planning, coordination, and implementation, the state government to institute an annual awards scheme to the best performing towns to create a competitive spirit among cities in AP.

Dr. S.K. JOSHI,
PRINCIPAL SECRETARY TO GOVERNMENT (UD)

SECTION OFFICER.

Annexure 2

NOTIFICATION TO CREATE SWM AND HEALTH WINGS TO IMPLEMENT MSWM RULES, 2000 IN ALL ULBS OF ANDHRA PRADESH

GOVERNMENT OF ANDHRA PRADESH
MUNICIPAL ADMINISTRATION & URBAN DEVELOPMENT DEPARTMENT

O/o Commissioner & Director of
Municipal Administration,
A.P., Hyderabad.

CIRCULAR

Roc.No.10414/2013/H1 **Dated:03-06-2013**

Sub: MA&UD – Implementation of MSWM Rules, 2000 in all ULBs – Creation of SWM and Health Wing In ULBs for more focused and effective implementation – Certain Instructions issued – Reg.

Ref:- 1) Municipal Solid Waste Management Rules 2000.
2) G.O.Ms.No.659 MA&UD (UBS) Dept., dated:17-11-2009 (Manual of Role and Responsibilities of various functionaries in ULBs in A.P)
3) G.O.Ms.No.151 Finance (SMPC-I) Dept., dt.18.07.2011.
4) G.O.Ms.No.125 Finance (SMPC-I) Dept., Dt.27.05.2013.

All the Municipal Commissioners (except the Commissioner, GHMC, Hyderabad) and all the Regional Director-cum-Appellate Commissioners of Municipal Administration in the State are aware that the Municipal Solid Waste Management is the top most priority item for the State for protecting Public Health and environment. Several initiatives have been taken in this regard both at the Departmental and the filed level for ensuring effective implementation of MSWM Rules 2000 in may of the Urban Local Bodies.

2. In the reference first cited, the Government have issued rules under the Municipal Solid Waste (Management and handling) Rules 2000, While following the said rules, considerable progress has been achieved in certain key SWM indicators. All the SWM activities need to be in a way ring fenced, within the Urban Local Body, to lend more focus on SWM activities and evolve a programmatic and targeted approach towards achieving and sustaining 100% compliance with MSWM Rules, 2000. One such issue, which has been identified for firming up and streamlining towards this direction with a target is clearly demarcating the Health and SWM Functionaries and their responsibilities in a clear cut manner at the ULBs. The ULB should define the role under the new solid waste and Resource Management wing and fix accountabilities accordingly.

3. In the reference 3rd cited Government have sanctioned the posts of Environment Engineers in different categories as follows:

a)	Executive Engineer Cadre	-	04
b)	Deputy Executive Engineer Cadre	-	28
c)	Assistant Engineer / Assistant Executive Engineer	-	89
	Total :		121

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In the G.O. 4th cited Government have sanctioned (37) numbers of Environment Engineers in the cadre of Assistant Engineer / Assistant Executive Engineer (Grade-III).

4. Accordingly, the Engineer-in-Chief (PH) Hyderabad have posted 20 Environment Engineers in the cadre of Deputy Executive Engineer in 20 ULB's, in his proceedings number 111,222,666,333,444/CSZ/2013, dt.04.04.2013. Action is being taken to fill up all other sanctioned posts of Environment Engineers in ULBs by the ENC (PH) in due course

5. In the reference second cited (copy enclosed), the Government have issued orders in respect of the Manual of Role and Responsibilities of various Functionaries in ULBs in Andhra Pradesh. As per the said orders, *"the Public Health wing can be divided into (i) Health and (ii) Solid Waste and Resource Management (SMW). While MHO takes care of Health activities, Environmental Engineers will takes care of ISWM chain by action them wherever this post is sanctioned. In the absence of Environmental Engineer, both the activities will be looked after by MHO" (Para 6-4 of page no.35 of the Manual) of Role and Responsibilities of various functionaries in ULBs in A.P.,*

6. Therefore, all the Municipal Commissioners of Urban Local Bodies in the state are hereby instructed to follow the above manual scrupulously and form clearly Health and Solid Waste Management (SWM) Wings in their respective ULBs duly entrusting responsibilities to health wing as shown hereunder, and report back by 20.06.2013.

Sl. No.	Health Wing	Sl. No.	SWM Wing.
1	Registration of Birth & Death	1	Sweeping & Cleaning of roads & drains
2	Urban Health Centres	2	Source Segregation of waste
3	Municipal dispensaries	3	Mandatory Door to Door collection of Waste
4	Vector Control activities	4	Bulk / Commercial waste collection
5	Vaccination activities	5	Ward-wise route mapping & Manpower Allocation
6	Mass Drug Administration	6	Primary & Secondary Transportation
7	Family Planning	7	Wet & Dry Resource and improvement Processing centre.
8	Dog, Monkey, Pig menace etc.,	8	Market Tie-ups for sale of Compost, Dry Recyclables and non recyclables.
9	Fairs & Festivals	9	Establishment of Green belt in Compost yard
10	Heath Awareness in Slum areas	10	Reclamation of old Dump-sites
11	VIP Visits	11	Vehicles & Tools maintenance (Preventive & Breakdown)
12	He / She has to ensure that appropriate action is taken for prevention and control of communicable diseases namely G.E. cases, JE. Cases and Malaria	12	Setting up of material recovery facilities and any other Establishment of all infrastructure related to SWM
13	To inspect markets hotels	13	Establishment of Bio-methanization

26	To issue trade licenses in consultation with Town Planning section with reference to land use / permitted use of building		
27	To take action on unauthorized trades		
28	To ensure implementation of Citizen Charter pertaining to Health wing.		
29	All other responsibilities as per relevant Acts and the Rules issued there under.		
30	Any other duties entrusted by the CMO / Commissioner		
31	Closer of toilets connections into the Drains.		

7. Further, all the Municipal Commissioners of Urban Local Bodies in the State are instructed to take immediate action for formation of Health Wing and SWM Wing in their ULB and the allocation of workers and supervisory staff to both the wings as per the need. All the RDMA's and M.Cs are instructed that no further outsourcing of SWM and Health Wing activities shall be taken up on account demarcation of work between Health and SWM wings.

8. All the RDMAs in the state hereby instructed to follow up on the above instructions issued and ensure that they are implemented by all the ULBs under their jurisdiction. They are also instructed to complete this exercise of formation of Health Wing and SWM wing separately as required under orders of Government, issued vide G.O.Ms.No.659 MA&UD (UBS) Dept., dt.17.11.2009 by 15.06.2013 positively and furnish a consolidated report by 20.06.2013.

Encl : As above.

Sd/- Dr.B.Janardhan Reddy
COMMISSIONER & DIRECTOR.

To,
All the Municipal Commissioner of ULBs in the State (except GHMC) (through the RDMAs concerned).
All the Regional Director-cum-Appellate Commissioners in the State.
All Special Officers.
Copy submitted to the Principal Secretary (UD) to Government, MA&UD Department, AP, Hyderabad for favour of information.
Copy submitted to the Principal Secretary (MA) to Government, MA&UD Department, AP., Hyderabad for favour of information.
Copy to the ENC (PH) with a request to fill remaining posts.
Copy to the Director of Health.
Copy to All District Collectors in the State.

for Commissioner & Director

Annexure 3

INTERNATIONAL EXAMPLES ON WASTE MANAGEMENT

CHINA

A Public Private Partnership around Waste Minimisation in Hong Kong

The Wastewi$e Scheme encourages the private sector to initiate waste reduction activities. A working group comprising representatives from various industries, schools, hospitals, government departments and the Environmental Protection Department (EPD) has been formed to assist members and encourage more companies to join the scheme. About 430 organisations have applied to join the scheme and are receiving free assessments of their waste generation and waste reduction efforts. These assessments are carried out twice a year in each organisation by an EPD- appointed advisor.

Participants who have made exceptional progress in reducing their waste are awarded Wastewi$e logos. So far 41 organisations have received the logos. The recipients collectively avoided the consumption of about 120 tonnes of paper and recycled 28,000 tonnes of paper, 400 tonnes of aluminium cans (most of this was on Housing Authority housing estates) and 1,000 tonnes of other metal scraps. They also purchased 160 tonnes of recycled paper and 900 refilled toner cartridges.

Universities and Tertiary Institutes

Waste recovery and recycling programmes have been organised at all 33 of Hong Kong's universities and tertiary institutes, with the support of the Environmental Protection Department (EPD) and the Environmental Campaign Committee (ECC). These programmes are fully backed by the presidents or vice-chancellors of the institutions. The programmes were the initiatives of working groups that were set up by the EPD in recent years and include members from all universities and tertiary institutes. The EPD and ECC have also jointly organised Waste Recycling Schemes and outreach programmes for working group members. The members are: the 8 universities, Hong Kong Institute of Education, Hong Kong Academy for Performing Arts, Hong Kong Shue Yan University, Chu Hai College of Higher Education, the 17 institutes of vocational education, and 4 training centres from the Construction Industry Training Authority.

Hotels, Hostels and Recreation Clubs

Hotels can produce large amounts of waste and the EPD and Hong Kong Hotels Association have been working together since 1997 to reduce this problem. The initiatives include tangible waste recovery programmes and awareness-raising efforts.

Some 43 hotels have joined a plastic bottle recovery programme, resulting in the collection of 5-7 tonnes of plastic bottles per month. A programme to collect textiles for recycling has resulted in one tonne of textiles being recovered per month.

Forty-two hotels have joined the Wastewi$e Scheme, which encourages the private sectors to undertake their own waste reduction initiatives. Six of them have been awarded the Wastewi$e logo. Additionally, the EPD has provided technical advice and run workshops for Hong Kong Hotels Association members, who have also received a CD-ROM on environmental management in hotels which was produced by the Hong Kong Polytechnic University in 2000.

On a smaller scale there is a problem of waste from hostels and recreation clubs. A working group was set up in 2000 with 10 hostels, including the YMCA and Salvation Army, and the EPD has provided technical advice on waste reduction and recovery programmes. All 10 hostels have set up such programmes. Similar advice has been offered to recreational clubs and most major clubs now have waste recovery programmes in place.

Supermarkets and Convenience Stores

Plastic bags are the main waste concern of supermarkets and convenience stores. Some initiatives have been introduced to reduce this problem and the problem of waste in general from these outlets. A working group was set up in 1999 which includes members from the EPD, major shopping outlets and supermarkets and active non-government organisations (NGOs). There is a consensus that plastic bag use should be reduced. A campaign in 1999-2000 collected some 500,000 signatures in support of using fewer plastic bags. More than 1,200 shops participated in the plastic bag reduction programme organised for the retail trade and supermarkets in 2001.

Some initiatives have been introduced to reduce plastic bag use, such as promoting reusable bags, encouraging shop staff to hand out fewer plastic bags and customers to request fewer bags, holding waste reduction workshops for frontline staff, producing a training manual for staff, airing public education programmes and organising a competition to design a reusable shopping bag. The Conservancy Association was appointed to organise a series of "No Plastic Bag, Please" campaigns aimed at newspaper vendors and supermarkets and convenience stores. The most recent initiative is the Plastic Bags (Domestic) Recovery Trial organised by the EPD. As part of the community cleaning programme organised by one of the leading supermarket chains, 7-Eleven, recycle bins for plastic bags has been placed in 90 7-Eleven stores since September 2002. Welcome has also nominated 24 superstores to participate in the recovery trial starting from November 2002. The EPD will assist in the collection logistics, outlet arrangements and the provision of publicity support and related materials.

Hospitals

Hospitals are being encouraged to promote waste reduction and recovery and to join the Wastewi$e Scheme. The EPD has provided technical advise and organised workshops and seminars for managerial and frontline staff in public and private hospitals.

Waste separation bins are in place in all 44 public hospitals and major private hospitals. As of September 2002, 38 public hospitals and the Hospital Authority Headquarters had applied to join the Wastewi$e Scheme.

Recycling Trade

A waste reduction task force was set up in March 2000 with members from the recycling industries. The task force discusses measures that can help the trade and aims to secure long-term land and berths for the trade and to help develop markets for recovered materials. A focus of concern is a major export outlet for locally recovered materials, the Kwun Tong Public Cargo Working Area.

GERMANY

Innovative approach towards waste minimisation

The Stadtreinigung Hamburg (SRH, Stadtreinigung means city-cleaning) is responsible for the municipal solid waste management in the city. The SRH is a city-owned institution, working as a private company. The function of the SRH is to be a solution-provider for waste collection, city-cleaning and disposal. Generation of municipal solid waste annualy in the city of Hamburg is 20,098.49 lakh tons. The approach adopted towards solid waste management for households and commercials is done separately.

Households: In Hamburg every household is responsible to have facilities for the segregation and collection of solid waste. This obligation is specified in the Hamburg solid waste management law (Article 11, connection and usage order). The SRH provides the household easy-movable dustbins of different sizes and for different waste materials for segregated collection of waste.

To standardize the colour coding for segregation, 4 colour bins system was adopted for different kinds of waste:

a) **The grey bin-** for all kinds of waste, which is not compostable or not recyclable like sweepings, sanitary articles and other household waste.

b) **The green bin-** for organic waste like compostable kitchen waste, garden rubbish. The waste from the green bin goes to the compost plant directly.

c) **The blue bin-** for paper waste. It is collected from the SRH in cooperation with a private SWM company. The paper collected is sold to the recycling companies.

d) **The yellow bin-** for lightweight packaging and plastics and is a part of a national dual waste system wherein manufacturers have to pay a fee for their packaged products to the system.

Fee Structure: For the different waste bins the households have to pay fees. The fee is divided into two parts: A minimum service charge of 6.15€ (~369Rs) per month has to be paid by every household, b) charges for usage of bins, including in the fee is the price for the container-bin. Usually households have a 120l grey bin, which costs 14.62€ (~877Rs) per month, for a weekly emptying. Table below depicts the fee levied on the citizens for the different bins and sizes. In order to further motivate and encourage the households for 100% segregation as well as to save money by segregating more waste, an innovative approach is being considered wherein the charge for the grey bin will be increased and the charge for the green bin will be reduced.

Table 1: Waste Bins and Charges in Hamburg

One time-charge		Grey Regular Household Waste Bin				Green Organic Waste Bin			Yellow Bin for lightweight packaging			Blue Paper Waste Bin			
Every household has to pay the one time service charge.		Bin for all kind of mix household waste. It is the most expensive bin, to convince the households to segregate their waste.				Bin for organic and biogradable waste. Much more cheaper than the regular bin.			Bin for lightweight packagings, plastics and metalls. Is financed by a dual system.			Blue Paper Bin for all kind of paper material.			
		Bin Size	weekly emptying	emptying once in two weeks		Bin Size	emptying once in two weeks		Bin Size	emptying once in two weeks		Bin Size	Emptying once a month		
6,15€ (~369Rs)	+	60 liter	11,14€ (~668Rs)	8,36€ (~501Rs)	+	/	/	+	/	/	+	/	/	+	TRANSPORTATION FEE (see table 2)
		80 liter	12,80€ (~768Rs)	9,60€ (~576Rs)		80 liter	6,60€ (~396Rs)		/	/		/	/		
		120 liter	14,62€ (~877Rs)	10,97€ (~658Rs)		120 liter	7,55€ (~453Rs)		/	/		/	/		
		240 liter	23,06€ (~1384Rs)	14,62€ (~877Rs)		240 liter	10,07€ (~604Rs)		240 liter	No fee		240 liter	No fee		
		500 liter	66,16€ (~3970Rs)	/		500 liter	34,16€ (~2050Rs)		/	/		/	/		
		770 liter	83,72€ (~5023Rs)	/		770 liter	43,25€ (~2595Rs)		/	/		/	/		
		1100 liter	101,67€ (~6100Rs)	/		1100 liter	52,25€ (~3135Rs)		1100 liter	No fee		1100 liter	No fee		

(All values per month)
Source: Stadtreinigung Hamburg (www.srhh.de)

In order to motivate people to segregate correctly, SRH takes an extra charge in case if somebody is not segregating the waste correctly, in a, yellow or blue waste bin. The bin will be specially-emptied, and for this emptying the user green has to pay the extra charge. In households where the waste is often segregated wrongly the SRH can remove also the other bins and increase the size of the grey bin so that the fees for the user will increase.

Evolution of Waste Incineration in Germany

In the late 19th century, the lack of appropriate waste collection and disposal systems in Europe along with public health issues raised an alarming concern to address the waste management issues. This marked the beginning of the age of "technical waste incineration". The first waste incineration plant known as Destructor was built in Nottingham, England in 1876. Following experience with waste incineration in Manchester, the introduction of this technology was also discussed in Germany.

The first waste incineration plant in Germany was built in 1894/95 in the wake of the last major cholera outbreak in Hamburg. This so-called "waste incineration works" took up operation in Bullerdeich, Hamburg on 1 January 1896, disposing of the waste of the city's 300,000 inhabitants. Thus, the foundations were laid for a new method of waste treatment which proved to be economically viable and also beneficial for health and environmental aspects..

However, in the beginning, the construction of waste incinerators faced intense public opposition. The duration and ferocity of the political controversy over the construction of the Hamburg waste incineration plant for more than 100 years ago bears close resemblance to today's public debates in connection with construction decisions and permitting processes. The massive air pollutant emissions and the resulting environmental burden were, interestingly, not an issue at that time, as in the age of industrialization, the "smoking stack" used to be a symbol of technological progress and had positive connotations.

The twenties and thirties, of the 20th century, saw significant developments in the incineration technology and the experiments with an electrostatic precipitator for flue gas clean-up were made. Technical advances allowed fully automated plant operation with continuous waste feed to the combustion chamber combined with continuous slag removal. The technology developed for these second-generation plants constituted the basis for modern waste incinerators.

Further development of the technology from the environmental point of view led to the Municipal Solid Waste Incinerator (MSWI) of the Modern Age" equipped with fully developed firing technology and powerful flue gas cleaning systems (3rd generation), a development that was accelerated in particular by the stringent emission control standards of the German Waste Incinerator Ordinance (17. BImSchV) passed in 1990. The late nineties of the last century witnessed the advent of the fourth-generation plants characterized by slimmed yet equally efficient flue gas cleaning systems.

The 17. BImSchV regulates the entire waste incineration process. Set stringent norms in 1990 for regulating emissions from incineration plants. For the combustion process a minimum temperature of 850°C is required, but if the concentration of organic chlorine(Cl) exceeds 1 wt% in the fuel, this temperature has to be increased to 1,100 °C. The combustion temperature has to be measured after a flue gas residence time of >2 s downstream of the last air injection.

The grate ashes have to reach a Total Organic Carbon (TOC) < 3 wt% and detailed provisions are provided for co-incineration. Safety measures for different operation modes are also included.

The limits set for air emissions are of special importance. Gaseous components, including fly ash, have to be monitored continuously. Heavy metals, Benzo(a)pyrene, and PCDD/F have to be sampled and analysed every two months during the first year of operation and later once per year. These stringent safety standards helped to reduce the public opposition against thermal waste treatment to a great extent.

German Standards for Air Emissions from Incineration Plants – I (mg/m³)

PARAMETER	AVERAGE PER DAY	HALF HOUR LIMIT	MEAN VALUE PER YEAR
Dust	5 (10)*	20	-
Total organic carbon (TOC)	10	20	-
Hydrogen chloride (HCl)	10	60	-
Hydrogen fluoride (HF)	1	4	-
Sulfur dioxide (SO2)	50	200	-
Mono-nitrogen oxide (NOx)	150 (200)*	400	100
Mercury (Hg)	0.03	0.05	0.01
Carbon monoxide (CO)	50	100	-
Ammonia	10	15	-
Minimum temperature of 850°C for at least 2 sec, O2 content 11% ( )* Values for plants with firing thermal capacity <50 MW			

German Standards for Air Emissions from Incineration Plants - II

MEAN VALUES OVER SAMPLING PERIOD PER GROUP	UNIT	VALUE
Cd, Tl	mg/m³	0.05
Sb, As, Pb, Cr, Co, Cu, Mn, Ni,V, Sn	mg/m³	0.5
As, Benzo(a) pyrene, Cd, Co, Cr	mg/m³	0.05
Dioxine/Furanes	ng/m³	0.1
Mean value per year of NOx	mg/m³	100

SOUTH AFRICA

Malmesbury Landfill Contract

The Malmesbury landfill operation is outsourced to a private operator. What makes it different from other contracts, though, is that this service agreement is not based on the permission to operate for a certain number of years but on the remaining airspace. As long as there is airspace on this landfill, the private operator is allowed to run it.

Interestingly, when the agreement was made, Council initially expected the landfill to last for not more than 5 years. To date, the contractor has been running this landfill for more than 11 years. Apart from higher compacting rate and deeper excavation, they started a material recovery facility onsite where incoming waste is sorted through. Although the total waste received is a mix of wet waste and potential recyclables, 28% of the waste is recovered.

Yellow Bag Household Recycling Project

The Yellow Bag household waste recovery and recycling programme was implemented in August 2002 in the Marina Da Gama area in more than a 1000 (thousand pilot households pre-dominantly middle to high income) and is still continuing to date. A first of its kind, this post-consumer waste recovery model is constantly being monitored and modified to optimise the recovery rates of recyclables while reducing the project's operational costs. It seeks to explore practical ways and to develop strategies aimed at waste reduction. During implementation, Cape Town was generating annually about 1.6 million tons with a remaining landfill lifespan of only about 8 years. At the date of writing, local waste volumes generated have ballooned to nearly 2.2 million tons annually with only about 6 years of landfill airspace left.

The basic operational principle that has remained unchanged throughout the last 2 years of running the Yellow Bag project has been the post-consumer separation of recyclables (all valuable packaging waste materials including paper, cardboard, glass, plastics, tins, etc.) from biodegradable waste and placing these recyclables in a yellow bag provided to the participating households free of charge. Since its inception, the project has undergone various characteristic phases of operational and management changes. This was done to explore various technical and logistical options related to the collection, transportation and utilisation of Yellow Bag waste materials in order to optimise the household waste separation process and make it financially more viable for a possible rollout to other areas.

USA

In-House Source Reduction, Wisconsin

Dunn County, Wisconsin (population 35,909) set a goal to reduce the quantity of waste generated by government offices by 15% over 1 year, and to reduce countywide waste generation by 5%. The county met all of its goals, thanks to the success of offices like the County Health Care Center which reduced its waste generation by 18% and saved thousands of dollars in the process.

Economic Incentive or Policy Ordinance, New York

Tompkins County, New York (population 94,000) instituted a "trash tag," or "pay-as-youth row" program that requires residents to purchase a tag for each container of garbage set out. The programme creates an economic incentive for residents to reduce their household waste, and adopts alternatives such as recycling and backyard composting. Soon after the programme was implemented, the county noted an increase in residential recycling, and some Tompkins County municipalities reported up to 50% less trash set out at the curb.

Education Programmes for Residents, San Francisco

The San Francisco, Bay Area (population 6.5 million) conducted the Shop Smart: Save Resources and Prevent Waste campaign, a unique public private partnership,with 103 cities and counties working with 225 supermarkets to educate shoppers about the importance of waste prevention and buying products made with recycled content. Exit polls showed that 43% of shoppers remembered one or more elements from the campaign, with almost 30% saying it affected their buying habits.

Materials Exchange or Reuse Operations, New York

New York City, New York (population 7 million) is home to Materials for the Arts, a programme of the city's Department of Sanitation and Department of Cultural Affairs. The programme's goal is to divert usable office equipment and supplies, furniture, construction materials, industrial byproducts, paint, fabric and more from the landfill. The material is used by more than 1,300 cultural organizations, community, health and social services with art programmes.

Annexure 4

APPROPRIATE COMPOST PLANT DESIGNS AND SPECIFICATION*

Table A4 1. Land Area Requirements for Compost Plants

PARAMETER	MIXED MUNICIPAL SOLID WASTE (MSW) RECEIVED AT THE PLANT SITE (TPD)				
	50	100	200	300	500
MSW volume (m^3)	84	168	336	504	840
After pre-processing					
MSW weight (MT)	40	80	160	240	400
MSW volume (m^3)	55	110	220	330	550
Land area (m^2)					
Tipping area* or receiving area	300	600	1200	1800	3000
Pre-processing area (covered)					
Covered	100	100	100	120	120
Uncovered	200	400	800	1200	2000
Compost pad*	3975	8300	14300	18000	27700
Covered (30%)	1190	2490	4300	5400	8300
Uncovered (70%)	2785	5810	10000	12600	19400
Machine shed	150	350	350	425	500
Curing area	180	400	650	1000	1400
Finished product godown	300	460	650	1000	1500
Subtotal (A)	5205	10610	18050	23545	36220
Surface area with impermeable structure having load-bearing capacity of 40 MT/m^2	4275	8900	15500	19800	30700
Surface area with impermeable structure having load-bearing capacity of 20-30 MT/m^2	730	1310	1750	2545	3520
Office, laboratory and other amenities (m^2)	100	100	200	200	300
Green belt (m^2)	1000	2000	4000	6000	8000
Buffer area for future expansion (m^2)	1000	2000	4000	6000	8000
Free space for demonstrations & parking vehicles, etc. (m^2)	1000	1000	2000	2500	3000
Roads (all weather conditions) (km)	1	1	1.5	2.0	3.0
Subtotal (B)	3000	5000	10000	14500	19000
Total (A+B)	8205	15610	28050	38045	55220
Approximate area (ha)	1.00	1.50	3.00	4.00	6.00
Utilities					
Power requirement (kW)	55	110	140	175	245
Staff requirements					
Regular	6	9	9	10	11
Contractual	14	32	43	74	111
Water requirement (kl)/day	30	60	140	250	350

* After two turnings and sanitisation (15 days) compost material to be shifted under the rain shed (30% covered)

** In high rainfall zones (>1,600 mm) total compost area and tipping area would be covered.

* For further details please refer to Part II of the Manual and Inter-Ministerial Task Force on Integrated Plant Nutrient Management (IPNM).

Table A4 2. Component Details of Compost Plant

S. NO.	PARAMETER	MIXED MUNICIPAL SOLID WASTE (MSW) RECEIVED AT THE PLANT SITE (TPD)				
		50	100	200	300	500
Site Development and Civil Structures						
1.	Compost pad area with impermeable reinforced cement concrete floor with strength 40 ton/m^2	4275	8900	15500	19800	30700
2.	Impermeable cement concrete floor in tipping, pre-processing, machine shed, curing area and storage area with strength 30 ton/m^2 except for machine foundation area	730.0	1310.0	1750.0	2545.0	3520.0
3.	Total area covered with steel truss and AC sheet roof (m^2) including RCC (M250) columns, compost pad and plant machine shed, curing and godown	1920	3800	6050	7945	11820
4.	Brick wall with cement plastering in pre-processing, machine shed and finished godown (m^2)	1100.0	1450.0	1750.0	2600.0	3500.0

Table A4 3. Details of Equipment and Machinery

S.NO.		EQUIPMENT	50 TPD	100 TPD	200 TPD	300 TPD	500 TPD
1.	**Yard Management**						
	1.1	Self propelled windrow turner/turning equipment	-	1	1	2	4
	1.2	Front wheel loader (1 m^3)	1	1	2	3	4
	1.3	Front wheel loader (0.40 m^3)	1	1	2	3	4
	1.4	Tractor with tipper trolley	1	1	1	3	-
	1.5	Dumper	-	1	2	2	4
	1.6	Water tanker with slurry pump	1	1	1	1	1
	1.7	Other utilities such as sprayer, wheel barrows, etc.	1	2	3	4	6
	1.8	Vehicles (as jeeps etc.)	1	1	1	1	2
2.	**Tipping & pre-processing section**						
	2.1	Feeder	-	1	1	1	1
	2.2	Trommel (100 mm)	-	1	1	1	1
	2.3	Transfer conveyor	-	1	1	1	1
	2.4	Sorting belt conveyor	-	1	1	1	1
3.	**Coarse segregation section**						
	3.1	Pay loader (0.40 m^3)	1	1	1	-	-
	3.2	Front wheel loader	-	-	-	1	1
	3.3	Tractor with tipper trolleys	1	1	1	2	-
	3.4	Feeder	1	1	1	1	1

Table A4 3. Details of Equipment and Machinery [contd.]

S.NO.		EQUIPMENT	50 TPD	100 TPD	200 TPD	300 TPD	500 TPD
	3.5	Cage drum	-	-	-	1	1
	3.6	Process conveyor	-	-	-	1	1
	3.7	Trommel (35 mm)	1	1	1	1	1
	3.8	Process - 35 conveyor	1	1	1	1	1
	3.9	Reject - 35 conveyor	1	1	1	1	1
	3.10	Trommel - 14mm	1	1	1	1	2
	3.11	Transfer conveyor	1	1	1	1	1 set
	3.12	Reject - 14 conveyor	1	1	1	1	1
	3.13	Storage conveyor	-	1 set	1 set	2 sets	2 sets
4.	**Refinement section**						
	4.1	Pay loader (0.4 m^3 bucket size)	-	1	1	2	4
	4.2	Drag chain feeder	1	1	1	1	2
	4.3	Elevator	1	1	1	1	2
	4.4	Vibro screen	1	-	-	-	-
	4.5	Rotary screen	-	1	1	1	2
	4.6	Gravity separator with aspirator	1	1	2	2	4
	4.7	Reject conveyor	1	1	1	1	2
	4.8	Add-mixer	-	1	1	1	2
5.	**Packaging section**						
	5.1	Bag stitching machine	1	2	2	2	4
	5.2	Weighing scale (100 kg)	1	2	2	2	4
	5.3	Pellet trucks	2	2	4	4	8
6.	**Control panel**						
	6.1	Hydraulic power pack	2 sets	3 sets	3 sets	4 sets	4 sets
	6.2	Central control panel	1 set	1 set	1 set	1 set	1 set

Table A4 4. Workshop Floor Specifications

ITEM NO.	DESCRIPTION	
1	Supplying and filling in plinth with moorum under floors including watering, ramming, consolidating and dressing complete	20 cm thick (40 cm thick in black soil)
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering—all work upto plinth level	1:4:8 (1 cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size)
3	62 mm thick cement concrete flooring with "Hardcore" concrete hardener topping under layer 50 mm thick cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick Hardcrete cement hardener consisting of mix 1:2 (1 cement hardener mix: 2 stone aggregate 6 mm nominal size) by volume with which Hardcrete hardening compound of Snowcem India or equivalent is mixed at 2 litre Hardcrete per 50 kg of cement including cement slurry but excluding the cost of nosing of steps	

Table A4 5. Windrow Floor Specifications

ITEM NO.	DESCRIPTION	
1	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of waste, lead upto 50 m and lift upto 1.5 m	20 cm thick (40 cm thick in black soil)
2	Supplying moorum at site and compaction of earth work in embankment under optimum moisture conditions to give at least 95% of the maximum dry density (proctor density)	30 cm thick
3	Supplying and stacking of graded stone aggregate at site of size range and laying water bound macadam with specified stone aggregate, stone screening and blinding material including screening, sorting, spreading to template and consolidation with power road roller of 8-10 tonne capacity etc. (payment for stone aggregate, screenings, kanakr, moorum and red bajri etc. to be made separately 45-90 mm)	10 cm thick
4	Supplying and stacking of graded stone aggregate at site of size range and laying water bound macadam with specified stone aggregate, stone screening and blinding material including screening, sorting, spreading to template and consolidation with power road roller of 8 to 10 tonne capacity etc. complete (payment for stone aggregate, screenings, kanakr, moorum and red bajri etc. to be made separately) Size 45-63 mm	7-5 cm thick
5	Cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and chamber in panels as required including consolidation, finishing and tamping complete	10 cm thick

Table A4 6. Specifications for Galvanized Iron (GI) Sheet Roofing [contd.]

ITEM NO.	DESCRIPTION	
1	Providing corrugated galvanized steel (GS) sheet roofing fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and GI limpet washers or with GI limpet washers filled with white lead and including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (upto a pitch of 60 degrees) excluding the cost of purlins, rafters and frusses	1.25 mm thick
2	Steel work in built-up tubular trusses including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, welded and bolted including special shaped washers	Hot finished seamless type tubes. Weight of truss at 12.00 kg/m^2

Table A4 7. Detailed Project Profile for Compost Plant (500 Tonnes Per Day)

S.NO.		COMPONENTS	QUANTITY	REMARKS
1.		Land	6 ha	Land required for site development, building construction, internal roads, green belt and other amenities along with provision for future expansion.
2.	Plant layout and design			
	2.1	Tipping and pre-processing area Tipping area* Pre-processing area*	Uncovered= 3000 m^2 Covered= 120 m^2 Uncovered= 2000 m^2	Tipping area is required to receive the pre-segregated material from local bodies. Fresh garbage is unloaded and then screened. The rejected material, which primarily contains inorganic matter, is directly sent to landfill site.
	2.2	Compost pad	Compost pad area* Total= 27,700 m^2 Compost pad area* Uncovered= 19,400 m^2	A horsehoe shape impervious concrete platform scientifically designed with proper gradient to accommodate fresh & digested garbage. The concrete platform is provided with peripheral drain to collect the leachate and rainwater over flow.
	2.3	Settling tank	1,25,000 l	The leachate overflow is collected in settling tank and the facility has the provision to recycle the leachate overflow.
	2.4	Monsoon shed	Monsoon shed area* Covered= 8,300 m^2	A 8 m high open shed covered with AC sheet roof. It enables to operate the plant during rainy season.
3.	Factory shed			
	3.1	Machine shed for coarse segregation section	Machine shed area*= 500 m^2	A 6 m high RCC shed with AC sheet roof. Properly ventilated to accommodate coarse segregation section refuge removal. Necessary side cuts to facilitate disposal of reject material.
	3.2	Control Room	Control room area*= 100 m^2.	A RCC control panel room is to be constructed at strategic position to supervise and operate the machines efficiently.

Table A4 7. Detailed Project Profile for Compost Plant (500 Tonnes Per Day) [contd.]

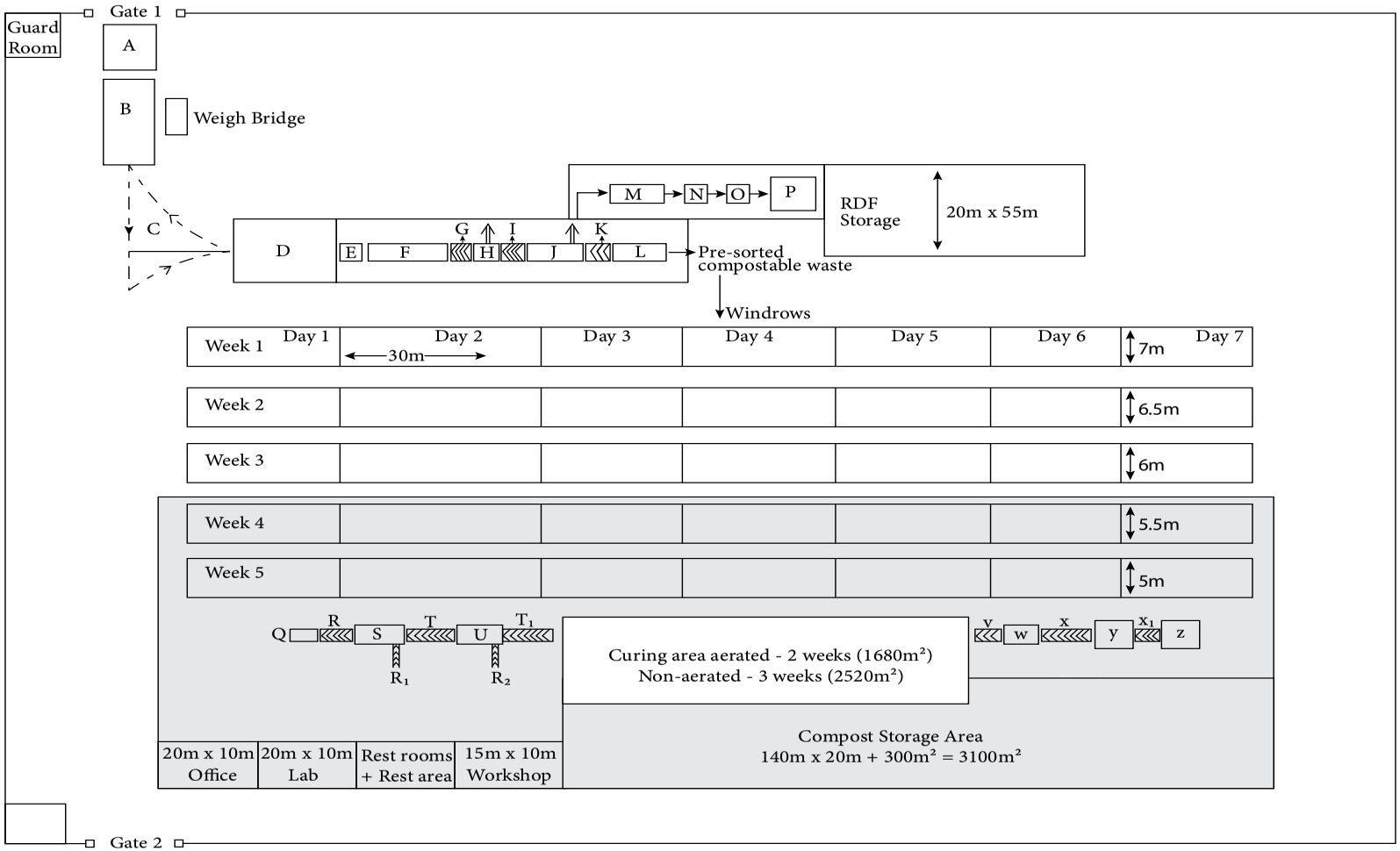
S.NO.		COMPONENTS	QUANTITY	REMARKS
	3.3	Curing Shed	Curing shed area*= 1400 m^2	9 m RCC closed shed with AC sheet roof provided for intermediate storage and curing of semi-finished material. The shed is also provided with hanging platform for storage conveyors.
	3.4	Refinement Tower		An RCC structure of 8 m x 8 m and floor height of 5.25 m is provided for installation of finishing sections machinery.
	3.5	Finish Product Godown	Finishing section area*= 1500 m^2	An RCC structure with AC sheet roof is provided to store the finished product.
4.		Office building and laboratory	Administrative office area*= 300 m^2	A two-storied RCC structure is to be constructed for administrative office with facilities for laboratory and conference room. Laboratory must be well equipped with all necessary provisions for monitoring of processes (e.g., oven, muffle furnace, balance spectrophotometer, different chemicals, glasswares etc.).
5.		Roads and other facilities		Roads of proper sizes are to be provided. Other facilities like canteen, toilet, washing place, store room, dump yard and supervisor room are to be provided adjacent to the coarse segregation section.
6.		Water supply and sprinkling system	60,000 l.	One water sump of adequate capacity is to be constructed near platform with provision of pump house for spraying of culture slurry and water for the treatment of garbage on the compost pad.
7.		Electric power	Power for pre-clearing area*= 40 kW Power for processing machines*= 125 kW Power for other amenities*= 80 kW Power connection required*= 245 kW Stand-by D.G set capacity= 150 kW	A HT or LT electric power connection has to be obtained from state electricity boards.
8.		Weighbridge	25 tonnes	An electronic weighbridge of adequate capacity is to be installed at the entrance to monitor the quantity of incoming and outgoing waste at the plant.

S.NO.		COMPONENTS	QUANTITY	REMARKS
9.		Green belt and garden		A green belt of densely planted, tall growing trees is to be developed around the plant. Suitable provision for demonstration plots to ascertain the quality of the finished products may be made available at the plant site.
10.		Compost rejects	Approximate quantity of material to be received at landfill site*= 150-175 TPD	A suitable provision for landfilling of 'compost rejects' as per the guidelines is to be provided near the plant site. The landfill site must have a shelf life of 20 years.
11.		Buffer area for future expansion		Appropriate selection of land considering future expansions due to continuously increasing population.
12.		Segregation and processing machinery		
	12.1	Preprocessing section		This section has a trammel with 100 mm screen along with a feeder, rejection conveyor and process conveyor. The screened material is sent to compost pad and reject is passed through sorting belt for manual picking of recyclable and/or biodegradable material. Final rejects are sent to sanitary landfill site.
	12.2	Coarse segregation section		This section comprises of three types of trammel screens of size 50 mm, 35 mm & 14 mm with feeder, hopper & conveyor, conveyor belts with distribution system to store the semi-finished products in curing area. Also three conveyor belts for compost rejects from the trammel screens are provided. The entire preparatory section machines operate on hydraulic system with centralized control panels.
	12.3	Refinement section		This section consists of rotary screen of size 6 mm, 5 mm & 3 mm for screening the semi-finished, cured material, rejects, gravels, glass, metal and other inert materials. Two vibrating sand separators are to be provided. An admixture is also provided to control moisture levels & to add required micronutrients for specific purpose. The final product is packed on packing spout in 50 kgs bags.
13.		Garbage handling and moving machines		Loader backhoe or compost turning machines for formation and turning of windrows are to be provided. A front-end loader to be provided for feeding the material to the preparatory and finished sections.

All values may vary from 10% to 15% depending on site conditions.

Table A4 8. Equipment for Compost Facility (500 Tonnes Per Day)

S.NO.		EQUIPMENT	QTY.	REMARKS
1.	**Yard management**			
	1.1	Loader backhoe or turning equipment	4	Turning of windrow
	1.2	Front wheel loader	3	For shifting and feeding of material
	1.3	Dumper	4	For material movement to landfill site
	1.4	Water tanker with slurry pump	2	For sprinkling of water and slurry on garbage
2.	**Tipping and pre-processing section**			
	2.1	Feeder	1	For feeding material at controlled rate
	2.2	Trommel - 100 mm	1	For screening
	2.3	Transfer conveyor	1	For conveying material to dumper
	2.4	Rejection conveyor	1	For removal of rejection and transferring to sorting belt
	2.5	Sorting belt conveyor	1	For sorting of biomass, if any
3.	**Coarse segregation section**			
	3.1	Front wheel loader	1	For shifting material in rain shed & feeding material to feeder
	3.2	Dumper	2	For material movement to landfill site
	3.3	Moving arm feeder	1	For feeding material to cage drum
	3.4	Cage drum	1	For screening
	3.5	Process conveyor	1	For feeding material to trommel
	3.6	Trommel - 35mm	1	For screening
	3.7	Process - 35 conveyor	1	For feeding material to next trommel
	3.8	Reject - 35 conveyor	1	For removal of rejection off-line
	3.9	Trommel - 14mm	2	For screening
	3.10	Transfer conveyor	1	For transferring material to curing area
	3.11	Reject 14 conveyor	1	For removal of rejection off-line
	3.12	Storage conveyor	2	For stacking material in curing area
4.	**Refinement section**			
	4.1	Pay loader (0.4 Cum)	4	For spreading material in curing area & feeding material to feeder
	4.2	Drag chain feeder	2	For feeding material at controlled rate
	4.3	Elevator	2	For lifting material & feeding it to rotary screen
	4.4	Rotary screen	2	For screening
	4.5	Gravity separator with aspirator	4	For separation of heavy impurities
	4.6	Reject conveyor	2	For removal of rejection off-line
	4.7	Add mixer	2	For adding additives to improve quality of end product
5.	**Packaging section**			
	5.1	Bag stitching machine	4	For stitching bags
	5.2	Weighing scale (100 kgs)	4	For weighing bags
	5.3	Pellet trucks	8	For stacking & moving packed material
6.	**Control panel**			
	6.1	Hydraulic power pack	4 sets	Push button station along with hydraulic system to improve efficiency and safety of equipment against continuously fluctuating load
	6.2	Central control panel	1 set	



A = Tyre wash depression, filled with water (l = 10, w = 3)	J = Segregation trommel with 80 mm sieve (l = 10, w = 2.5)	R1 R2 = Discharge belts (l = as required, w = 1)
B = Weigh bridge pit less, load cell based (l = 9, w = 3)	L = Sorting conveyor (removal of smaller non-biodegradable Items) (l = 10, w = 1.2)	S = Trommel with 35mm Sieve (l = 8, d = 2)
C = Area for turning of trucks (l = 20, w = 20)	M = Bio-dryer for combustible material (l = 10, d = 2.5)	U = Trommel with 16 mm Sieve (l = 7, d = 2)
D = Unloading area (under covered shed) (l = 20, w = 15)	N = Shredder (footprint) (l = 2, w = 2)	W = Trommel with 4 mm Sieve (l = 6, d = 1.5)
E = Bag breaker (l = 3, d = 2)	O = Gravity separator (footprint) (l = 2, w = 2)	Y = Gravity separator (footprint) (l = 2, w = 2)
F = Sorting Conveyor (l = 15, w = 1.2)	P = Baling equipment (footprint) (l = 3, w = 3)	Z = Weighing and bagging (footprint) (l = 4, w = 4)
G, I, K = Transfer Conveyor (l = as required, w = 1)	Q = Moving bed hopper for digested material (l = 5, w = 2)	
H = Trommel with 10 mm sieve for (removal of supercficial dust (l = 3, d = 2)	R, T, T1, V, X, X1 = Transfer conveyors (l = as required, w = 1)	

Note 1: L= Length, W= Width, D = Diameter (in meter)

Note 2: This design has been made keeping in view optimized process efficiency. Efficient process would lead to increased yield of products with quality and reduced process residues, which is sent to the landfill. However, In India, it is rather common to use reduced specifications, such as, length of trommels for reducing cost. The cascading action does not happen properly and the segregation process suffers. Similarly, concentric trommels have severe limitation on cascading action and at best they act as concentric rotary screens.

Note 3: For areas with high humidity, aerated curing for 3 weeks recommended.

Figure A4.1: Municipal Solid Waste Based Compost Plant, Capacity 300 Tons Per Day Input Material

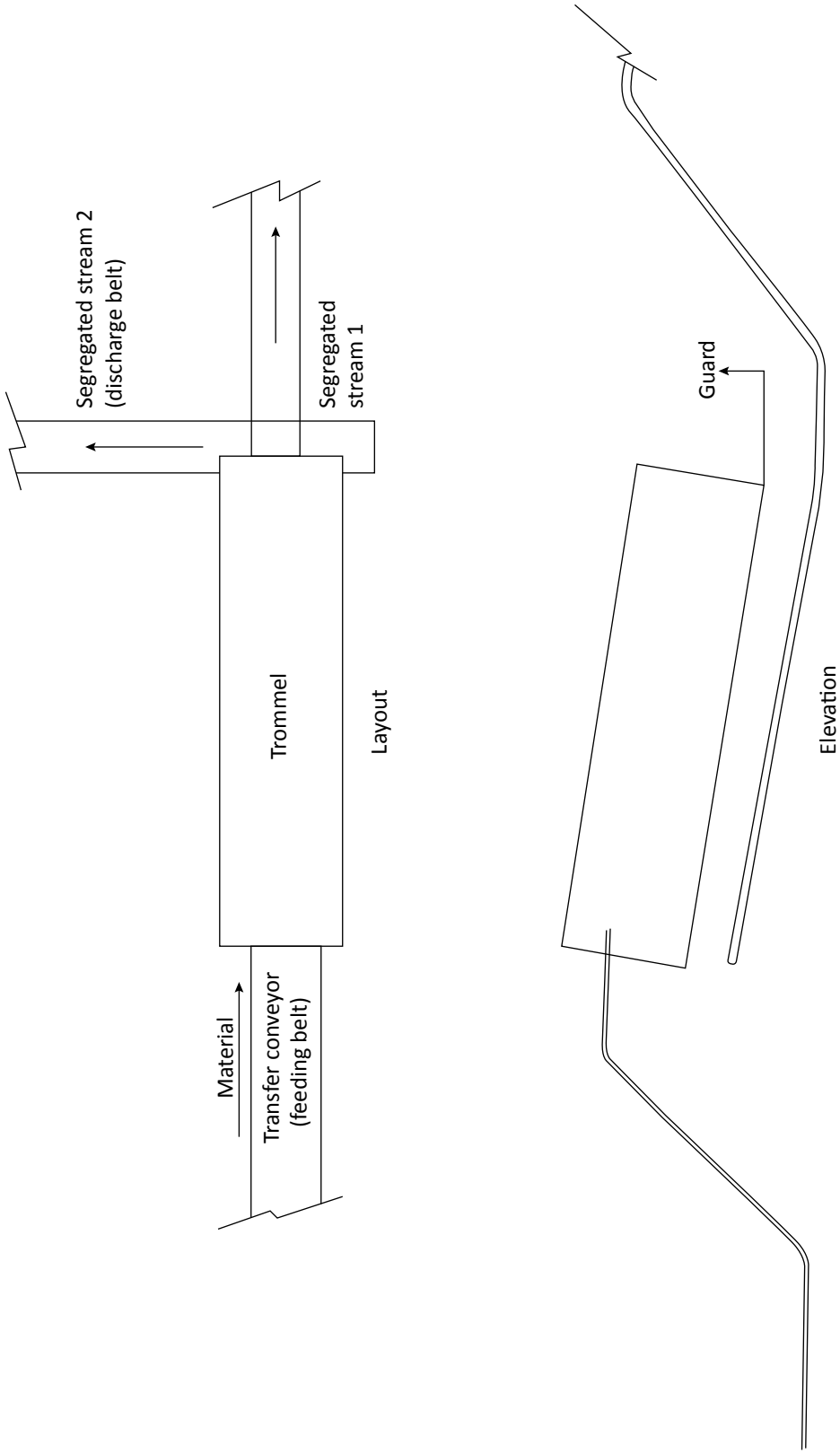


Figure A4 2. Trommel System

Annexure 5

A STANDARD OPERATING PROCEDURE FOR WINDROW COMPOSTING

1. TROUBLESHOOTING

Understanding the basic concepts and limitations of the composting process will help operators run a successful operation. Frequent monitoring of the heaps is important, as the heap characteristics are clues to the composting process. Heap characteristics can be used to identify problems within the process.

Symptoms such as high or low temperature, odour, leachate discharge, and others are indications of problems. Commonly encountered problems, as well as possible causes and solutions, are included in the trouble shooting guide as follows:

Table A5 1: Solid Waste Composting Facility Troubleshooting Guide

PROBLEM	CAUSE	RECOMMENDATION
Foul odour	Anaerobic conditions: Heaps too large	Reduce windrow size, no wider than 69 m, no taller than 2.5 m.
	Heaps too wet or excess organic	Turn or mix windrow; maybe add dry matter.
	Temperature too high	Turn windrow.
	Material compaction	Turn windrow or reduce windrow size.
Standing water or ponds on surface of windrow	Ruts and holes	Regrade or reconstruct; use careful equipment operation.
	Inadequate slope	Regrade at recommended slope design.
	Improper construction	Align windrows to run down slope, not across.
Inadequate composting rate • with low windrow temperature • with high windrow temperature	Insufficient moisture	Add more water initially, or add water while turning.
	Uneven distribution of air, moisture, or nutrients	Consider size reduction methods; turn heap, adding water if necessary.
	Windrow too small (heat loss)	Construct heaps to minimum of 2.5 m height or higher for cold seasons.
	Lack of nitrogen	Mix in a nitrogen source.
	Windrow too large or dense (anaerobic conditions)	Make heaps smaller; turn to loosen compacted materials.

Table A5 1: Solid Waste Composting Facility Troubleshooting Guide [contd.]

PROBLEM	CAUSE	RECOMMENDATION
Fires or dry heaps	Temperature too high	Make heaps smaller; turn to loosen compacted material.
	Not enough water	Add water and turn heaps.
	Stray sparks or embers	Keep potential fire sources away from heaps.
Surface water pollution	Leachate discharge	Configure windrows perpendicular to slope to eliminate surface water accumulation; treat leachate before it leaves the site by approved methods (such as conveying to catch basin or pass through filter area);practise storm water management methods to divert surface water away from compost or curing heaps.
Dust	Turning operations	Avoid turning dry heaps on windy days; use standard dust control methods; locate facility away from residential areas and downwind from sensitive areas.

2. DO´S/DON'T´S

DO's

- Implement and maintain standard operating procedure (SOP) faithfully.
- Monitor yard operation diligently.
- Survey the raw material catchment's area periodically.
- Select municipal solid waste (MSW) rich in organic matter.
- Keep a regular watch on the quality of municipal solid waste.
- Always use fresh slurry.
- Test the water sample for pH and salinity regularly.
- Always follow safe measures.
- Enforce traffic rules strictly for incoming vehicles.
- Prepare working area for waste pickers.
- Keep dump yard area neat and clean.
- Develop and maintain good rapport with municipal corporation at all levels.
- Keep records for all observations in prescribed formats.
- Collect leachate from windrows via drains and collection tank and use with garden mix.
- Take corrective actions without delay.
- Develop and maintain greenbelt and garden.
- Dispose process rejects scientifically.
- Harness maximum resource recovery.
- Apply correct dosage inoculum.
- Turn the windrows as per schedule.
- Reject out rightly hospital, industrial or hazardous waste.
- Always mask slaughter house, fish or chicken waste with regular garbage.

DONT´S

- Do not create conditions for pathogens to develop.
- Do not allow pigs, cows, dogs and birds in dump yard.
- Do not allow rag pickers within operation area of equipment.
- Do not allow that windrows get compacted too much.
- Do not work in dump yard without mask, handgloves, gumboot and cap.
- Do not touch electric fittings with wet hand.
- Do not allow smoking in the dump yard.
- Do not use saline or hard water for spraying.
- Do not spray excess water on the heap.
- Do not keep dead animal, slaughter house, fish, chicken waste in the open.
- Do not accept industrial, hospital or hazardous waste with municipal waste while collection.
- Do not allow leachate to flow uncontrolled out of windrows.
- Do not litter plastics within the premises.
- Do not let leachate contaminate soil, groundwater and surface water.

3. WINDROW MANAGEMENT

Reception of waste at entrance area or weighbridge:

1. The weight of the vehicle should be noted (W1)
2. The dry waste is unloaded at designated area and the weight is recorded (W2)
3. The wet waste is unloaded at the reception area for wet waste (W3)
4. The waste is inspected for conforming and non-conforming waste and the following actions taken
   a. Biodegradable waste
      - accepted and sent to windrow platform
   b. Pure vegetable, food waste from market, hotels and slaughter house
      - accepted and sent to biomethanation plant
   c. Construction debris
      - accepted and disposed in sanitary landfill
   d. Biomedical and industrial sludge
      - rejected and to be sent back to generators for proper disposal
5. The details of weighment shall be recorded in the following format:

Table A5 2: Format for Recording Waste Receipts

MATERIAL WEIGH SLIP					
Ticket No.					
Vehicle No.					
Vehicle Identification No.					
Ward or Zone No.		Time :	Gross Weight Kg		kg
Driver Name or No.		Time :	Tare Weight		kg
Material Code		Time :	Net Weight		kg

6. One copy of the weigh slip should be handed over to the driver. The original stays in the plant.
7. The wet waste shall be placed only in the first row using loader or excavator
8. Deposit waste in the area designated for the weekday e.g., waste received on Sundays would be placed on the area designated for Sundays
9. The heaps have to be set up as loose heaps to allow infiltration of air. Moisture has to be added if simple squeezing test shows that the humidity is low
10. Simultaneously, shift windrow heap of the corresponding weekdays by one row
11. When constructing the windrow, care should be taken not to drive on or compact the material
12. Record temperatures at every 20m of the windrow heap using a long probe thermometer
13. Turn the heap
    - when temperature are below 35°C or above 60°C
    - when moisture content is above 60%
    - when foul smell emanates from heap
14. The characteristics of the windrows shall be recorded by the yard supervisor of the plant responsible for composting process according to the format given below:

Table A5 3: Format for Daily Report of Heap Characteristics to be Maintained by Yard Supervisor

DATE	HEAP NO	TEMP.	MOISTURE CONTENT	OXYGEN LEVEL	PH	ODOUR	TEXTURE	1ST TURN	2ND TURN	3ND TURN

15. Spray water in case moisture content is below 40%
16. When the temperature has reduced to the required range and after elapse of 3-4 weeks, the windrow is dismantled and the fermented material is shifted to the pre-sorting section of the screening process

4. OPERATION AND MAINTENANCE OF SCREENING PLANT

1. The fermented material from the 3-4 week windrow is shifted to the pre-screening section and then post-sorting section
2. The following section describes operation and maintenance of pre-screen and post-screening equipment. This operation procedure is applicable to all screens-200mm, 100mm, 75mm, 16mm and 4mm:
   - check hydraulic levels of all power packs
   - check coolant levels. Top up with coolant as appropriate
   - check for visible oil leaks. Tighten hoses or replace, if needed
   - check for electrical safety. Tighten connections or rectify as appropriate
   - the feeding should be stopped half an hour before shutting down the plant
   - wait until all moving equipment in the trommel, process and reject conveyors are empty of material
   - the operator should clean all the conveyors and trommels using hand rakes and hard brushes
   - remove the waste or rags which are still stuck to the machine
   - oil the chain links and grease the nipples as advised in the daily maintenance chart

5. EMERGENCY

- in case of any abnormal sound, temperature rise, choking of conveyor, the operator has to press the emergency stop
- the plant may be restarted after the cause is investigated and addressed
- the shift in-charge has to sign off the release of document

Annexure 6

GUIDELINES FOR THE SELECTION OF SITE FOR LANDFILLING

HAZARDOUS WASTE MANAGEMENT
SERIES: HAZWAMS/23/2002-03

GUIDELINES FOR THE SELECTION OF SITE FOR LANDFILLING

CENTRAL POLLUTION CONTROL BOARD
MINISTRY OF ENVIRONMENT & FORESTS
e-mail : cpcb@alpha.nic.in Website : www.cpcb.delhi.nic.in
February 2003

GUIDELINES FOR THE SELECTION OF SITE FOR LANDFILLING

CENTRAL POLLUTION CONTROL BOARD
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दिलीप विश्वास
अध्यक्ष

DILIP BISWAS
Chairman

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(भारत सरकार का संगठन)
पर्यावरण और वन मंत्रालय

Central Pollution Control Board
(A Govt. of India Organisation)
Ministry of Environment & Forests
Phones : 2204948

FOREWORD

Solid Waste Management is one of the essential services to be provided by municipality to the community. This is an important activity which needs to be planned and executed in an appropriate manner to maintain clean environment.

In keeping with the guidelines formulated by the Committee appointed by the Honorable Supreme Court of India on "Solid Waste Management in Class I Cities in India" and regulations promulgated by the Ministry of Environment & Forests, Govt. of India a study was undertaken through NEERI to assess the problem of disposal of solid waste by landfilling and develop guidelines for selection of sites for developing sanitary landfilling.

We hope, the guidelines will be useful to the Municipal authorities, concerned organisations, academic institutions, researchers and others in planning solid waste management in the country.

(Dilip Biswas)

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1.0 INTRODUCTION

In India, recently solid waste management systems are assuming larger dimensions in keeping with the Municipal Solid Wastes (Management & Handling) Rules, 2000. Many of the municipalities are taking appropriate actions to improve various component systems like collection of solid waste from generation areas, its transportation to processing and disposal site(s), utilising the recycling potential of Municipal Solid Waste (MSW) and ultimately disposing of by landfilling.

In view of this, under the sponsorship of Central Pollution Control Board (CPCB), NEERI has carried out the extensive studies to assess the pathways of pollution for various environmental media. Further, a site selection criteria has been developed in the form of guidelines to suit Indian condition in keeping with the findings of the other studies.

Guidelines have been developed through extensive literature search, and review of earlier studies carried out by NEERI. The developed criteria encompass environmental conditions, hydrogeological conditions, accessibility, ecological and societal effects, etc.

The guidelines have been divided into two Sections. Section - A deals with technical screening procedure based upon economic, engineering and environmental suitability and public approval/acceptance and presents the site scrutinising procedures. Section - B presents the validation of guidelines in real life situation for Bangalore city.

These guidelines are indicative and are only meant for guidance. Government agencies like municipalities, corporations, etc. and implementation authorities would be required to conform to the requirement of the legislation.

2.0 SALIENT FEATURES OF THE GUIDELINES FOR SELECTION OF SITES FOR LANDFILLS

1. The Guidelines are designed to provide a framework for the development of policy and procedure to protect health of community and environmental quality arising out of disposal of municipal solid waste.

2. The guidelines are for setting up of sanitary landfills for the disposal of municipal solid waste.

3. The guidelines delineate step-by-step procedure for screening potential sites and its selection through ranking of feasible site alternatives.

4. Ranking of site is based on objective evaluation of accessibility, receptor, environmental, socio-economic, waste management practice, climatological and geological related attributes based on scaling - weighing technique which involves importance and sensitivity of the attributes.

5. The guidelines indicate possible information sources, delineate the techniques for collection of samples and their analysis for site characterisation.

6. The guidelines provide details related to methodology, provide proforma and illustrate with a case study.

7. The guidelines discuss their application to municipal solid waste management as a whole, and to restore the environmental quality arising from waste disposal.

8. Bibliographic references are provided for the benefit of the users for obtaining specific detail from the these sources.

3.0 SCOPE AND APPLICABILITY

The guidelines are to provide policy and procedure to protect community, environment and ecosystem and to assist the appropriate agency in the siting of new facilities for disposal of municipal solid waste on techno-enviro-economic compatibility in suitable locations. Further, these are oriented primarily to the setting of independent disposal facilities, located away from the sources of waste generation.

4.0 SITING OF A FACILITY FOR DISPOSAL OF MUNICIPAL SOLID WASTE

The main purpose of the siting process is to make the best use of the land resources available. The siting for disposal of solid waste and disposal facilities requires the synthesis of two distinct selection procedures, viz. a technical screening process based upon economic, engineering and environmental suitability, and public approval process. A general listing of various factors to be considered for siting is presented in **Table 1**. The relative importance of these factors depends on the site consideration as well as the chosen method of disposal.

Table 1 Factors in Siting of Municipal Solid Waste Disposal Facility

- Accessibility to the site
  - Distance from the highway
  - Distance from the origin of waste

- Receptor related
  - Proximity of human habitation/locality
  - Drinking water sources
  - Land use designation
  - Agriculture value
  - Public utility facility
  - Historical/Archeological monuments
  - Public accessibility

- Environmental related
  - Hydrogeological investigation
  - Distance to nearest surface water
  - Air quality
  - Soil quality
  - Water quality
  - Safety

- Socio-economic
  - Job opportunity
  - Vision
  - Health

- Waste management practices related
  - Waste quantity/day
  - Life of site

The goals of siting facility are to:

- Minimise health risk
- Minimise adverse environmental impact
- Minimise costs of the development, construction, operation and closure
- Maximise public acceptability of the project

To achieve these goals specific objectives may be defined for siting in terms of physical, environmental, economic and cultural factors. No single site can, however, satisfy all the selection objectives, hence, trade off between various factors should be considered.

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5.0 SITE SELECTION METHODOLOGY

The site selection process should be carried out in a progressive step-by-step procedure involving the evaluation of alternatives. Various steps to identify site for disposal of solid waste are shown in flowchart (**Figure 1**).

5.1 Definition of Waste Management Problem

The first step in the facilities development process is to define the nature and size of the waste problem to be managed by the proposed facility. This task is undertaken through surveys of waste generation, handling and management practices and options available and/or adopted. An outline of engineering, planning and environmental issues to be considered in the later phases is also to be prepared.

5.2 Selection of Candidate Sites

This phase is very crucial in the siting process and can be carried out through a multi-level screening process.

Level I - Constraint Mapping : Constraint mapping eliminates environmentally unsuitable sites and narrows down the number of sites for further consideration. Certain features termed as "exclusionary factors" identified for constraint mapping are given in **Figure 1**.

Level II - Potential Site Selection : The level II factors include landuse and infrastructure facilities. Land use includes target land area required, land ownership and its current use. Infrastructural facility includes major highway access, sites of existing/former waste disposal facilities and land designated for industrial use. These provide the basis for highlighting promising sites within the candidate areas remaining after level I analysis.

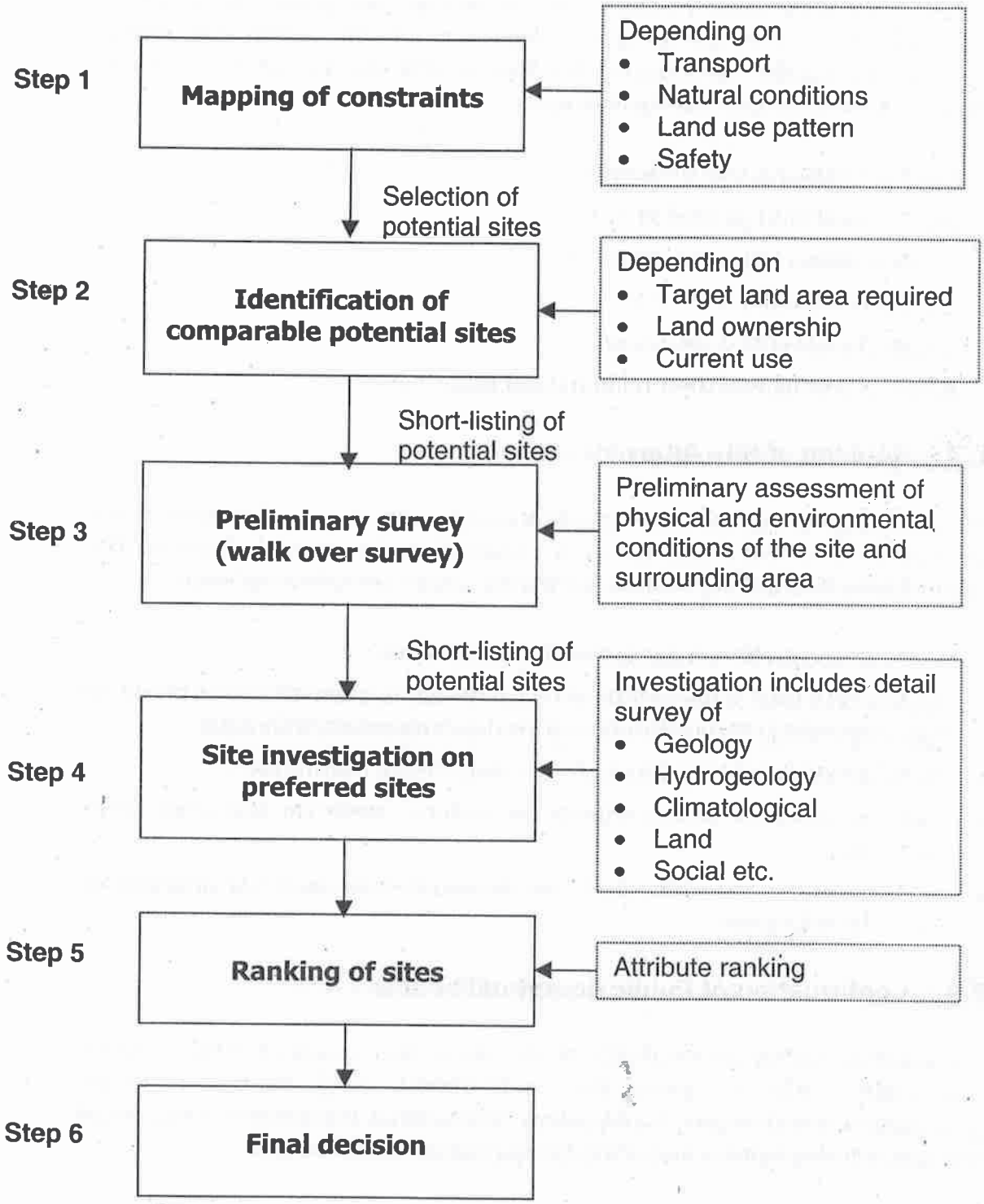

Figure 1 : Site Selection Criteria

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Level III - Preliminary Survey : The sites selected in level II are further scrutinised to eliminate areas which fail to meet additional socio-economic and environmental concerns at the site and surrounding areas. The objectives of the walkover survey (preliminary survey) is to identify sufficient constraint to reduce the number of possible sites. This may be carried out by surveying the areas and collecting data regarding :

- Existing zones of development
- Agricultural land preserves
- Areas of mineral development
- Freshwater wetlands
- Visual corridors of scenic rivers
- Riverine and dam-related flood hazard areas

5.3 Ranking of Site Alternatives

The next stage of site selection involves comparison of candidate sites based on evaluation of each site for more detailed environmental impacts. The methodology for ranking of site alternatives comprises following steps:

- Select attributes for evaluation of site alternatives
- Apportion a total score of 1000 between the assessment attributes based on their importance through ranked pairwise comparison technique
- Develop Site Sensitivity Index (SSIs) using Delphi Technique
- Estimate score for each attribute for various candidate site alternatives using SSIs
- Add the scores for individual site alternatives, to rank the alternatives based on total score

5.4 Confirmation of Public Acceptability of the Site

For ensuring public acceptability of the site, target audience which include community leaders, municipal authorities, environmental groups, government departments, transporters, educational institutions, local social services, planners and site-specific groups should be addressed.

In keeping with the current life style and various problems of solid waste management, the community should be made aware and motivated for participation. The field staff should also educate the public that the risks associated with well designed municipal solid waste management systems are considerably less than its absence and that the risks associated with the

facility would be no greater, and probably less, than those associated with any other industry.

5.5 Regulatory Approval

The site should be in accordance with the specification prescribed in the schedule III of the Municipal Solid Wastes (Management and Handling) Rules, 2000 and require approval from regulatory agencies for all facilities related to disposal of municipal solid waste.

Section A

6.0 SELECTION OF CANDIDATE SITES FOR DETAILED INVESTIGATION

The algorithmic procedure to be followed for the selection of candidate sites for sanitary landfills is as described below :

6.1 Step I - Mapping of Constraints

With increasing population the city boundaries are also increasing. The first step for site selection is mapping of constraints. The most stringent criteria for site selection at the initial stage may result in lesser possibility of getting the sites selected for landfilling. Several of these negative aspects may conveniently be recorded on a suitably scaled map of the municipality and its surroundings. Such mapping will reveal areas in which landfill sites might be located.

Constraint mapping eliminates environmentally unsuitable sites and narrows down the number of sites for further consideration. Certain features termed as "exclusionary factors" such as restricted areas for play ground, gardens etc., are identified using map of appropriate scale. These factors will eliminate unsuitable sites from further analysis.

The factors to'be considered while selection are as below :

1) **Transport consideration**

Should be as near as possible from a suitable main road
Must be within the economical travel distance from origin of waste

2) **Natural conditions**

- Should not be flood plains or other areas liable to flooding
- Extreme morphology (steep or over steep, liable to land slips)

3) **Land use pattern**

- Designated ground water recharge, sole source aquifer or surface water catchment areas for water supply schemes should be avoided

- Incompatible future land use designations on or adjacent to the site, particularly hard (built) development or mineral extraction should be avoided
- Should not be within a military exclusion zone

4) **Safety of selected site**

- Must not be within 20 km of an airport runway in the direction of approach and take-off
- Area of former military activity where buried ordnance may be present and hence needs to be avoided
- Must not be within a safe buffer distance (say 100 m) from an existing or planned quarry, which will undertake blasting with explosives
- Areas known to contain collapsing soils need not to be considered

6.2 Step II – Identification of Comparable Potential Sites

This step includes factors like land use and infrastructure facilities (major highway access site of existing/former waste disposal facilities and land designated for industrial use), land area required; which provides the basis for highlighting promising site within the candidate areas remaining after step I analysis.

Depending on the restrictions imposed by the constraint mapping exercise, the municipality should aim to draw up a list of maximum number of possible sites. These may include positive features such as:

- Easy access to a road system
- Proximity to the urban area
- Ease in land acquisition
- Beneficial after-use

The area required for landfilling can be computed by following methods :

The required site area will depend upon

- The total quantity of waste to be disposed at the site over its life time
- The volume that this waste (and any cover material) will occupy in the site

- How this volume can be accommodated in the site (% of site covered, depth, and/or height of landfilled waste)

Area of the site should be inclusive of :

Buffer between adjacent properties at the site boundary and the filling area
Access road
- Soil stockpile area outside the fill surface
- On-site structure and equipment-storage area

Typically, the usable fill area ranges from 50 to 80% of sites gross area

6.3 Step III – Preliminary Survey (Walk over survey)

The sites selected in step II are further scrutinised to eliminate areas which fail to meet additional socio-economic and environmental concerns at the site and surrounding area by walk over survey.

While the first two steps may not require first hand knowledge of the possible sites further elimination of sites will require a formal inspection of each site. A number of features, both favourable and unfavourable, may be identified by a walkover survey.

The preliminary survey may some times require confirmation by other authorities. The objective of the walkover surveys is to identify sufficient constraints to reduce the number of possible sites. This may be done by surveying the area and collecting data regarding :

- Existing zones of development
- Areas of mineral deposition
- Freshwater and wetland
- Natural vegetation
- Exposed geology

The data required from preliminary survey includes:

Is the site presently well drained?
Are there established watercourses within or adjacent to the site
Is there evidence of ephemeral streams, springs or sinkholes?
- From knowledge of the geology of the area does the morphology of the site suggest significant or minimum depths of soft material?
- Is there any evidence of geological features on or near the site?

- Are there any features, which will significantly limit the useful area of the site for landfilling?
- Does the nearby well have high water table?
- Where are the nearest inhabited dwellings?

6.4 Step IV – Site Investigation on Preferred Sites

Fourth step is site investigation, includes detail survey of hydrogeology, water, climatology, soil etc. of the sites which are scrutinised from step III. Subsurface exploration and a topographic survey should be carried out at the preferred site. These site investigations will be critical to the success of the siting and design of the landfill.

From the results of the site investigation program, the estimates of cost and capacity of the preferred site(s) may be firmed up and clearly preferred site identified.

7.0 RANKING OF SITES

The next stage of site selection involves comparison of candidate sites based on evaluation of each site for more detailed impacts. After scrutinising the sites through step I to III (**5.2 Selection of Candidate Sites**), the number of sites may be reduced, and are ranked according to their environmental, social and community impacts.

7.1 Site Scrutinisation

After conducting siting phase for identifying comparable sites, final firm selection for one site is arrived through site scrutinising procedure. The procedure involves selection of attributes, attribute weightage and ranking.

Site Scrutinising Procedure

The methodology for ranking of site alternatives comprises following steps:

- Select attributes for evaluation of site alternatives
- Apportion of total score of 1000 between the assessment attributes based on their importance through pairwise comparison technique
- Develop Site Sensitivity Index using Delphi Technique
- Estimate weightage for each attribute for various candidate site alternatives using Site Sensitivity Index
- Add the scores for individual site alternatives to rank the alternatives based on total score

The procedure for ranking is described below :

7.2 Selection through Ranking of Sites

Selection of Attributes

A set of 32 attributes has been considered for ranking of disposal site alternatives (**Table 2**). These attributes are decided on the basis of the literature review pertaining to site selection, experts from waste management including NEERI's expertise and are also decided taking in view the factors contributing the pollution pathways. Each of the attribute is considered, keeping in view the environmental impacts, cost for the site, accessibility, volume of the site, etc. These attributes are then grouped according to the category so that those can be assigned with the weightage.

Attribute Weightage

The selected attributes are grouped into 7 categories, consequently, a numerical value called weightage has been assigned to each category, in accordance with the relative magnitude of impact it assesses using a pairwise comparison technique. Based on Delphi, weightage is assigned to each category. A total of 1000 points are assigned among the 7 categories. The weightage to each attribute is assigned following the same procedure of pairwise comparison within the category. Total points pertaining to a particular category are assigned to the attributes belonging to that category. The weightages for individual attribute and the categories are listed in **Table 3**.

7.3 Site Sensitivity Index

Site sensitivity index is scale indicating degree of sensitivity of individual attribute. Accordingly for each of the attribute a four-level sensitivity scale has been considered. This scale ranges from "0" (indicating no or very less potential hazard) to "1" (indicating a highest potential hazard). The sensitivity levels are listed in **Table 2**.

Estimation of Weightage (Score)

Based on the actual measurements and the opinion of the experts, the corresponding site sensitive index will be given for each attribute. The value of the sensitivity index will be multiplied by the corresponding weightages of the attributes. This will result in weightage (score) for each of the attribute. The worksheet for the procedure is presented in **Table 3.**

Table 2

Development of Site Sensitivity Index

Sr. No.	Attribute	0.0-0.25	0.25-0.5	0.5-0.75	0.75-1.0
			Accessibility Related		
1.	Type of road	National highway	State highway	Local road	No road
2.	Distance from collection area	< 10 km	10-20 km	20-25 km	> 25 km
			Receptor Related		
3.	Population within 500 meters	0 to 100	100 to 250	250 to 1000	> 1000
4.	Distance to nearest drinking water source	> 5000 m	2500 to 5000 m	1000 to 2500 m	< 1000 m
5.	Use of site by nearby residents	Not used	Occasional	Moderate	Regular
6.	Distance to nearest building	> 3000 m	1500 to 3000 m	500 to 1500 m	< 500 m
7.	Land use/Zoning	Completely remote (zoning not applicable)	Agricultural	Commercial or industrial	Residential
8.	Decrease in property value with respect to distance	> 5000 m	2500 to 5000 m	1000 to 2500 m	< 1000 m
9.	Public utility facility within 2 kms	Commercial and industrial area	National heritage	Hospital	Air port
10.	Public acceptability	Fully accepted	Acceptance with suggestions	Acceptance with major changes	Non acceptance
			Environmental Related		
11.	Critical environment	Not a critical environment	Pristine natural areas	Wetlands, flood plains, and preserved areas	Major habitat of endangered or threatened species
12.	Distance to nearest surface water	> 8000 m	1500 to 8000 m	500 to 1500 m	< 500 m

Contd...

Table 2 Contd...

Sr. No.	Attribute	0.0-0.25	0.25-0.5	0.5-0.75	0.75-1.0
13.	Depth to ground water	> 30 m	15 to 30 m	5 to 15 m	< 5 m
14.	Contamination	Air, water or food contamination	Biota-contamination	Soil contamination only	No contamination
15.	Water quality	Highly polluted	Polluted	Potable	Confirming to standard
16.	Air quality	Highly polluted	Polluted	Confirming to industrial standards	Confirming to residential standards
17.	Soil quality	Highly contaminated	Contaminated	Average	No contamination
Socio-economic Related					
18.	Health	No problem	Moderate	High	Severe
19.	Job opportunities	High	Moderate	Low	Very low
20.	Odour	No odour	Moderate odour	High odour	Intensive foul odour
21.	Vision	Site not seen	Site partly seen (25%)	Site partly seen (75%)	Site fully seen
Waste Management Practice Related					
22.	Waste quantity/day	< 250 tonnes	250 to 1000 tonnes	1000 to 2000 tonnes	> 2000 tonnes
23.	Life of site	> 20 years	10-20 years	2-10 years	< 2 years
Climatological Related					
24.	Precipitation effectiveness index*	< 31	31 to 63	63 to 127	> 127
25.	Climatic features contributing to Air pollution	No problem	Moderate	High	Severe

Contd...

* Precipitation effectiveness index is the ratio of annual precipitation to annual evaporation.

Table 2 Contd...

Sr. No.	Attribute	0.0-0.25	0.25-0.5	0.5-0.75	0.75-1.0
			Geological Related		
26.	Soil permeability	> 1 X 10^{-7} cm/sec.	1 X 10^{-5} to 1 x 10^{-7} cm/sec.	1 X 10^{-3} to 1 x 10^{-5} cm/sec.	< 1 X 10^{-3} cm/sec.
27.	Depth to bedrock	> 20 m	10 to 20 m	3 to 10 m	< 3 m
28.	Susceptibility to erosion and run-off	Not susceptible	Potential	Moderate	Severe
29.	Physical characteristics of rock	Massive	Weathered		Highly weathered
30.	Depth of soil layer	> 5 m	2-5 m	1-2 m	< 1 m
31.	Slope pattern	< 1%	1-2%	2-5%	> 10%
32.	Seismicity	Zone I	Zone II	Zone III	Zone IV & V

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Table 3

Worksheet for Ranking of Disposal Sites

Name of site :

Location :

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Accessibility Related				
Type of road			25	
Distance from collection point			35	
Total			**60**	
Receptor related				
Population within 500 meters			50	
Distance to nearest drinking water source			55	
Use of site by nearby residents			25	
Distance to nearest building			15	
Land use/Zoning			35	
Decrease in property value with respect to distance			15	
Public utility facility within 2 kms			25	
Public acceptability			30	
Total			**250**	

Contd...

Table 3 Contd...

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Environmental Related				
Critical environments			45	
Distance to nearest surface water			55	
Depth to ground water			65	
Contamination			35	
Water quality			40	
Air quality			35	
Soil quality			30	
Total			**305**	
Socio-economic Related				
Health			40	
Job opportunities			20	
Odour			30	
Vision			20	
Total			**110**	
Waste Management Practice Related				
Waste quantity/day			45	
Life of site			40	
Total			**85**	

Contd...

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Table 3 Contd...

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Climatological Related				
Precipitation effectiveness index			25	
Climatic features contributing to Air pollution			15	
Total			**40**	
Geological Related				
Soil permeability			35	
Depth to bedrock			20	
Susceptibility to erosion & run-off			15	
Physical characteristics of rock			15	
Depth of soil layer			30	
Slope pattern			15	
Seismicity			20	
Total			**150**	
Grand Total			**1000**	

7.4 Aggregating the Score for Selection

The scores for each attributes and then for all the categories of an individual site will be added to calculate the total score for the site. The same procedure has to be repeated for all of the alternative sites. The results will be interpreted on the basis of the total score. The total scores of all the alternative sites will be compared and will be ranked on the basis of less sensitivity. The site with the least score will be less sensitive, i.e. there will not be significant impact on the environmental quality due to the disposal site and hence will be the most acceptable. The site suitability accordingly will decrease with increase in the total score. Therefore, the site with less score will be selected for disposal. As far as the environmental related attributes are concerned, the contaminated land, polluted water, air and soil quality is preferred option for landfilling site.

A broad score is developed to identify which site is acceptable. The generalised scores are given below :

Total score	Site Description
< 300	Less sensitive to the impacts (preferable)
300 to 750	Moderate
> 750	Highly sensitive to the impacts (undesirable)

The criteria developed are applied to a case study for evaluation and validation purposes.

Section B

8.0 A CASE STUDY

The guidelines developed for selection of sites for developing sanitary landfilling are validated for the city of Bangalore. Bangalore Mahanagar Palike (BMP) proposed four sites, viz. Kannahalli, Seegehalli, Medhiagrahara and Gedanahalli.

8.1 Existing Solid Waste Management System in Bangalore

The prevailing system for solid waste management is presented in **Figure 2**. In order to select the site, it is necessary to know the quantity and composition of solid waste that would be disposed of in the landfill. Accordingly, per capita waste quantity is computed on the basis of field investigations keeping with the population rise at the rate of 4.25% per year and also the per capita rise of 0.383% per year. The waste quantity that would be generated, processed and finally disposed of in the landfills for every year till 2010 is computed and presented in **Table 4**.

On an average the waste contains biodegradable fraction in the range of 30-35%. The average plastic content is 9.18%. The moisture content of solid waste for residential and commercial area was 38% and 42.52% respectively. Part of the solid waste is processed by composting managed by 4 private entrepreneurs where approximately 100-300 metric tonnes of waste per day are utilised.

8.2 Landfill Site Selection

Keeping with the site selection procedure described in Part A, the site evaluation was carried out to select the best site for disposal amongst the available sites.

Medhiagrahara site measures approximately 27 acres. As this site is within the radius of 20 km from the proposed airbase at Devanhalli, cannot be considered for landfilling. This is in accordance with Government of India regulations on Municipal Solid Waste (Management and Handling) Rules, 2000 [The Gazette of India: Extraordinary part II-sec 3(ii): No landfill site should be within 20 kms radius from the airbase]. Hence this site was rejected and no investigations were carried out on the site.

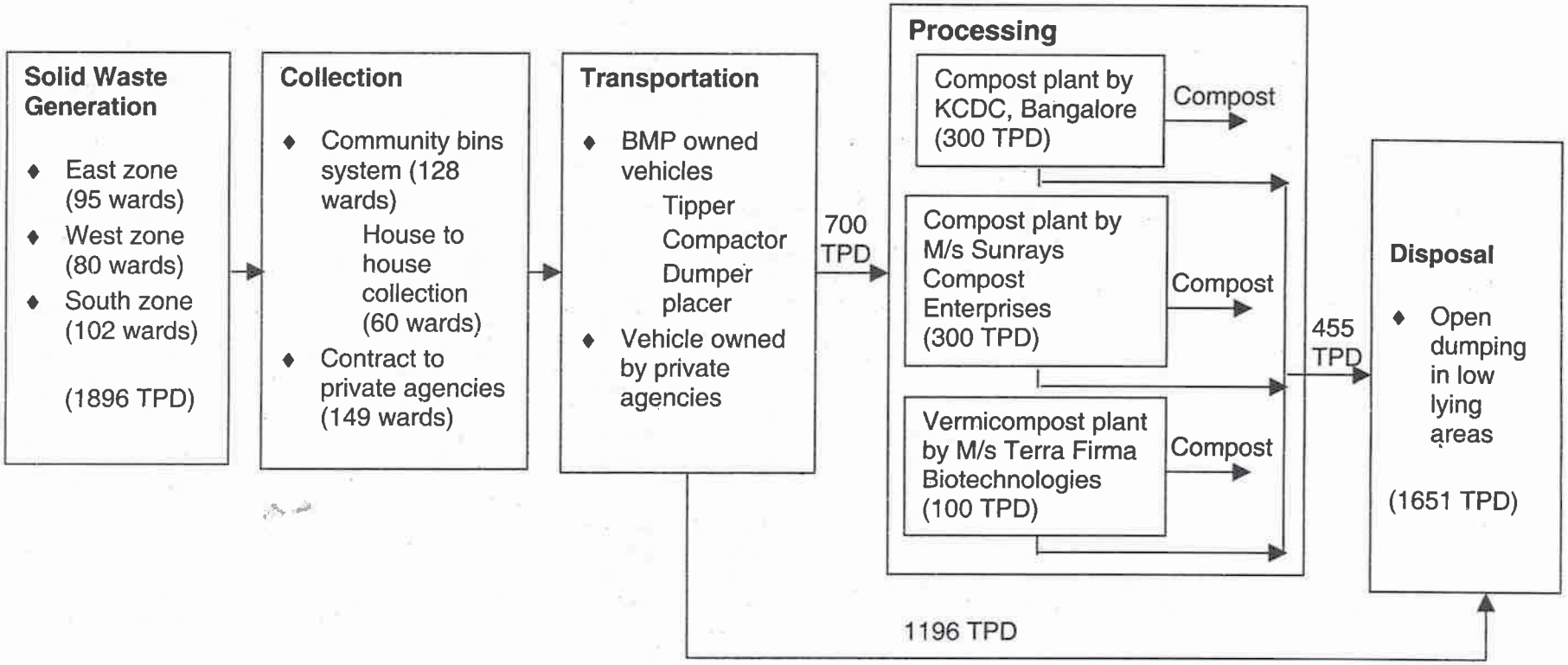

Figure 2 : Existing Solid Waste Management System in Bangalore City

Table 4

Estimates for Landfill Area required for the Period 2000-2010

Year	Population (lakhs)	MSW * (kg/capita/day)	MSW (MT/day)	Total biodegradable matter ** (MT/day)	Qty. of MSW for composting (MT/day)	Net qty. for disposal (MT/day)	Net qty. for disposal (MT/yr)	Qty. for disposal (Cumulative) (MT)	Landfill area (Cumulative) (hectares)	Land area, including cover mater (hectares)
2000	44.79	0.3831	1715.90	600.57	700	1015.90	370804	370804	12.36	14.83
2001	46.40	0.4088	1896.84	663.89	700	1196.84	436846	807650	26.92	32.31
2002	48.07	0.4362	2096.86	733.90	700	1396.86	509853	1317503	43.92	52.70
2003	49.80	0.4654	2317.97	811.29	1300 ***	1017.97	371558	1689061	56.30	67.56
2004	51.60	0.4966	2562.39	896.84	1300	1262.39	460773	2149834	71.66	85.99
2005	53.46	0.5299	2832.59	991.41	1300	1532.59	559396	2709231	90.31	108.37
2006	55.38	0.5654	3131.29	1095.95	1300	1831.29	668419	3377650	112.59	135.11
2007	27.38	0.6033	3461.47	1211.52	1300	2161.47	788938	4166588	138.89	166.66
2008	59.45	0.6437	3826.48	1339.27	1300	2526.48	922165	5088753	169.63	203.55
2009	61.59	0.6868	4229.98	1480.49	1300	2929.98	1069441	6158195	205.27	246.33
2010	63.81	0.7328	4676.02	1636.61	1300	3376.02	1232248	7390442	246.35	295.62

* Total biodegradable matter as per analysis 35%

** Waste generation rate increases @ 6.7% per annum equivalent to rate of increase of GDP (Source: www.asiaweek.com/asiaweek/features/asiacities/ac1999/data/bangalore.html)

*** A 600 TPD compost plat would be installed in 2003

The second proposed site Gedannahally measures approximately 50 acres. This site is also rejected as it is submerged in water. The remaining two sites viz. Kannahalli and Seegehalli are evaluated for their consideration as candidate landfill sites.

8.3 Attribute Evaluation for Kannahalli and Seegehalli Sites

It is always desirable to evaluate various attributes separately for each of the site under consideration. However, in the present case, as both of these sites are very close to each other their attributes are evaluated jointly for both the sides. Furthermore, an attempt has been made to differentiate between the sites wherever possible.

Accessibility Related Attributes

Both of these sites lie on the west side of the city at a distance of approximately 2.5 km from state high-way and are at a distance of approximately 22 km from the city and 9 km from corporation limit. Nearest locality is Kannahalli colony with approximately 100 residents at a distance of approximately 500 m from these sites.

Receptor Related Attributes

Kannahalli site is in the proximity of two villages, one at a distance of 1.5 km towards the east of the site (population of approximately 2000 people) and the other village (approximate population of 1500) at a distance of 2 km. Seegehalli site have three villages around it at a distance of 2-3 km with population of 200, 500 and 12000 residents.

These sites do not form a part of any specific zone of the city, except for unauthorised cultivation. Since the residential localities are developing along the highway the potential for moderate decrease in property value exist.

Environmental Related Attributes

The general elevation of the area is 828 m (Kannahalli) and 870 m (Seegehalli) above mean sea level. Kannahalli site represents a typical topographic valley which divides the area almost at the central part along northwest-southwest direction (Exhibit 1). Physiographically, the Seegehalli site is located on a mound sloping in all directions (Exhibit 2). These sites can be treated neither as a wetland nor as a flood zone. The proposed sites are barren land with very few bushes and no big trees.

Exhibit 1 : Proposed Kannahalli Landfill Site

Exhibit 2 : Proposed Seegehalli Landfill Site

Bore well is the main water source in the villages surrounding the site. There is a lake at a distance of 2.5 kms from the site. The minimum and maximum depth of water from ground level is 8 m and 29 m respectively. Baseline data for chemical analysis of the water samples from the surrounding water sources, groundwater and surface water, indicates that the hardness exceeds the permissible limit and concentration of heavy metals are within the permissible limit (IS : 10500:1991). Baseline data from soil analysis indicates that the soil is sandy soil with clay percent ranging in between 30 to 35%, silt percent ranging between 15 to 20%, whereas remaining is sand.

Socio-economic Related Attributes

As these sites are close to small colony, the residents will be affected by odour, noise, aesthetics, etc. due to landfilling operations. However, as human habitation in surrounding villages is mostly at a distance of approximately 2-3 km from the proposed site, the public vision would not be affected due to landfilling operation.

Waste Management Practice Related Attributes

Waste quantity generated per day is 1896 MT for the year 2001. The three composting plants accepts 700 TPD of which 455 TPD are rejected so totally 1651 tonnes are required to be disposed by landfilling. The area of the proposed site (Kannahalli) is approximately 29 acres. In keeping with the topography and the contour survey, the volume of the site is computed with the following the assumptions :

- The depth of landfilling as 8 m
- The density of waste as 1000 kg/m^3
- Volume consumed by soil cover as 20% of total volume

Accordingly, the total volume available for disposal of waste 751124 m^3. If the entire quantity of solid waste generated in Bangalore is landfilled at this site, the site will serve for approximately 21 months.

The area of Seegehalli site is approximately 7 acres. In keeping with the topography of the site and in absence of detailed contour survey, the volume of the site is computed with the following assumptions :

- The depth of landfilling as 3 m
- The density of waste as 1000 kg/cum

- Volume consumed by soil cover as 20% of total volume

Accordingly, the total volume of the site is 67990 m^3. If the whole waste that is generated in the city is landfilled, the site will serve for approximately 60 days.

Climatological Related Attributes

About 1200 mm per year rainfall is recorded for both the sites. The maximum temperature is in the range of 30 to 35^{0}C. The mean wind speed is 5.4 kmph which does not pose any problem of air pollution.

Geological Related Attributes

These sites are mainly underlined by granites and gneisses. The depth to bedrock (overall thickness of soil) for weathered and semi-weathered formation varies from 5-40 m.

The soil permeability varies between $1x10^{-4}$ to $1x10^{-5}$ cm/sec. As per the seismic zoning map of India (www.mapsofindia.com), the stretch falls in the seismic zone - I.

8.4 Site Score Calculations

On the basis of the data, site sensitive index are calculated which are then multiplied by the weightages of each attribute. The total score for each category is then obtained by adding the score of each attribute. The sites scores calculation for Kannahalli site are depicted in **Table 5** whereas for Seegehalli site in **Table 6**.

8.5 Ranking of Sites

The total score for both the sites are calculated on the basis of the ranking methodology (**Table 7**). The site with less score indicates that the site is less sensitive to impact. Hence the site with less score will be ranked first.

As both the proposed sites are very close to each other, not much difference is expected for these sites. As far as the environmental related attributes (contaminated land, polluted water, air and soil quality) are concerned, Kannahalli site is the preferred option for landfill site.

Table 5

Worksheet for Ranking of Disposal Sites

Name of site : Kannahalli

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Accessibility Related				
Type of road	State highway	0.35	25	8.75
Distance from collection point	25 km	0.75	35	26.25
Total			**60**	**35**
Receptor related				
Population within 500 meters	100	0.25	50	12.5
Distance to nearest drinking water source	200m	1	55	55
Use of site by nearby residents	Not used	0	25	0
Distance to nearest building	100	1	15	15
Land use/Zoning	Completely remote	0	35	0
Decrease in property value with respect to distance	No decrease in property value	0	15	0
Public utility facility within 2 km	No public utility	0	25	0

Contd...

Table 5 Contd...

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Public acceptability	No complains	0.15	30	4.5
Total			**250**	**87**
Environmental Related				
Critical environments	Not a critical environment	0.15	45	6.75
Distance to nearest surface water	1.5 km	0.5	55	27.5
Depth to ground water	5 m	0.75	65	48.75
Contamination	No contamination	1.0	35	35
Water quality	Potable	0.75	40	30
Air quality	Confirming to residential standards	1.0	35	35
Soil quality	Average	0.75	30	22.50
Total			**305**	**205.50**
Socio-economic Related				
Health	Moderate	0.25	40	10
Job opportunities	Low	0.5	20	10
Odour	Moderate	0.35	30	10.5
Vision	Site partly seen (25%)	0.3	20	6
Total			**110**	**36.5**
Waste Management Practice Related				
Waste quantity/day	1197 t/d	0.6	45	27
Life of site	21 months	0.8	40	32
Total			**85**	**59**

Contd...

Table 5 Contd…

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Climatological Related				
Precipitation effectiveness index	31 to 63	0.5	25	12.5
Climatic features contributing to Air pollution	No problem	0	15	0
Total			**40**	**12.5**
Geological Related				
Soil permeability	$1x10^{-4}$ to $1x10^{-5}$	0.5	35	17.5
Depth to bedrock	10-40 m	0.3	20	6
Susceptibility to erosion & run-off	Not susceptible	0	15	0
Physical characteristics of rock	Weathered	0.3	15	4.5
Depth of soil layer	0.3-3 m	0.75	30	22.5
Slope pattern	2%	0.25	15	3.75
Seismicity	Zone I	0	20	0
Total			**150**	**54.25**
Grand Total			**1000**	**489.75**

Table 6

Worksheet for Ranking of Disposal Sites

Name of site : Seegehalli

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Accessibility Related				
Type of road	State highway	0.35	25	8.75
Distance from collection point	24	0.6	35	21
Total			**60**	**29.75**
Receptor related				
Population within 500 meters	100	0.25	50	12.5
Distance to nearest drinking water source	500m	0.8	55	44
Use of site by nearby residents	Not used	0	25	0
Distance to nearest building	500	0.75	15	11.25
Land use/Zoning	Completely remote	0	35	0
Decrease in property value	Moderate	0.25	15	3.75
Public utility facility within 2 km	No public utility	0	25	0

Contd...

Table 6 Contd...

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Public acceptability	No complains	0.15	30	4.5
Total			**250**	**76**
Environmental Related				
Critical environments	Not a critical environment	0.15	45	6.75
Distance to nearest surface water	3 km	0.3	55	16.5
Depth to ground water	20 m	0.25	65	16.25
Contamination	No contamination	1.0	35	35
Water quality	Potable	0.75	40	30
Air quality	Confirming to residential standards	1.0	35	35
Soil quality	Average	0.75	30	22.5
Total			**305**	**162**
Socio-economic Related				
Health	No problem	0.15	40	6
Job opportunities	Low	0.5	20	10
Odour	Moderate	0.35	30	10.5
Vision	Site not seen	0	20	0
Total			**110**	**26.5**
Waste Management Practice Related				
Waste quantity/day	1197 t/d	0.6	45	27
Site area that can serve	2 months	1	40	40
Total			**85**	**67**

Contd...

31

Table 6 Contd...

Attribute	Attribute measurement	Sensitivity index	Weightage	Attribute score
Climatological Related				
Precipitation effectiveness index	31 to 63	0.5	25	12.5
Climatic features contributing to Air pollution	No problem	0	15	0
Total			**40**	**12.5**
Geological Related				
Soil permeability	$1x10^{-4}$ to $1x10^{-5}$	0.5	35	17.5
Depth of bedrock	9-27 m	0.6	20	12
Susceptibility to erosion & run-off	moderate	0.75	15	11.25
Physical characteristics of rock	Weathered	0.75	15	11.25
Depth of soil layer	0.9-5 m	0.75	30	22.5
Slope pattern	> 10 %	1	15	15
Seismicity	Zone I	0	20	0
Total			**150**	**89.5**
Grand Total			**1000**	**463.25**

Table 7

Ranking of Sites

Attribute category	Maximum weightage	Kannahalli site	Seegehalli site
Receptor related	250	87	76
Environment related	305	205.5	162
Accessibility related	60	35	29.75
Socio-economic related	110	36.5	26.5
Waste management practice related	85	59	67
Climatological related	40	12.5	12.5
Geological related	150	54.25	89.5
Total score	**1000**	**489.75**	**463.25**
Rank		**II**	**I**

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Annexure 7

TYPICAL EXAMPLE (PRELIMINARY DESIGN) OF LANDFILL

The example given below is applicable to preliminary design of a landfill. Detailed design is not covered in this example. The word 'tentative' is used wherever adequate information was not available and when an ad hoc estimate has been made.

A. BASIC DATA

Location	Delhi
Waste generation	1000 TPD (current)
Design life	Active period = 16 years; Closure and post closure period= 25 years
Topography	Flat ground
Subsoil	Sandy silt up to 20 m below ground surface, underlain by bedrock
Water table	10 m below ground surface
Average total precipitation	750 mm per year

B. LANDFILL CAPACITY, LANDFILL HEIGHT, LANDFILL AREA

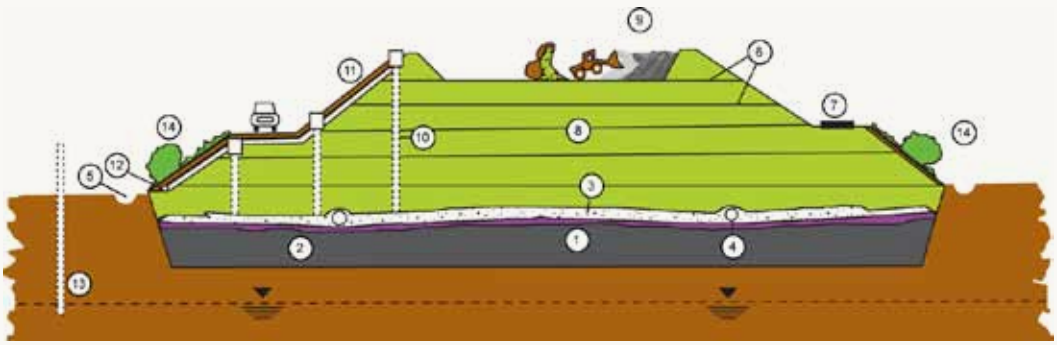
a.	Current waste generation	1000 TPD
b.	Estimated waste generation after 16 years	1700 TPD
c.	Total waste generation in 16 Years	0.5 (1000+1700) x 365 x 16 = 7 x 10^6 tonnes
d.	Total waste volume (assumed density 0.85 tonnes/ m^3)	= (7 x 10^6)/0.85 = 8.25 x 10^6 m^3
e.	Volume of daily cover	=0.1 x 8.25 x 10^6 =0.825 x 10^6 m^3
f.	Volume of liner and cover systems	= 0.125 x 8.25 x 10^6 = 1.03 x 10^6 m^3 = 0.825 x 10^6 m^3
g.	First estimate of landfill volume (Ci)	= (8.25 +0.825+1.03-0.825) x 10^6 = 9.28 x 10^6 m^3
h.	Likely shape of landfill	Rectangular in plan (length: width= 2:1) Primarily above ground level, partly below ground level
i.	Area restrictions	Nil
j.	Possible maximum landfill height	20 m
k.	Area required	= (9.28 x 10^6)/20 = 4.15 x 10^5 m^2 = 41.5 hectares
l.	Approximate plan dimensions	= 450 m x 900 m
m.	Actual landfill section and plan	Diagram illustrated below

C. LANDFILL SECTION AND PLAN*

Landfill section and plan is evaluated on the basis of	4:1 side slope for the above-ground portion of the landfill 2:1 side slope for the below-ground portion of the landfill Material balance for daily cover, liner and final cover material through excavation at site Extra space around the waste filling area for infrastructural facilities
Additional 30m land is acquired around the landfill to place infrastructure facilities.	Final size of landfill = 572 m x 1172 m

(depends upon the site conditions)*

Figure A7 1. Section of a typical municipal sanitary landfill



1. Geological barrier
2. Impermeable base liner
3. Drainage layer
4. Leachate collection system
5. Storm - water drain ditch
6. Bordering dams
7. Circulation roads
8. Landfill body
9. Filling and compacting in layers
10. Gas venting system
11. Protective cover system
12. Gas collectors
13. Groundwater control
14. Re-planting

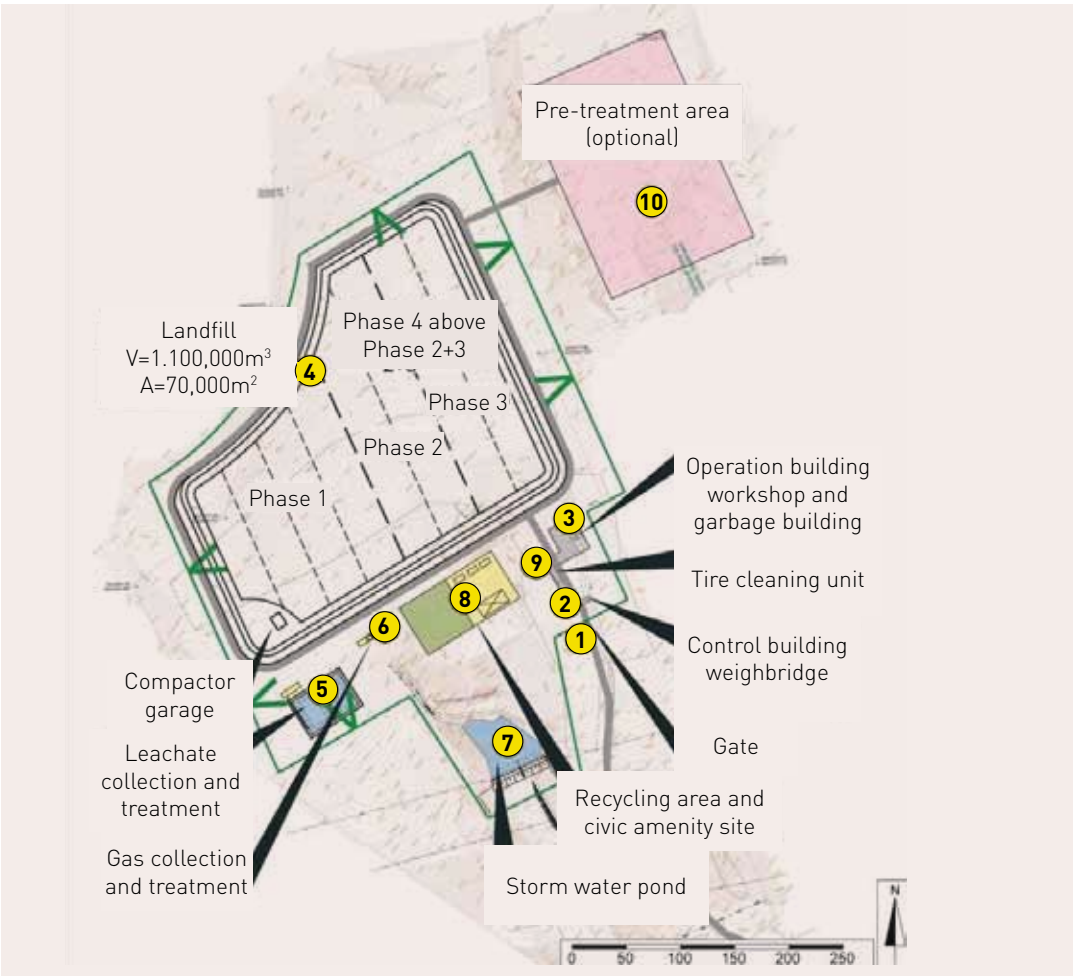
D. LANDFILL PHASES

a.	Active life of landfill	16 years
b.	Duration of one phase	1 year
	Number of phases	16. Each phase extends from base to final cover
	Volume of one phase	Landfill capacity/16
	Plan area of phase	= (Volume of one phase)/landfill height = 240 m x 120 m (approx.)
	Number of daily cells	= 365
	Plan area of one cell/on the basis of 2.0 m lift of each cell	= (Volume of one cell)/2.0 = 22 m x 42 m (approx.)

E. LANDFILL INFRASTRUCTURE & LAYOUT

a.	Site fencing	All around the landfill
b.	Weighbridges (computerized)	Two weighbridges of 50 tonne capacity
c.	Administrative office	30 m x 10 m building
d.	Site control office	3 m x 5 m (portable cabin)
e.	Access roads	i. Main access road: 7.0 m wide, from the main road to parking area after weighbridge ii. Arterial road: 3.5 m wide all along the periphery
f.	Waste inspection and sampling facility	Nil; to be done at landfill area
g.	Equipment workshop and garage	30 m x 20 m building
h.	Vehicle cleaning	Within the workshop
i.	Other facilities	Temporary holding area: Excavated portion of half phase to be used Surface water drain: Adjacent to arterial road along periphery Leachate collection pipe: Adjacent to arterial road along periphery Leachate holding tank: 20 x 10 x 3 m Leachate treatment facility: 40 m x 20 m (in plan) (tentative) Gas flaring facility: 20 m x 10 m (in plan) (tentative) Surface water sedimentation tank: 40 x 10 x 1.5 m

Figure A7 2. Section of a typical municipal sanitary landfill



F. LINER AND LEACHATE COLLECTION SYSTEM

a.	Liner system	The liner system will comprise of the following layers below the waste: i. 0.30 m thick drainage layer comprising of Badarpur sand (coarse sand) or gravel (stone dust with no fines) ii. 0.2 m thick protective layer of sandy silt (Delhi silt) iii. 1.5 mm thick high density polyethylene (HDPE) geomembrane iv. 1.0 m thick clay layer or amended soil layer (since clay is not easily available in Delhi, amended soil layer comprising of local soil and bentonite is to be designed)
b.	Amended soil layer design through laboratory testing	Sandy silt mixed with bentonite in proportions of 2,4,6, 8 and 10% in laboratory and permeability determined. Minimum bentonite content determined for achieving permeability of less than 10^{-9m}/sec. 5% bentonite and sandy silt assumed in preliminary design
c.	Leachate evaluation	Average total precipitation in Delhi = 750 mm/year Only one phase is operative every year Plan area of operating phase = 29,000 m^2 Assuming 80% precipitation in 4 months (monsoon period) Peak leachate quantity (thumb rule basis) = 200 m^3 per day (to be confirmed by the Hydrologic Evaluation of Landfill Performance [HELP] model or any other software)
d.	Leachate collection pipes	Diameter of HDPE pipes (perforated) = 15 cm Spacing of pipe required (hydraulic analysis) = 22 m
e.	Leachate holding tank	Size of holding 3 days of leachate = 20 x 10 x 3 m

G. COVER SYSTEM DESIGN

	Cover system	The cover system will comprise of the following layer above the waste. 0.45 m thick gas collection layer comprising of gravel (stone dust with no fines) 0.6 m thick barrier layer (sandy silt + 5% bentonite) 0.3 m thick surface layer of local top soil for vegetative growth
	Passive gas vents	Passive gas vents 1 m high (above landfill top cover) will be provided at a spacing of 75 m x 75 m

H. SURFACE WATER DRAINAGE SYSTEM

a.	Surface water runoff	Average total precipitation in Delhi = 750mm/year Peak discharge rate reaching drainage channel = 0.064 m^3/sec Dimensions of drainage channel: Depth = 0.6m; Base width = 0.6m; Side Slopes = 3:1
b.	Sedimentation tank	To remove suspended particles of size 40 microns and above tank size required = 40 x 15 x 15

I. ENVIRONMENTAL MONITORING SYSTEM

a.	Ground water monitoring wells	Numbers = 6 (1 upgradient well; 5 wells along the sides in downgradient directions; all wells 30 m away from landfill)
b.	Lysimeters	Numbers = 2 lysimeter under each phase. Total nos.= 32
c.	Gas monitors	Two portable gas monitors for landfill gas
d.	Samplers	Stainless steel or HDPE samplers (25 nos.) for i. Groundwater samples ii. Leachate samples in vertical risers/ wells iii. Grab samplers for landfill gas (25 nos.) at: • Passive vents • Gas wells
e.	Downhole monitors	One multi-parameter downhole groundwater monitoring system

Annexure 8

SOLID WASTE MANAGEMENT RULES, 2016

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 8th April, 2016

S.O. 1357(E).—Whereas the draft of the Solid Waste Management Rules, 2015 were published under the notification of the Government of India in the Ministry of Environment, Forest and Climate Change number G.S.R. 451 (E), dated the 3rd June, 2015 in the Gazette of India, part II, Section3, sub- section (i) of the same date inviting objections or suggestions from the persons likely to be affected thereby, before the expiry of the period of sixty days from the publication of the said notification on the Solid Waste Management Rules, 2015 in supersession of the Municipal Solid Waste (Management and Handling) Rules, 2000;

And whereas, copies of the said Gazette were made available to the public on the 3rd June, 2015;

And whereas, the objections or comments received within the stipulated period were duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sections 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986) and in supersession of the Municipal Solid Waste (Management and Handling) Rules, 2000, except as respect things done or omitted to be done before such supersession, the Central Government hereby makes the following rules for management of Solid Waste, namely:-

1. **Short title and commencement.-**

(1) These rules may be called the Solid Waste Management Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. **Application.-** These rules shall apply to every urban local body, outgrowths in urban agglomerations, census towns as declared by the Registrar General and Census Commissioner of India, notified areas, notified industrial townships, areas under the control of Indian Railways, airports, airbases, Ports and harbours, defence establishments, special economic zones, State and Central government organisations, places of pilgrims, religious and historical importance as may be notified by respective State government from time to time and to every domestic, institutional, commercial and any other non residential solid waste generator situated in the areas except industrial waste, hazardous waste, hazardous chemicals, bio medical wastes, e-waste, lead acid batteries and radio-active waste, that are covered under separate rules framed under the Environment (Protection) Act, 1986**.**

3. **Definitions –**(1) In these rules, unless the context otherwise requires,- (1) **"aerobic composting"** means a controlled process involving microbial decomposition of organic matter in the presence of oxygen;

2. **"anaerobic digestion"** means a controlled process involving microbial decomposition of organic matter in absence of oxygen;
3. **"authorisation"** means the permission given by the State Pollution Control Board or Pollution Control Committee, as the case may be, to the operator of a facility or urban local suthority, or any other agency responsible for processing and disposal of solid waste;
4. **"biodegradable waste "** means any organic material that can be degraded by micro-organisms into simpler stable compounds;
5. **"bio-methanation"** means a process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas;
6. **"brand owner"** means a person or company who sells any commodity under a registered brand label.
7. "**buffer zone**" means zone of no development to be maintained around solid waste processing and disposal facility, exceeding 5 TPD of installed capacity. This will be maintained within total and area allotted for the solid waste processing and disposal facility.
8. **"bulk waste generator"** means and includes buildings occupied by the Central government departments or undertakings, State government departments or undertakings, local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadia and sports complexes having an average waste generation rate exceeding 100kg per day**;**
9. **"bye-laws"** means regulatory framework notified by local body, census town and notified area townships for facilitating the implementation of these rules effectively in their jurisdiction**.**
10. **"census town"** means an urban area as defined by the Registrar General and Census Commissioner of India;
11. **"combustible waste"** means non-biodegradable, non-recyclable, non-reusable, non hazardous solid waste having minimum calorific value exceeding 1500 kcal/kg and excluding chlorinated materials like plastic, wood pulp, etc**;**
12. "**composting"** means a controlled process involving microbial decomposition of organic matter;
13. "**contractor**" means a person or firm that undertakes a contract to provide materials or labour to perform a service or do a job for service providing authority;
14. **"co-processing"** means use of non-biodegradable and non recyclable solid waste having calorific value exceeding 1500k/cal as raw material or as a source of energy or both to replace or supplement the natural mineral resources and fossil fuels in industrial processes;
15. **"decentralised processing"** means establishment of dispersed facilities for maximizing the processing of bio-degradable waste and recovery of recyclables closest to the source of generation so as to minimize transportation of waste for processing or disposal;
16. "**disposal"** means the final and safe disposal of post processed residual solid waste and inert street sweepings and silt from surface drains on land as specified in Schedule I to prevent contamination of ground water, surface water, ambient air and attraction of animals or birds;
17. **"domestic hazardous waste"** means discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc., generated at the household level;

18. **"door to door collection"** means collection of solid waste from the door step of households, shops, commercial establishments , offices , institutional or any other non residential premises and includes collection of such waste from entry gate or a designated location on the ground floor in a housing society , multi storied building or apartments , large residential, commercial or institutional complex or premises;**.**

19. **"dry waste"** means waste other than bio-degradable waste and inert street sweepings and includes recyclable and non recyclable waste, combustible waste and sanitary napkin and diapers, etc;

20. **"dump sites"** means a land utilised by local body for disposal of solid waste without following the principles of sanitary land filling;

21. **"extended producer responsibility" (EPR)** means responsibility of any producer of packaging products such as plastic, tin, glass and corrugated boxes, etc., for environmentally sound management, till end-of-life of the packaging products;

22. **"facility"** means any establishment wherein the solid waste management processes namely segregation, recovery, storage, collection, recycling, processing, treatment or safe disposal are carried out;

23. **"fine" means** penalty imposed on waste generators or operators of waste processing and disposal facilities under the bye-laws for non-compliance of the directions contained in these rules and/or bye- laws

24. **"Form"** means a F8orm appended to these rules;

25. **"handling"** includes all activities relating to sorting, segregation, material recovery, collection, secondary storage, shredding, baling, crushing, loading, unloading, transportation, processing and disposal of solid wastes;

26. **"inerts"** means wastes which are not bio-degradable, recyclable or combustible street sweeping or dust and silt removed from the surface drains;

27. **"incineration"** means an engineered process involving burning or combustion of solid waste to thermally degrade waste materials at high temperatures;

28. **"informal waste collector"** includes individuals, associations or waste traders who are involved in sorting, sale and purchase of recyclable materials;

29. "**leachate"** means the liquid that seeps through solid waste or other medium and has extracts of dissolved or suspended material from it;

30. **" local body"** for the purpose of these rules means and includes the municipal corporation, nagar nigam, municipal council, nagarpalika, nagar Palikaparishad, municipal board, nagar panchayat and town panchayat, census towns, notified areas and notified industrial townships with whatever name they are called in different States and union territories in India;

31. "**materials recovery facility" (MRF)** means a facility where non-compostable solid waste can be temporarily stored by the local body or any other entity mentioned in rule 2 or any person or agency authorised by any of them to facilitate segregation, sorting and recovery of recyclables from various components of waste by authorised informal sector of waste pickers, informal recyclers or any other work force engaged by the local body or entity mentioned in rule 2for the purpose before the waste is delivered or taken up for its processing or disposal;

32. **"non-biodegradable waste"** means any waste that cannot be degraded by micro organisms into simpler stable compounds;

33. **"operator of a facility"** means a person or entity, who owns or operates a facility for handling solid waste which includes the local body and any other entity or agency appointed by the local body;

34. **primary collection"** means collecting, lifting and removal of segregated solid waste from source of its generation including households, shops, offices and any other non-residential premises or from any collection points or any other location specified by the local body;

35. "**processing"** means any scientific process by which segregated solid waste is handled for the purpose of reuse, recycling or transformation into new products**;**

36. **"recycling**" means the process of transforming segregated non-biodegradable solid waste into new material or product or as raw material for producing new products which may or may not be similar to the original products;

37. **"redevelopment"** means rebuilding of old residential or commercial buildings at the same site, where the existing buildings and other infrastructures have become dilapidated;

38. **"refused derived fuel**"(RDF) means fuel derived from combustible waste fraction of solid waste like plastic, wood, pulp or organic waste, other than chlorinated materials, in the form of pellets or fluff produced by drying, shredding, dehydrating and compacting of solid waste ;

39. "**residual solid waste"** means and includes the waste and rejects from the solid waste processing facilities which are not suitable for recycling or further processing;

40. **"sanitary land filling "** means the final and safe disposal of residual solid waste and inert wastes on land in a facility designed with protective measures against pollution of ground water, surface water and fugitive air dust, wind-blown litter, bad odour, fire hazard, animal menace, bird menace, pests or rodents, greenhouse gas emissions, persistent organic pollutants slope instability and erosion;

41. **"sanitary waste"** means wastes comprising of used diapers, sanitary towels or napkins, tampons, condoms, incontinence sheets and any other similar waste;

42. **"Schedule"** means the Schedule appended to these rules;

43. "**secondary storage**" means the temporary containment of solid waste after collection at secondary waste storage depots or MRFs or bins for onward transportation of the waste to the processing or disposal facility;

44. **"segregation"** means sorting and separate storage of various components of solid waste namely biodegradable wastes including agriculture and dairy waste, non biodegradable wastes including recyclable waste, non-recyclable combustible waste, sanitary waste and non recyclable inert waste, domestic hazardous wastes, and construction and demolition wastes;

45. **"service provider"** means an authority providing public utility services like water, sewerage, electricity, telephone, roads, drainage, etc;

46. **"solid waste"** means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste generated in the area under the local authorities and other entities mentioned in rule 2;

47. **"sorting"** means separating various components and categories of recyclables such as paper, plastic, card-boards, metal, glass, etc., from mixed waste as may be appropriate to facilitate recycling;

48. **"stabilising"** means the biological decomposition of biodegradable wastes to a stable state where it generates no leachate or offensive odours and is fit for application to farm land ,soil erosion control and soil remediation;

49. **"street vendor"** means any person engaged in vending of articles, goods, wares, food items or merchandise of everyday use or offering services to the general public, in a street, lane, side walk, footpath, pavement, public park or any other public place or private area, from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific; and the words "street vending" with their grammatical variations and cognate expressions, shall be construed accordingly;

50. **"tipping fee"** means a fee or support price determined by the local authorities or any state agency authorised by the State government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill;

51. **"transfer station"** means a facility created to receive solid waste from collection areas and transport in bulk in covered vehicles or containers to waste processing and, or, disposal facilities;

52. **"transportation"** means conveyance of solid waste, either treated, partly treated or untreated from a location to another location in an environmentally sound manner through specially designed and covered transport system so as to prevent the foul odour, littering and unsightly conditions;

53. **"treatment"** means the method, technique or process designed to modify physical, chemical or biological characteristics or composition of any waste so as to reduce its volume and potential to cause harm;

54. **"user fee"** means a fee imposed by the local body and any entity mentioned in rule 2 on the waste generator to cover full or part cost of providing solid waste collection, transportation, processing and disposal services.

55. "**vermi composting"** means the process of conversion of bio-degradable waste into compost using earth worms;

56. "**waste generator**" means and includes every person or group of persons, every residential premises and non residential establishments including Indian Railways, defense establishments, which generate solid waste;

57. **"waste hierarchy"** means the priority order in which the solid waste is to should be managed by giving

emphasis to prevention, reduction, reuse, recycling, recovery and disposal, with prevention being the most preferred option and the disposal at the landfill being the least;

58. **"waste picker"** means a person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood.

(2) Words and expressions used herein but not defined, but defined in the Environment (Protection) Act, 1986, the Water (Prevention and Control of Pollution) Act, 1974, Water (Prevention and Control of Pollution) Cess Act, 1977 and the Air (prevention and Control of Pollution) Act, 1981 shall have the same meaning as assigned to them in the respective Acts.

4 Duties of waste generators.- (1) Every waste generator shall,-

(a) segregate and store the waste generated by them in three separate streams namely bio-degradable, non bio-degradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorised waste pickers or waste collectors as per the direction or notification by the local authorities from time to time;

(b) wrap securely the used sanitary waste like diapers, sanitary pads etc., in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities and shall place the same in the bin meant for dry waste or non- bio-degradable waste;

(c) store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016; and

(d) store horticulture waste and garden waste generated from his premises separately in his own premises and dispose of as per the directions of the local body from time to time.

(2) No waste generator shall throw**,** burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.

(3) All waste generators shall pay such user fee for solid waste management, as specified in the bye-laws of the local bodies.

(4) No person shall organise an event or gathering of more than one hundred persons at any unlicensed place without intimating the local body, at least three working days in advance and such person or the organiser of such event shall ensure segregation of waste at source and handing over of segregated waste to waste collector or agency as specified by the local body.

(5) Every street vendor shall keep suitable containers for storage of waste generated during the course of his activity such as food waste, disposable plates, cups, cans, wrappers, coconut shells, leftover food, vegetables, fruits, etc., and shall deposit such waste at waste storage depot or container or vehicle as notified by the local body**.**

(6) All resident welfare and market associations shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorised recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.

(7) All gated communities and institutions with more than 5,000 sqm area shall, within one year from the date of notification of these rules and in partnership with the local body, ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorizsd recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.

(8) All hotels and restaurants shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorised recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.

5. Duties of Ministry of Environment, Forest and Climate Change.- (1) The Ministry of Environment, Forest and Climate Change shall be responsible for over all monitoring the implementation of these rules in the country. It shall constitute a Central Monitoring Committee under the Chairmanship of Secretary, Ministry of Environment, Forest and Climate Change comprising officer not below the rank of Joint Secretary or Advisor from the following namely,-

1) Ministry of Urban Development

2) Ministry of Rural Development

3) Ministry of Chemicals and Fertilizers

4) Ministry of Agriculture

5) Central Pollution Control Board

6) Three State Pollution Control Boards or Pollution Control Committees by rotation

7) Urban Development Departments of three State Governments by rotation

8) Rural Development Departments from two State Governments by rotation

9) Three Urban Local bodies by rotation

10) Two census towns by rotation

11) FICCI, CII

12) Two subject experts

2. This Central Monitoring Committee shall meet at least once in a year to monitor and review the implementation of these rules. The Ministry of Environment, Forest and Climate Change may co-opt other experts, if needed. The Committee shall be renewed every three years.

6. Duties of Ministry of Urban Development.- (1) The Ministry of Urban Development shall coordinate with State Governments and Union territory Administrations to,-

(a) take periodic review of the measures taken by the states and local bodies for improving solid waste management practices and execution of solid waste management projects funded by the Ministry and external agencies at least once in a year and give advice on taking corrective measures;

(b) formulate national policy and strategy on solid waste management including policy on waste to energy in consultation with stakeholders within six months from the date of notification of these rules;

(c) facilitate States and Union Territories in formulation of state policy and strategy on solid management based on national solid waste management policy and national urban sanitation policy;

(d) promote research and development in solid waste management sector and disseminate information to States and local bodies;

(e) undertake training and capacity building of local bodies and other stakeholders;and

(f) provide technical guidelines and project finance to states, Union territories and local bodies on solid waste management to facilitate meeting timelines and standards.

7. Duties of Department of Fertilisers, Ministry of Chemicals and Fertilisers.- (1) The Department of Fertilisers through appropriate mechanisms shall,-

(a) provide market development assistance on city compost; and

(b) ensure promotion of co-marketing of compost with chemical fertilisers in the ratio of 3 to 4 bags: 6 to 7 bags by the fertiliser companies to the extent compost is made availablefor marketing to the companies.

8. Duties of Ministry of Agriculture, Government of India.- The Ministry of Agriculture through appropriate mechanisms shall,-

(a) provide flexibility in Fertiliser Control Order for manufacturing and sale of compost;

(b) propagate utlisation of compost on farm land;

(c) set up laboratories to test quality of compost produced by local authorities or their authorised agencies; and

(d) issue suitable guidelines for maintaining the quality of compost and ratio of use of compost visa-a-vis chemical fertilizers while applying compost to farmland.

9. Duties of the Ministry of Power.-The Ministry of Power through appropriate mechanisms shall,-

(a) decide tariff or charges for the power generated from the waste to energy plants based on solid waste.

(b) compulsory purchase power generated from such waste to energy plants by distribution company.

10. Duties of Ministry of New and Renewable Energy Sources- The Ministry of New and Renewable Energy Sources through appropriate mechanisms shall,-

(a) facilitate infrastructure creation for waste to energy plants; and

(b) provide appropriate subsidy or incentives for such waste to energy plants.

11. Duties of the Secretary–in-charge, Urban Development in the States and Union territories.- (1) The Secretary, Urban Development Department in the State or Union territory through the Commissioner or Director of Municipal Administration or Director of local bodies shall,-

(a) prepare a state policy and solid waste management strategy for the state or the union territory in consultation with stakeholders including representative of waste pickers**,** self help group and similar groups working in the field of waste management consistent with these rules, national policy on solid waste management and national urban sanitation policy of the ministry of urban development, in a period not later than one year from the date of notification of these rules;

(b) while preparing State policy and strategy on solid waste management, lay emphasis on waste reduction, reuse, recycling, recovery and optimum utilisation of various components of solid waste to ensure minimisation of waste going to the landfill and minimise impact of solid waste on human health and environment;

(c) state policies and strategies should acknowledge the primary role played by the informal sector of waste pickers, waste collectors and recycling industry in reducing waste and provide broad guidelines regarding integration of waste picker or informal waste collectors in the waste management system.

(d) ensure implementation of provisions of these rules by all local authorities;

(e) direct the town planning department of the State to ensure that master plan of every city in the State or Union territory provisions for setting up of solid waste processing and disposal facilities except for the cities who are members of common waste processing facility or regional sanitary landfill for a group of cities; and

(f) ensure identification and allocation of suitable land to the local bodies within one year for setting up of processing and disposal facilities for solid wastes and incorporate them in the master plans (land use plan) of the State or as the case may be, cities through metropolitan and district planning committees or town and country planning department;

(h) direct the town planning department of the State and local bodies to ensure that a separate space for segregation, storage, decentralised processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwelling or having a plot area exceeding 5,000 square meters;

(i) direct the developers of Special Economic Zone, Industrial Estate, Industrial Park to earmark at least five percent of the total area of the plot or minimum five plots or sheds for recovery and recycling facility.

(j) facilitate establishment of common regional sanitary land fill for a group of cities and towns falling within a distance of 50 km (or more) from the regional facility on a cost sharing basis and ensure professional management of such sanitary landfills;

(k) arrange for capacity building of local bodies in managing solid waste, segregation and transportation or processing of such waste at source;

(l) notify buffer zone for the solid waste processing and disposal facilities of more than five tons per day in consultation with the State Pollution Control Board; and

(m) start a scheme on registration of waste pickers and waste dealers.

12. Duties of District Magistrate or District Collector or Deputy Commissioner.- The District Magistrate or District Collector or as the case may be , the Deputy Commissioner shall, -

(a) facilitate identification and allocation of suitable land as per clause (f) of rules 11 for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-charge of State Urban Development Department within one year from the date of notification of these rules;

(b) review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development.

13. Duties of the Secretary–in-charge of Village Panchayats or Rural Development Department in the State and Union territory.- (1) The Secretary–in-charge of Village Panchayats or Rural Development Department in the State and Union territory shall have the same duties as the Secretary–in-charge, Urban Development in the States and Union territories, for the areas which are covered under these rules and are under their jurisdictions.

14. Duties of Central Pollution Control Board.-The Central Pollution Control Board shall, -

(a) co-ordinate with the State Pollution Control Boards and the Pollution Control Committees for implementation of these rules and adherence to the prescribed standards by local authorities;

(b) formulate the standards for ground water, ambient air, noise pollution, leachate in respect of all solid waste processing and disposal facilities;

(c) review environmental standards and norms prescribed for solid waste processing facilities or treatment technologies and update them as and when required;

(d) review through State Pollution Control Boards or Pollution Control Committees, at least once in a year, the implementation of prescribed environmental standards for solid waste processing facilities or treatment technologies and compile the data monitored by them;

(e) review the proposals of State Pollution Control Boards or Pollution Control Committees on use of any new technologies for processing, recycling and treatment of solid waste and prescribe performance standards, emission norms for the same within 6 months;

(f) monitor through State Pollution Control Boards or Pollution Control Committees the implementation of these rules by local bodies;

(g) prepare an annual report on implementation of these rules on the basis of reports received from State Pollution Control Boards and Committees and submit to the Ministry of Environment, Forest and Climate Change and the report shall also be put in public domain;

(h) publish guidelines for maintaining buffer zone restricting any residential, commercial or any other construction activity from the outer boundary of the waste processing and disposal facilities for different sizes of facilities handling more than five tons per day of solid waste;

(i) publish guidelines, from time to time, on environmental aspects of processing and disposal of solid waste to enable local bodies to comply with the provisions of these rules; and

(j) provide guidance to States or Union territories on inter-state movement of waste.

15. Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations.- The local authorities and Panchayats shall,-

(a) prepare a solid waste management plan as per state policy and strategy on solid waste management within six months from the date of notification of state policy and strategy and submit a copy to respective departments of State Government or Union territory Administration or agency authorised by the State Government or Union territory Administration;

(b) arrange for door to door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other non residential premises. From multi-storage buildings, large commercial complexes, malls, housing complexes, etc., this may be collected from the entry gate or any other designated location;

(c) establish a system to recognise organisations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorised waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste;

(d) facilitate formation of Self Help Groups, provide identity cards and thereafter encourage integration in solid waste management including door to door collection of waste;

(e) frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules and ensure timely implementation;

(f) prescribe from time to time user fee as deemed appropriate and collect the fee from the waste generators on its own or through authorised agency;

(g) direct waste generators not to litter i.e throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink canes, tetra packs, fruit peel, wrappers, etc., or burn or burry waste on streets, open public spaces, drains, waste bodies and to segregate the waste at source as prescribed under these rules and hand over the segregated waste to authorised the waste pickers or waste collectors authorised by the local body;

(h) setup material recovery facilities or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorised waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, textile from the source of generation or from material recovery facilities; Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black;

(i) establish waste deposition centres for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at this centre for its safe disposal. Such facility shall be established in a city or town in a manner that one centre is set up for the area of twenty square kilometers or part thereof and notify the timings of receiving domestic hazardous waste at such centres;

(j) ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the State Pollution Control Board or the Pollution Control Committee;

(k) direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and handover to the waste collectors or agency authorised by local body;

(l) provide training on solid waste management to waste-pickers and waste collectors;

(m) collect waste from vegetable, fruit, flower, meat, poultry and fish market on day to day basis and promote setting up of decentralised compost plant or bio-methanation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions;

(n) collect separately waste from sweeping of streets, lanes and by-lanes daily, or on alternate days or twice a week depending on the density of population, commercial activity and local situation;

(o) set up covered secondary storage facility for temporary storage of street sweepings and silt removed from surface drains in cases where direct collection of such waste into transport vehicles is not convenient. Waste so collected shall be collected and disposed of at regular intervals as decided by the local body;

(p) collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible;

(q) transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility. Preference shall be given for on site processing of such waste;

(r) transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility;

(s) transport construction and demolition waste as per the provisions of the Construction and Demolition Waste management Rules, 2016;

(t) involve communities in waste management and promotion of home composting, bio-gas generation, decentralised processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facility;

(u) phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.

(v) facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilisation of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Urban Development from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralised processing to minimize transportation cost and environmental impacts such as-

a) bio-methanation, microbial composting, vermi-composting, anaerobic digestion or any other appropriate processing for bio-stabilisation of biodegradable wastes;

b) waste to energy processes including refused derived fuel for combustible fraction of waste or supply as feedstock to solid waste based power plants or cement kilns;

(w) undertake on their own or through any other agency construction, operation and maintenance of sanitary landfill and associated infrastructure as per Schedule 1 for disposal of residual wastes in a manner prescribed under these rules;

(x) make adequate provision of funds for capital investments as well as operation and maintenance of solid waste management services in the annual budget ensuring that funds for discretionary functions of the local body have been allocated only after meeting the requirement of necessary funds for solid waste management and other obligatory functions of the local body as per these rules;

(y) make an application in Form-I for grant of authorisation for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tones per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee, as the case may be;

(za) prepare and submit annual report in Form IV on or before the 30th April of the succeeding year to the Commissioner or Director, Municipal Administration or designated Officer;

(zb) the annual report shall then be sent to the Secretary -in-Charge of the State Urban Development Department or village panchayat or rural development department and to the respective State Pollution Control Board or Pollution Control Committee by the 31st May of every year;

(zc) educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility;

(zd) ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the workforce;

(ze) ensure that provisions for setting up of centers for collection, segregation and storage of segregated wastes, are incorporated in building plan while granting approval of building plan of a group housing society or market complex; and

(zf) frame bye-laws and prescribe criteria for levying of spot fine for persons who litters or fails to comply with the provisions of these rules and delegate powers to officers or local bodies to levy spot fines as per the bye laws framed; and

(zg) create public awareness through information, education and communication campaign and educate the waste generators on the following; namely:-

(i) not to litter;

(ii) minimise generation of waste;

(iii) reuse the waste to the extent possible;

(iv) practice segregation of waste into bio–degradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous wastes at source;

(v) practice home composting, vermi-composting, bio-gas generation or community level composting;

(vi) wrap securely used sanitary waste as and when generated in the pouches provided by the brand owners or a suitable wrapping as prescribed by the local body and place the same in the bin meant for non-biodegradable waste;

(vii) storage of segregated waste at source in different bins;

(viii) handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies; and

(ix) pay monthly user fee or charges to waste collectors or local bodies or any other person authorised by the local body for sustainability of solid waste management.

(zh) stop land filling or dumping of mixed waste soon after the timeline as specified in rule 23 for setting up and operationalisation of sanitary landfill is over;

(zi) allow only the non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and pre-processing rejects and residues from waste processing facilities to go to sanitary landfill and the sanitary landfill sites shall meet the specifications as given in Schedule–I, however, every effort shall be made to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill;

(zj) investigate and analyse all old open dumpsites and existing operational dumpsites for their potential of bio-mining and bio-remediation and wheresoever feasible, take necessary actions to bio-mine or bio-remediate the sites;

(zk) in absence of the potential of bio-mining and bio-remediation of dumpsite, it shall be scientifically capped as per landfill capping norms to prevent further damage to the environment.

16. Duties of State Pollution Control Board or Pollution Control Committee.- (1) The State Pollution Control Board or Pollution Control Committee shall,-

(a) enforce these rules in their State through local bodies in their respective jurisdiction and review implementation of these rules at least twice a year in close coordination with concerned Directorate of Municipal Administration or Secretary-in-charge of State Urban Development Department;

(b) monitor environmental standards and adherence to conditions as specified under the Schedule I and Schedule II for waste processing and disposal sites;

(d) while examining the proposal for authorisation, the requirement of consents under respective enactments and views of other agencies like the State Urban Development Department, the Town and Country Planning Department, District Planning Committee or Metropolitan Area Planning Committee, as may be applicable, Airport or Airbase Authority, the Ground Water Board, Railways, power distribution companies, highway department and other relevant agencies shall be taken into consideration and they shall be given four weeks time to give their views, if any;

(e) issue authorisation within a period of sixty days in Form II to the local body or an operator of a facility or any other agency authorised by local body stipulating compliance criteria and environmental standards as specified in Schedules I and II including other conditions, as may be necessary;

(f) synchronise the validity of said authorisation with the validity of the consents;

(g) suspend or cancel the authorization issued under clause (a) any time, if the local body or operator of the facility fails to operate the facility as per the conditions stipulated:

provided that no such authorization shall be suspended or cancelled without giving notice to the local body or operator, as the case may be; and

(h) on receipt of application for renewal, renew the authorisation for next five years, after examining every application on merit and subject to the condition that the operator of the facility has fulfilled all the provisions of the rules, standards or conditions specified in the authorisation, consents or environment clearance.

(2) The State Pollution Control Board or Pollution Control Committee shall, after giving reasonable opportunity of being heard to the applicant and for reasons thereof to be recorded in writing, refuse to grant or renew an authorisation.

(3) In case of new technologies, where no standards have been prescribed by the Central Pollution Control Board, State Pollution Control Board or Pollution Control Committee, as the case may be, shall approach Central Pollution Control Board for getting standards specified.

(4) The State Pollution Control Board or the Pollution Control Committee, as the case may be, shall monitor the compliance of the standards as prescribed or laid down and treatment technology as approved and the conditions stipulated in the authorisation and the standards specified in Schedules I and II under these rules as and when deemed appropriate but not less than once in a year.

(5) The State Pollution Control Board or the Pollution Control Committee may give directions to local bodies for safe handling and disposal of domestic hazardous waste deposited by the waste generators at hazardous waste deposition facilities.

(6) The State Pollution Control Board or the Pollution Control Committee shall regulate Inter-State movement of waste.

17. Duty of manufacturers or brand owners of disposable products and sanitary napkins and diapers.- (1) All manufacturers of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for establishment of waste management system.

(2) All such brand owners who sell or market their products in such packaging material which are non-biodegradable shall put in place a system to collect back the packaging waste generated due to their production.

(3) Manufacturers or brand owners or marketing companies of sanitary napkins and diapers shall explore the possibility of using all recyclable materials in their products or they shall provide a pouch or wrapper for disposal of each napkin or diapers along with the packet of their sanitary products.

(4) All such manufacturers, brand owners or marketing companies shall educate the masses for wrapping and disposal of their products.

18. Duties of the industrial units located within one hundred km from the refused derived fuel and waste to energy plants based on solid waste- All industrial units using fuel and located within one hundred km from a solid waste based refused derived fuel plant shall make arrangements within six months from the date of notification of these rules to replace at least five percent of their fuel requirement by refused derived fuel so produced.

19. Criteria for Duties regarding setting-up solid waste processing and treatment facility.- (1) The department in- charge of the allocation of land assignment shall be responsible for providing suitable land for setting up of the solid waste processing and treatment facilities and notify such sites by the State Government or Union territory Administration.

(2) The operator of the facility shall design and set up the facility as per the technical guidelines issued by the Central Pollution Control Board in this regard from time to time and the manual on solid waste management prepared by the Ministry of Urban Development.

(3) The operator of the facility shall obtain necessary approvals from the State Pollution Control Board or Pollution Control Committee.

(4) The State Pollution Control Board or Pollution Control Committee shall monitor the environment standards of the operation of the solid waste processing and treatment facilities.

(5) The operator of the facility shall be responsible for the safe and environmentally sound operations of the solid waste processing and or treatment facilities as per the guidelines issued by the Central Pollution Control Board from time to time and the Manual on Municipal Solid Waste Management published by the Ministry of Urban Development and updated from time to time.

(6) The operator of the solid waste processing and treatment facility shall submit annual report in Form III each year by 30th April to the State Pollution Control Board or Pollution Committee and concerned local body.

20. Criteria and actions to be taken for solid waste management in hilly areas.- In the hilly areas, the duties and responsibilities of the local authorities shall be the same as mentioned in rule 15 with additional clauses as under:

(a) Construction of landfill on the hill shall be avoided. A transfer station at a suitable enclosed location shall be setup to collect residual waste from the processing facility and inert waste. A suitable land shall be identified in the plain areas down the hill within 25 kilometers for setting up sanitary landfill. The residual waste from the transfer station shall be disposed of at this sanitary landfill.

(b) In case of non-availability of such land, efforts shall be made to set up regional sanitary landfill for the inert and residual waste.

(c) Local body shall frame Bye-laws and prohibit citizen from littering wastes on the streets and give strict direction to the tourists not to dispose any waste such as paper, water bottles, liquor bottles, soft drink canes, tetra packs, any other plastic or paper waste on the streets or down the hills and instead direct to deposit such waste in the litter bins that shall be placed by the local body at all tourist destinations.

(d) Local body shall arrange to convey the provisions of solid waste management under the bye-laws to all tourists visiting the hilly areas at the entry point in the town as well as through the hotels, guest houses or like where they stay and by putting suitable hoardings at tourist destinations.

(e) Local body may levy solid waste management charge from the tourist at the entry point to make the solid waste management services sustainable.

(f) The department in- charge of the allocation of land assignment shall identify and allot suitable space on the hills for setting up decentralised waste processing facilities. Local body shall set up such facilities. Step garden system may be adopted for optimum utilisation of hill space.

21. Criteria for waste to energy process.- (1) Non recyclable waste having calorific value of 1500 K/cal/kg or more shall not be disposed of on landfills and shall only be utilised for generating energy either or through refuse derived fuel or by giving away as feed stock for preparing refuse derived fuel.

(2) High calorific wastes shall be used for co-processing in cement or thermal power plants.

(3) The local body or an operator of facility or an agency designated by them proposing to set up waste to energy plant of more than five tones per day processing capacity shall submit an application in Form-I to the State Pollution Control Board or Pollution Control Committee, as the case may be, for authorisation.

(4) The State Pollution Control Board or Pollution Control Committee, on receiving such application for setting up waste to energy facility, shall examine the same and grant permission within sixty days.

22. Time frame for implementation.- Necessary infrastructure for implementation of these rules shall be created by the local bodies and other concerned authorities, as the case may be, on their own, by directly or engaging agencies within the time frame specified below:

Sl. No.	Activity	Time limit from the date of notification of rules
(1)	(2)	(3)
1.	identification of suitable sites for setting up solid waste processing facilities	1 year

2.	identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local authorities under 0.5 million population and for setting up common regional sanitary landfill facilities or stand alone sanitary landfill facilities by all local authorities having a population of 0.5 million or more .	1 year
3.	procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities	2 years
4.	enforcing waste generators to practice segregation of bio degradable, recyclable, combustible, sanitary waste domestic hazardous and inert solid wastes at source ,	2 years
5.	Ensure door to door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities.	2 years
6.	ensure separate storage, collection and transportation of construction and demolition wastes	2 years
7.	setting up solid waste processing facilities by all local bodies having 100000 or more population	2 years
8.	Setting up solid waste processing facilities by local bodies and census towns below 100000 population.	3 years
9	setting up common or stand alone sanitary landfills by or for all local bodies having 0.5 million or more population for the disposal of only such residual wastes from the processing facilities as well as untreatable inert wastes as permitted under the Rules	3 years
10.	setting up common or regional sanitary landfills by all local bodies and census towns under 0.5 million population for the disposal of permitted waste under the rules	3years
11.	bio-remediation or capping of old and abandoned dump sites	5years

23. State Level Advisory Body. – (1) Every Department in-charge of local bodies of the concerned State Government or Union territory administration shall constitute a State Level Advisory Body within six months from the date of notification of these rules comprising the following members, namely:-

Sl. No	Designation	Member
(1)	(2)	(3)
1.	Secretary, Department of Urban Development orLocal self government department of the State	Chairperson, ex-officio
2.	One representative of Panchayats or Rural development Department not below the rank of Joint Secretary to State Government	Member, ex-officio
3.	one representative of Revenue Department of State Government	Member,ex-officio
4.	One representative from Ministry of Environment, Forest and Climate Change Government of India	Member, ex-officio

5.	One representative from Ministry of Urban Development, Government of India	Member, ex-officio
6.	One representative from Ministry of Rural Development, Government of India	Member, ex-officio
7.	One representative from the Central Pollution Control Board	Member, ex-officio
8.	One representative from the State Pollution Control Board or Pollution Control Committee	Member, ex-officio
9.	One representative from Indian Institute of Technology or National Institute of Technology	Member,Ex-officio
10.	Chief town planner of the state	Member
11.	Three representatives from the local bodies by rotation	Member
12.	Two representatives from census towns or urban agglomerations by rotation.	Member
13.	One representative from reputed Non-Governmental Organisation or Civil Society working for the waste pickers or informal recycler or solid waste management	Member
14.	One representative from a body representing Industries at the State or Central level	Member
15.	one representative from waste recycling industry	member
16.	Two subject experts	Member
17.	Co-opt one representative each from agriculture department, and labour department of State Government.	Member

(2) The State Level Advisory Body shall meet at least one in every six months to review the matters related to implementation of these rules, state policy and strategy on solid waste management and give advice to state government for taking measures that are necessary for expeditious and appropriate implementation of these rules.

(3) The copies of the review report shall be forwarded to the State Pollution Control Board or Pollution Control Committee for necessary action.

24. Annual report.- (1) The operator of facility shall submit the annual report to the local body in Form-III on or before the 30th day of April every year.

(2) The local body shall submit its annual report in Form-IV to State P Control Board or P Committee and the Secretary-in-Charge of the Department of Urban Development of the concerned State or Union Territory in case of metropolitan city and to the Director of Municipal Administration or Commissioner of Municipal Administration or Officer in -Charge of Urban local bodies in the state in case of all other local bodies of state on or before the 30th day of June every year

(3) Each State Pollution Control Board or Pollution Control Committee as the case may be, shall prepare and submit the consolidated annual report to the Central Pollution Control Board and Ministry of Urban Development on the implementation of these rules and action taken against non complying local body by the 31st day of July of each year in Form-V.

(4) The Central Pollution Control Board shall prepare a consolidated annual review report on the status of implementation of these rules by local bodies in the country and forward the same to the Ministry of Urban Development

and Ministry of Environment, Forest and Climate Change, along with its recommendations before the 31st day of August each year.

(5) The annual report shall be reviewed by the Ministry of Environment, Forest and Climate Change during the meeting of Central Monitoring Committee.

25. Accident reporting- In case of an accident at any solid waste processing or treatment or disposal facility or landfill site, the Officer- in- charge of the facility shall report to the local body in Form-VI and the local body shall review and issue instructions if any, to the in- charge of the facility.

SCHEDULE I

[see rule 15 (w),(zi), 16 (1) (b) (e), 16 (4)]

Specifications for Sanitary Landfills

(A) Criteria for site selection.-

(i) The department in the business allocation of land assignment shall provide suitable site for setting up of the solid waste processing and treatment facilities and notify such sites.

(ii) The sanitary landfill site shall be planned, designed and developed with proper documentation of construction plan as well as a closure planin a phased manner. In case a new landfill facility is being established adjoining an existing landfill site, the closure plan of existing landfill should form a part of the proposal of such new landfill.

(iii) The landfill sites shall be selected to make use of nearby wastes processing facilities. Otherwise, wastes processing facility shall be planned as an integral part of the landfill site.

(iv) Landfill sites shall be set up as per the guidelines of the Ministry of Urban Development, Government of India and Central Pollution Control Board.

(v) The existing landfill sites which are in use for more than five years shall be improved in accordance with the specifications given in this Schedule.

(vi) The landfill site shall be large enough to last for at least 20-25 years and shall develop 'landfill cells' in a phased manner to avoid water logging and misuse.

(vii) The landfill site shall be 100 meter away from river, 200 meter from a pond, 200 meter from Highways, Habitations, Public Parks and water supply wells and 20 km away from Airports or Airbase. However in a special case, landfill site may be set up within a distance of 10 and 20 km away from the Airport/Airbase after obtaining no objection certificate from the civil aviation authority/ Air force as the case may be. The Landfill site shall not be permitted within the flood plains as recorded for the last 100 years, zone of coastal regulation, wetland, Critical habitat areas, sensitive eco-fragile areas..

(viii) The sites for landfill and processing and disposal of solid waste shall be incorporated in the Town Planning Department's land-use plans.

(ix) A buffer zone of no development shall be maintained around solid waste processing and disposal facility, exceeding five Tonnes per day of installed capacity. This will be maintained within the total area of the solid waste processing and disposal facility. The buffer zone shall be prescribed on case to case basis by the local body in consultation with concerned State Pollution Control Board.

(x) The biomedical waste shall be disposed of in accordance with the Bio-medical Waste Management Rules, 2016, as amended from time to time . The hazardous waste shall be managed in accordance with the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended from time to time. The E-waste shall be managed in accordance with the e-Waste (Management) Rules, 2016 as amended from time to time.

(xi) Temporary storage facility for solid waste shall be established in each landfill site to accommodate the waste in case of non- operation of waste processing and during emergency or natural calamities.

(B) Criteria for development of facilities at the sanitary landfills.-

(i) Landfill site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles, to prevent entry of unauthorised persons and stray animals

(ii) The approach and / internal roads shall be concreted or paved so as to avoid generation of dust particles due to vehicular movement and shall be so designed to ensure free movement of vehicles and other machinery.

(iii) The landfill site shall have waste inspection facility to monitor waste brought in for landfilling h, office facility for record keeping and shelter for keeping equipment and machinery including pollution monitoring equipment. The operator of the facility shall maintain record of waste received, processed and disposed.

(iv) Provisions like weigh bridge to measure quantity of waste brought at landfill site, fire protection equipment and other facilities as may be required shall be provided.

(v) Utilities such as drinking water and sanitary facilities (preferably washing/bathing facilities for workers) and lighting arrangements for easy landfill operations during night hours shall be provided.

(vi) Safety provisions including health inspections of workers at landfill sites shall be carried out made.

(vii) Provisions for parking, cleaning, washing of transport vehicles carrying solid waste shall be provided. The wastewater so generated shall be treated to meet the prescribed standards.

(C) Criteria for specifications for land filling operations and closure on completion of land filling.-

(i) Waste for land filling shall be compacted in thin layers using heavy compactors to achieve high density of the waste. In high rainfall areas where heavy compactors cannot be used, alternative measures shall be adopted.

(ii) Till the time waste processing facilities for composting or recycling or energy recovery are set up, the waste shall be sent to the sanitary landfill. The landfill cell shall be covered at the end of each working day with minimum 10 cm of soil, inert debris or construction material..

(iii) Prior to the commencement of monsoon season, an intermediate cover of 40-65 cm thickness of soil shall be placed on the landfill with proper compaction and grading to prevent infiltration during monsoon. Proper drainage shall be constructed to divert run-off away from the active cell of the landfill.

(iv) After completion of landfill, a final cover shall be designed to minimise infiltration and erosion. The final cover shall meet the following specifications, namely :--

a) The final cover shall have a barrier soil layer comprising of 60 cm of clay or amended soil with permeability coefficient less than 1 x 10^{-7} cm/sec.

b) On top of the barrier soil layer, there shall be a drainage layer of 15 cm.

c) On top of the drainage layer, there shall be a vegetative layer of 45 cm to support natural plant growth and to minimise erosion.

(D) Criteria for pollution prevention.-In order to prevent pollution from landfill operations, the following provisions shall be made, namely:-

(i) The storm water drain shall be designed and constructed in such a way that the surface runoff water is diverted from the landfilling site and leachates from solid waste locations do not get mixed with the surface runoff water. Provisions for diversion of storm water discharge drains shall be made to minimise leachate generation and prevent pollution of surface water and also for avoiding flooding and creation of marshy conditions.

(ii) Non-permeable lining system at the base and walls of waste disposal area. For landfill receiving residues of waste processing facilities or mixed waste or waste having contamination of hazardous materials (such as aerosols, bleaches, polishes, batteries, waste oils, paint products and pesticides) shall have liner of composite barrier of 1.5 mm thick high density polyethylene (HDPE) geo-membrane or geo-synthetic liners, or equivalent, overlying 90 cm of soil (clay or amended soil) having permeability coefficient not greater than 1 x 10-7 cm/sec. The highest level of water table shall be at least two meter below the base of clay or amended soil barrier layer provided at the bottom of landfills.

(iii) Provisions for management of leachates including its collection and treatment shall be made. The treated leachate shall be recycled or utilized as permitted, otherwise shall be released into the sewerage line, after meeting the standards specified in Schedule- II**.**. In no case, leachate shall be released into open environment.

(iv) Arrangement shall be made to prevent leachate runoff from landfill area entering any drain, stream, river, lake or pond. In case of mixing of runoff water with leachate or solid waste, the entire mixed water shall be treated by the concern authority.

(E) Criteria for water quality monitoring.-

(i) Before establishing any landfill site, baseline data of ground water quality in the area shall be collected and kept in record for future reference. The ground water quality within 50 meter of the periphery of landfill site shall be periodically monitored covering different seasons in a year that is, summer, monsoon and post-monsoon period to ensure that the ground water is not contaminated.

(ii) Usage of groundwater in and around landfill sites for any purpose (including drinking and irrigation) shall be considered only after ensuring its quality. The following specifications for drinking water quality shall apply for monitoring purpose, namely :-

S. No.	Parameters	IS 10500:2012, Edition 2.2(2003-09) Desirable limit (mg/l except for pH)
(1)	(2)`	(3)
	Arsenic	0.01
	Cadmium	0.01
	Chromium(as Cr^{6+})	0.05
	Copper	0.05
	Cyanide	0.05
	Lead	0.05
	Mercury	0.001
	Nickel	-
	Nitrate as NO_3	45.0
	pH	6.5-8.5
	Iron	0.3
	Total hardness (as $CaCO_3$)	300.0
	Chlorides	250
	Dissolved solids	500
	Phenolic compounds (as C_6H_5OH)	0.001
	Zinc	5.0
	Sulphate (as SO_4)	200

(F) Criteria for ambient air quality monitoring.-

(i) Landfill gas control system including gas collection system shall be installed at landfill site to minimize odour, prevent off-site migration of gases, to protect vegetation planted on the rehabilitated landfill surface. For enhancing landfill gas recovery, use of geomembranes in cover systems along with gas collection wells should be considered.

(ii) The concentration of methane gas generated at landfill site shall not exceed 25 per cent of the lower explosive limit (LEL).

(iii) The landfill gas from the collection facility at a landfill site shall be utilized for either direct thermal applications or power generation, as per viability. Otherwise, landfill gas shall be burnt (flared) and shall not be allowed to escape directly to the atmosphere or for illegal tapping. Passive venting shall be allowed in case if its utilisation or flaring is not possible.

(iv) Ambient air quality at the landfill site and at the vicinity shall be regularly monitored. Ambient air quality shall

meet the standards prescribed by the Central Pollution Control Board for Industrial area.

G. Criteria for plantation at landfill Site.- A vegetative cover shall be provided over the completed site in accordance with the following specifications, namely:-

(a) Locally adopted non-edible perennial plants that are resistant to drought and extreme temperatures shall be planted;

(b) The selection of plants should be of such variety that their roots do not penetrate more than 30 cms. This condition shall apply till the landfill is stabilized;

(c) Selected plants shall have ability to thrive on low-nutrient soil with minimum nutrient addition;

(d) Plantation to be made in sufficient density to minimise soil erosion.

(e) Green belts shall be developed all around the boundary of the landfill in consultation with State Pollution Control Boards or Pollution Control Committees .

H. Criteria for post-care of landfill site.- (1) The post-closure care of landfill site shall be conducted for at least fifteen years and long term monitoring or care plan shall consist of the following, namely :-‘

(a) Maintaining the integrity and effectiveness of final cover, making repairs and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(b) Monitoring leachate collection system in accordance with the requirement;

(c) Monitoring of ground water in and around landfill;

(d) Maintaining and operating the landfill gas collection system to meet the standards.

(2) Use of closed landfill sites after fifteen years of post-closure monitoring can be considered for human settlement or otherwise only after ensuring that gaseous emission and leachate quality analysis complies with the specified standards and the soil stability is ensured.

I. Criteria for special provisions for hilly areas.-Cities and towns located on hills shall have location-specific methods evolved for final disposal of solid waste by the local body with the approval of the concerned State Pollution Control Board or the Pollution Control Committee. The local body shall set up processing facilities for utilisation of biodegradable organic waste. The non-biodegradable recyclable materials shall be stored and sent for recycling periodically. The inert and non-biodegradable waste shall be used for building roads or filling-up of appropriate areas on hills. In case of constraints in finding adequate land in hilly areas, waste not suitable for road-laying or filling up shall be disposed of in regional landfills in plain areas.

J. Closure and Rehabilitation of Old Dumps- Solid waste dumps which have reached their full capacity or those which will not receive additional waste after setting up of new and properly designed landfills should be closed and rehabilitated by examining the following options:

(i) Reduction of waste by bio mining and waste processing followed by placement of residues in new landfills or capping as in (ii) below.

(i). Capping with solid waste cover or solid waste cover enhanced with geomembrane to enable collection and flaring / utilisation of greenhouse gases.

(iii) Capping as in (ii) above with additional measures (in alluvial and other coarse grained soils) such as cut-off walls and extraction wells for pumping and treating contaminated ground water.

(iv) Any other method suitable for reducing environmental impact to acceptable level.

SCHEDULE II

[see rule 16 (1), (b), (e), 16 (4))

Standards of processing and treatment of solid waste

A. Standards for composting.- The waste processing facilities shall include composting as one of the technologies for processing of bio degradable waste. In order to prevent pollution from compost plant, the following shall be complied with namely :-

(a) The incoming organic waste at site shall be stored properly prior to further processing. To the extent possible, the waste storage area should be covered. If, such storage is done in an open area, it shall be provided with impermeable base with facility for collection of leachate and surface water run-off into lined drains leading to a leachate treatment and disposal facility;

(b) Necessary precaution shall be taken to minimise nuisance of odour, flies, rodents, bird menace and fire hazard;

(c) In case of breakdown or maintenance of plant, waste intake shall be stopped and arrangements be worked out for diversion of waste to the temporary processing site or temporary landfill sites which will be again reprocessed when plant is in order;

(d) Pre-process and post-process rejects shall be removed from the processing facility on regular basis and shall not be allowed to pile at the site. Recyclables shall be routed through appropriate vendors. The non-recyclable high calorific fractions to be segregated and sent to waste to energy or for RDF production, co-processing in cement plants or to thermal power plants. Only rejects from all processes shall be sent for sanitary landfill site(s).

(e) The windrow area shall be provided with impermeable base. Such a base shall be made of concrete or compacted clay of 50 cm thick having permeability coefficient less than 10^{-7} cm/sec. The base shall be provided with 1 to 2 per cent slope and circled by lined drains for collection of leachate or surface run-off;

(f) Ambient air quality monitoring shall be regularly carried out. Odurnuisance at down-wind direction on the boundary of processing plant shall also be checked regularly.

(g) Leachate shall be re-circulated in compost plant for moisture maintenance.

(h) The end product compost shall meet the standards prescribed under Fertilizer Control Order notified from time to time.

(i) In order to ensure safe application of compost, the following specifications for compost quality shall be met, namely:-

Parameters	**Organic Compost (FCO 2009)**	**Phosphate Rich Organic Manure (FCO 2013)**
(1)	**(2)**	**(3)**
Arsenic (mg/Kg)	10.00	10.00
Cadmium (mg/Kg)	5.00	5.00
Chromium (mg/Kg)	50.00	50.00
Copper (mg/Kg)	300.00	300.00
Lead (mg/Kg)	100.00	100.00
Mercury (mg/Kg)	0.15	0.15
Nickel (mg/Kg)	50.00	50.00
Zinc (mg/Kg)	1000.00	1000.00
C/N ratio	<20	Less than 20:1
pH	6.5-7.5	(1:5 solution) maximum 6.7
Moisture, percent by weight, maximum	15.0-25.0	25.0
Bulk density (g/cm^3)	<1.0	Less than 1.6
Total Organic Carbon, per cent by weight, minimum	12.0	7.9

Total Nitrogen (as N), per cent by weight, minimum	0.8	0.4
Total Phosphate (as P_20_5) percent by weight, minimum	0.4	10.4
Total Potassium (as K_20), percent by weight, minimum	0.4	-
Colour	Dark brown to black	-
Odour	Absence of foul Odor	-
Particle size	Minimum 90% material should pass through 4.0 mm IS sieve	Minimum 90% material should pass through 4.0 mm IS sieve
Conductivity (as dsm-1), not more than	4.0	8.2

* Compost (final product) exceeding the above stated concentration limits shall not be used for food crops. However, it may be utilized for purposes other than growing food crops.

B. Standards for treated leachates.-The disposal of treated leachates shall meet the following standards, namely:-

S. No	Parameter	Standards (Mode of Disposal)		
		Inland surface water	Public sewers	Land disposal
(1)	(2)	(3)	(4)	(5)
1.	Suspended solids, mg/l, max	100	600	200
2.	Dissolved solids (inorganic) mg/l, max.	2100	2100	2100
3	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
4	Ammonical nitrogen (as N), mg/l, max.	50	50	-
5	Total Kjeldahl nitrogen (as N), mg/l, max.	100	-	-
6	Biochemical oxygen demand (3 days at 27^0 C) max.(mg/l)	30	350	100
7	Chemical oxygen demand, mg/l, max.	250	-	-
8	Arsenic (as As), mg/l, max	0.2	0.2	0.2
9	Mercury (as Hg), mg/l, max	0.01	0.01	-
10	Lead (as Pb), mg/l, max	0.1	1.0	-
11	Cadmium (as Cd), mg/l, max	2.0	1.0	-

12	Total Chromium (as Cr), mg/l, max.	2.0	2.0	-
13	Copper (as Cu), mg/l, max.	3.0	3.0	-
14	Zinc (as Zn), mg/l, max.	5.0	15	-
15	Nickel (as Ni), mg/l, max	3.0	3.0	-
16	Cyanide (as CN), mg/l, max.	0.2	2.0	0.2
17	Chloride (as Cl), mg/l, max.	1000	1000	600
18	Fluoride (as F), mg/l, max	2.0	1.5	-
19	Phenolic compounds (as C_6H_5OH) mg/l, max.	1.0	5.0	-

Note : While discharging treated leachates into inland surface waters, quantity of leachates being discharged and the quantity of dilution water available in the receiving water body shall be given due consideration.

C. Standards for incineration: The Emission from incinerators /thermal technologies in Solid Waste treatment/disposal facility shall meet the following standards, namely:-

Parameter	**Emission standard**	
(1)	**(2)**	**(3)**
Particulates	50 mg/Nm^3	Standard refers to half hourly average value
HCl	50 mg/Nm^3	Standard refers to half hourly average value
SO2	200 mg/Nm^3	Standard refers to half hourly average value
CO	100 mg/Nm^3	Standard refers to half hourly average value
	50 mg/Nm^3	Standard refers to daily average value
Total Organic Carbon	20 mg/Nm^3	Standard refers to half hourly average value
HF	4 mg/Nm^3	Standard refers to half hourly average value
NOx (NO and NO2 expressed as NO2)	400 mg/Nm^3	Standard refers to half hourly average value
Total dioxins and furans	0.1 ng TEQ/Nm^3	Standard refers to 6-8 hours sampling. Please refer guidelines for 17 concerned congeners for toxic equivalence values to arrive at total toxic equivalence.
Cd + Th + their compounds	0.05 mg/Nm^3	Standard refers to sampling time anywhere between 30 minutes and 8 hours.
Hg and its compounds	0.05 mg/Nm^3	Standard refers to sampling time anywhere between 30 minutes and 8 hours.

Sb + As + Pb + Cr + Co + Cu + Mn + Ni + V + their compounds	0.5 mg/Nm^3	Standard refers to sampling time anywhere between 30 minutes and 8 hours.
Note.- *All values corrected to 11% oxygen on a dry basis.*		

Note:

(a) Suitably designed pollution control devices shall be installed or retrofitted with the incinerator to achieve the above emission limits..

(b) Waste to be incinerated shall not be chemically treated with any chlorinated disinfectants.

(c) Incineration of chlorinated plastics shall be phased out within two years.

(d) if the concentation of toxic metals in incineration ash exceeds the limits specified in the Hazardous Waste (Management, Handling and Trans boundary Movement) Rules, 2008, as amended from time to time, the ash shall be sent to the hazardous waste treatment, storage and disposal fcaility.

(e) Only low sulphur fuel like LDO, LSHS, Diesel**,** bio-mass, coal, LNG, CNG, RDF and bio-gas shall be used as fuel in the incinerator.

(f) The CO2 concentration in tail gas shall not be more than 7%.

(g) All the facilities in twin chamber incinerators shall be designed to achieve a minimum temperature of 950^{0}C in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds.

(h) Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve total Organic Carbon (TOC) content in the slag and bottom ash less than 3%, or the loss on ignition is less than 5% of the dry weight.

(i) Odour from sites shall be managed as per guidelines of CPCB issued from time to time

FORM – I

[see rule 15 (y) 16 (1) (c), 21(3)]

Application for obtaining authorisation under solid waste management rules

for processing/recycling/treatment and disposal of solid waste

To,

The Member Secretary,

State Pollution Control Board or Pollution Control Committee,

of…....

Sir,

I/We hereby apply for authorisation under the Solid Waste Management Rules, 2016 for processing, recycling, treatment and disposal of solid waste.

1.	Name of the local body/agency appointed by them/ operator of facility	
2.	Correspondence address Telephone No. Fax No. ,e-mail:	

3.	Nodal Officer & designation(Officer authorised by the local body or agency responsible for operation of processing/ treatment or disposal facility)	
4.	Authorisation required for setting up and operation of the facility (Please tick mark)	waste processing recycling treatment disposal at landfill
5.	Attach copies of the Documents Site clearance (local body) Proof of Environmental Clearance Consent for establishment Agreement between municipal authority and operating agency Investment on the project and expected return	
6.	**Processing/recycling/treatment of solid waste** (i) Total Quantity of waste to be processed per day Quantity of waste to be recycled Quantity of waste to be treated Quantity of waste to be disposed into landfill (ii)Utilisation programme for waste processed (Product utilisation) (iii)Methodology for disposal (attach details) Quantity of leachate Treatment technology for leachate (iv)Measures to be taken for prevention and control of environmental pollution (v)Measures to be taken for safety of workers working in the plant (vi)Details on solid waste processing/recycling/ treatment/disposal facility (to be attached)	
7.	**Disposal of solid waste** Number of sites identified Quantity of waste to be disposed per day Details of methodology or criteria followed for site selection (attach) Details of existing site under operation Methodology and operational details of landfilling Measures taken to check environmental pollution	
8	Any other information.	

Date: Signature:

Place: Designation

Form- II

[see rule 16 (1) (e)]

Format for issue of authorisation

File No.: _____

Dated:_____

Authorisation No_____

To

Ref: Your application number _____dt. _____

The _____State Pollution Control Board/Pollution Control Committee after examining the proposal hereby authorises_____ having administrative office at _____to set up and operate waste processing/recycling/ treatment/disposal facility at_____

The authorisation is hereby granted to operate the facility for processing, recycling, treatment and disposal of solid waste.

The authorisation is subject to the terms and conditions stated below and such conditions as may be otherwise specified in these rules and the standards laid down in Schedules I and II under these rules.

The _____State Pollution Control Board/Pollution Control Committees of the UT may, at any time, revoke any of the conditions applicable under the authorisation and shall communicate the same in writing.

Any violation of the provision of the Solid Waste Management Rules, 2016will attract the penal provision of the Environment (Protection) Act, 1986 (29 of 1986).

(Member Secretary)

State Pollution Control Board/Pollution Control Committee of the UT

(Signature and designation)

Date:

Place:

Form – III

[see rule 19 (6), 24 (1)]

Format of annual report to be submitted by the operator of facility to the local body

1	Name of the City/Town and State	
2	Population	
3	Area in sq. kilometers	
4	Name & Address of the local body Telephone No. Fax No. E-mail:	
5	Name and address of operator of the facility	
6	Name of officer in-charge of the facility Phone No: Fax No: E-mail:	

7	Number of households in the city/town , Number of non-residential premises in the city Number of election/ administrative wards in the city/town	
8	Quantity of Solid waste	
	Estimated Quantity of solid waste generated in the local body area per day in metric tones	/tpd
	Quantity of solid waste collected per day	/tpd
	Per capita waste collected per day	/gm/day
	Quantity of solid waste processed	/tpd
	Quantity of solid waste disposed at landfill	/tpd
9	Status of Solid Waste Management (SWM) service	
	Segregation and storage of waste at source Whether solid waste is stored at source in domestic/commercial/ institutional bins If yes, Percentage of households practice storage of waste at source in domestic bins Percentage of non-residential premises practice storage of waste at source in commercial /institutional bins Percentage of households dispose of throw solid waste on the streets Percentage of non-residential premises dispose of throw solid waste on the streets Whether solid waste is stored at source in a segregated form If yes, Percentage of premises segregating the waste at source	 Yes/No % % % % Yes/No %
	Door to Door Collection of solid waste	
	Whether door to door collection (D2D) of solid waste is being done in the city/town	Yes/No
	if yes	
	Number of wards covered in D2D collection of waste	
	No. of households covered	
	No. of non-residential premises including commercial establishments ,hotels, restaurants educational institutions/ offices etc covered	

	Percentage of residential and non-residential premises covered in door to door collection through : Motorized vehicle Containerized tricycle/handcart Other device	% % %
	If not, method of primary collection adopted	
	Sweeping of streets	
	Length of roads, streets, lanes, bye-lanes in the city that need to be cleaned	km
	Frequency of street sweepings and percentage of population covered	frequency: Daily / Alternate days / Twice a week / Occasionally % of population covered
	Tools used Manual sweeping Mechanical sweeping Whether long handle broom used by sanitation workers Whether each sanitation worker is given handcart/tricycle for collection of waste Whether handcart / tricycle is containerized Whether the collection tool synchronizes with collection/ waste storage containers utilized	% % Yes/No Yes/No Yes/No Yes/No
.	Secondary Waste Storage facilities	
	No. and type of waste storage depots in the city/town Open waste storage sites Masonry bins Cement concrete cylinder bins Dhalao/covered rooms/space Covered metal/plastic containers Upto 1.1 m^3 bins 2 to 5 m^3 bins Above 5m^3 containers Bin-less city	No. Capacity in m^3
	Bin/ population ratio	

	Ward wise details of waste storage depots (attach) : Ward No: Area: Population: No. of bins placed Total volume of bins placed		
	Total storage capacity of waste storage facilities in cubic meters		
	Total waste actually stored at the waste storage depots daily		
	Give frequency of collection of waste from the depots Number of bins cleared	Frequency	No. of bins
		Daily	
		Alternate day	
		Twice a week	
		Once a week	
		Occasionally	
	Whether storage depots have facility for storage of segregated waste in green, blue and black bins	Yes/ No (if yes, add details) No. of green bins: No. of blue bins: No. of black bins:	
	Whether lifting of solid waste from storage depots is manual or mechanical. Give percentage	(%) of Manual Lifting of SOLID WASTE	%
		(%) of Mechanical lifting	%
	If mechanical – specify the method used	front-end loaders/ Top loaders	
	Whether solid waste is lifted from door to door and transported to treatment plant directly in a segregated form	Yes/ No (if yes, specify)	

	Waste Transportation per day Type and Number of vehicles used (pl tick or add)	No. Trips made waste transported
	Animal cart Tractors Non tipping Truck Tipping Truck Dumper Placers Refuse collectors Compactors Others JCB/loader	
	Frequency of transportation of waste	Frequency (%) of waste transported Daily Alternate day Twice a week Once a week Occasionally
	Quantity of waste transported each day	/tpd
	Percentage of total waste transported daily	%
	Waste Treatment Technologies used	
	Whether solid waste is processed	Yes/No
	If yes, Quantity of waste processed daily	/tpd
	Land(s) available with the local body for waste processing (in Hectares)	
	Land currently utilized for waste processing	
	Solid waste processing facilities in operation	
	Solid waste processing facilities under construction	
	Distance of processing facilities from city/town boundary	
	Details of technologies adopted	

	Composting ,	Qty. raw material processed Qty. final product produced Qty. sold Qty. of residual waste landfilled
	vermi composting	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Bio-methanation	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Refuse Derived Fuel	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Waste to Energy technology such as incineration, gasification, pyrolysis or any other technology (give detail)	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Co-processing	Qty. raw material processed
	Combustible waste supplied to cement plant	
	Combustible waste supplied to solid waste based power plants	
	Others	Qty.
	Solid waste disposal facilities	
	No. of dumpsites sites available with the local body	
	No. of sanitary landfill sites available with the local body	
	Area of each such sites available for waste disposal	
	Area of land currently used for waste disposal	
	Distance of dumpsite/landfill facility from city/town	kms
	Distance from the nearest habitation	kms

	Distance from state/national highway	kms
	Distance from Airport	kms
	Distance from important religious places or historical monument	kms
	Whether it falls in flood prone area	Yes/No
	Whether it falls in earthquake fault line area	Yes/No
	Quantity of waste landfilled each day	tpd
	Whether landfill site is fenced	Yes / No
	Whether Lighting facility is available on site	Yes / No
	Whether Weigh bridge facility available	Yes / No
	Vehicles and equipments used at landfill (specify)	Bulldozer, Compacters etc. available
	Manpower deployed at landfill site	Yes/No (if yes, attach details)
	Whether covering is done on daily basis	Yes/No
	If not, Frequency of covering the waste deposited at the landfill	
	Cover material used	
	Whether adequate covering material is available	Yes/No
	Provisions for gas venting provided	Yes/No, (if yes, attach technical data sheet)
	Provision for leachate collection	Yes/No, (if yes, attach technical data sheet)
10	Whether an Action Plan has been prepared for improving solid waste management practices in the city	Yes/No (if Yes attach Action Plan details)
11	What separate provisions are made for : Dairy related activities : Slaughter houses waste : C&D waste (construction debris) :	Attach details on Proposals, Steps taken, Yes/No Yes/No Yes/No
12	Details of Post Closure Plan	Attach Plan
13	How many slums are identified and whether these are provided with Solid Waste Management facilities :	Yes/ No (if Yes, attach details)

15	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules	
16	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies.	

Signature of Operator

Dated :

Place:

Form – IV

[see rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body

CALENDAR YEAR:	**DATE OF SUBMISSION OF REPORT:**

1	Name of the City/Town and State	
2	Population	
3	Area in sq. kilometers	
4	Name & Address of local body Telephone No. Fax No. E-mail:	
5	Name of officer in-charge dealing with solid waste management (SOLID WASTEM)Phone No: Fax No: E-mail:	
6	Number of households in the city/town Number of non-residential premises in the city Number of election/ administrative wards in the city/town	
7	Quantity of Solid waste (solid waste)	
	Estimated Quantity of solid waste generated in the local body area per day in metric tones	/tpd
	Quantity of solid waste collected per day	/tpd

	Per capita waste collected per day	/gm/day
	Quantity of solid waste processed	/tpd
	Quantity of solid waste disposed at dumpsite/ landfill	/tpd
8	Status of Solid Waste Management service	
	Segregation and storage of waste at source Whether SOLID WASTE is stored at source in domestic/commercial/ institutional bins, If yes, Percentage of households practice storage of waste at source in domestic bins Percentage of non-residential premises practice storage of waste at source in commercial /institutional bins Percentage of households dispose or throw solid waste on the streets Percentage of non-residential premises dispose of throw solid waste on the streets Whether solid waste is stored at source in a segregated form, If yes, Percentage of premises segregating the waste at source	 Yes/No % % % % Yes/No %
	Door to Door Collection of solid waste	
	Whether door to door collection (D2D) of solid waste is being done in the city/town	Yes/No
	if yes	
	Number of wards covered in D2D collection of waste	
	No. of households covered	
	No. of non-residential premises including commercial establishments ,hotels, restaurants educational institutions/ offices etc covered	
	Percentage of residential and non-residential premises covered in door to door collection through : Motorized vehicle Containerized tricycle/handcart Other device	 % % %
	If not, method of primary collection adopted	
	Sweeping of streets	
	Length of roads, streets, lanes, bye-lanes in the city that need to be cleaned	km

	Frequency of street sweepings and percentage of population covered	frequency	Daily	Alternate days	Twice a week	Occasionally
		% of population covered				
	Tools used Manual sweeping Mechanical sweeping Whether long handle broom used by sanitation workers Whether each sanitation worker is given handcart/tricycle for collection of waste Whether handcart / tricycle is containerized Whether the collection tool synchronizes with collection/ waste storage containers utilized	% % Yes/No Yes/No Yes/No Yes/No				
.	Secondary Waste Storage facilities					
	No. and type of waste storage depots in the city/town Open waste storage sites Masonry bins Cement concrete cylinder bins Dhalao/covered rooms/space Covered metal/plastic containers Upto 1.1 m3 bins 2 to 5 m3 bins Above 5m3 containers Bin-less city	No. Capacity in m^3				
	Bin/ population ratio					
	Ward wise details of waste storage depots (attach) : Ward No: Area: Population: No. of bins placed Total volume of bins placed					
	Total storage capacity of waste storage facilities in cubic meters					
	Total waste actually stored at the waste storage depots daily					

	Give frequency of collection of waste from the depots Number of bins cleared	Frequency	No. of bins
		Daily	
		Alternate day	
		Twice a week	
		Once a week	
		Occasionally	
	Whether storage depots have facility for storage of segregated waste in green, blue and black bins	Yes/ No (if yes, add details) No. of green bins: No. of blue bins: No. of black bins:	
	Whether lifting of solid waste from storage depots is manual or mechanical. Give percentage (%) of Manual Lifting of solid waste (%) of Mechanical lifting	% %	
	If mechanical – specify the method used	front-end loaders/ Top loaders	
	Whether solid waste is lifted from door to door and transported to treatment plant directly in a segregated form	Yes/ No (if yes, specify)	
	Waste transportation per day Type and Number of vehicles used	No. Trips made waste transported	
	Animal cart Tractors Non tipping Truck Tipping Truck Dumper Placers Refuse collectors Compactors Others JCB/loader		

	Frequency of transportation of waste	Frequency (%) of waste transported Daily Alternate day Twice a week Once a week Occasionally
	Quantity of waste transported each day	/tpd
	Percentage of total waste transported daily	%
	Waste Treatment Technologies used	
	Whether solid waste is processed	Yes/No
	If yes, Quantity of waste processed daily	/tpd
	Whether treatment is done by local body or through an agency	
	Land(s) available with the local body for waste processing (in Hectares)	
	Land currently utilized for waste processing	
	Solid waste processing facilities in operation	
	Solid waste processing facilities under construction	
	Distance of processing facilities from city/town boundary	
	Details of technologies adopted	
	Composting ,	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Vermi composting	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Bio-methanation	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled

	Refuse Derived Fuel	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Waste to Energy technology such as incineration, gasification, pyrolysis or any other technology (give detail)	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste landfilled
	Co-processing	Qty. raw material processed
	Combustible waste supplied to cement plant	
	Combustible waste supplied to solid waste based power plants	
	Others	Qty.
	Solid waste disposal facilities	
	No. of dumpsites sites available with the local body	
	No. of sanitary landfill sites available with the local body	
	Area of each such sites available for waste disposal	
	Area of land currently used for waste disposal	
	Distance of dumpsite/landfill facility from city/town	kms
	Distance from the nearest habitation	kms
	Distance from water body	kms
	Distance from state/national highway	kms
	Distance from Airport	kms
	Distance from important religious places or historical monument	kms
	Whether it falls in flood prone area	Yes/No
	Whether it falls in earthquake fault line area	Yes/No
	Quantity of waste landfilled each day	tpd
	Whether landfill site is fenced	Yes / No
	Whether Lighting facility is available on site	Yes / No

	Whether Weigh bridge facility available	Yes / No
	Vehicles and equipments used at landfill (specify)	Bulldozer, Compacters etc. available
	Manpower deployed at landfill site	Yes/No (if yes, attach details)
	Whether covering is done on daily basis	Yes/No
	If not, Frequency of covering the waste deposited at the landfill	
	Cover material used	
	Whether adequate covering material is available	Yes/No
	Provisions for gas venting provided Provision for leachate collection	Yes/No (if yes, attach technical data sheet) Yes/No (if yes, attach technical data sheet)
9	Whether an Action Plan has been prepared for improving solid waste management practices in the city	Yes/No (if Yes attach Action Plan details)
10	What separate provisions are made for : Dairy related activities : Slaughter houses waste : C&D waste (construction debris) :	Attach details on Proposals,Steps taken, Yes/No Yes/No Yes/No
11	Details of Post Closure Plan	Attach Plan
12	How many slums are identified and whether these are provided with Solid Waste Management facilities :	Yes/ No (if Yes, attach details)
13	Give details of: Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	
14	Give details of: Contractor/ concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	
15	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules	

16	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies	

Signature of CEO/Municipal Commissioner/

Executive Officer/Chief Officer

Date:

Place:

Form – V

[see rule 24(3)]

Format of annual report to be submitted by the state pollution control board or pollution control committee committees to the central pollution control board

PART A

To,

The Chairman

Central Pollution Control Board

Parivesh Bhawan, East Arjun Nagar

DELHI- 110 0032

1.	Name of the State/Union territory	:	
2.	Name & address of the State Pollution Control	:	
3.	Number of local bodies responsible for management of solid waste in the State/Union territory under these rules	:	
4.	No. of authorisation application Received	:	
5.	A Summary Statement on progress made by local body in respect of solid waste management	:	Please attach as Annexure-I
6.	A Summary Statement on progress made by local bodies in respect of waste collection, segregation, transportation and disposal	:	Please attach as Annexure-II
7.	A summary statement on progress made by local bodies in respect of implementation of Schedule II	:	Please attach as Annexure-III

Date: …….	Chairman or the Member Secretary
Place: ……..	State Pollution Control Board/
	Pollution Control Committee

PART B

Towns/cities

Total number of towns/cities

Total number of ULBs

Number of class I & class II cities/towns

Authorisation status (names/number)

Number of applications received

Number of authorisations granted

Authorisations under scrutiny

SOLID WASTE Generation status

Solid waste generation in the state (TPD)

collected

treated

landfilled

Compliance to Schedule I of SW Rules (Number/names of towns/capacity)

Good practices in cities/towns

House-to-house collection

Segregation

Storage

Covered transportation

Processing of SW (Number/names of towns/capacity)

Solid Waste processing facilities setup:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization

Processing facility operational:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization

Processing facility under installation/planned:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletisation

Waste-to-Energy Plants: (Number/names of towns/capacity)

Sl. No.	Plant Location	Status of operation	Power generation (MW)	Remarks

Disposal of solid waste (number/names of towns/capacity):

Landfill sites identified

Landfill constructed

Landfill under construction

Landfill in operation

Landfill exhausted

Landfilled capped

Solid Waste Dumpsites (number/names of towns/capacity):

Total number of existing dumpsites

Dumpsites reclaimed/capped

Dumpsites converted to sanitary landfill

Monitoring at Waste processing/Landfills sites

Sl. No.	Name of facilities	Ambient air	Groundwater	Leachate quality	Compost quality	VOCs
1.						
2.						
3.						

Status of Action Plan prepared by Municipalities

Total number of municipalities:

Number of Action Plan submitted:

Form – VI

[see rule 25]

Accident Reporting

1.	Date and time of accident	:	
2.	Sequence of events leading to accident	:	
3.	The waste involved in accident	:	

4.	Assessment of the effects of the accidents on human health and the environment	:	
5.	Emergency measures taken	:	
6.	Steps taken to alleviate the effects of accidents	:	
7.	Steps taken to prevent the recurrence of such an accident	:	
Date: ……		Signature:……..……	
Place: ……		Designation: ……	

[F. No. 18-3/2004-HSMD]

BISHWANATH SINHA, Jt. Secy.

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Annexure 9

THE PLASTIC WASTE MANAGEMENT RULES, 2016

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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No. 178] NEW DELHI, FRIDAY, MARCH 18, 2016/PHALGUNA 28, 1937

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 18th March, 2016

G.S.R. 320(E).—Whereas the Plastic Waste (Management and Handling) Rules, 2011 published vide notification number S.O 249(E), dated 4th February, 2011 by the Government of India in the erstwhile Ministry of Environment and Forests, as amended from time to time, provided a regulatory frame work for management of plastic waste generated in the country;

And whereas, to implement these rules more effectively and to give thrust on plastic waste minimization, source segregation, recycling, involving waste pickers, recyclers and waste processors in collection of plastic waste fraction either from households or any other source of its generation or intermediate material recovery facility and adopt polluter's pay principle for the sustainability of the waste management system, the Central Government reviewed the existing rules;

And whereas, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the draft rules, namely, the Plastic Waste Management, Rules, 2015 were published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* number G.S.R. 423(E), dated the 25th May, 2015 in the Gazette of India, inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of a period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

And Whereas copies of the said Gazette were made available to the public on the 25th May, 2015;

And Whereas the objections and suggestions received within the said period from the public in respect of the said draft rules have been duly considered by the Central Government**;**

NOW, Therefore, in exercise of the powers conferred by sections 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Plastic Waste (Management and Handling) Rules, 2011, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

1. Short title and commencement.- (1) These rules shall be called the Plastic Waste Management Rules, 2016.

(1) Save as otherwise provided in these rules, they shall come into force on the date of their publication in the Official Gazette.

2. Application.-(1) These rules shall apply to every waste generator, local body, Gram Panchayat, manufacturer, Importers and producer.

(2) The rule 4 shall not apply to the export oriented units or units in special economic zones, notified by the Central Government, manufacturing their products against an order for export: Provide this exemption shall not apply to units engaged in packaging of gutkha, tobacco and pan masala and also to any surplus or rejects, left over products and the like.

3. Definitions.- In these rules, unless the context otherwise requires.-

(a) **"Act"** means the Environment (Protection) Act, 1986 (29 of 1986);

(b) **"brand owner"** means a person or company who sells any commodity under a registered brand

label.

(c) **"carry bags"** mean bags made from plastic material or compostable plastic material, used for the purpose of carrying or dispensing commodities which have a self carrying feature but do not include bags that constitute or form an integral part of the packaging in which goods are sealed prior to use.

(d) **"commodity"** means tangible item that may be bought or sold and includes all marketable goods or wares;

(e) "**compostable plastics**" mean plastic that undergoes degradation by biological processes during composting to yield CO_2, water, inorganic compounds and biomass at a rate consistent with other known compostable materials, excluding conventional petro-based plastics, and does not leave visible, distinguishable or toxic residue;

(f) **"consent"** means the consent to establish and operate from the concerned State Pollution Control Board or Pollution Control Committee granted under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981);

(g) "**disintegration**" means the physical breakdown of a material into very small fragments;

(h) **"extended producer's responsibility "** means the responsibility of a producer for the environmentally sound management of the product until the end of its life;

(i) **"food-stuffs"** mean ready to eat food products, fast food, processed or cooked food in liquid, powder, solid or semi-solid form;

(j) **"facility"** means the premises used for collection, Storage, recycling, processing and disposal of plastic waste;

(k) **"importer"** means a person who imports or intends to import and holds an Importer -Exporter Code number, unless otherwise specifically exempted.

(l) **"institutional waste generator"** means and includes occupier of the institutional buildings such as building occupied by Central Government Departments, State Government Departments, public or private sector companies, hospitals, schools, colleges, universities or other places of education, organisation, academy, hotels, restaurants, malls and shopping complexes;

(m) "**manufacturer"** means and include a person or unit or agency engaged in production of plastic raw material to be used as raw material by the producer.

(n) **"multilayered packaging"** means any material used or to be used for packaging and having at least one layer of plastic as the main ingredients in combination with one or more layers of materials such aspaper, paper board, polymeric materials, metalised layers or aluminium foil, either in the form of a laminate or co-extruded structure;

(o) **"plastic"** means material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, Vinyl, low density polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, Polybutylene terephthalate;

(p) **"plastic sheet"** means Plastic sheet is the sheet made of plastic;

(q) **"plastic waste"**means any plastic discardedafter use or after their intended use is over;

(r) **"prescribed authority"** means the authorities specified in rule 12;

(s) **"producer"** means persons engaged in manufacture or import of carry bags or multilayered packaging or plastic sheets or like, and includes industries or individuals using plastic sheets or like or covers made of plastic sheets or multilayered packaging for packaging or wrapping the commodity;

(t) **"recycling"** means the process of transforming segregated plastic waste into a new product or raw material for producing new products;

(u) **"registration"** means registration with the State Pollution Control Board or Pollution Control Committee concerned, as the case may be;

(v) **"street vendor"** shall have the same meaning as assigned to it in clause (l) of sub-section (1) of Section 2 of the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 (7 of 2014);

(w) **"local body"** means urban local body with different nomenclature such as municipal corporation, municipality, nagarpalika, nagarnigam, nagarpanchayat, municipal council including notified area committee (NAC) and not limited to or any other local body constituted under the relevant statutes such as gram panchayat, where the management of plastic waste is entrusted to such agency;

(x) **"virgin plastic"** means plastic material which has not been subjected to use earlier and has also not been blended with scrap or waste;

(y) **"waste generator"** means and includes every person or group of persons or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defense establishments which generate plastic waste;

(z) **"waste management"** means the collection, storage, transportation reduction, re-use, recovery, recycling, composting or disposal of plastic waste in an environmentally safe manner;

(aa) **"waste pickers"** mean individuals or agencies, groups of individuals voluntarily engaged or authorised for picking of recyclable plastic waste.

4. Conditions.- (1) The manufacture, importer stocking, distribution, sale and use of carry bags, plastic sheets or like, or cover made of plastic sheet and multilayered packaging, shall be subject to the following conditions, namely:-

a) carry bags and plastic packaging shall either be in natural shade which is without any added pigments or made using only those pigments and colourants which are in conformity with Indian Standard : IS 9833:1981 titled as "List of pigments and colourants for use in plastics in contact with foodstuffs, pharmaceuticals and drinking water", as amended from time to time;

b) Carry bags made of recycled plastic or products made of recycled plastic shall not be used for storing, carrying, dispensing or packaging ready to eat or drink food stuff';

c) carry bag made of virgin or recycled plastic, shall not be less than fifty microns in thickness;

d) plastic sheet or like, which is not an integral part of multilayered packaging and cover made of plastic sheet used for packaging, wrapping the commodity shall not be less than fifty microns in thickness except where the thickness of such plastic sheets impair the functionality of the product;

e) the manufacturer shall not sell or provide or arrange plastic to be used as raw material to a producer, not having valid registration from the concerned State Pollution Control Boards or Pollution Control Committee;

f) sachets using plastic material shall not be used for storing, packing or selling gutkha, tobacco and pan masala;

g) recycling of plastic waste shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time;

h) The provision of thickness shall not be applicable to carry bags made up of compostable plastic. Carry bags made from compostable plastics shall conform to the Indian Standard: IS 17088:2008 titled as Specifications for Compostable Plastics, as amended from time to time. The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling; and

i) plastic material, in any form including Vinyl Acetate - Maleic Acid - Vinyl Chloride Copolymer, shall not be used in any package for packaging gutkha, pan masala and tobacco in all forms.

5. Plastic waste management.- (1) The plastic waste management by the urban local bodies in their respective jurisdiction shall be as under:-

(a) plastic waste, which can be recycled, shall be channelized to registered plastic waste recycler and recycling of plastic shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time.

(b) local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil etc. The standards and pollution control norms specified by the prescribed authority for these technologies shall be complied with.

(c) Thermo set plastic waste shall be processed and disposed off as per the guidelines issued from time to time by the Central Pollution Control Board.

(d) The inert from recycling or processing facilities of plastic waste shall be disposed of in compliance with the Solid Waste Management Rules, 2000 or as amended from time to time.

6. Responsibility of local body.- (1) Every local body shall be responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies or producers.

(2) The local body shall be responsible for setting up, operationalisation and co-ordination of the waste management system and for performing the associated functions, namely:-

(a) Ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste;

(b) ensuring that no damage is caused to the environment during this process;

(c) ensuring channelization of recyclable plastic waste fraction to recyclers;

(d) ensuring processing and disposal on non-recyclable fraction of plastic waste in accordance with the guidelines issued by the Central Pollution Control Board;

(e) creating awareness among all stakeholders about their responsibilities;

(f) engaging civil societies or groups working with waste pickers; and

(g) ensuring that open burning of plastic waste does not take place.

(3) The local body for setting up of system for plastic waste management shall seek assistance of producers and such system shall be set up within one year from the date of final publication of these rules in the Official Gazaette of India.

(4) The local body to frame bye-laws incorporating the provisions of these rules.

7. Responsibility of Gram Panchayat.- (1) Every gram panchayat either on its own or by engaging an agency shall set up, operationalise and co-ordinate for waste management in the rural area under their control and for performing the associated functions, namely,-

(a) ensuring segregation, collection, storage, transportation, plastic waste and channelization of recyclable plastic waste fraction to recyclers having valid registration; ensuring that no damage is caused to the environment during this process;

(b) creating awareness among all stakeholders about their responsibilities; and

(c) ensuring that open burning of plastic waste does not take place

8. Responsibility of waste generator.- (1) The waste generator shall.-

(a) take steps to minimize generation of plastic waste and segregate plastic waste at source in accordance with the Solid Waste Management Rules, 2000 or as amended from time to time.

(b) not litter the plastic waste and ensure segregated storage of waste at source and handover segregated waste to urban local body or gram panchayat or agencies appointed by them or registered waste pickers', registered recyclers or waste collection agencies;

(2) All institutional generators of plastic waste, shall segregate and store the waste generated by them in accordance with the Municipal Solid Waste (Management and Handling) Rules, 2000 notified vide S.O. 908(E) dated the 25th September, 2000 under the Act or amendment from time to time and handover

segregated wastes to authorized waste processing or disposal facilities or deposition centers either on its own or through the authorized waste collection agency.

(3) All waste generators shall pay such user fee or charge as may be specified in the bye-laws of the local bodies for plastic waste management such as waste collection or operation of the facility thereof, etc.;

(4) Every person responsible for organising an event in open space, which involves service of food stuff in plastic or multilayered packaging shall segregate and manage the waste generated during such events in accordance with the Municipal Solid Waste (Management and Handling) Rules, 2000 notified vide
S.O. 908(E) dated the 25th September, 2000 under the Act or amendment from time to time.

9. Responsibility of producers, **Importers and Brand Owners.-** (1) The producers, within a period of six months from the date of publication of these rules, shall work out modalities for waste collection system based on Extended Producers Responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned.

(2) Primary responsibility for collection of used multi-layered plastic sachet or pouches or packaging is of Producers, Importers and Brand Owners who introduce the products in the market. They need to establish a system for collecting back the plastic waste generated due to their products. This plan of collection to be submitted to the State Pollution Control Boards while applying for Consent to Establish or Operate or Renewal. The Brand Owners whose consent has been renewed before the notification of these rules shall submit such plan within one year from the date of notification of these rules and implement with two years thereafter.

(3) manufacture and use of non- recyclable multilayered plastic if any should be phased out in Two years time.

(4) The producer, within a period of three months from the date of final publication of these rules in the Official Gazette shall apply to the Pollution Control Board or the Pollution Control Committee, as the case may be, of the States or the Union Territories administration concerned, for grant of registration.

(5) No producer shall on and after the expiry of a period of Six Months from the date of final publication of these rules in the Official Gazette manufacture or use any plastic or multilayered packaging for packaging of commodities without registration from the concerned State Pollution Control Board or the Pollution Control Committees.

(6) Every producer shall maintain a record of details of the person engaged in supply of plastic used as raw material to manufacture carry bags or plastic sheet or like or cover made of plastic sheet or multilayered packaging.

10. Protocols for compostable plastic materials.-Determination of the degree of degradability and degree of disintegration of plastic material shall be as per the protocols of the Indian Standards listed in Schedule-I to these rules.

11. Marking or labelling.-(1) Each plastic carry bag and multilayered packaging shall have the following information printed in English namely,-

(a) name, registration number of the manufacturer and thickness in case of carry bag;

(b) name and registration number of the manufacturer in case of multilayered packaging; and

(c) name and certificate number [Rule 4(h)] in case of carry bags made from compostable plastic

(2) Each recycled carry bag shall bear a label or a mark “recycled” as shown below and shall conform to the Indian Standard: IS 14534: 1998 titled as “Guidelines for Recycling of Plastics”, as amended from time to time;

NOTE: PET-Polyethylene terephthalate, HDPE-High density polyethylene, V-Vinyl (PVC), LDPE- Low density polyethylene, PP-Polypropylene, PS-Polystyrene and Other means all other resins and multi-materials like ABS (Acrylonitrile butadiene styrene), PPO (Polyphenylene oxide), PC (Polycarbonate), PBT (Polybutylene terephalate) etc.

Each carry bag made from compostable plastics shall bear a label "compostable" and shall conform to the Indian Standard : IS or ISO 17088:2008 titled as Specifications for "Compostable Plastics".

12. Prescribed authority.- (1) The State Pollution Control Board and Pollution Control Committee in respect of a Union territory shall be the authority for enforcement of the provisions of these rules relating to registration, manufacture of plastic products and multilayered packaging, processing and disposal of plastic wastes.

(2) The concerned Secretary-in-charge of Urban Development of the State or a Union Territory shall be the authority for enforcement of the provisions of these rules relating to waste management by waste generator, use of plastic carry bags, plastic sheets or like, covers made of plastic sheets and multilayered packaging.

(3) The concerned Gram Panchayat shall be the authority for enforcement of the provisions of these rules relating to waste management by the waste generator, use of plastic carry bags, plastic sheets or like, covers made of plastic sheets and multilayered packaging in the rural area of the State or a Union Territory.

(4) The authorities referred to in sub-rules (1) to (3) shall take the assistance of the District Magistrate or the Deputy Commissioner within the territorial limits of the jurisdiction of the concerned district in the enforcement of the provisions of these rules.

13. Registration of producer, recyclers and manufacturer,- (1) No person shall manufacture carry bags or recycle plastic bags or multilayered packaging unless the person has obtained a registration from the State Pollution Control Board or the Pollution Control Committee of the Union Territory concerned, as the case may be, prior to the commencement of production;

(2) Every producer shall, for the purpose of registration or for renewal of registration, make an application to the State Pollution Control Board or the Pollution Control Committee of the Union territory concerned, in Form I

(3) Every person recycling or processing waste or proposing to recycle or process plastic waste shall make an application to the State Pollution Control Board or the Pollution Control Committee, for grant of registration or renewal of registration for the recycling unit, in Form II.

(4) Every manufacturer engaged in manufacturer of plastic to be used as raw material by the producer shall make an application to the State Pollution Control Board or the Pollution Control Committee of the Union territory concerned, for the grant of registration or for the renewal of registration, in Form III.

(5) The State Pollution Control Board or the Pollution Control Committee shall not issue or renew registration to plastic waste recycling or processing units unless the unit possesses a valid consent under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) along with a certificate of registration issued by the District Industries Centre or any other Government agency authorised in this regard.

(6) The State Pollution Control Board or the Pollution Control Committee shall not renew registration of producer unless the producer possesses and action plan endorsed by the Secretary in charge of Urban Development of the concerned State or Union Territory for setting of plastic waste management system.

(7) On receipt of the application complete in all respects for the registration for recycling or processing of plastic waste under sub-rule (3), the State Pollution Control Board may, after such inquiry as it considers necessary and on being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipment to handle plastic waste safely, may grant registration to the applicant on fulfilment of the conditions as may be laid down in terms of registration.

(8) Every State Pollution Control Board or Pollution Control Committee shall take a decision on the grant of registration within ninety days of receipt of an application which is complete in all respects.

(9) The registration granted under this rule shall initially be valid for a period of one year, unless revoked, suspended or cancelled and shall subsequently be granted for three years.

(10) State Pollution Control Board or the Pollution Control Committees shall not revoke, suspend or cancel registration without providing the opportunity of a hearing to the producer or person engaged in recycling or processing of plastic wastes.

(11) Every application for renewal of registration shall be made at least one hundred twenty days before the expiry of the validity of the registration certificate.

14. Responsibility of retailers and street vendors- (1) Retailers or street vendors shall not sell or provide commodities to consumer in carry bags or plastic sheet or multilayered packaging, which are not manufactured and labelled or marked, as per prescribed under these rules.

(2) Every retailers or street vendors selling or providing commodities in, plastic carry bags or multilayered packaging or plastic sheets or like or covers made of plastic sheets which are not manufactured or labelled or marked in accordance with these rules shall be liable to pay such fines as specified under the bye-laws of the local bodies.

15. Explicit pricing of carry bags.- (1) The shopkeepers and street vendors willing to provide plastic carry bags for dispensing any commodity shall register with local body. The local body shall, within a period of six months from the date of final publication of these rules ion the Official Gazette of India notification of these rules, by notification or an order under their appropriate state statute or byelaws shall make provisions for such registration on payment of plastic waste management fee of minimum rupees forty eight thousand @ rupees four thousand per month. The concerned local body may prescribe higher plastic waste management fee, depending upon the sale capacity. The registered shop keepers shall display at prominent place that plastic carry bags are given on payment.

(2) Only the registered shopkeepers or street vendors shall be eligible to provide plastic carry bags for dispensing the commodities.

(3) The local body shall utilize the amount paid by the customers for the carry bags exclusively for the sustainability of the waste management system within their jurisdictions.

16. State Level Monitoring Committee.- (1) The State government or the union Territory shall, for the purpose of effective monitoring of implementation of these rules, constitute a State Level Advisory Committee consisting of the following persons, namely;-

(a)	the Secretary, Department of Urban Development	- Chairman
(b)	Director from State Department of Environment	- Member
(c)	Member Secretary from State Pollution Control Board or Pollution Control Committee	- Member
(d)	Municipal Commissioner	- Member
(e)	one expert from Local Body	- Member
(f)	one expert from Non-Governmental involved in Waste Management	- Member

(g)	Commissioner, Value Added Tax or his nominee,	- Member
(h)	Sales Tax Commissioner or Officer	- Member
(i)	representative of Plastic Association, Drug Manufacturers Association, Chemical Manufacturers Association	- Member
(j)	one expert from the field of Industry	- Member and
(k)	one expert from the field of academic institution	- Member
(l)	Director , Municipal Administration	- Convener

The State Level Advisory Body shall meet at least once in Six Month and may invite experts, if it considers necessary.

17. Annual reports.- (1) Every person engaged in recycling or processing of plastic waste shall prepare and submit an annual report in Form-IV to the local body concerned under intimation to the concerned State Pollution Control Board or Pollution Control Committee by the 30th April, of every year.

(2) Every local body shall prepare and submit an annual report in Form –V to the concerned Secretary-in-charge of the Urban Development Department under intimation to the concerned State Pollution Control Board or Pollution Control Committee by the 30th June, every year.

(3) Each State Pollution Control Board or Pollution Control Committee shall prepare and submit an annual report in Form VI to the CPCB on the implementation of these rules by the 31st July, of every year.

(4) The CPCB shall prepare a consolidated annual report on the use and management of plastic waste and forward it to the Central Government along with its recommendations before the 31st August of every year.

SCHEDULE-I

[See rule 10]

1.	IS / ISO 14851: 1999 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium-Method by measuring the oxygen demand in a closed Respirometer
2.	IS / ISO 14852: 1999 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium-Method by analysis of evolved carbon dioxide
3.	IS / ISO 14853: 2005 Plastics- Determination of the ultimate anaerobic biodegradation of plastic materials in an aqueous system-Method by measurement of biogas production
4.	IS /ISO 14855-1: 2005 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions-Method by analysis of evolved carbon dioxide (Part-1 General method)
5.	IS / ISO 14855-2: 2007 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions-Method by analysis of evolved carbon dioxide (Part-2: Gravimetric measurement of carbon dioxide evolved in a laboratory- scale test)
6.	IS / ISO 15985: 2004 Plastics- Determination of the ultimate anaerobic biodegradation and disintegration under high-solids anaerobic digestion conditions- Methods by analysis of released biogas
7.	IS /ISO 16929: 2002 Plastics- Determination of degree of disintegration of plastic materials under defined composting conditions in a pilot - scale test
8.	IS / ISO 17556: 2003 Plastics- Determination of ultimate aerobic biodegradability in soil by measuring the oxygen demand in a Respirometer or the amount of carbon dioxide evolved
9.	IS / ISO 20200:2004 Plastics- Determination of degree of disintegration of plastic materials under simulated composting conditions in a laboratory - scale test

FORM - I

[See rules 13 (2)]

APPLICATION FOR REGISTRATION FOR PRODUCERS or Brand Owners

From: .....

……

…….(Name and full address of the occupier)

To

The Member Secretary,

.....……. Pollution Control Board or Pollution Control Committee

…….

…….

Sir,

I /We hereby apply for registration under rule 9 of the Plastic Waste Management Rules, 2015

1. Producers

PART – A GENERAL		
1.(a)	Name and location of the unit	
(b)	Address of the unit	
(c)	Registration required for manufacturing of: (i) Carry bags; (a) petro- based, (b) Compostable (ii) Multilayered plastics	
(d)	Manufacturing capacity	
(e)	In case of renewal, previous registration number and date of registration	
2.	Is the unit registered with the District Industries Centre of the State Government or Union Territory? If yes, attach a copy.	
3.(a)	Total capital invested on the project	
(b)	Year of commencement of production	
4. (a)	List and quantum of products and by-products	
(b)	List and quantum of raw materials used	
5.	Furnish a flow diagram of manufacturing process showing input and output in terms of products and waste generated including for captive power generation and water.	
6.	Status of compliance with these rules- Thickness – fifty micron (Yes/No)	
PART – B PERTAINING TO LIQUID EFFLUENT AND GASEOUS EMISSIONS		
7.	(a) Does the unit have a valid consent under the Water (Prevention and control of Pollution) Act, 1974 (6 of 1974)? If yes, attach a copy	
	(b) Does the unit have a valid consent under the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981)? If yes, attach a copy	
PART – C PERTAINING TO WASTE		
8.	Solid Wastes or rejects: (a) Total quantum of waste generated (b) Mode of storage within the plant (c) Provision made for disposal of wastes	
9.	Attach or Provide list of person supplying plastic to be used as raw material to manufacture carry bags or plastic sheet of like or multilayered packaging	

10.	Attach or provide list of personnel or Brand Owners to whom the products will be supplied	
11.	Action plan on collecting back the plastic wastes	
		Name and Signature Designation
Date : Place :		

II Brand Owners:

PART – A GENERAL		
1.	Name, Address and Contact number	
2	In case of renewal, previous registration number and date of registration	
3	Is the unit registered with the District Industries Centre of the State Government or Union Territory? If yes, attach a copy.	
4.(a)	Total capital invested on the project	
(b)	Year of commencement of production	
5. (a)	List and quantum of products and by-products	
(b)	List and quantum of raw materials used	
PART – B PERTAINING TO LIQUID EFFLUENT AND GASEOUS EMISSIONS		
5	Does the unit have a valid consent under the Water (Prevention and control of Pollution) Act, 1974 (6 of 1974)? If yes, attach a copy	
6	Does the unit have a valid consent under the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981)? If yes, attach a copy	
PART – C PERTAINING TO WASTE		
7.	Solid Wastes or rejects: (c) Total quantum of waste generated (d) Mode of storage within the plant (d) Provision made for disposal of wastes	
8.	Attach or Provide list of person supplying plastic material	
9	Action plan on collecting back the plastic wastes	
		Name and Signature Designation
Date : Place :		

FORM - II

[see rule 13 (3)]

APPLICATION FORM FOR REGISTRATION OF UNITS ENGAGED IN PROCESSING OR RECYCLING OF PLASTIC WASTE

1.	Name and Address of the unit	
2.	Contact person with designation, Tel./Fax /email	

3.	Date of commencement				
4.	No. of workers (including contract labour)				
5.	Consents Validity	a. Water (Prevention & Control of Pollution) Act, 1974; Valid up to _____ b. Air (Prevention & Control of Pollution) Act, 1981; Valid up to_____ c. Authorization ; valid up to ….			
6.	Manufacturing Process	Please attach a flow diagram of the manufacturing process flow diagram for each product.			
7.	Products and installed capacity of production (MTA)	Products		Installed capacity	
8.	Waste Management:	S. No.	Type	Category	Qty.
	a. Waste generation in processing plastic-waste	(i)			
		(ii)			
		(iii)			
	b. Waste Collection and transportation (attach details)				
	c. Waste Disposal details	S. No.	Type	Category	Qty
		(i)			
		(ii)			
	d. Provide details of the disposal facility, whether the facility is authorized by SPCB or PCC				
	e. Please attach analysis report of characterization of waste generated (including leachate test if applicable)				
9.	Details of plastic waste proposed to be acquired through sale, auction, contract or import, as the case may be, for use as raw material	(i) Name (ii) Quantity required /year			
10.	Occupational safety and health aspects	Please provide details of facilities			
11.	Pollution Control Measures				
	Whether the unit has adequate pollution control systems or equipment to meet the standards of emission or effluent.	If Yes, please furnish details			
	Whether unit is in compliance with conditions laid down in the said rules.	Yes/No			
	Whether conditions exist or are likely to exist of the material being handled or processed posing adverse immediate or delayed impacts on the environment.	Yes/No			
	Whether conditions exist (or are likely to exist) of the material being handled or processed by any means capable of yielding another material (e.g. leachate) which may possess eco-toxicity.	Yes/No			
12.	Any other relevant information including fire or accident mitigative measures				
13.	List of enclosures as per rule				

Name and Signature

Designation

Date :

Place :

FORM - III

[See rules 13(4)]

APPLICATION FOR REGISTRATION FOR MANUFACTURERS OF PLASTIC RAW MATERIALS

From: .....

……

…….(Name and full address of the occupier)

To

The Member Secretary,

.....……. Pollution Control Board or Pollution Control Committee

…….

…….

Sir,

I/We hereby apply for registration under the Plastic Waste Management Rules, 2011

PART – A GENERAL		
1.(a)	Name and location of the unit	
(b)	Address of the unit	
(c)	In case of renewal, previous registration number and date of registration	
2.	Is the unit registered with the DIC or DCSSI of the State Government or Union Territory? If yes, attach a copy.	
3.(a)	Total capital invested on the project	
(b)	Year of commencement of production	
(c)	List of producers and quantum of raw materials supplied to producers	
Date : Place :		Name and Signature Designation

Form - IV

[See rules 17 (1)]

FORMAT OF ANNUAL REPORT BY OPERATOR OF PLASTIC WASTE PROCESSING OR RECYCLING FACILITY TO THE LOCAL BODY

Period of Reporting:

(1)	Name and Address of operator of the facility	
(2)	Name of officer in-charge of the facility (Telephone/Fax/Mobile/ E-mail)	
(3)	Capacity:	
(4)	Technologies used for management of plastic waste:	
(5)	Quantity of plastic waste received during the year being reported upon along with the source	
(6)	Quantity of plastic waste processed (in tons): - Plastic waste recycled(in tons) - Plastic waste processed (in tons) - Used (in tons)	
(7)	Quantity of inert or rejects sent for final disposal to landfill sites:	
(8)	Details of land fill facility to which inert or rejects were sent	

	for final disposal: - Address -Telephone	
(9)	Attach status of compliance to environmental conditions, if any specified during grant of Consent or registration	

Signature of Operator

Dated :

Place:

Form - V

[See rules 17(2)]

FORMAT FOR ANNUAL REPORT ON PLASTIC WASTE MANAGEMENT TO BE SUBMITTED BY THE LOCAL BODY

Period of Reporting:

(1)	Name of the City or Town and State:	
(2)	Population	
(3)	Area in sq. kilometers	
(4)	Name & Address of Local body Telephone No. Fax No. E-mail:	
(5)	Total Numbers of the wards in the area under jurisdiction	
(6)	Total Numbers of Households in the area under jurisdiction	
(7)	Number of households covered by door to door collection	
(8)	Total number of commercial establishments and Institutions in the area under jurisdiction -Commercial establishments - Institutions	
(9)	Number of commercial establishments and Institutions covered by door to door collection -Commercial establishments - Institutions	
(10)	Summary of the mechanisms put in place for management of plastic waste in the area under jurisdiction along with the details of agencies involved in door to door collection	
(11)	Attach details of infrastructure put in place for management of plastic waste generated in the area under jurisdiction	
(12)	Attach details of infrastructure required, if any along with justification	
(13)	Quantity of Plastic Waste generated during the year from area under jurisdiction (in tons)	
(14)	Quantity of Plastic Waste collected during the year from area under jurisdiction (in tons)	
(15)	Quantity of plastic waste channelized for recycling during the year (in tons)	
(16)	Quantity of plastic waste channelized for use during the year (in tons)	
(17)	Quantity of inert or rejects sent to landfill sites during the year (in tons)	
(18)	Details of each of facilities used for processing and disposal of plastic waste **Facility-I** i) Name of operator ii) Address with Telephone Number or Mobile iii) Capacity iv) Technology Used v) Registration Number vi) Validity of Registration (up to)	

Name of the SPCB or PCC	Estimated Plastic Waste generation Tons Per Annum (TPA)	No. of registered Plastic Manufacturing or Recycling (including multilayer, compostable) units. (Rule 9)			No. of Unregistered plastic manufacturing Recycling units. (in residential or unapproved areas)	Details of Plastic Waste Management (PWM) e.g. Collection, Segregation, Disposal (Co-processing road construction etc.) (Rules 6) (Attach separate	Partial or complete ban on usages of Plastic Carry Bags (through Executive Order) (Attach copy of notification or executive order)	Status of Marking Labelling on carry bags (Rule 8) [Specify the number of units or not complied)complied	Explicit Pricing of carry bags (Rule 10)	Details of the meeting of State Level Advisory Body (SLA) along with its recommend-dations on Implementation (Rule 11)	No. of violations and action taken on non-compliance of provisions of these Rules	Number of Municipal Authority or Gram Panchayat-under jurisdiction and Submission of Annual Report to CPCB (Rule 12)
		Plastic units	Compostable Plastic Units	Multilayer Plastic units								

	Facility-II i) Name of operator ii) Address with Telephone Number or Mobile iii) Capacity iv) Technology Used v) Registration Number Validity of Registration (up to)	
(19)	Give details of: Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste.	
(20)	Give details of: Contractor or concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste.	
(21)	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules including the financial constrains, if any	
(22)	Whether an Action Plan has been prepared for improving solid waste management practices in the city? If yes (attach copy) Date of revision:	

Signature of CEO or Municipal Commissioner or

Executive Officer or Chief Officer

Date:

Place:

Form-VI

STATE-WISE STATUS OF IMPLEMENTATION OF PLASTIC WASTE MANAGEMENT RULES, 2016 FOR THE YEAR … ANNUAL REPORT Format

						sheet)						
(1)	(2)	(3)			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

[F. No. 17-2/2001-HSMD]

BISHWANATH SINHA, Jt. Secy.

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Annexure 10

Guidelines on Co-processing in Cement/Power/Steel Industry

February 2010

Central Pollution Control Board
(Ministry of Environment & Forests, Govt. of India)
Parivesh Bhawan
East Arjun Nagar, Delhi – 110 032

Foreword

In conjunction with the UN Commission on sustainable development under the programmes on sustainable consumption and production patterns, the strategy adopted for hazardous waste management in the country stipulates the hierarchy of Reduce, Reuse and Recycle ahead of ultimate disposal. In tandem with this approach, the Hazardous wastes (Management and Handling & Transboundary movement) Rules, 2008, provided for a specific section i.e.; Rule 11 dedicated to utilization of hazardous wastes. The hazardous incinerable waste has vast potential to be used as a supplementary resource or for energy gradient recovery on co-processing. Their higher calorific value /constituents which are ingredients of cement evolve scope of its utilization as a supplementary resource material in the cement industry.

Central Pollution Control Board under the Hazardous wastes (Management and Handling & Transboundary movement) Rules, 2008 has been empowered to accord approval for utilization of hazardous wastes. About 6.2 Million tonnes of hazardous wastes including out of which 0.41 Million tonnes of Incinerable wastes is annually generated in India. The disposal of such waste in common and captive incinerators leads to the loss of vital resource besides having potential to cause severe environmental risks if not operated in an environmentally sound manner.

However, Co-processing of hazardous wastes in cement kiln, wherever, characteristics so suggests, will eradicate such risks and harness the encapsulated energy, hence a priority area. In order to streamline the procedure of co-processing so as to give a thrust to such activity, the present guidelines have been prepared.

Contributions of Shri B. P. Shukla, Additional Director & I/c HWMD, Dr. S. S. Bala, Additional Director & I/c PCI-II Div., Shri Suneel Dave, SEE, PCI-II Div, Shri P. K. Gupta, Environmental Engineer, PCI-II Div. and Shri Bharat K Sharma, Environmental Engineer, HWMD and Dr. D. D. Basu, Sr. Scientist, under the guidance of Shri J. S. Kamyotra, Member Secretary, CPCB, deserve acknowledgement for preparing the guidelines.

I believe that the document will be useful to all stake holders in joining hands to promote gainful utilization of hazardous waste and protect natural resources of the country. The success achieved on adoption shall also go a long way in attaining the national mission of reducing carbon emission.

(Prof. S. P. Gautam)

February 23, 2010
Delhi

PART- I

(Cement)

1.0 Background:

About 6.2 Million tonnes of hazardous wastes is annually generated in India, out of which around 3.09 Million tonnes is recyclable, 0.41 Million tonnes is incinerable and 2.73 Million tonnes is land-fillable. This categorization of hazardous wastes into 3 classes is based on the hazard potential and its characteristics guiding its ultimate disposal, in accordance with the Hazardous wastes (Management and Handling & Transboundary Movement) Rules, 2008. Most of these wastes have characteristics suited to their utilization as resource material either for recovery of energy or materials like metals or their utility in construction, manufacture of low-grade articles or recovery of the product itself, which after processing can be utilized as a resource material. Hence a new mind- set treating the hazardous waste as a resource material rather than a difficult disposable material is the need of the hour.

The cost of providing incinerator would depend on its capacity ranging from Rs 10 crores to 30 crores. Assuming disposal cost of Incinerable hazardous waste is about Rs. 16,000/- per MT, it may roughly be estimated that additionally about Rs. 640 crore / annum would be incurred in incinerating hazardous waste in our country. Besides, incinerator if not operated optimally may contribute to emissions including toxic Dioxins and Furans. This coupled with resource conservation and reduced carbon emissions make a strong case for considering co-processing as a sound and better alternative for hazardous wastes disposal in general and Incinerable waste in particular.

Thus the co-processing of hazardous substances in cement industry is much beneficial option, whereby hazardous wastes are not only destroyed at a higher temperature of around 1400^0C and longer residence time but its inorganic content gets fixed with the clinker apart from using the energy content of the wastes. Apart from this, no residues are left, which in case of incineration still requires to be land filled as incinerator ash. Further the acidic gases, if any generated during co-processing gets neutralized, since the raw material is alkaline in nature. Such phenomenon also reduces resource requirement such as coal and lime stone. Thus utilization of Hazardous wastes for co-processing makes a win –win situation.

The production of cement in India is about 200 Million Tonnes per annum, for which estimated coal and lime stone requirement are 40 Million Tons per annum and 320 Million Tons per annum, respectively. The country, therefore, has potential to utilize entire hazardous waste generation, if found suitable otherwise, for co-processing. Apart from this many other substances having high calorific value viz.; tyres and plastic wastes, which are otherwise treated as “waste”” but do not fall under the purview of “hazardous waste”as stipulated in the Hazardous wastes (Management and Handling & Transboundary movement) Rules, 2008, can also be co-processed in the Cement industry. Apart from Cement Industry, Thermal Power Plant, Iran and Steel Industry are other potential candidates for co-processing. The location of Cement, Thermal Power and Steel Industry along with existing location of Common Hazardous Waste Treatment & Disposal Facility (TSDF) have been depicted in the following map.

CPCB has already taken up trial run for co-processing of few categories of wastes and granted regular permission for the same. The list has been appended as Annexure-I. Based on satisfactory performance of trial run, 22 cement manufacturing units in various States already started co-processing of these few categories of wastes with the approval of CPCB. Further, trial run is also going on for various other categories of waste.

Locations showing Cement, Steel and Thermal Power Plant of India

Locations showing Common Hazardous Waste Treatment & Disposal Facility (TSDF)

2.0 Objective:

Despite co-processing having inherent advantages, a careful approach is called for in view of hazardous nature of substances also being handled, many of which has potential to create havoc in terms of transportation, handling, storage and processing itself. Further the mechanism to be followed for co-processing hazardous wastes, has to conform to the Rules and regulations as provided for under Hazardous Wastes (Management and Handling & Transboundary Movement) Rules, 2008 apart from provisions in various other related Acts & Rules. Development of a standard methodology and application procedure to streamline the entire processing mechanism taking all essential safeguards along with the delivery of approvals in a reasonable time frame prompted CPCB to formulate the guidelines.

3.0 The hazardous wastes for co-processing need to be handled in an environmentally safe manner avoiding the possibilities of contaminating the nearby environment and eliminate the chances of accidents leading to environmental catastrophe. The requirements of handling, including labelling, packaging, transport and storage applicable to the hazardous wastes have been described in following sub-sections, however, these will not be applicable to other substances like tyre chips, plastic waste and other high volume low effect wastes such as phosphogypsum, red mud, slags from pyrometallurgical operations etc. not covered under the purview of the Hazardous wastes (Management and Handling & Transboundary movement) Rules, 2008:

3.1 Responsibilities for occupier for handling of hazardous wastes:

"Occupier" in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous waste the person in possession of the hazardous waste.

(i) The occupier shall take all adequate steps while handling hazardous wastes to:

(a) Contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(b) Provide persons working on the site with the training, equipment and information necessary to ensure their safety.

3.2 Authorization:

(i) Every person who is engaged in processing, treatment, package, storage, transportation, use, collection, conversion, offering for sale, transfer or the like of hazardous waste shall require to obtain an authorization from the State Pollution Control Board/ Pollution Control Committee. For obtaining such authorization or its renewal, the person shall make an application in Form 1 of the Rules to the State Pollution Control Board/ Pollution Control Committee. Accordingly, authorisation requirement is also applicable for cement co-processing.

(ii) The hazardous waste shall be collected, stored or re-processed only in authorized facility / industry by the State Pollution Control Board/ Pollution Control Committee for the purpose.

3.3 Packaging:

The containers must be able to withstand normal handling and retain integrity for a minimum period of six months. In general, packaging of hazardous substances must meet the following requirements:

(i) All packaging materials including containers shall be of such strength, construction and type as not to break open or become defective during transportation.

(ii) All packaging materials including containers shall be so packed and sealed that spillages of hazardous wastes / substances are prevented during transportation due to jerks and vibrations caused by uneven road surface.

(iii) Re-packing materials including that used for fastening must not be affected by the contents or form a dangerous combination with them.
(iv) Packaging material should be such that there will be no significant chemical or galvanic action among any of the material in the package.

The containers when used for packaging of the hazardous wastes shall meet the following requirements:

- Container shall be of mild steel with suitable corrosion-resistant coating and roll-on roll-off cover, which may either be handled by articulated crane or by a hook lift system comfortably for a large variety of wastes. Other modes of packaging, like collection in 22-liter plastic drums, cardboard cartons, PP and HDPE/LDPE containers etc., also work for variety of waste. However, all such container should be amenable to mechanical handling.
- It should be leak proof.
- In general, the containers for liquid hazardous waste should be completely closed / sealed. There should be no gas generation due to any chemical reaction within the container, and thud should be devoid of air vents.
- Container should be covered with a solid lid or a canvas to avoid emissions of any sort including spillage, dust etc. and to minimize odour generation both at the point of loading as well as during transportation.
- Container used for transportation of waste should be able to withstand the shock loads due to vibration effect/undulations of pavements etc.
- Container should be easy to handle during transportation and emptying.
- As far as possible, manual handling of containers should be minimized. Appropriate material handling equipment is to be used to load, transport and unload the containers. This equipment, lift gates and pallets. Drums should not be rolled on or off vehicles.
- Where a two-tier or three-tier storage is envisaged the frame should have adequate strength to hold the containers.
- One-way containers (especially 16-liter drums) are also allowed. The multi-use container should be re-useable provided it should be cleaned and free from deterioration or defects.
- Loads are to be properly placed on vehicles. Hazardous waste containers are not to overhang, perch lean or be placed in other unstable base. Load should be secured with straps, clamps, braces or other measures to prevent movement and loss. Design of the container should be such that it can be safely accommodated on the transport vehicle.
- Dissimilar wastes shall not be collected in the same container. Wastes shall be segregated and packed separately.

3.4 Labelling:

There are two types of labelling requirements:

(i) Labelling of individual transport containers (ranging from a pint-size to a tank); and
(ii) Labelling of transport vehicles.

All hazardous waste containers must be clearly marked with the contents. The marking must be irremovable, waterproof and firmly attached. Previous content labels shall be obliterated when the contents are different. Proper marking of containers is essential.

Containers that contain hazardous waste shall be labelled with the words “HAZARDOUS WASTE” in Vernacular language, Hindi / English. The information on the label must include the code number of the waste, the waste type, the origin (name, address, telephone number of

generator), hazardous property (e.g. flammable), and the symbol for the hazardous property (e.g. the red square with flame symbol).

The label must withstand the effects of rain and sun. Labelling of containers is important for tracking the wastes from the point of generation up to the final point of disposal. The following are the requirements for labelling:

- The label should contain the name and address of the facility occupier[^], where it is being sent for co-processing i.e. labelling of container shall be provided with a general label as per Form 12 of the Rules.
- Emergency contact phone numbers shall be prominently displayed viz; the phone number of concerned Regional Officer of the SPCB /PCC, Fire Station, Police Station and other agencies concerned.

Explanation: As a general rule, the label has to state the origin/ generator of the waste. He / she and only he / she – is responsible and shall know, in case of any accident / spillage etc. what kind of wastes it is, what hazard may occur and which measures should be taken. The second in the line is the collector / transporter / disposer, who has to know the risk and what to do to minimize risks and hazards.

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^ *Facility means any establishment wherein the processes incidental to the handling, collection, reception, treatment, storage, recycling, recovery, reuse and disposal of hazardous waste are carried out. Co-processing is an activity that may consist of recovery or reuse or disposal of hazardous waste or waste(s) combination.*

3.5 Collection and transportation of Hazardous wastes:

Safe transportation of hazardous waste to the site for utilization as a supplementary resource or for energy recovery, or after processing is a collective responsibility of the waste occupier/generator and operator[*] of the facility. The detailed guidelines for collection and transport of hazardous waste have been provided at Annexure -2.

3.6 Storage of Hazardous wastes:

The occupier, re-processor/re-user/co-processor of facility may store the hazardous wastes for a period not exceeding ninety days of the permitted quantity for reprocessing / reuse and shall maintain a record of sale, transfer, storage and reprocessing of such wastes and make these records available for inspection: Provided that the State Pollution Control Board may extend the said period for re-processors and facility operators up to six months of their annual capacity.

The detailed storage requirements for incinerable hazardous waste have been presented at Annexure 3.

4.0 Feeding of materials for co-processing:

Different feed points can be used to insert the co-processing materials into the cement production process. The most common ones are:

- The main burner at the rotary kiln outlet end
- The rotary kiln inlet end
- The pre-calciner
- The mid kiln (for long dry and wet kilns)

Appropriate feed points have to be selected according to the physical, chemical and toxicological characteristics of the substances, if relevant, used. Wastes of high calorific value have to be always fed into the high temperature combustion zones of the kiln system. Such wastes containing stable toxic components should be fed to the main burner to ensure complete combustion in the high temperature and long retention time. Alternative raw materials containing components that can be volatilized at low temperatures (for example, hydrocarbons) have to be fed into the high temperature zones of the kiln system. Feeding of alternative raw materials containing volatile (organic and inorganic) components to the kiln via the normal raw meal supply should be avoided unless it has been demonstrated by trial runs in the kiln that there is no undesired emission from the stack.

5.0 Suitability of Substances for co-processing:

1. The decision on what type of substances can be used is based on the clinker production processes, the raw material and fuel compositions , the feeding points, the air pollution control devices and the given waste management problems. The Accept - Refuse Chart in Annexure-4 could be used by plant operators to help them in considering, which type of substance is suitable for co processing.

   Some of the substances, which have potential to be used in co-processing in cement kiln are given at Appendix A. The list at the Appendix is just an indicative and shall not be taken for co-processing directly but only after conducting trial run as per the procedures laid down in the para 10 of this document.

2. As a basic rule , waste accepted must give an added – value for the cement kiln:
   - Calorific value from the organic part
   - Material value from the mineral part

   Many substances, particularly those of low calorific value, contain a significant proportion of incombustible substance(s), while inorganic substances are used as a combination of high and low calorific value raw material.

3. In some cases kilns can be used for the safe disposal of hazardous waste such as obsolete pesticides, PCB or out-dated pharmaceutical products, which may not have appropriate material or energy value as per the Annexure 4 but can be disposed in cement kiln without impacting the product quality. However, for this type of treatment, regulatory authorities and cement plant operators must come to individual agreements and standards on a case - by - case basis in consultation with CPCB.

4. A wide range of hazardous waste materials may be co-processed such as; ETP sludge, paint sludge, refinery sludge and TDI tar. There are liquid hazardous wastes such as used oil, solvents or end - of - line products from the transport sector, which may also be used as Alternate Fuel and Raw Material (AFR). Some materials can be delivered as single batches directly to the cement plant, while other may be pre-processed to meet the required conditions. Regular quality control of the collected and delivered substances will help to ensure a smooth use of the AFR in kiln.
5. The quality of what goes in determines the quality of what comes out. Therefore, attention must be paid to the selection of raw materials and fuels. Material resources

6. Process requirement, product quality target or emission regulations all have a bearing on the choice of the physical and chemical parameters of the potential waste material considered for use. In selecting and using the substances, the aims are:
   - To ensure that the waste used undergoes its most compatible treatment compared to other possible technologies.
   - To restrain damaging effects to the products or the production process complying with the Hazardous Waste M,H & T M Rules, 2008.

7. The maximum concentration of various toxic parameters of waste, which may be considered for co-processing is termed as Acceptance criteria and appended as Annexure-5. This is evolved based on the following criteria.
   - Emission standards.
   - Pollutants in traditional raw materials.
   - Treatment alternatives for the available waste.
   - Trial run conducted in India.

8. The waste can be sourced either from TSDF or from the waste generator directly. In case of former, the waste for co-processing needs to be homogenized for smooth operation of cement kiln as it could be composed of different characteristics of wastes.

9. All the waste cannot be used for co-processing, keeping in view the environment, health, safety and operational concern. The wastes listed below are normally not recommended for co-processing till otherwise proved/evidenced for.
   - Biomedical waste
   - Asbestos containing waste.
   - Electronic scrap.
   - Entire batteries.
   - Explosives.
   - Corrosives.
   - Mineral acid wastes.
   - Radioactive Wastes.
   - Unsorted municipal garbage.

6.0 Operating Conditions:

a) Co-processing plants shall be designed, equipped, built and operated in such a way that the gas resulting from the co-processing is raised in a controlled and homogeneous fashion and even under the most unfavourable conditions, to a temperature of 950°C for two seconds. For hazardous wastes with a content of more than 1% halogenated organic substances (expressed as chlorine), the temperature has to be raised to 1100°C.

b) Co-processing plants shall have and operate an automatic system to prevent waste feed:
   I. at start up, until the temperature of 950°C or 1100°C as the case may be.
   II. When ever the temperature of 950°C or 1100°C as the case may be is not maintained.
   III. When ever emission monitoring show that any emission limits value is exceeded due to disturbances or failures of air pollution control devices.

c) Co-processing plants shall be designed, equipped, built and operated in such a way as to prevent emission into the air giving rise to significant ground level air pollution; in particular; exhaust gases shall be discharged in a controlled fashion and in conformity with ambient air quality standards (Annexure- 6) by means of a stack, the height of which is calculated in such a way as to safeguard human health and the environment.

d) The management of the co- processing plant shall be in the hands of a skilled person , competent to manage the hazardous waste in an environmentally sound manner.

7.0 Air Pollution Control requirements:

The dust emission is the main pollutant as far as pollution from cement industry is concerned. The dust emission is unlikely to change when cement plant is processing hazardous and other substances. Generally cement kilns are equipped with Electro Static Precipitator or Bag House to control the particulate matter emission. Any acid gases formed during co-processing are likely to be scrubbed by the raw material being of an alkaline nature and are incorporated into the cement clinker. However, cement industry has to ensure that they meet the particulate matter emission standards during co-processing as prescribed under the consent order issued by SPCB/PCC. For other pollutants i.e. HCl, SO_2, CO, TOC, HF, NOx, total dioxins and furans, Cd + Tl + their compounds, Hg and its compounds, Sb + As + Pb + Co + Cr + Cu + Mn + Ni + V + their compounds, the emission during co-processing should not exceed the base line emissions i.e.; during pre co-processing phase of trial run.

8.0 Emission standards:

The emission standards for particulate matter prescribed for cement kiln by the concerned State Pollution Control Board shall be applicable during co-processing in cement kiln also. For other pollutants i.e. HCl, SO_2, CO, TOC, HF, NOx, total dioxins and furans, Cd + Tl + their compounds, Hg and its compounds, Sb + As + Pb + Co + Cr + Cu + Mn + Ni + V + their compounds, the emission during co-processing should not exceed the base line emissions i.e.; during pre co-processing phase of trial run.

9.0 Monitoring requirements:

The continuous measurement of particulate matter emission shall be carried out at co processing plant and the emission data shall be submitted to CPCB and the concerned SPCB/PCC. As per direction of CPCB monitoring of dioxins and furans including other parameters will be done by the cement plant.

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10.0 Application Procedure:

As per Rule 11 of Hazardous wastes (M,H & TM) rules,2008 Central pollution Control Board has been empowered to grant approval for utilization of hazardous wastes as a supplementary resource or for energy recovery, or after processing and obtaining such approval before hand is mandatory. The procedure formulated for the same has been sequentially described in following subsections:

10.1 The application duly filled in as per prescribed format for trail run (appended as Annexure 7) and enclosing all relevant enclosures has to be submitted to concerned State Pollution Control Board/PCC., where the waste is proposed to be utilized/ co-processed., with a copy of complete application endorsed to CPCB by the proponent. As such the CPCB has been empowered to accord approval for utilisation of hazardous wastes,. however in order to curtail the constraints on time/ inconvenience, and to encourage the co-processing, the approval for trial run shall be given by concerned SPCB/PCC., where the waste is proposed to be utilized/ co-processed. In case CPCB has objections, if any, shall communicate the same to the proponent with a copy to concerned SPCB within 30 days from the date of receipt of the application. The SPCB shall grant the permission for trail run within 60 days from the date of receipt of application. The permission, so accorded will be considered as deemed approval of CPCB.

10.2 SPCB/PCC shall ensure that Cement industry planning to conduct trial run to co-process hazardous waste meets the emission standards prescribed by SPCB in consent order / environmental clearance.

10.3 The protocol to be followed for trial run for co-processing has been detailed at Annexure 8. SPCB/PCC will grant permission for trial run in the format appended as Annexure 9.

The proponent shall inform CPCB about the date of the trial run 15 days in advance so that CPCB can monitor the trial run.

10.4 After successful completion of trial run, for regular permission, the proponent shall apply to CPCB through concerned SPCB/PCC in the prescribed proforma provided as Annexure 7 along with all details related to the trial run. CPCB on receipt of the proposal will process and put up to the committee for making its specific recommendations. The proponent, if needed may be called for making a presentation before the committee.

10.5 On recommendation of the committee, competent authority in CPCB may grant or refuse the permission for regular co-processing within 30 days in format appended as Annexure 10. The percentage of hazardous waste to be co-processed along with the characteristics shall be prescribed in the permission.

10.6 Once regular permission for co-processing is granted for any waste, the other cement plants may not require to conduct trial run. They can directly submit their application in the desired format to CPCB through SPCB for regular co-processing. CPCB shall grant permission of regular co-processing within 45 days from the date of receipt of the application.

10.7 For non-hazardous substances like plastic waste, tyre chips etc. similar procedure may be followed both for trail run and regular permission by SPCB/PCC. The permission granted by SPCB/PCC will be endorsed to CPCB along with the trial run report for reference. In case SPCB/PCC desires any clarification, the same may be referred to CPCB.

Annexure - 2

Collection& Transportation of Hazardous Wastes

The occupier of the hazardous waste shall ensure that wastes are packaged in a manner suitable for safe handling, storage and transport. Labeling on packaging is readily visible and material used for packaging shall withstand physical conditions and climatic factors.

(a) The occupier shall ensure that information regarding characteristics of wastes particularly in terms of being Corrosive, Reactive, Ignitable or Toxic is provided on the label.

(b) The transport of hazardous waste containers shall be in accordance with the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, (herein after referred as HW (M, H & TBM) Rules) and the rules made by the Central Government under the Motor Vehicle Act, 1988 and other guidelines issued from time to time.

(c) The occupier shall provide the transporter with the relevant information in Form 11, regarding the hazardous nature of the waste and measures to be taken in case of an emergency and shall mark the hazardous wastes containers as per Form 12.

(d) All hazardous waste containers shall be provided with a general label as given in Form 12 of the HW (M, H & TBM) Rules.

(f) In case of transportation of hazardous waste through a State other than the State of origin or destination, the occupier shall intimate the concerned State Pollution Control Boards before he hands over the hazardous waste to the transporter.

(g) Manifest System (Movement Document to be used within the country only)-

i) The occupier shall prepare six copies of the Manifest in Form 13 comprising of colour code indicated below and all six copies shall be signed by the transporter:

Copy number with colour code (1)	Purpose (2)
Copy 1 (White)	To be forwarded by the occupier to the State Pollution Control Board Committee.
Copy 2 (Yellow)	To be carried by the occupier after taking signature on it form the transporter and the rest of the four copies to be carried by the transporter.
Copy 3 (Yellow)	To be retained by the operator.
Copy 4 (orange)	To be return to the transporter by the operator of the facility / recycler after accepting waste.
Copy 5 (green)	To be return by the operator of the facility to State Pollution Control board/Committee after treatment and disposal of the waste.
Copy 6 (blue)	To be return by the operator of the facility to the occupier after treatm and disposal of hazardous materials/wastes.

** Operator means a person who owns or operates a facility for collection, reception, treatment, storage or disposal of hazardous wastes.*

ii) The occupier shall not forwarded copy 1 (white) to the State Pollution Control Board, and in case of hazardous waste is likely to be transported through any transit State, the occupier shall prepare an additional copy each for information to such State and forward the same to the concerned State Pollution Control Board before he hand over the hazardous waste to the transporter.
iii) No transporter shall accept hazardous waste from an occupier for transport unless it is accompanied by copies 3 to 6 of the manifest.
iv) The transporter shall submit copies 3 to 6 of the manifest duly signed with date to the operator of the facility along with the waste consignment.
v) Operator of the facility upon completion of co-processing of the hazardous waste shall forward copy 5 (green) to the State Pollution Control Board and copy 6 (blue) to the occupier and the copy 3 (pink) shall be retained by the operator of the facility.

(h) The occupier shall provide the transporter with relevant information in Form 11 (i.e. Transport Emergency (TREM) Card) of the HW (M, H & TBM) Rules regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.

Responsibilities of the hazardous waste Transporter

Transporter of hazardous wastes shall be responsible for:

(a) Obtaining requisite authorization from SPCB/PCC for transport of hazardous waste (in addition to any other permission that may be required under the Motor Vehicle (Amendment) Act of 1981).
(b) The transport vehicles shall be designed suitably to handle and transport the hazardous wastes of various characteristics.
(c) The transporting should follow all the Rules pertaining to transportation of hazardous waste as stipulated under HW (M, H & TM) Rules,2008.
(d) Transporting the wastes in closed container at all time.
(e) Delivering the wastes at designated points only.
(f) Informing SPCB/PCC is Form 14 of the HW (M, H & TBM) Rules, or local authority, occupier / operator of a facility, and others concerned immediately in case of spillage, leakage or other accidents during transportation.
(g) The transporter shall train the driver with regard to the emergency response measures to be taken during the transportation of waste.
(h) Cleanup in case of contamination.
(i) Cleaning of vehicles shall be carried out at designated places as authorized by SPCB/PCC.

Transportation Requirement

The following are the requirements pertaining to the transportation of hazardous waste:

(a) Vehicle used for transportation shall be in accordance with the provisions under the Motor Vehicle Act, 1988, and rules made thereunder.
(b) Transporter shall possess requisite copies of the certificate (valid authorization obtained from the concerned SPCB/PCC for transportation of waste by the waste generator and operator of a facility) for transportation of hazardous waste.

(c) Transporter should have valid “Pollution under Control Certificate” (PUCC) during the transportation of hazardous waste and shall be properly displayed.
(d) Vehicle shall be painted preferably in blue colour with white strip of 15 to 30 cm width running centrally all over the body. This is to facilitate easy identification.
(e) Vehicle should be fitted with mechanical handling equipment as may be required for safe handling and transportation of the wastes.
(f) The words “HAZARDOUS WASTE” shall be displayed on all sides of the vehicle in Vernacular Language, Hindiand English.
(g) Name of the facility operator or the transporter, as the case may be, shall be displayed.
(h) Emergency phone numbers and TREM Card in Form 11 of HW (M, H & TM) Rules,2008.
(i) Vehicle shall be fitted with roll-on /roll-off covers if the individual containers do not possess the same.
(j) Carrying of passengers is strictly prohibited and those associated with the waste haulers shall be permitted only in the cabin.
(k) Transporter shall carry documents of manifest for the wastes during transportation as required under Rule 21 of the HW (M, H & TBM) Rules.
(l) The trucks shall be dedicated for transportation of hazardous wastes and they shall not be used for any other purpose.
(m) Each vehicle shall carry first-aid kit, spill control equipment and fire extinguisher.
(n) Hazardous Waste transport vehicle shall run only at a speed specified under Motor Vehicle Act in order to avoid any eventuality during the transportation of hazardous waste.
(o) Educational qualification for the driver shall be minimum of 10th pass (SSC). The driver of the transport vehicle shall have valid driving license of heavy vehicles from the State Road Transport Authority and shall have experience in transporting the chemicals.
(p) Driver (s) shall be properly trained for handling the emergency situations and safety aspects involved in the transportation of hazardous wastes.
(q) The design of the trucks shall be such that there is no spillage during transportation.

Annexure – 3

1. Storage Requirement (for incinerable hazardous waste only):

(a) Flammable, ignitable, reactive and non-compatible wastes should be stored separately and should never be stored in the same storage shed.

(b) Storage area may consist of different sheds for storing different kinds of hazardous wastes and sheds should be provided with suitable openings.

(c) Adequate storage capacity (i.e. 25 % of the annual capacity of the hazardous waste utilization as a supplementary resource or for energy recovery, or after processing) should be provided in the premises.

(d) Storage area should be designed to withstand the load of material stocked and any damage from the material spillage.

(e) Storage area should be provided with the flameproof electrical fittings and it should be strictly adhered to.

(f) Automatic smoke, heat detection system should be provided in the sheds. Adequate fire fighting systems should be provided for the storage area, along with the areas in the facility.

(g) There should be at least 15 m distance between the storage sheds.

(h) Loading and unloading of wastes in storage sheds should only be done under the supervision of the well trained and experienced staff.

(i) Fire break of at least 04 meter between two blocks of stacked drums should be provided in the storage shed. One block of drum should not exceed 300 MT of waste.

(j) Minimum of 1 meter clear space should be left between two adjacent rows of pallets in pair for inspection.

(k) The storage and handling should have at least two routes to escape in the event of any fire in the area.

(l) Doors and approaches of the storage area should be of suitable sizes for entry of fork lift and fire fighting equipment;

(m) The exhaust of the vehicles used for the purpose of handling, lifting and transportation within the facility such as forklifts or trucks should be fitted with the approved type of spark arrester.

(n) In order to have appropriate measures to prevent percolation of spills, leaks etc. to the soil and ground water, the storage area should be provided with concrete floor or steel sheet depending on the characteristics of waste handled and the floor must be structurally sound and chemically compatible with wastes.

(o) Measures should be taken to prevent entry of runoff into the storage area. The Storage area shall be designed in such a way that the floor level is at least 150 mm above the maximum flood level.

(p) The storage area floor should be provided with secondary containment such as proper slopes as well as collection pit so as to collect wash water and the leakages/spills etc.

(q) All the storage yards should be provided with proper peripheral drainage system connected with the sump so as to collect any accidental spills in roads or within the storage yards as well as accidental flow due to fire fighting.

2. Storage Drums/Containers:

(a) The container shall be made or lined with the suitable material, which will not react with, or in other words compatible with the hazardous wastes proposed to be stored.
(b) The stacking of drums in the storage area should be restricted to three high on pallets (wooden frames). Necessary precautionary measures should be taken so as to avoid stack collapse. However, for waste having flash point less than 65.5 O C, the drums should not be stacked more than one height.
(c) No drums should be opened in the storage sheds for sampling etc. and such activity should be done in designated places out side the storage areas;
(d) Drums containing wastes stored in the storage area should be labelled properly indicating mainly type, quantity, characteristics, source and date of storing etc.

3. Spillage/leakage control measures:

(a) The storage areas should be inspected daily for detecting any signs of leaks or deterioration if any. Leaking or deteriorated containers should be removed and ensured that such contents are transferred to a sound container.
(b) In case of spills / leaks/dry adsorbents/cotton should be used for cleaning instead of water.
(c) Proper slope with collection pits be provided in the storage area so as to collect the spills/leakages.
(d) Storage areas should be provided with adequate number of spill kits at suitable locations. The spill kits should be provided with compatible sorbent material in adequate quantity.

4. Record Keeping and Maintenance:

(a) Proper records with regard to the industry –wise type of waste received, characteristics as well as the location of the wastes that have been stored in the facility need to be maintained.

5 Miscellaneous:

(a) Smoking shall be prohibited in and around the storage areas;
(b) Good house keeping need to be maintained around the storage areas;
(c) Signboards showing precautionary measures to be taken, in case of normal and emergency situations should be displayed at appropriate locations;
(d) To the extent possible, manual operations with in storage area are to be avoided. In case of manual operation, proper precautions need to be taken, particularly during loading / unloading of liquid hazardous waste in drums;
(e) A system for inspection of storage area to check the conditions of the containers, spillages, leakages etc. should be established and proper records should be maintained;
(f) The wastes containing volatile solvents or other low vapour pressure chemicals should be adequately protected from direct exposure to sunlight and adequate ventilation should be provided;
(g) Tanks for storage of liquids waste should be properly dyked and should be provided with adequate transfer systems;

(h) Storage sites should have adequate & prompt emergency response equipment systems for the hazardous waste stored on-site. This should include fire fighting arrangement based on the risk assessment, spill management, evacuation and first aid;

(i) Immediately on receipt of the hazardous waste, it should be analyzed and depending upon its characteristics its storage should be finalized;

(j) Only persons authorized to enter and trained in hazardous waste handling procedures should have access to the storage site;

(k) Mock drill for onsite emergency should be conducted regularly and records maintained;

6. Recommended Storage time and the Quantity of the Incinerable Hazardous Wastes:

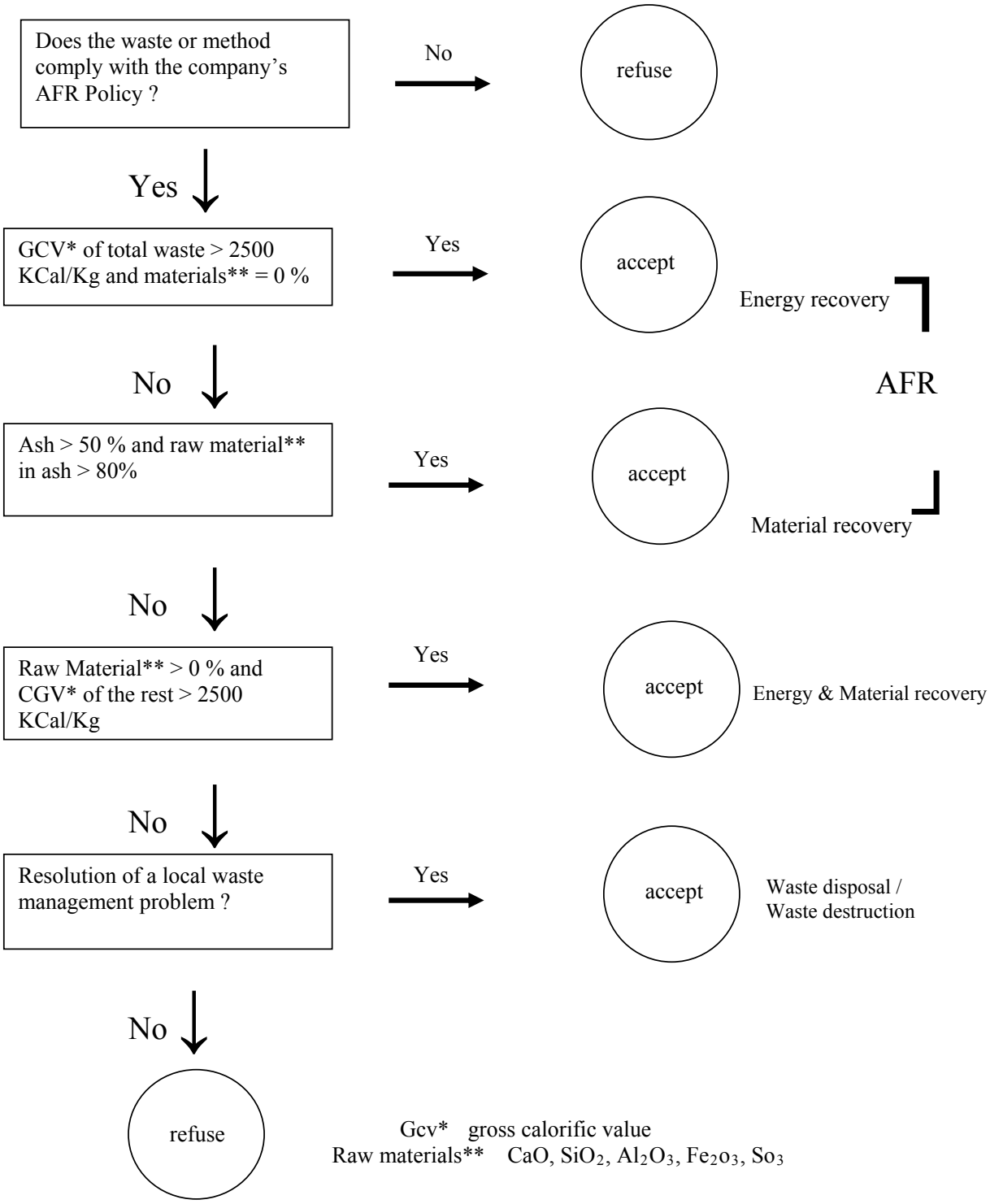
Normal storage of incinerable hazardous wastes at the facility site for utilization as a supplementary resource or for energy recovery, or after processing should be restricted to maximum of 3 months. However State Pollution Control Board/Pollution Control Committee may extend the period upto 6 months in accordance with the Hazardous wastes (M,H & TM) Rules,2008

7. Hazard Analysis and Safety Audit:

For every facility for utilization as supplementary resource or for energy recovery, or after processing, a preliminary hazard analysis should be conducted. Safety Audit internally by the facility operator every year & externally once in two years by a reputed expert agency should be carried out and same should be submitted to the SPCB/PCC.

Such conditions should be stipulated by SPCBs while granting authorization under the HW (M, H & TBM) Rules to the operators.

Accept or Refuse Flowchart for a Cement Plant Operator



Gcv* gross calorific value
Raw materials** CaO, SiO_2, Al_2O_3, Fe_2o_3, So_3

Annexure 5

Acceptance Criteria

Table 1.0: Specification of HW for use as Alternative Raw Material

Parameter	Limit
Volatile organic Hydrocarbon	< 5000 ppm
Total organic Carbon (TOC)	< 1000 ppm
CaO + SiO2 + A1203 + Fe203 + SO3 (In Ash)	> 80 %
Chloride	< 1.5 %
Sulphur	< 1.5 %
PCB/PCT (ppm)	< 5.0
Heavy Metals (ppm) Hg Cd+Tl+Hg As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	 < 10 < 100 < 10,000

Table 2.0: Specification of HW for use of energy recovery

Parameter	Limit
Calorific Value As received basis	>2500 k Cal/Kg
Ash -Liquid -Solid	 < 5% < 20%
Chloride	< 1.5 %
Halogens (F+Br+I)	< 1.0 %
Sulphur	< 1.5 %
PCB/PCT (ppm)	< 50
Heavy Metals (ppm) Hg Cd+Tl+Hg As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	 < 10 < 100 < 25,00
pH	4 to 12
Viscosity (cSt) for Liquid	< 100
Flash point (Deg Centigrade) (for Liquid)	> 60

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke -Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O_3) $\mu g/m^3$	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemilminescence - Chemical Method
6	Lead (Pb) $\mu g/m^3$	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m^3	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH_3) $\mu g/m^3$	Annual* 24 hours**	100 400	100 400	-Chemiluminescence -Indophenol blue method

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m^3	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m^3	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Annexure 7

Format* for obtaining approval from the Central Pollution Control Board under the Rule 11 of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008

1	Name & Address of the Unit:	
1.1	Contact Person and phone number:	
1.2	Products to be manufactured and quantity (MT/Day):	
2	*Details of source of hazardous waste to be utilized*	
2.1	Name & address of hazardous waste generating industry:	
2.2	Name of the hazardous wastes including category as per the Schedule I:	
2.3	Generation (MTA) of hazardous waste proposed for utilization:	
2.4	Detailed characteristics of hazardous waste proposed for utilization:	
2.5	Process flow diagram of hazardous waste generating unit:	
3	*Details of utilization of hazardous wastes*	
3.1	Process Flow Diagram:	
3.2	Please attach copy of air consent, water consent and authorization:	
3.3	Base line data including characteristics pertaining to air emissions, waste water generation and other solid wastes including hazardous waste being generated:	
3.4	Material Balance without utilizing hazardous wastes:	
3.5	Name and category of hazardous waste including quantity proposed to be to be utilized:	
3.6	Quantity of coal to be replaced by co-processing	
3.7	Material balance with utilization of hazardous wastes:	
3.8	Chemistry involved with and without utilization of hazardous wastes:	
3.9	Data including characteristics pertaining to air emissions, waste water generation and other solid wastes including hazardous waste being generated during utilization of hazardous wastes, if available:	
3.10	Details of findings of laboratory/ pilot scale study, international practice etc.	

* *To be filled and submitted by the unit, who desires to utilize hazardous wastes as a supplementary resource or for energy recovery, or after processing. It shall also be forwarded by the SPCB/PCC under whose jurisdiction the unit falls.*

Annexure 8

Protocol of Trial Run for Co-processing of Hazardous Waste in Cement Kiln

Part – A

Requirement of testing for hazardous waste

Atleast one representative sample shall be collected (for the whole trial period) and analysed for the following.

- Calorific value of the waste (KCal / Kg) : Gross and net
- Proximate analysis (Moisture content, Ash content, Volatile matter content, Fixed carbon content)
- Ultimate analysis (Carbon content, Hydrogen content, Sulphur content, Nitrogen content, Oxygen content)
- Characteristics of the waste (Chlorine, fluorine and metal content lead, zinc, tin, cadmium, arsenic, mercury, chromium, cobalt, nickel, thallium, copper, vanadium, antimony, manganese, selenium, Iron)
- Total Organic Carbon (TOC)
- TCLP Test
- Total Petroleum Hydrocarbon
- Organo - chlorine compounds
- VOCs and Semi-VOCs
- Poly Chloro Biphenyls (PCBs)
- Poly Chloro Phenols (PCPs)
- Viscosity (for Liquid Hazardous Wastes)
- Water content (for Liquid Hazardous Wastes)
- Solid content (for Liquid Hazardous Wastes)

Requirement of testing for conventional fuel

Atleast one representative sample shall be collected (for the whole trial period) and analysed for the following.

- Calorific value of sludge (KCal / Kg) : Gross and net
- Proximate analysis (Moisture content, Ash content, Volatile matter content, Fixed carbon content)
- Ultimate analysis (Carbon content, Hydrogen content, Sulphur content, Nitrogen content, Oxygen content)
- Characteristics of the fuel (Chlorine, fluorine and metal content lead, zinc, tin, cadmium, arsenic, mercury, chromium, cobalt, nickel, thallium, copper, vanadium, antimony, manganese, selenium, Iron)
- Total Organic Carbon (TOC)

Monitoring Programme at Cement Plant

S. No.	Date and duration	Operation of Cement Kiln
1.	One Day	Emission monitoring during normal operation of cement kiln
2.	Three Days	Emission monitoring during trial run of cement kiln at a fixed percentage of hazardous waste
3.	One Day	Emission monitoring during normal operation of cement kiln

Detailed emission monitoring schedule to be followed before, after and during trial run of co-processing of hazardous waste in cement kiln

S.No.	Parameter	Frequency
1.	Particulates	4 samples / day
2.	SO_2	4 samples / day
3.	HCl	4 samples / day
4.	CO	4 samples / day
5.	NOx	4 samples / day
6.	Total Organic Carbon	1 sample / day
7.	HF	4 samples / day
8.	Hydrocarbons	2 samples / day
9.	Opacity (continuous dust emission monitoring)	Continuous
10.	VOC	2 samples / day
11.	PAH	2 samples /day
12.	Metals (both particulate and vapour phase) Cd, Th, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Zn, Sn, Se	1 sample / day

13.	Dioxin & furans	1 sample / day
14.	Cyanide	1 sample / day

Ambient Air Quality Monitoring

SPM, RSPM, SO_2, NOx Monitoring at three locations (one in upwind and two in down wind direction). The monitoring shall be carried out 24 hourly basis during whole trial period.

Clinker Analysis

- Daily one representative sample shall be collected and analysed for the following.
  - Chlorine, Flourine, Sulphur, Cyanide

  - Metals i.e. Cd, Th, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, V, Zn, Sn, Se

- Leachability study of clinker (produced before trial run and during trial run) for fluoride, cyanide etc. including metals i.e. Cd, Th, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, V, Zn, Sn, Se with proper conclusion
- Total Organic Carbon (TOC)

Raw Meterial Analysis

Atleast one representative sample shall be collected (for the whole trial period) and analysed for the following.

- Fluorides as F, Sulphates as SO_4, Aluminium as Al_2O_3, Silica as SiO_2, Iron as Fe_2O_3

- Metals i.e. Cd, Th, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, V, Zn, Sn, Se

- Total Organic Carbon (TOC)

Material Balance

A detailed report with complete interpretation including material balance for heavy metals and other important parameters shall be prepared.

Part - B

Information required to be collected during the trial run by cement industry

- Coloured computer print of process chart of different sections from Central Control Room

- Sketch showing stack duct connections and port hole with dimensions
- Note on hazardous waste handling and feeding mechanism i.e. from arrival of waste from hazardous waste generator to kiln burner / pyro
- Process flow diagram for co-incineration of hazardous waste in cement kiln
- Note on difficulties faced in grinding the hazardous waste with suggestions for improvement
- Distance between hazardous waste generator and cement plant.
- Copy of Safety manual for transportation of hazardous waste and other related documents, if any
- Process flow diagram for cement manufacturing (Limestone stacking to packing plant)
- Layout plan
- Pyro drawings (with marking of temp.)
- Copy of consent order (showing prescribed standards)
- Stack emission and ambient air quality data of previous month
- Meteorology data (wind speed & direction, temp., rainfall) of trial period
- Wind rose diagram on daily basis
- Copy of daily log sheets of Kiln, clinker cooler and Coal mill for the entire period of trial run.
- Sketch showing locations of ambient air quality stations and soil sampling points w.r.t. cement plant (with marking of North, South direction)
- Photographs of trial run in CD
- Hourly data of continuous emission monitoring system for entire period of trial run (along with trend chart) for kiln section
- Note on manufacturing process of cement
- Kiln stoppages with date, time, duration and reason
- Coal mill stoppages with date, time, duration and reason
- Kiln ESP stoppages with date, time, duration and reason

Design (Optimum) Values

- Design raw mill out put in TPH
- Design kiln feed in TPH
- Design clinker production in TPH
- Design coal consumption in kiln burner in TPH
- Design coal consumption in pyro in TPH
- Design temp. of pyro (max.)
- Design temp. of Kiln (burning zone)
- Average coal mill output in TPH in normal operation
- Average running hours of coal mill in normal operation
- Design coal mill out put in TPH
- Gas residence time in kiln
- Gas residence time in pre-heater

Production data for entire trial period

- Raw mill output in TPH
- Kiln feed in TPH (with trend chart)
- Clinker production in TPH (Hourly average)
- Coal consumption in TPH in kiln (hourly average)
- Coal consumption in TPH in pyro (hourly average)
- hazardous waste consumption in TPH (Hourly average)
- Temp. of pyroclone 6th stage maximum (hourly average)
- Temp. of kiln maximum at burning zone (hourly)
- Coal mill out put in TPH (hourly)

Chemical analysis of clinker (hourly sample homogenized on daily basis) for entire trial period

- Loss on Ignition (LOI) %
- Silica (SiO_2) %
- Iron Oxide (Fe_2O_3) %
- Aluminium Oxide (Al_2O_3) %
- Calcium Oxide (CaO) %
- Magnesium Oxide (MgO) %
- Sulphate (SO_3) %
- Free Lime (CaO) %
- Total Alkalies
  a) Na_2O%
  b) K_2O%
- Minor Constituents
  a) P_2O_5%
  b) Cl%

Physical tests of cement (hourly sample homogenized on daily basis) for entire trial period

- Blain (m2 / kg)
- Setting Time (minutes)
  a) Initial setting time
  b) Final setting time
- Soundness
  a) Le – Chat (mm)
  b) Autoclave (%)
- Compressive Strength (MPa)
  a) 3days
  b) 7days
  c) 28 days

Productivity Parameters during Trial Run

- Kiln Output Rate
  (a) TPD
  (b) TPH
- Energy Consumption
  (a) Electrical, kWh/t Clinker
  (b) Thermal, %
  (c) Kcal/kg Clinker
  (d) Coal Mill Power, kWh/t Coal

Kiln Parameters Observed During the Period of Trial

- Kiln Speed, rpm
- Kiln Torque, Amp.
- Kiln Feed, tph
- BE Temperature, °C
- BZ Temperature, °C
- PH Outlet (P-Line)
  (a) Gas Temperature, °C
  (b) Draft, mmWG
  (c) O_2, %
  (d) CO, %
- PH Outlet (K-Line)
  (a) Gas Temperature, °C
  (b) Draft, mmWG
  (c) O_2, %
  (d) CO, %
- Secondary Air temperature, °C
- Tertiary Air temperature, °C
- Moisture in Coal as fed, %
- Fine Coal residue, % on 90μ
- Litre Weight, g/l

Information related to hazardous waste generator

- About the company
- Address of the company
- Name of the head of the company
- Year in which plant was commissioned
- List of the products manufactured with capacity and production data
- Manufacturing process of each product
- Process flow chart of each product (including waste generation)
- Waste water treatment plant details including capacity of tanks, retention time, characteristics of waste water, efficiency of ETP, sludge generation, process description of ETP, flow chart of ETP etc / Details of the process by which hazardous waste is generated
- Quantity of hazardous waste generation, physical state of hazardous waste, present method of storage and disposal, cost of disposal
- Copy of air, water consent and authorization for hazardous waste disposal

Annexure 9

Model Permission for Trial run for co-processing of hazardous waste in cement kiln

Permission is hereby accorded for trial run for co-processing of hazardous waste viz. …… from …….. in the cement kiln of M/s ……. under the Rule 11 of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, subject to compliance of various provisions of the Environment (Protection) Act, 1986 including the following:

1. Handling, storage, transportation and co-processing of hazardous waste shall follow the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008.
2. For transportation of proposed hazardous wastes to conduct trial run for co-processing in cement kiln, manifest system as per Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 and guidelines of CPCB shall be followed.
3. The generator of hazardous waste shall obtain the permission from the State Pollution Control Board to conduct the trial run for co-processing of hazardous waste in cement plant under Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008.
4. Monitoring during the trial run shall be conducted as per the enclosed monitoring protocol (Annexure-8, Part A). Emission monitoring shall be conducted by recognized laboratory in consultation with SPCB/CPCB. Other tests related to quality of clinker & cement should be carried out and information as per Annexure-8, Part B, should be generated / collected.
5. The cement plant shall take the hazardous waste only from the authorized generator.
6. The plant shall estimate the quantity of hazardous waste required to conduct the trial run as per Annexure-8, Part A. Only estimated quantity of hazardous waste shall be stored and co-processed in the plant during trial run. Cement industry shall provide adequate covered storage space for the hazardous waste in accordance with Hazardous Waste Rules and also ensure that there is no leaching of any pollutant.

7. The cement plant shall ensure the compliance of the conditions stipulated in the consents issued under the Water Act, 1974 and Air Act, 1981 during the trial run of co-processing of hazardous waste.

8. The cement plant shall comply with all the requirements in accordance with the Public Liability Insurance Act, 1991 as amended.

9. SPCB reserves the right to review / impose additional conditions or revoke, change or alter any of the terms and conditions.

Necessary arrangement shall be made to conduct the trial run smoothly. The final programme of the trial run shall be communicated to SPCB and CPCB within a month. The cement plant shall inform the date of trial run well in advance so that SPCB and CPCB representative can be present during the trial run. After trial run, the study report incorporating the information as at Annexure - 8 of the guidelines shall be submitted to SPCB for further forwarding the case to CPCB for consideration.

Annexure 10

Model Permission for co-processing of hazardous waste in cement kiln

Permission is hereby accorded for co-processing of hazardous waste viz. …… from …….. in the cement kiln of M/s …… under the Rule 11 of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, subject to compliance of various provisions of the Environment (Protection) Act, 1986 including the following:

1. The permission is valid only for co-processing of above specified hazardous waste. The waste characteristics should be similar to that for which trial runs have been conducted by CPCB/SPCB. The details enclosed as Annexure. Prior permission has to be obtained for co-processing of any other hazardous waste.
2. The cement plant shall obtain the authirization from the concerned State Pollution Control Boards as required under Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 for storage, handling, transportation and co-processing of hazardous waste.
3. For transportation of proposed hazardous wastes for co-processing in cement kiln, manifest system as per Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 and guidelines of CPCB shall be followed.
4. The generator of hazardous waste shall obtain authirization from the State Pollution Control Board as required under Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 for storage, handling, transportation and co-processing of hazardous waste in cement plant.
5. The cement plant shall estimate the quantity of hazardous waste required to be co-processed. Cement industry shall provide adequate covered storage space for the hazardous waste in accordance with Hazardous Waste Rules and also ensure that there is no leaching of any pollutant. The actual quantity of hazardous waste co-processed in each calendar year shall be reported to the CPCB and SPCB.
6. The cement plant shall ensure the compliance of the conditions stipulated in the consents issued under the Air Act, 1981 and Water Act, 1974during the co-processing of hazardous waste.
7. The emission standards for particulate matter prescribed for cement kiln by the concerned State Pollution Control Board shall be applicable during co-processing in cement kiln also. For other pollutants i.e.; CO, TOC, NOx, HCl, SO_2, HF total dioxins and furans,

Cd + Tl + their compounds, Hg and its compounds, Sb + As + Pb + Co + Cr + Cu + Mn + Ni + V + their compounds, the emission values during co-processing shall not exceed the base line emissions i.e. during pre co-processing phase of trial run. The continuous measurement of particulate matter emission shall be carried out at co processing plant and the emission data shall be submitted to CPCB and the concerned SPCB/PCC. As per direction of CPCB monitoring of dioxins and furans including other parameters will be done by the cement plant.

8. The cement plant shall take the hazardous waste only from the authorized generator/TSDF.
9. A log book of the waste co-processed shall be maintained including emission monitoring result during co-processing.
10. During co-processing of hazardous waste in cement kiln, the cement plant shall comply with all the requirements in accordance with the Public Liability Insurance Act, 1991 as amended.
11. In case of any violation in the conditions stipulated, the permission can be withdrawn at any time.
12. CPCB reserves the right to review / impose additional conditions or revoke, change or alter any of the terms and conditions.

Appendix A

Substances having potential to be used in Co-processing in Cement Plant

A. Industrial Wastes

1. 0 Organic Chemical Wastes

1.1 Mineral oils, synthetic oils and fats oil sludges and solid wastes

sludges from on-site effluent treatment
tank bottom sludges

wastes from shaping (including forging, welding, pressing, drawing, turning, cutting and filing)

waste machining oils containing halogens (not emulsioned)
waste machining oils free of halogens (not emulsioned)
waste machining emulsions containing halogens
waste machining emulsions free of halogens
synthetic machining oils

waste hydraulic oils and brake fluids

hydraulic oils, containing PCBs or PCTs
other chlorinated hydraulic oils (not emulsions)
non-chlorinated hydraulic oils (not emulsions)
chlorinated emulsions
non-chlorinated emulsions
hydraulic oils containing only mineral oil
other hydraulic oils

waste engine, gear and lubricating oils

chlorinated engine, gear and lubricating oils
non-chlorinated engine, gear and lubricating oils
other engine, gear and lubricating oils

waste insulating and heat transmission oils and other liquids

insulating or heat transmission oils and other liquids containing PCBs (chlorinated waste and PCB are subject to legal limitations, maximum concentration in input and maximum T/year allowed)
other chlorinated insulating and heat transmission oils and other liquids
non-chlorinated insulating and heat transmission oils and other liquids
synthetic insulating and heat transmission oils and other liquids
mineral insulating and heat transmission oils and other liquids

bilge oils

bilge oils from inland navigation
bilge oils from jetty sewers
bilge oils from other navigation

oil/water separator contents

oil/water separator sludges
interceptor sludges
desalter sludges or emulsions
other emulsions

oil waste not otherwise specified

oil waste not otherwise specified

1. 2 Petrochemical wastes oil sludges and solid wastes

sludges from on-site effluent treatment
desalter sludges
tank bottom sludges
acid alkyl sludges
oil spills
sludges from plant, equipment and maintenance operations
wastes not otherwise specified

oil desulphurisation waste

waste containing Sulphur

waste from the pyrolytic treatment of coal

acid tars
other tars
waste from cooling columns

1. 3 Solvents, paints, varnishes, glues (adhesive, sealants), organic rubbers

1.3.1 waste for the MFSU of organic dyes and pigments (excluding 06 11 00)

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors

halogenated still bottoms and reaction residues
halogenated filter cakes, spent absorbents

1.3.2 wastes from the MFSU of paint and varnish

waste paints and varnish containing halogenated solvents
waste paints and varnish free of halogenated solvents
waste from water-based paints and varnishes

1.3.3 sludges from paint and varnish removal containing halogenated solvents

sludges from paint and varnish removal free of halogenated solvents
aqueous sludges containing paint or varnish
wastes from paint or varnish (except 08 01 05 and 08 01 06)
wastes not otherwise specified

1.3.4 wastes from the MFSU of printing inks

waste ink containing halogenated solvents
waste ink free of halogenated solvents

1.3.5 wastes from the MFSU of adhesives and sealants
(including waterproofing products)

waste adhesive and sealants containing halogenated solvents
waste adhesive and sealants free of halogenated solvents
waste from water-based adhesive and sealants
adhesive and sealants sludges containing halogenated solvents
adhesive and sealants sludges free of halogenated solvents
aqueous sludges containing adhesive and sealants
aqueous liquid waste containing adhesive and sealants

1.3.6 wastes from solvent and coolant recovery (still bottoms)

Chlorofluorocarbons
other halogenated solvents and solvent mixes
other solvents and solvent mixes
sludges containing halogenated solvents
sludges containing other solvents

1. 4 Wastes from synthetic materials and rubbers waste for the MFSU of plastics, synthetic rubber and man-made fibres

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors

halogenated still bottoms and reaction residues
other still bottoms and reaction residues

2. 0 Other Chemical Wastes

2.1 wood preservation waste

non-halogenated organic wood preservatives
organochlorinated wood preservatives

2.2 wastes from pulp, paper and cardboard production and processing

de-inking sludges from paper recycling
fibre and paper sludge

2.3 wastes from the leather industry

degreasing wastes containing solvents without a liquor phase

2.4 wastes from textile industry

halogenated waste from dressing and finishing
dye stuffs and pigments

2.5 waste from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors
halogenated still bottoms and reaction residues
other still bottoms and reaction residues

2.6 waste for the MFSU of organic pesticides

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors
halogenated still bottoms and reaction residues
other still bottoms and reaction residues

2.7 waste for the MFSU of pharmaceuticals

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors
halogenated still bottoms and reaction residues

other still bottoms and reaction residues

2.8 waste for the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors
halogenated still bottoms and reaction residues
other still bottoms and reaction residues

2.9 waste for the MFSU of fine chemical products not otherwise specified

aqueous washing liquids and mother liquors
sludges from on-site effluent treatment
organic halogenated solvents, washing liquids and mother liquors
other organic solvents, washing liquids and mother liquors
halogenated still bottoms and reaction residues
other still bottoms and reaction residues

2.10 wastes from the MFSU of printing inks

waste from water-based inks
ink sludges containing halogenated solvents
ink sludges free of halogenated solvents
aqueous sludges containing ink
aqueous liquid waste containing ink
wastes not otherwise specified

2.11 wastes from the photographic industries

water based developer and activator solutions
water based offset plate developer solutions
solvent based developer solutions
fixer solution
bleach solutions and bleach fixer solutions

2.12 wastes from aluminium thermal metallurgy

tars and other carbon-containing wastes from anode manufacture

2.13 waste from metal degreasing and machinery maintenance

Chlorofluorocarbons
other halogenated solvents and solvent mixes
other solvents and solvent mixes
aqueous solvent mixes containing halogens
aqueous solvent mixes free of halogens

sludges and solid wastes containing halogenated solvents
sludges and solid wastes free of halogenated solvents

2.14 wastes from textile cleaning and degreasing of natural products

halogenated solvents and solvent mixes
solvent mixes or organic liquids free of halogenated solvents
sludges and solid wastes containing halogenated solvents
sludges and solid wastes containing other solvents

2.15 wastes from the electronic industry

Chlorofluorocarbons
other halogenated solvents and solvent mixes
other solvents and solvent mixes
sludges and solid wastes containing halogenated solvents
sludges and solid wastes containing other solvents

2.16 wastes from coolants, foam/aerosols propellants

Chlorofluorocarbons
other halogenated solvents and solvent mixes
other solvents and solvent mixes
sludges and solid wastes containing halogenated solvents
sludges and solid wastes containing other solvents

2.17 off-specification batches

organic off-specification batches

2.18 chemicals and gases in containers

other wastes containing organic chemicals, e.g. lab
chemicals not otherwise specified

2.19 asphalt, tar and tarred products

tar and tar products

2.20 waste from research, diagnosis, prevention of diseases involving animals

discarded chemicals

B. Wastes of Animal and Vegetal Origin (except municipal, textile, agricultural and hospital wastes)

1.0 Fats and oils from animal and vegetal origin

1.1 primary production waste

sludges from washing and cleaning
animal feces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site

1.2 wastes from the preparation and processing of meat, fish and other foods of animal origin

sludges from washing and cleaning
materials unsuitable for consumption or processing
sludges from on-site effluent treatment

1.3 wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee and tobacco preparation, processing; conserve production; tobacco processing

sludges from washing, cleaning, peeling, centrifuging and separation
wastes from preserving agents
wastes from solvent extraction
materials unsuitable for consumption or processing
sludges from on-site effluent treatment

1.4 wastes from sugar processing

sludges from on-site effluent treatment

1.5 wastes from dairy products industry

materials unsuitable for consumption or processing
sludges from on-site effluent treatment

1.6 wastes from backing and confectionery industry

wastes from preserving agents
sludges from on-site effluent treatment

wastes from the production of alcoholic and non-alcoholic beverages (excluding coffee, tea and cocoa)

wastes from washing, cleaning and mechanical reduction of the raw material
wastes from spirits distillation
wastes from chemical treatment

Materials unsuitable for consumption or processing sludges from on-site effluent treatment

C. Other Wastes

1.0 Disposed, sorted and/or stocked wastes from a waste treatment facility

1.1 **waste from oil regeneration**

acid tars
other tars
Aqueous liquid waste from oil regeneration

1.2 **wastes from solvent and coolant recovery (still bottoms)**

Chlorofluorocarbons
other halogenated solvents and solvent mixtures
other solvents and solvent mixtures
sludge containing halogenated solvents
sludge containing other solvents

1.3 **waste from transport and storage tank cleaning**

wastes from marine transport tank cleaning, containing chemicals
wastes from marine transport tank cleaning, containing oil
wastes from marine transport tank cleaning, containing oil
wastes from railway and road transport tank cleaning, containing oil
wastes from railway and road transport tank cleaning, containing chemicals
wastes from storage tank cleaning, containing chemicals
wastes from storage tank cleaning, containing oil

1.4 **Wastes from drums and tanks treatment facility, contaminated by one or more constituent enumerated in Annex II of Directive 91/689/CEE**

1.5 **Wastes from incineration or pyrolysis of municipal and similar commercial, industrial and instit. Waste**

pyrolysis wastes

1.6 **wastes from anaerobic treatment of wastes**

anaerobic treatment sludges of municipal and similar wastes
anaerobic treatment sludges of animal and vegetable wastes

1.7 **landfill leachate**

landfill leachate

wastes from waste water treatment plants not otherwise specified

grease and oil mixture from oil/waste water separation

1.8 separately collected fractions

oil and fat
paint, inks, adhesive and resins
solvents
detergents
medicines
pesticides

1.9 other municipal waste

Septic Tank Sludge

Annexure 11

THE BIO-MEDICAL WASTE MANAGEMENT RULES, 2016

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

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MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 28th March, 2016

G.S.R. 343(E).—Whereas the Bio-Medical Waste (Management and Handling) Rules, 1998 was published *vide* notification number S.O. 630 (E) dated the 20th July, 1998, by the Government of India in the erstwhile Ministry of Environment and Forests, provided a regulatory frame work for management of bio-medical waste generated in the country;

And whereas, to implement these rules more effectively and to improve the collection, segregation, processing, treatment and disposal of these bio-medical wastes in an environmentally sound management thereby, reducing the bio-medical waste generation and its impact on the environment, the Central Government reviewed the existing rules;

And whereas, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government published the draft rules in the Gazette vide number G.S.R. 450 (E), dated the 3rd June, 2015 inviting objections or suggestions from the public within sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

And whereas, the copies of the Gazette containing the said draft rules were made available to the public on the 3rd June, 2015;

And whereas, the objections or comments received within the specified period from the public in respect of the said draft rules have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by section 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Bio-Medical Waste (Management and Handling) Rules, 1998, except as respects things done or omitted to be done before such suppression, the Central Government hereby makes the following rules, namely:-

1. Short title and commencement.- (1) these rules may be called the Bio-Medical Waste Management Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. **Application.-**

(1) These rules shall apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, ayush hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs.

(2). These rules shall not apply to,-

(a) radioactive wastes as covered under the provisions of the Atomic Energy Act, 1962(33 of 1962) and the rules made there under;

(b) hazardous chemicals covered under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 made under the Act;

(c) solid wastes covered under the Municipal Solid Waste (Management and Handling) Rules, 2000 made under the Act;

(d) the lead acid batteries covered under the Batteries (Management and Handling) Rules, 2001 made under the Act;

(e) hazardous wastes covered under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 made under the Act;

(f) waste covered under the e-Waste (Management and Handling) Rules, 2011 made under the Act; and

(g) hazardous micro organisms, genetically engineered micro organisms and cells covered under the Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically Engineered Micro organisms or Cells Rules, 1989 made under the Act.

3. Definitions.- In these rules, unless the context otherwise requires, -

(a) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

(b) "animal house" means a place where animals are reared or kept for the purpose of experiments or testing;

(c) "authorisation" means permission granted by the prescribed authority for the generation, collection, reception, storage, transportation, treatment, processing, disposal or any other form of handling of bio-medical waste in accordance with these rules and guidelines issued by the Central Government or Central Pollution Control Board as the case may be;

(d) "authorised person" means an occupier or operator authorised by the prescribed authority to generate, collect, receive, store, transport, treat, process, dispose or handle bio-medical waste in accordance with these rules and the guidelines issued by the Central Government or the Central Pollution Control Board, as the case may be;

(e) "biological" means any preparation made from organisms or micro-organisms or product of metabolism and biochemical reactions intended for use in the diagnosis, immunisation or the treatment of human beings or animals or in research activities pertaining thereto;

(f) "bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps, including the categories mentioned in Schedule I appended to these rules;

(g) "bio-medical waste treatment and disposal facility" means any facility wherein treatment, disposal of bio-medical waste or processes incidental to such treatment and disposal is carried out, and includes common bio-medical waste treatment facilities;

(h) "Form" means the Form appended to these rules;

(i) "handling" in relation to bio-medical waste includes the generation, sorting, segregation, collection, use, storage, packaging, loading, transportation, unloading, processing, treatment, destruction, conversion, or offering for sale, transfer, disposal of such waste;

(j) "health care facility" means a place where diagnosis, treatment or immunisation of human beings or animals is provided irrespective of type and size of health treatment system, and research activity pertaining thereto;

(k) "major accident" means accident occurring while handling of bio-medical waste having potential to affect large masses of public and includes toppling of the truck carrying bio-medical waste, accidental release of bio-medical waste in any water body but exclude accidents like needle prick injuries, mercury spills;

(l) "management" includes all steps required to ensure that bio- medical waste is managed in such a manner as to protect health and environment against any adverse effects due to handling of such waste;

(m) "occupier" means a person having administrative control over the institution and the premises generating bio-medical waste, which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank, health care facility and clinical establishment, irrespective of their system of medicine and by whatever name they are called;

(n) "operator of a common bio-medical waste treatment facility" means a person who owns or controls a Common Bio-medical Waste Treatment Facility (CBMWTF) for the collection, reception, storage, transport, treatment, disposal or any other form of handling of bio-medical waste;

(o) "prescribed authority" means the State Pollution Control Board in respect of a State and Pollution Control Committees in respect of an Union territory;

(p) "Schedule" means the Schedule appended to these rules.

4. Duties of the Occupier.- It shall be the duty of every occupier to-

(a) take all necessary steps to ensure that bio-medical waste is handled without any adverse effect to human health and the environment and in accordance with these rules;

(b) make a provision within the premises for a safe, ventilated and secured location for storage of segregated biomedical waste in colored bags or containers in the manner as specified in Schedule I, to ensure that there shall be no secondary handling, pilferage of recyclables or inadvertent scattering or spillage by animals and the bio-medical waste from such place or premises shall be directly transported in the manner as prescribed in these rules to the common bio-medical waste treatment facility or for the appropriate treatment and disposal, as the case may be, in the manner as prescribed in Schedule I;

(c) pre-treat the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilisation on-site in the manner as prescribed by the World Health Organisation (WHO) or National AIDs Control Organisation (NACO) guidelines and then sent to the common bio-medical waste treatment facility for final disposal;

(d) phase out use of chlorinated plastic bags, gloves and blood bags within two years from the date of notification of these rules;

(e) dispose of solid waste other than bio-medical waste in accordance with the provisions of respective waste management rules made under the relevant laws and amended from time to time;

(f) not to give treated bio-medical waste with municipal solid waste;

(g) provide training to all its health care workers and others, involved in handling of bio medical waste at the time of induction and thereafter at least once every year and the details of training programmes conducted, number of personnel trained and number of personnel not undergone any training shall be provided in the Annual Report;

(h) immunise all its health care workers and others, involved in handling of bio-medical waste for protection against diseases including Hepatitis B and Tetanus that are likely to be transmitted by handling of bio-medical waste, in the manner as prescribed in the National Immunisation Policy or the guidelines of the Ministry of Health and Family Welfare issued from time to time;

(i) establish a Bar- Code System for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose within one year from the date of the notification of these rules;

(j) ensure segregation of liquid chemical waste at source and ensure pre-treatment or neutralisation prior to mixing with other effluent generated from health care facilities;

(k) ensure treatment and disposal of liquid waste in accordance with the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

(l) ensure occupational safety of all its health care workers and others involved in handling of bio-medical waste by providing appropriate and adequate personal protective equipments;

(m) conduct health check up at the time of induction and at least once in a year for all its health care workers and others involved in handling of bio- medical waste and maintain the records for the same;

(n) maintain and update on day to day basis the bio-medical waste management register and display the monthly record on its website according to the bio-medical waste generated in terms of category and colour coding as specified in Schedule I;

(o) report major accidents including accidents caused by fire hazards, blasts during handling of bio-medical waste and the remedial action taken and the records relevant thereto, (including nil report) in Form I to the prescribed authority **and also** along with the annual report;

(p) make available the annual report on its web-site and all the health care facilities shall make own website within two years from the date of notification of these rules;

(q) inform the prescribed authority immediately in case the operator of a facility does not collect the bio-medical waste within the intended time or as per the agreed time;

(r) establish a system to review and monitor the activities related to bio-medical waste management, either through an existing committee or by forming a new committee and the Committee shall meet once in every six months and the record of the minutes of the meetings of this committee shall be submitted along with the annual report to the prescribed authority and the healthcare establishments having less than thirty beds shall

designate a qualified person to review and monitor the activities relating to bio-medical waste management within that establishment and submit the annual report;

(s) maintain all record for operation of incineration, hydro or autoclaving etc., for a period of five years;

(t) existing incinerators to achieve the standards for treatment and disposal of bio-medical waste as specified in Schedule II for retention time in secondary chamber and Dioxin and Furans within two years from the date of this notification.

5. Duties of the operator of a common bio-medical waste treatment and disposal facility.-It shall be the duty of every operator to -

(a) take all necessary steps to ensure that the bio-medical waste collected from the occupier is transported, handled, stored, treated and disposed of, without any adverse effect to the human health and the environment, in accordance with these rules and guidelines issued by the Central Government or, as the case may be, the central pollution control board from time to time;

(b) ensure timely collection of bio-medical waste from the occupier as prescribed under these rules;

(c) establish bar coding and global positioning system for handling of bio- medical waste within one year;

(d) inform the prescribed authority immediately regarding the occupiers which are not handing over the segregated bio-medical waste in accordance with these rules;

(e) provide training for all its workers involved in handling of bio-medical waste at the time of induction and at least once a year thereafter;

(f) assist the occupier in training conducted by them for bio-medical waste management;

(g) undertake appropriate medical examination at the time of induction and at least once in a year and immunise all its workers involved in handling of bio-medical waste for protection against diseases, including Hepatitis B and Tetanus, that are likely to be transmitted while handling bio-medical waste and maintain the records for the same;

(h) ensure occupational safety of all its workers involved in handling of bio-medical waste by providing appropriate and adequate personal protective equipment;

(i) report major accidents including accidents caused by fire hazards, blasts during handling of bio-medical waste and the remedial action taken and the records relevant thereto, (including nil report) in Form I to the prescribed authority **and also** along with the annual report;

(j) maintain a log book for each of its treatment equipment according to weight of batch; categories of waste treated; time, date and duration of treatment cycle and total hours of operation;

(k) allow occupier , who are giving waste for treatment to the operator, to see whether the treatment is carried out as per the rules;

(l) shall display details of authorisation, treatment, annual report etc on its web-site;

(m) after ensuring treatment by autoclaving or microwaving followed by mutilation or shredding, whichever is applicable, the recyclables from the treated bio-medical wastes such as plastics and glass, shall be given to recyclers having valid consent or authorisation or registration from the respective State Pollution Control Board or Pollution Control Committee;

(n) supply non-chlorinated plastic coloured bags to the occupier on chargeable basis, if required;

(o) common bio-medical waste treatment facility shall ensure collection of biomedical waste on holidays also;

(p) maintain all record for operation of incineration, hydroor autoclaving for a period of five years; and

(q) upgrade existing incinerators to achieve the standards for retention time in secondary chamber and Dioxin and Furans within two years from the date of this notification.

6. Duties of authorities.-The Authority specified in column (2) of Schedule-III shall perform the duties as specified in column (3) thereof in accordance with the provisions of these rules.

7. Treatment and disposal.- (1) Bio-medical waste shall be treated and disposed of in accordance with Schedule I, and in compliance with the standards provided in Schedule-II by the health care facilities and common bio-medical waste treatment facility.

(2) Occupier shall hand over segregated waste as per the Schedule-I to common bio-medical waste treatment facility for treatment, processing and final disposal:

Provided that the lab and highly infectious bio-medical waste generated shall be pre-treated by equipment like autoclave or microwave.

(3) No occupier shall establish on-site treatment and disposal facility, if a service of common bio-medical waste treatment facility is available at a distance of seventy-five kilometer.

(4) In cases where service of the common bio-medical waste treatment facility is not available, the Occupiers shall set up requisite biomedical waste treatment equipment like incinerator, autoclave or microwave, shredder prior to commencement of its operation, as per the authorisation given by the prescribed authority.

(5) Any person including an occupier or operator of a common bio medical waste treatment facility, intending to use new technologies for treatment of bio medical waste other than those listed in Schedule I shall request the Central Government for laying down the standards or operating parameters.

(6) On receipt of a request referred to in sub-rule (5), the Central Government may determine the standards and operating parameters for new technology which may be published in Gazette by the Central Government.

(7) Every operator of common bio-medical waste treatment facility shall set up requisite biomedical waste treatment equipments like incinerator, autoclave or microwave, shredder and effluent treatment plant as a part of treatment, prior to commencement of its operation.

(8) Every occupier shall phase out use of non-chlorinated plastic bags within two years from the date of publication of these rules and after two years from such publication of these rules, the chlorinated plastic bags shall not be used for storing and transporting of bio-medical waste and the occupier or operator of a common bio-medical waste treatment facility shall not dispose of such plastics by incineration and the bags used for storing and transporting biomedical waste shall be in compliance with the Bureau of Indian Standards. Till the Standards are published, the carry bags shall be as per the Plastic Waste Management Rules, 2011.

(9) After ensuring treatment by autoclaving or microwaving followed by mutilation or shredding, whichever is applicable, the recyclables from the treated bio-medical wastes such as plastics and glass shall be given to such recyclers having valid authorisation or registration from the respective prescribed authority.

(10) The Occupier or Operator of a common bio-medical waste treatment facility shall maintain a record of recyclable wastes referred to in sub-rule (9) which are auctioned or sold and the same shall be submitted to the prescribed authority as part of its annual report. The record shall be open for inspection by the prescribed authorities.

(11) The handling and disposal of all the mercury waste and lead waste shall be in accordance with the respective rules and regulations.

8. Segregation, packaging, transportation and storage.-(1) No untreated bio-medical waste shall be mixed with other wastes.

(2) The bio-medical waste shall be segregated into containers or bags at the point of generation in accordance with Schedule I prior to its storage, transportation, treatment and disposal.

(3) The containers or bags referred to in sub-rule (2) shall be labeled as specified in Schedule IV.

(4) Bar code and global positioning system shall be added by the Occupier and common bio-medical waste treatment facility in one year time.

(5) The operator of common bio-medical waste treatment facility shall transport the bio-medical waste from the premises of an occupier to any off-site bio-medical waste treatment facility only in the vehicles having label as provided in part 'A' of the Schedule IV along with necessary information as specified in part 'B' of the Schedule IV.

(6) The vehicles used for transportation of bio-medical waste shall comply with the conditions if any stipulated by the State Pollution Control Board or Pollution Control Committee in addition to the requirement contained in the Motor Vehicles Act, 1988 (59 of 1988), if any or the rules made there under for transportation of such infectious waste.

(7) Untreated human anatomical waste, animal anatomical waste, soiled waste and, biotechnology waste shall not be stored beyond a period of forty –eight hours:

Provided that in case for any reason it becomes necessary to store such waste beyond such a period, the occupier shall take appropriate measures to ensure that the waste does not adversely affect human health and the environment and inform the prescribed authority along with the reasons for doing so.

(8) Microbiology waste and all other clinical laboratory waste shall be pre-treated by sterilisation to Log 6 or disinfection to Log 4, as per the World Health Organisation guidelines before packing and sending to the common bio-medical waste treatment facility.

9. Prescribed authority.-(1) The prescribed authority for implementation of the provisions of these rules shall be the State Pollution Control Boards in respect of States and Pollution Control Committees in respect of Union territories.

(2) The prescribed authority for enforcement of the provisions of these rules in respect of all health care establishments including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories and blood banks of the Armed Forces under the Ministry of Defence shall be the Director General, Armed Forces Medical Services, who shall function under the supervision and control of the Ministry of Defence.

(3) The prescribed authorities shall comply with the responsibilities as stipulated in Schedule III of these rules.

10. Procedure for authorisation.-Every occupier or operator handling bio-medical waste, irrespective of the quantity shall make an application in Form II to the prescribed authority i.e. State Pollution Control Board and Pollution Control Committee, as the case may be, for grant of authorisation and the prescribed authority shall grant the provisional authorisation in Form III and the validity of such authorisation for bedded health care facility and operator of a common facility shall be synchronised with the validity of the consents.

(1) The authorisation shall be one time for non-bedded occupiers and the authorisation in such cases shall be deemed to have been granted, if not objected by the prescribed authority within a period of ninety days from the date of receipt of duly completed application along with such necessary documents.

(2) In case of refusal of renewal, cancellation or suspension of the authorisation by the prescribed authority, the reasons shall be recorded in writing:

Provided that the prescribed authority shall give an opportunity of being heard to the applicant before such refusal of the authorisation.

(3) Every application for authorisation shall be disposed of by the prescribed authority within a period of ninety days from the date of receipt of duly completed application along with such necessary documents, failing which it shall be deemed that the authorisation is granted under these rules.

(4) In case of any change in the bio-medical waste generation, handling, treatment and disposal for which authorisation was earlier granted, the occupier or operator shall intimate to the prescribed authority about the change or variation in the activity and shall submit a fresh application in Form II for modification of the conditions of authorisation.

11. **Advisory Committee**.-(1) Every State Government or Union territory Administration shall constitute an Advisory Committee for the respective State or Union territory under the chairmanship of the respective health secretary to oversee the implementation of the rules in the respective state and to advice any improvements and the Advisory Committee shall include representatives from the Departments of Health, Environment, Urban Development, Animal Husbandry and Veterinary Sciences of that State Government or Union territory Administration, State Pollution Control Board or Pollution Control Committee, urban local bodies or local bodies or Municipal Corporation, representatives from Indian Medical Association, common bio-medical waste treatment facility and non-governmental organisation.

(2) Notwithstanding anything contained in sub-rule (1), the Ministry of Defence shall constitute the Advisory Committee (Defence) under the chairmanship of Director General of Health Services of Armed Forces consisting of representatives from the Ministry of Defence, Ministry of Environment, Forest and Climate Change, Central Pollution Control Board, Ministry of Health and Family Welfare, Armed Forces Medical College or Command Hospital.

(3) The Advisory Committee constituted under sub-rule (1) and (2) shall meet at least once in six months and review all matters related to implementation of the provisions of these rules in the State and Armed Forces Health Care Facilities, as the case may be.

(4) The Ministry of Health and Defence may co-opt representatives from the other Governmental and non-governmental organisations having expertise in the field of bio-medical waste management.

12. **Monitoring of implementation of the rules in health care facilities.-** (1) The Ministry of Environment, Forest and Climate Change shall review the implementation of the rules in the country once in a year through the State Health Secretaries and Chairmen or Member Secretary of State Pollution Control Boards and Central Pollution Control Board and the Ministry may also invite experts in the field of bio-medical waste management, if required.

(2) The Central Pollution Control Board shall monitor the implementation of these rules in respect of all the Armed Forces health care establishments under the Ministry of Defence.

(3) The Central Pollution Control Board along with one or more representatives of the Advisory Committee constituted under sub-rule (2) of rule 11, may inspect any Armed Forces health care establishments after prior intimation to the Director General Armed Forces Medical Services.

(4) Every State Government or Union territory Administration shall constitute District Level Monitoring Committee in the districts under the chairmanship of District Collector or District Magistrate or Deputy Commissioner or Additional District Magistrate to monitor the compliance of the provisions of these rules in the health care facilities generating bio-medical waste and in the common bio-medical waste treatment and disposal facilities, where the bio-medical waste is treated and disposed of.

(5) The District Level Monitoring Committee constituted under sub-rule (4) shall submit its report once in six months to the State Advisory Committee and a copy thereof shall also be forwarded to State Pollution Control Board or Pollution Control Committee concerned for taking further necessary action.

(6) The District Level Monitoring Committee shall comprise of District Medical Officer or District Health Officer, representatives from State Pollution Control Board or Pollution Control Committee, Public Health Engineering Department, local bodies or municipal corporation, Indian Medical Association, common bio-medical waste treatment facility and registered non-governmental organisations working in the field of bio-medical waste management and the Committee may co-opt other members and experts, if necessary and the District Medical Officer shall be the Member Secretary of this Committee.

13. **Annual report.-**(1) Every occupier or operator of common bio-medical waste treatment facility shall submit an annual report to the prescribed authority in Form-IV, on or before the 30th June of every year.

(2) The prescribed authority shall compile, review and analyse the information received and send this information to the Central Pollution Control Board on or before the 31st July of every year.

(3) The Central Pollution Control Board shall compile, review and analyse the information received and send this information, along with its comments or suggestions or observations to the Ministry of Environment, Forest and Climate Change on or before 31st August every year.

(4) The Annual Reports shall also be available online on the websites of Occupiers, State Pollution Control Boards and Central Pollution Control Board.

14. Maintenance of records.- (1) Every authorised person shall maintain records related to the generation, collection, reception, storage, transportation, treatment, disposal or any other form of handling of bio-medical waste, for a period of five years, in accordance with these rules and guidelines issued by the Central Government or the Central Pollution Control Board or the prescribed authority as the case may be.

(2) All records shall be subject to inspection and verification by the prescribed authority or the Ministry of Environment, Forest and Climate Change at any time.

15. **Accident reporting.-** (1) In case of any major accident at any institution or facility or any other site while handling bio-medical waste, the authorised person shall intimate immediately to the prescribed authority about such accident and forward a report within twenty-four hours in writing regarding the remedial steps taken in Form I.

(2) Information regarding all other accidents and remedial steps taken shall be provided in the annual report in accordance with rule 13 by the occupier.

16. Appeal.-(1) Any person aggrieved by an order made by the prescribed authority under these rules may, within a period of thirty days from the date on which the order is communicated to him, prefer an appeal in Form V to the Secretary (Environment) of the State Government or Union territory administration .

(2) Any person aggrieved by an order of the Director General Armed Forces Medical Services under these rules may, within thirty days from the date on which the order is communicated to him, prefer an appeal in Form V to the Secretary, Ministry of Environment, Forest and Climate Change.

(3) The authority referred to in sub-para (1) and (2) as the case may be, may entertain the appeal after the expiry of the said period of thirty days, if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(4) The appeal shall be disposed of within a period of ninety days from the date of its filing.

17. **Site for common bio-medical waste treatment and disposal facility**.-(1) Without prejudice to rule 5 of these rules, the department in the business allocation of land assignment shall be responsible for providing suitable site for setting up of common biomedical waste treatment and disposal facility in the State Government or Union territory Administration.

(2) The selection of site for setting up of such facility shall be made in consultation with the prescribed authority, other stakeholders and in accordance with guidelines published by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board.

18. **Liability of the occupier, operator of a facility**.- (1) The occupier or an operator of a common bio-medical waste treatment facility shall be liable for all the damages caused to the environment or the public due to improper handling of bio- medical wastes.

(2) The occupier or operator of common bio-medical waste treatment facility shall be liable for action under section 5 and section 15 of the Act, in case of any violation.

SCHEDULE I

[See rules 3 (e), 4(b), 7(1), 7(2), 7(5), 7 (6) and 8(2)]

Part-1

Biomedical wastes categories and their segregation, collection, treatment, processing and disposal options

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
Yellow	**(a) Human Anatomical Waste:** Human tissues, organs, body parts and fetus below the viability period (as per the Medical Termination of Pregnancy Act 1971, amended from time to time).	Yellow coloured non-chlorinated plastic bags	Incineration or Plasma Pyrolysis or deep burial*
	(b)Animal Anatomical Waste : Experimental animal carcasses, body parts, organs, tissues, including the waste generated from animals used in experiments or testing in veterinary hospitals or colleges or animal houses.		
	(c) Soiled Waste: Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components.		Incineration or Plasma Pyrolysis or deep burial* In absence of above facilities, autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy recovery.

	(d) Expired or Discarded Medicines: Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.	Yellow coloured non-chlorinated plastic bags or containers	Expired `cytotoxic drugs and items contaminated with cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temperature >1200 ^{0}C or to common bio-medical waste treatment facility or hazardous waste treatment, storage and disposal facility for incineration at >1200^{0}C Or Encapsulation or Plasma Pyrolysis at >1200^{0}C. All other discarded medicines shall be either sent back to manufacturer or disposed by incineration.
	(e) Chemical Waste: Chemicals used in production of biological and used or discarded disinfectants.	Yellow coloured containers or non-chlorinated plastic bags	Disposed of by incineration or Plasma Pyrolysis or Encapsulation in hazardous waste treatment, storage and disposal facility.
	(f) Chemical Liquid Waste: Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, Silver X-ray film developing liquid, discarded Formalin, **infected secretions, aspirated body fluids,** liquid from **laboratories** and floor washings, cleaning, house-keeping and disinfecting activities etc.	Separate collection system leading to effluent treatment system	After resource recovery, the chemical liquid waste shall be pre-treated before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in Schedule- III.
	(g) Discarded linen, mattresses, beddings contaminated with blood or body fluid.	Non-chlorinated yellow plastic bags or suitable packing material	Non- chlorinated chemical disinfection followed by incineration or Plazma Pyrolysis or for energy recovery. In absence of above facilities, shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy recovery or incineration or Plazma Pyrolysis.
	(h) Microbiology, Biotechnology and other clinical laboratory waste: Blood bags, Laboratory cultures, stocks or specimens of micro-organisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of	Autoclave safe plastic bags or containers	Pre-treat to sterilize with non-chlorinated chemicals on-site as per National AIDS Control Organisation or World Health Organisation guidelines thereafter for Incineration.

	biological, residual toxins, dishes and devices used for cultures.		
Red	**Contaminated Waste (Recyclable)** (a) Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and *fixed needle syringes*) and vaccutainers with their needles cut) and gloves.	Red coloured non-chlorinated plastic bags or containers	Autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent to registered or authorized recyclers or for energy recovery or plastics to diesel or fuel oil or for road making, whichever is possible. Plastic waste should not be sent to landfill sites.
White (Translucent)	**Waste sharps including Metals:** Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This includes both used, discarded and contaminated metal sharps	Puncture proof, Leak proof, tamper proof containers	Autoclaving or Dry Heat Sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete; combination of shredding cum autoclaving; and sent for final disposal to iron foundries (having consent to operate from the State Pollution Control Boards or Pollution Control Committees) or sanitary landfill or designated concrete waste sharp pit.
Blue	**(a) Glassware:** Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes.	Cardboard boxes with blue colored marking	Disinfection (by soaking the washed glass waste after cleaning with detergent and Sodium Hypochlorite treatment) or through autoclaving or microwaving or hydroclaving and then sent for recycling.
	(b) Metallic Body Implants	Cardboard boxes with blue colored marking	

***Disposal by deep burial is permitted only in rural or remote areas where there is no access to common bio-medical waste treatment facility. This will be carried out with prior approval from the prescribed authority and as per the Standards specified in Schedule-III. The deep burial facility shall be located as per the provisions and guidelines issued by Central Pollution Control Board from time to time.**

Part -2

(1) All plastic bags shall be as per BIS standards as and when published, till then the prevailing Plastic Waste Management Rules shall be applicable.

(2) Chemical treatment using at least 10% Sodium Hypochlorite having 30% residual chlorine for twenty minutesor any other equivalent chemical reagent that should demonstrate $Log_{10}4$ reduction efficiency for microorganisms as given in Schedule- III.

(3) Mutilation or shredding must be to an extent to prevent unauthorized reuse.

(4) There will be no chemical pretreatment before incineration, except for microbiological, lab and highly infectious waste.

(5) Incineration ash (ash from incineration of any bio-medical waste) shall be disposed through hazardous waste treatment, storage and disposal facility, if toxic or hazardous constituents are present beyond the prescribed limits as given in the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 or as revised from time to time.

(6) Dead Fetus below the viability period (as per the Medical Termination of Pregnancy Act 1971, amended from time to time) can be considered as human anatomical waste. Such waste should be handed over to the operator of common bio-medical waste treatment and disposal facility in yellow bag with a copy of the official Medical Termination of Pregnancy certificate from the Obstetrician or the Medical Superintendent of hospital or healthcare establishment.

(7) Cytotoxic drug vials shall not be handed over to unauthorised person under any circumstances. These shall be sent back to the manufactures for necessary disposal at a single point. As a second option, these may be sent for incineration at common bio-medical waste treatment and disposal facility or TSDFs or plasma pyrolys is at temperature >1200 ^{0}C.

(8) Residual or discarded chemical wastes, used or discarded disinfectants and chemical sludge can be disposed at hazardous waste treatment, storage and disposal facility. In such case, the waste should be sent to hazardous waste treatment, storage and disposal facility through operator of common bio-medical waste treatment and disposal facility only.

(9) On-site pre-treatment of laboratory waste, microbiological waste, blood samples, blood bags should be disinfected or sterilized as per the Guidelines of World Health Organisation or National AIDS Control Organisation and then given to the common bio-medical waste treatment and disposal facility.

(10) Installation of in-house incinerator is not allowed. However in case there is no common biomedical facility nearby, the same may be installed by the occupier after taking authorisation from the State Pollution Control Board.

(11) Syringes should be either mutilated or needles should be cut and or stored in tamper proof, leak proof and puncture proof containers for sharps storage. Wherever the occupier is not linked to a disposal facility it shall be the responsibility of the occupier to sterilize and dispose in the manner prescribed.

(12) Bio-medical waste generated in households during healthcare activities shall be segregated as per these rules and handed over in separate bags or containers to municipal waste collectors. Urban Local Bodies shall have tie up with the common bio-medical waste treatment and disposal facility to pickup this waste from the Material Recovery Facility (MRF) or from the house hold directly, for final disposal in the manner as prescribed in this Schedule.

SCHEDULE II

[See rule 4(t), 7(1) and 7(6)]

STANDARDS FOR TREATMENT AND DISPOSAL OF BIO-MEDICALWASTES

1. STANDARDS FOR INCINERATION.-

All incinerators shall meet the following operating and emission standards-

A. Operating Standards

1). Combustion efficiency (CE) shall be at least 99.00%.

2). The Combustion efficiency is computed as follows:

$$C.E. = \frac{\%C0_2}{\%C0_2 + \%\ CO} \times 100$$

3). The temperature of the primary chamber shall be a minimum of 800 ^{0}C and the secondary chamber shall be minimum of 1050^{0}C + or - 50^{0}C.

4). The secondary chamber gas residence time shall be at least two seconds.

B. Emission Standards

Sl. No.	Parameter	Standards	
(1)	(2)	(3)	(4)
		Limiting concentration in mg Nm^3 unless stated	**Sampling Duration in minutes, unless stated**
1.	Particulate matter	50	30 or $1NM^3$ of sample volume, whichever is more
2.	Nitrogen Oxides NO and NO_2 expressed asNO_2	400	30 for online sampling or grab sample
3.	HCl	50	30 or $1NM^3$ of sample volume, whichever is more
4.	Total Dioxins and Furans	0.1ngTEQ/Nm^3 (at 11% O2)	8 hours or $5NM^3$ of sample volume, whichever is more
5.	Hg and its compounds	0.05	2 hours or $1NM^3$ of sample volume, whichever is more

C. Stack Height: Minimum stack height shall be 30 meters above the ground and shall be attached with the necessary monitoring facilities as per requirement of monitoring of 'general parameters' as notified under the Environment (Protection) Act, 1986 and in accordance with the Central Pollution Control Board Guidelines of Emission Regulation Part-III.

Note:

(a) The existing incinerators shall comply with the above within a period of two years from the date of the notification.

(b) The existing incinerators shall comply with the standards for Dioxins and Furans of 0.1ngTEQ/Nm^3, as given below within two years from the date of commencement of these rules.

(c) All upcoming common bio-medical waste treatment facilities having incineration facility or captive incinerator shall comply with standards for Dioxins and Furans.

(d) The existing secondary combustion chambers of the incinerator and the pollution control devices shall be suitably retrofitted, if necessary, to achieve the emission limits.

(e) Wastes to be incinerated shall not be chemically treated with any chlorinated disinfectants.

(f) Ash from incineration of biomedical waste shall be disposed of at common hazardous waste treatment and disposal facility. However, it may be disposed of in municipal landfill, if the toxic metals in incineration ash are within the regulatory quantities as defined under the Hazardous Waste (Management and Handling and Transboundary Movement) Rules, 2008 as amended from time to time.

(g) Only low Sulphur fuel like Light Diesel Oil or Low Sulphur Heavy Stock or Diesel, Compressed Natural Gas, Liquefied Natural Gas or Liquefied Petroleum Gas shall be used as fuel in the incinerator.

(h) The occupier or operator of a common bio-medical waste treatment facility shall monitor the stack gaseous emissions (under optimum capacity of the incinerator) once in three months through a laboratory approved under the Environment (Protection) Act, 1986 and record of such analysis results shall be maintained and submitted to the prescribed authority. In case of dioxins and furans, monitoring should be done once in a year.

(i) The occupier or operator of the common bio-medical waste treatment facility shall install continuous emission monitoring system for the parameters as stipulated by State Pollution Control Board or Pollution Control Committees in authorisation and transmit the data real time to the servers at State Pollution Control Board or Pollution Control Committees and Central Pollution Control Board.

(j) All monitored values shall be corrected to 11% Oxygen on dry basis.

(k) Incinerators (combustion chambers) shall be operated with such temperature, retention time and turbulence, as to achieve Total Organic Carbon content in the slag and bottom ashes less than 3% or their loss on ignition shall be less than 5% of the dry weight.

(l) The occupier or operator of a common bio-medical waste incinerator shall use combustion gas analyzer to measure CO_2, CO and O_2.

2. **Operating and Emission Standards for Disposal by Plasma Pyrolysis or Gasification:**

A. Operating Standards:

All the operators of the Plasma Pyrolysis or Gasification shall meet the following operating and emission standards:

1) Combustion Efficiency (CE) shall be at least 99.99%.

2) The Combustion Efficiency is computed as follows.

$$C.E = \frac{\% CO_2}{(\% CO_2 + \% CO)} \times 100$$

3) The temperature of the combustion chamber after plasma gasification shall be 1050 ± 50 ^{o} C with gas residence time of at least 2(two) second, with minimum 3 % Oxygen in the stack gas.

4) The Stack height should be minimum of 30 m above ground level and shall be attached with the necessary monitoring facilities as per requirement of monitoring of 'general parameters' as notified under the Environment (Protection) Act, 1986 and in accordance with the CPCB Guidelines of Emission Regulation Part-III.

B. Air Emission Standards and Air Pollution Control Measures

(i) Emission standards for incinerator, notified at Sl No.1 above in this Schedule, and revised from time to time, shall be applicable for the Plasma Pyrolysis or Gasification also.

(ii) Suitably designed air pollution control devices shall be installed or retrofitted with the 'Plasma Pyrolysis or Gasification to achieve the above emission limits, if necessary.

(iii) Wastes to be treated using Plasma Pyrolysis or Gasification shall not be chemically treated with any chlorinated disinfectants and chlorinated plastics shall not be treated in the system.

C. Disposal of Ash Vitrified Material: The ash or vitrified material generated from the 'Plasma Pyrolysis or Gasification shall be disposed off in accordance with the Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008 and revisions made thereafter in case the constituents exceed the limits prescribed under Schedule II of the said Rules or else in accordance with the provisions of the Environment (Protection) Act, 1986, whichever is applicable.

3. STANDARDS FOR AUTOCLAVING OF BIO-MEDICAL WASTE.-

The autoclave should be dedicated for the purposes of disinfecting and treating bio-medical waste.

(1) When operating a gravity flow autoclave, medical waste shall be subjected to:

(i) a temperature of not less than 121° C and pressure of 15 pounds per square inch (psi) for an autoclave residence time of not less than 60 minutes; or

(ii) a temperature of not less than 135° C and a pressure of 31 psi for an autoclave residence time of not less than 45 minutes; or

(iii) a temperature of not less than 149° C and a pressure of 52 psi for an autoclave residence time of not less than 30 minutes.

(2) When operating a vacuum autoclave, medical waste shall be subjected to a minimum of three pre-vacuum pulse to purge the autoclave of all air. The air removed during the pre-vacuum, cycle should be decontaminated by means of HEPA and activated carbon filtration, steam treatment, or any other method to prevent release of pathogen. The waste shall be subjected to the following:

(i) a temperature of not less than 121°C and pressure of 15 psi per an autoclave residence time of not less than 45 minutes; or

(ii) a temperature of not less than 135°C and a pressure of 31 psi for an autoclave residence time of not less than 30 minutes;

(3) Medical waste shall not be considered as properly treated unless the time, temperature and pressure indicators indicate that the required time, temperature and pressure were reached during the autoclave process. If for any reasons, time temperature or pressure indicator indicates that the required temperature, pressure or residence time was not

reached, the entire load of medical waste must be autoclaved again until the proper temperature, pressure and residence time were achieved.

(4) **Recording of operational parameters:** Each autoclave shall have graphic or computer recording devices which will automatically and continuously monitor and record dates, time of day, load identification number and operating parameters throughout the entire length of the autoclave cycle.

(5) **Validation test for autoclave:** The validation test shall use four biological indicator strips, one shall be used as a control and left at room temperature, and three shall be placed in the approximate center of three containers with the waste. Personal protective equipment (gloves, face mask and coveralls) shall be used when opening containers for the purpose of placing the biological indicators. At least one of the containers with a biological indicator should be placed in the most difficult location for steam to penetrate, generally the bottom center of the waste pile. The occupier or operator shall conduct this test three consecutive times to define the minimum operating conditions. The temperature, pressure and residence time at which all biological indicator vials or strips for three consecutive tests show complete inactivation of the spores shall define the minimum operating conditions for the autoclave. After determining the minimum temperature, pressure and residence time, the occupier or operator of a common biomedical waste treatment facility shall conduct this test once in three months and records in this regard shall be maintained.

(6) **Routine Test:** A chemical indicator strip or tape that changes colour when a certain temperature is reached can be used to verify that a specific temperature has been achieved. It may be necessary to use more than one strip over the waste package at different locations to ensure that the inner content of the package has been adequately autoclaved. The occupier or operator of a common bio medical waste treatment facility shall conduct this test during autoclaving of each batch and records in this regard shall be maintained.

(7) Spore testing: The autoclave should completely and consistently kill the approved biological indicator at the maximum design capacity of each autoclave unit. Biological indicator for autoclave shall be Geobacillusstearothermophilus spores using vials or spore Strips; with at least $1X10^6$ spores. Under no circumstances will an autoclave have minimum operating parameters less than a residence time of 30 minutes, a temperature less than 121° C or a pressure less than 15 psi. The occupier or operator of a common bio medical waste treatment and disposal facility shall conduct this test at least once in every week and records in this regard shall be maintained.

4. **STANDARDS OF MICROWAVING.-**

(1) Microwave treatment shall not be used for cytotoxic, hazardous or radioactive wastes, contaminated animal carcasses, body parts and large metal items.

(2) The microwave system shall comply with the efficacy test or routine tests and a performance guarantee may be provided by the supplier before operation of the limit.

(3) The microwave should completely and consistently kill the bacteria and other pathogenic organisms that are ensured by approved biological indicator at the maximum design capacity of each microwave unit. Biological indicators for microwave shall be Bacillus atrophaeusspores using vials or spore strips with at least 1×10^4sporesper detachable strip. The biological indicator shall be placed with waste and exposed to same conditions as the waste during a normal treatment cycle.

5. **STANDARDS FOR DEEP BURIAL.-** (1) A pit or trench should be dug about two meters deep. It should be half filled with waste, then covered with lime within 50 cm of the surface, before filling the rest of the pit with soil.

(2) It must be ensured that animals do not have any access to burial sites. Covers of galvanised iron or wire meshes may be used.

(3) On each occasion, when wastes are added to the pit, a layer of 10 cm of soil shall be added to cover the wastes.

(4) Burial must be performed under close and dedicated supervision.

(5) The deep burial site should be relatively impermeable and no shallow well should be close to the site.

(6) The pits should be distant from habitation, and located so as to ensure that no contamination occurs to surface water or ground water. The area should not be prone to flooding or erosion.

(7) The location of the deep burial site shall be authorised by the prescribed authority.

(8) The institution shall maintain a record of all pits used for deep burial.

(9) The ground water table level should be a minimum of six meters below the lower level of deep burial pit.

6. STANDARDS FOR EFFICACY OF CHEMICAL DISINFECTION

Microbial inactivation efficacy is equated to "Log10 kill" which is defined as the difference between the logarithms of number of test microorganisms before and after chemical treatment. Chemical disinfection methods shall demonstrate a 4 Log10 reduction or greater for Bacillus Subtilis (ATCC 19659) in chemical treatment systems.

7. STANDARDS FOR DRY HEAT STERILIZATION

Waste sharps can be treated by dry heat sterilization at a temperature not less than 185^0C, at least for a residence period of 150 minutes in each cycle, which sterilization period of 90 minutes. There should be automatic recording system to monitor operating parameters.

(i) Validation test for Shaprs sterilization unit

Waste shaprs sterilization unit should completely and consistently kill the biological indicator GeobacillusStearothermophillus or Bacillus Atropheausspoers using vials with at least $\log_{10}$ 6 spores per ml. The test shall be carried out once in three months

(ii) Routine test

A chemical indicator strip or tape that changes colour when a certain temperature is reached can be used to verify that a specific temperature has been achieved. It may be necessary to use more than one strip over the waste to ensure that the inner content of the sharps has been adequately disinfected. This test shall be performed once in week and records in this regard shall be maintained.

8. **STANDARDS FOR LIQUID WASTE.-**

(1) The effluent generated or treated from the premises of occupier or operator of a common bio medical waste treatment and disposal facility, before discharge into the sewer should conform to the following limits-

PARAMETERS	PERMISSIBLE LIMITS
pH	6.5-9.0
Suspended solids	100 mg/l
Oil and grease	10 mg/l
BOD	30 mg/l
COD	250 mg/l
Bio-assay test	90% survival of fish after 96 hours in 100% effluent.

(2) Sludge from Effluent Treatment Plant shall be given to common bio-medical waste treatment facility for incineration or to hazardous waste treatment, storage and disposal facility for disposal.

Schedule III

[See rule 6 and 9(3)]

List of Prescribed Authorities and the Corresponding Duties

Sl. No. (1)	Authority (2)	Corresponding Duties (3)
1	Ministry of Environment, Forest and Climate Change, Government of India	(i) Making Policies concerning bio-medical waste Management in the Country including notification of Rules and amendments to the Rules as and when required. (ii) Providing financial assistance for training and awareness programmes on bio-medical waste management related activities to for the State Pollution Control Boards or Pollution Control Committees. (iii) Facilitating financial assistance for setting up or up-gradation of common bio-medical waste treatment facilities. (iv) Undertake or support operational research and assessment with reference to risks to environment and health due to bio-medical waste and previously unknown disposables and wastes from new types of equipment. (v) Constitution of Monitoring Committee for implementation of the rules. (vi) Hearing Appeals and give decision made in Form- V against order passed by the prescribed authorities. (vii) Develop Standard manual for Trainers and Training.

		(viii) Notify the standards or operating parameters for new technologies for treatment of bio medical waste other than those listed in Schedule- I.
2	Central or State Ministry of Health and Family Welfare, Central Ministry for Animal Husbandry and Veterinary or State Department of Animal Husbandry and Veterinary.	(i) Grant of license to health care facilities or nursing homes or veterinary establishments with a condition to obtain authorisation from the prescribed authority for bio-medical waste management. (ii) Monitoring, Refusal or Cancellation of license for health care facilities or nursing homes or veterinary establishments for violations of conditions of authorisation or provisions under these Rules. (iii) Publication of list of registered health care facilities with regard to bio-medical waste generation, treatment and disposal. (iv) Undertake or support operational research and assessment with reference to risks to environment and health due to bio-medical waste and previously unknown disposables and wastes from new types of equipment. (v) Coordinate with State Pollution Control Boards for organizing training programmes to staff of health care facilities and municipal workers on bio-medical waste. (vi) Constitution of Expert Committees at National or State level for overall review and promotion of clean or new technologies for bio-medical waste management. (vii) Organizing or Sponsoring of trainings for the regulatory authorities and health care facilities on bio-medical waste management related activities. (viii) Sponsoring of mass awareness campaigns in electronic media and print media.
3	Ministry of Defence	(i) Grant and renewal of authorisation to Armed Forces health care facilities or common bio-medical waste treatment facilities (Rule 9). (ii) Conduct training courses for authorities dealing with management of bio-medical wastes in Armed Forces health care facilities or treatment facilities in association with State Pollution Control Boards or Pollution Control Committees or Central Pollution Control Board or Ministry of Environment, Forest and Climate Change. (iii) Publication of inventory of occupiers and bio-medical waste generation from Armed Forces health care facilities or occupiers (iv) Constitution of Advisory Committee for implementation of the rules. (v) Review of management of bio-medical waste generation in the Armed Forces health care facilities through its Advisory Committee (Rule 11). (vi) Submission of annual report to Central Pollution Control Board within the stipulated time period (Rule 13).
4.	Central Pollution Control Board	(i) Prepare Guidelines on bio-medical waste Management and submit to the Ministry of Environment, Forest and Climate Change. (ii) Co-ordination of activities of State Pollution Control Boards or Pollution Control Committees on bio-medical waste.

		(iii) Conduct training courses for authorities dealing with management of bio-medical waste. (iv) Lay down standards for new technologies for treatment and disposal of bio-medical waste (Rule 7) and prescribe specifications for treatment and disposal of bio-medical wastes (Rule 7). (v) Lay down Criteria for establishing common bio-medical waste treatment facilities in the Country. (vi) Random inspection or monitoring of health care facilities and common bio-medical waste treatment facilities. (vii) Review and analysis of data submitted by the State Pollution Control Boards on bio-medical waste and submission of compiled information in the form of annual report along with its observations to Ministry of Environment, Forest and Climate Change . (viii) Inspection and monitoring of health care facilities operated by the Director General, Armed Forces Medical Services (Rule 9). (ix) Undertake or support research or operational research regarding bio-medical waste.
5.	State Government of Health or Union Territory Government or Administration	(i) To ensure implementation of the rule in all health care facilities or occupiers. (ii) Allocation of adequate funds to Government health care facilities for bio-medical waste management. (iii) Procurement and allocation of treatment equipments and make provision for consumables for bio-medical waste management in Government health care facilities. (iv) Constitute State or District Level Advisory Committees under the District Magistrate or Additional District Magistrate to oversee the bio-medical waste management in the Districts. (v) Advise State Pollution Control Boards or Pollution Control Committees on implementation of these Rules. (vi) Implementation of recommendations of the Advisory Committee in all the health care facilities.
6.	State Pollution Control Boards or Pollution Control Committees	(i) Inventorisation of Occupiers and data on bio-medical waste generation, treatment & disposal. (ii) Compilation of data and submission of the same in annual report to Central Pollution Control Board within the stipulated time period. (iii) Grant and renewal, suspension or refusal cancellation or of authorisation under these rules (Rule 7, 8 and 10). (iv) Monitoring of compliance of various provisions and conditions of authorisation. (v) Action against health care facilities or common bio-medical waste treatment facilities for violation of these rules (Rule 18). (vi) Organizing training programmes to staff of health care facilities and common bio-medical waste treatment facilities and State Pollution Control Boards or Pollution Control Committees Staff on segregation, collection, storage, transportation, treatment and disposal of bio-medical wastes.

		(vii) Undertake or support research or operational research regarding bio-medical waste management. (viii) Any other function under these rules assigned by Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time. (ix) Implementation of recommendations of the Advisory Committee. (x) Publish the list of Registered or Authorised (or give consent) Recyclers. (xi) Undertake and support third party audits of the common bio-medical waste treatment facilities in their State.
7	Municipalities or Corporations, Urban Local Bodies and Gram Panchayats	(i) Provide or allocate suitable land for development of common bio-medical waste treatment facilities in their respective jurisdictions as per the guidelines of Central Pollution Control Board. (ii) Collect other solid waste (other than the bio-medical waste) from the health care facilities as per the Municipal Solid Waste (Management and handling) Rules, 2000 or as amended time to time. (iii) Any other function stipulated under these Rules.

SCHEDULE IV

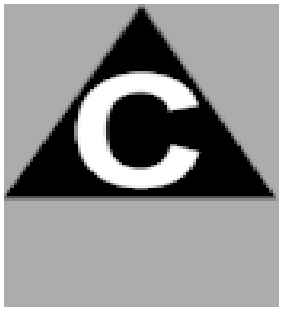
[See rule 8(3) and (5)]

Part A

LABEL FOR BIO-MEDICAL WASTE CONTAINERS or BAGS

HANDLE WITH CARE

CYTOTOXIC HAZARDSYMBOL



HANDLE WITH CARE

Part B

LABEL FOR TRANSPORTING BIO-MEDICAL WASTE BAGS OR CONTAINERS

Day .....Month .....

Year .....

Date of generation .....

Waste category Number .....

Waste quantity……

Sender's Name and Address

Phone Number .....

Receiver's Name and Address:

Phone Number .....

Fax Number..... Fax Number .....

Contact Person ..... Contact Person .....

In case of emergency please contact :

Name and Address :

Phone No.

Note :Label shall be non-washable and prominently visible.

FORM – I

[(See rule 4(o), 5(i) and 15 (2)]

ACCIDENT REPORTING

1. Date and time of accident :
2. Type of Accident :
3. Sequence of events leading to accident :
4. Has the Authority been informed immediately :
5. The type of waste involved in accident :
6. Assessment of the effects of the accidents on human health and the environment:
7. Emergency measures taken :
8. Steps taken to alleviate the effects of accidents :
9. Steps taken to prevent the recurrence of such an accident :
10. Does you facility has an Emergency Control policy? If yes give details:

Date : …… Signature ……

Place: …… Designation ……..

FORM - II

(See rule10)

APPLICATION FOR AUTHORISATION OR RENEWAL OF AUTHORISATION

(To be submitted by occupier of health care facility or common bio-medical waste treatment facility)

To

The Prescribed Authority
(Name of the State or UT Administration)
Address.

1. Particulars of Applicant:

(i) Name of the Applicant:
(In block letters & in full)

(ii) Name of the health care facility (HCF) or common bio-medical waste treatment facility (CBWTF) :

(iii) Address for correspondence:

(iv) Tele No., Fax No.:

(v) Email:

(vi) Website Address:

2. Activity for which authorisation is sought:

Activity	Please tick
Generation, segregation	
Collection,	
Storage	
packaging	
Reception	
Transportation	
Treatment or processing or conversion	
Recycling	
Disposal or destruction	
use	
offering for sale, transfer	
Any other form of handling	

3. Application for □ fresh or □ renewal of authorisation (please tick whatever is applicable):

(i) Applied for CTO/CTE Yes/No

(ii) In case of renewal previous authorisation number and date:

(iii) Status of Consents:

(a) under the Water (Prevention and Control of Pollution) Act, 1974

(b) under the Air (Prevention and Control of Pollution) Act, 1981:

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4. (i) Address of the health care facility (HCF) or common bio-medical waste treatment facility (CBWTF):

(ii) GPS coordinates of health care facility (HCF) or common bio-medical waste treatment facility (CBWTF):

5. Details of health care facility (HCF) or common bio-medical waste treatment facility (CBWTF):

(i) Number of beds of HCF:

(ii) Number of patients treated per month by HCF:

(iii) Number healthcare facilities covered by CBMWTF: _____

(iv) No of beds covered by CBMWTF: _____

(v) Installed treatment and disposal capacity of CBMWTF:_____ Kg per day

(vi) Quantity of biomedical waste treated or disposed by CBMWTF:_____ Kg/ day

(vii) Area or distance covered by CBMWTF:_____

(pl. attach map a map with GPS locations of CBMWTF and area of coverage)

(viii) Quantity of Biomedical waste handled, treated or disposed:

Category	Type of Waste	Quantity Generated or Collected, kg/day	Method of Treatment and Disposal (Refer Schedule-I)
(1)	(2)	(3)	(4)
Yellow	(a) Human Anatomical Waste:		
	(b)Animal Anatomical Waste :		
	(c) Soiled Waste:		
	(d) Expired or Discarded Medicines:		
	(e) Chemical Solid Waste:		
	(f) Chemical Liquid Waste :		

	(g) Discarded linen, mattresses, beddings contaminated with blood or body fluid.		
	(h) Microbiology, Biotechnology and other clinical laboratory waste:		
Red	Contaminated Waste (Recyclable)		
White (Translucent)	Waste sharps including Metals:		
Blue	Glassware:		
	Metallic Body Implants		

6. Brief description of arrangements for handling of biomedical waste (attach details):
   (i) Mode of transportation (if any) of bio-medical waste:
   (ii) Details of treatment equipment (please give details such as the number, type & capacity of each unit)

	No of units	Capacity of each unit
Incinerators :		
Plasma Pyrolysis:		
Autoclaves:		
Microwave:		
Hydroclave:		
Shredder:		
Needle tip cutter or destroyer		
Sharps encapsulation or concrete pit:		
Deep burial pits:		
Chemical disinfection:		
Any other treatment equipment:		

7. Contingency plan of common bio-medical waste treatment facility (CBWTF)(attach documents):

8. Details of directions or notices or legal actions if any during the period of earlier authorisation

9. Declaration

I do hereby declare that the statements made and information given above are true to the best of my knowledge and belief and that I have not concealed any information.

I do also hereby undertake to provide any further information sought by the prescribed authority in relation to these rules and to fulfill any conditions stipulated by the prescribed authority.

Date : Signature of the Applicant

Place : Designation of the Applicant

FORM –III

(See rule 10)

AUTHORISATION

(Authorisation for operating a facility for generation, collection, reception, treatment, storage, transport and disposal of biomedical wastes)

1. File number of authorisation and date of issue…….

2. M/s _____ an occupier or operator of the facility located at _____ is hereby granted an authorisation for;

Activity	Please tick
Generation, segregation	
Collection,	
Storage	
packaging	

Reception
Transportation
Treatment or processing or conversion
Recycling
Disposal or destruction
use
offering for sale, transfer
Any other form of handling

3. M/s _____ is hereby authorized for handling of biomedical waste as per the capacity given below;

(i) Number of beds of HCF:

(ii) Number healthcare facilities covered by CBMWTF: _____

(iii) Installed treatment and disposal capacity:_____ Kg per day

(iv) Area or distance covered by CBMWTF:_____

_____

(v) Quantity of Biomedical waste handled, treated or disposed:

Type of Waste Category	Quantity permitted for Handling
Yellow	
Red	
White (Translucent)	
Blue	

4. This authorisation shall be in force for a period of ……. Years from the date of issue.

5. This authorisation is subject to the conditions stated below and to such other conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Date ……. Signature……..

Place: …… Designation ……..

*Terms and conditions of authorisation **

1. The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made there under.

2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the prescribed authority.

3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the biomedical wastes without obtaining prior permission of the prescribed authority.

4. Any unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised shall constitute a breach of his authorisation.

5. It is the duty of the authorised person to take prior permission of the prescribed authority to close down the facility and such other terms and conditions may be stipulated by the prescribed authority.

Form - IV

(See rule 13)

ANNUAL REPORT

[To be submitted to the prescribed authority on or before 30th June every year for the period from January to December of the preceding year, by the occupier of health care facility (HCF) or common bio-medical waste treatment facility (CBWTF)]

Sl. No.	Particulars		
1 .	Particulars of the Occupier	:	
	(i) Name of the authorised person (occupier or operator of facility)	:	
	(ii) Name of HCF or CBMWTF	:	
	(iii) Address for Correspondence	:	
	(iv) Address of Facility		
	(v)Tel. No, Fax. No	:	
	(vi) E-mail ID	:	
	(vii) URL of Website		
	(viii) GPS coordinates of HCF or CBMWTF		
	(ix) Ownership of HCF or CBMWTF	:	(State Government or Private or Semi Govt. or any other)
	(x). Status of Authorisation under the Bio-Medical Waste (Management and Handling) Rules	:	Authorisation No.: …… ……..valid up to ……..
	(xi). Status of Consents under Water Act and Air Act	:	Valid up to:
2.	Type of Health Care Facility	:	
	(i) Bedded Hospital	:	No. of Beds:…..
	(ii) Non-bedded hospital (Clinic or Blood Bank or Clinical Laboratory or Research Institute or Veterinary Hospital or any other)	:	
	(iii) License number and its date of expiry		
3.	Details of CBMWTF	:	
	(i) Number healthcare facilities covered by CBMWTF	:	
	(ii) No of beds covered by CBMWTF	:	
	(iii) Installed treatment and disposal capacity of CBMWTF:	:	_____ Kg per day
	(iv) Quantity of biomedical waste treated or disposed by CBMWTF	:	_____ Kg/day
4.	Quantity of waste generated or disposed in Kg per annum (on monthly average basis)	:	Yellow Category :
			Red Category :
			White:
			Blue Category :
			General Solid waste:
5	Details of the Storage, treatment, transportation, processing and Disposal Facility		
	(i) Details of the on-site storage facility	:	Size :
			Capacity :
			Provision of on-site storage : (cold storage or any other provision)

	disposal facilities		Type of treatment equipment / No of units / Capacity Kg/day / Quantity treatedor disposed in kg per annum Incinerators Plasma Pyrolysis Autoclaves Microwave Hydroclave Shredder Needle tip cutter or destroyer - Sharps encapsulation or concrete pit - Deep burial pits: Chemical disinfection: - Any other treatment equipment:
	(iii) Quantity of recyclable wastes sold to authorized recyclers after treatment in kg per annum.	:	Red Category (like plastic, glass etc.)
	(iv) No of vehicles used for collection and transportation of biomedical waste	:	
	(v) Details of incineration ash and ETP sludge generated and disposed during the treatment of wastes in Kg per annum		Quantity generated / Where disposed Incineration Ash ETP Sludge
	(vi) Name of the Common Bio-Medical Waste Treatment Facility Operator through which wastes are disposed of	:	
	(vii) List of member HCF not handed over bio-medical waste.		
6	Do you have bio-medical waste management committee? If yes, attach minutes of the meetings held during the reporting period		
7	Details trainings conducted on BMW		
	(i) Number of trainings conducted on BMW Management.		
	(ii) number of personnel trained		
	(iii) number of personnel trained at the time of induction		
	(iv) number of personnel not undergone any training so far		
	(v) whether standard manual for training is available?		
	(vi) any other information)		
8	Details of the accident occurred during the year		

	(i) Number of Accidents occurred		
	(ii) Number of the persons affected		
	(iii) Remedial Action taken (Please attach details if any)		
	(iv) Any Fatality occurred, details.		
9.	Are you meeting the standards of air Pollution from the incinerator? How many times in last year could not met the standards?		
	Details of Continuous online emission monitoring systems installed		
10.	Liquid waste generated and treatment methods in place. How many times you have not met the standards in a year?		
11	Is the disinfection method or sterilization meeting the log 4 standards? How many times you have not met the standards in a year?		
12.	Any other relevant information	:	(Air Pollution Control Devices attached with the Incinerator)

Certified that the above report is for the period from
……..……
……
……
……

Name and Signature of the Head of the Institution

Date:

Place

FORM –V

(See rule 16)

Application for filing appeal against order passed by the prescribed authority

1. Name and address of the person applying for appeal :
2. Number, date of order and address of the authority which passed the order, against which appeal is being made (certified copy of order to be attached):
3. Ground on which the appeal is being made:
4. List of enclosures other than the order referred in para 2 against which appeal is being filed:

Signature ……..

Date : Name and Address……..

[F. No. 3-1/2000-HSMD]

BISHWANATH SINHA, Jt. Secy.

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Annexure 12

THE E-WASTE (MANAGEMENT) RULES, 2016

[PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY PART-II, SECTION-3, SUB-SECTION (i)]

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 23rd March , 2016

G.S.R 338(E). - Whereas the draft rules, namely the e-waste (Management) Rules, 2015, were published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* number G.S.R. 472(E), dated the 10th June, 2015 in the Gazette of India, Extraordinary Part II, section 3, sub-section (ii) inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS the copies of the Gazette containing the said notification were made available to the public on the 10th day of June, 2015;

AND WHEREAS the objections and suggestions received within the specified period from the public in respect of the said draft rules have been duly considered by the Central Government;

NOW, THEREFORE, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the e-waste (Management and Handling) Rules, 2011, published in the Gazette of India, section 3, sub-section (ii), *vide* number S.O. 1035(E), dated the 12th May, 2011, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

CHAPTER I

PRELIMINARY

1. Short title and commencement. - (1) These rules may be called the E-Waste (Management) Rules, 2016.
(2) They shall come into force from the 1st day of October, 2016.

2. Application. - These rules shall apply to every manufacturer, producer, consumer, bulk consumer, collection centres, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational but shall not apply to -

(a) used lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001 made under the Act;
(b) micro enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006); and

(c) radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under.

3. Definitions. - (1) In these rules, unless the context otherwise requires, -

(a) 'Act' means the Environment (Protection) Act, 1986 (29 of 1986);
(b) 'authorisation' means permission for generation, handling, collection, reception, storage, transportation, refurbishing, dismantling, recycling, treatment and disposal of e-waste, granted to manufacturer, dismantler, refurbisher and recycler;
(c) 'bulk consumer' means bulk users of electrical and electronic equipment such as Central Government or State Government Departments, public sector undertakings, banks, educational institutions, multinational organisations, international agencies, partnership and public or private companies that are registered under the Factories Act, 1948 (63 of 1948) and the Companies Act, 2013 (18 of 2013) and health care facilities which have turnover of more than one crore or have more than twenty employees;
(d) 'Central Pollution Control Board' means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);
(e) 'collection centre' means a centre or a collection point or both established by producer individually or as association jointly to collect e-waste for channelising the e-waste to recycler and play such role as indicated in the authorisation for Extended Producer Responsibility granted to the producer and having facilities as per the guidelines of Central Pollution Control Board, including the collection centre established by the dismantler or refurbisher or recycler which should be a part of their authorisation issued by the State Pollution Control Board where the facility exists;
(f) ‘component’ means one of the parts of a sub-assembly or assembly of which a manufactured product is made up and into which it may be resolved and includes an accessory or attachment to another component;
(g) ‘consumables’ means an item, which participates in or is required for a manufacturing process or for functioning of the electrical and electronic equipment and may or may not form part of end-product. Items, which are substantially or totally consumed during a manufacturing process, shall be deemed to be consumables;
(h) 'consumer' means any person using electrical and electronic equipment excluding the bulk consumers;
(i) ‘channelisation’ means to direct the path for movement of e-wastes from collection onwards to authorised dismantler or recycler. In case of fluorescent and other mercury containing lamps, where recyclers are not available, this means path for movement from collection centre to Treatment, Storage and Disposal Facility;
(j) 'dealer' means any individual or firm that buys or receives electrical and electronic equipment as listed in Schedule I of these rules and their components or consumables or parts or spares from producers for sale;
(k) ‘deposit refund scheme’ means a scheme whereby the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end-of-life electrical and electronic equipment is returned;
(l) 'dismantler' means any person or organisation engaged in dismantling of used electrical and electronic equipment into their components and having facilities

as per the guidelines of Central Pollution Control Board and having authorisation from concerned State Pollution Control Board;

(m) 'disposal' means any operation which does not lead to recycling, recovery or reuse and includes physico-chemical or biological treatment, incineration and deposition in secured landfill;

(n) 'end-of-life' of the product means the time when the product is intended to be discarded by the user;

(o) 'environmentally sound management of e-waste' means taking all steps required to ensure that e-waste is managed in a manner which shall protect health and environment against any adverse effects, which may result from such e-waste;

(p) 'electrical and electronic equipment' means equipment which are dependent on electric current or electro-magnetic field in order to become functional;

(q) 'e-retailer' means an individual or company or business entity that uses an electronic network such as internet, telephone, to sell its goods;

(r) 'e-waste' means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair processes;

(s) 'e-waste exchange' means an independent market instrument offering assistance or independent electronic systems offering services for sale and purchase of e-waste generated from end-of-life electrical and electronic equipment between agencies or organisations authorised under these rules;

(t) 'Extended Producer Responsibility' means responsibility of any producer of electrical or electronic equipment, for channelisation of e-waste to ensure environmentally sound management of such waste. Extended Producer Responsibility may comprise of implementing take back system or setting up of collection centres or both and having agreed arrangements with authorised dismantler or recycler either individually or collectively through a Producer Responsibility Organisation recognised by producer or producers in their Extended Producer Responsibility - Authorisation;

(u) 'Extended Producer Responsibility - Authorisation' means a permission given by Central Pollution Control Board to a producer, for managing Extended Producer Responsibility with implementation plans and targets outlined in such authorisation including detail of Producer Responsibility Organisation and e-waste exchange, if applicable;

(v) 'Extended Producer Responsibility Plan' means a plan submitted by a producer to Central Pollution Control Board, at the time of applying for Extended Producer Responsibility - Authorisation in which a producer shall provide details of e-waste channelisation system for targeted collection including detail of Producer Responsibility Organisation and e-waste exchange, if applicable;

(w) 'facility' means any location wherein the process incidental to the collection, reception, storage, segregation, refurbishing, dismantling, recycling, treatment and disposal of e-waste are carried out;

(x) 'Form' means a form appended to these rules;

(y) 'historical e-waste' means e-waste generated from electrical and electronic equipment as specified in Schedule I, which was available on the date from which these rules come into force;

(z) 'manufacturer' means a person or an entity or a company as defined in the Companies Act, 2013 (18 of 2013) or a factory as defined in the Factories Act, 1948 (63 of 1948) or Small and Medium Enterprises as defined in Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006), which has facilities for manufacture of electrical and electronic equipment;

CHAPTER II

RESPONSIBILITIES

4. Responsibilities of the manufacturer. - (1) collect e-waste generated during the manufacture of any electrical and electronic equipment and channelise it for recycling or disposal;

(2) apply for an authorisation in Form 1 (a) in accordance with the procedure prescribed under sub-rule (2) of rule 13 from the concerned State Pollution Control Board, which shall give the authorisation in accordance with Form 1 (bb);

(3) ensure that no damage is caused to the environment during storage and transportation of e-waste;

(4) maintain records of the e-waste generated, handled and disposed in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board;

(5) file annual returns in Form-3, to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

5. Responsibilities of the producer. - The producer of electrical and electronic equipment listed in Schedule I shall be responsible for -

(1) implementing the Extended Producers Responsibility with the following frameworks, namely:-

(a) collection and channelisation of e-waste generated from the 'end-of-life' of their products or 'end-of-life' products with same electrical and electronic equipment code and historical waste available on the date from which these rules come into force as per Schedule I in line with the targets prescribed in Schedule III in Extended Producer Responsibility - Authorisation;

(b) the mechanism used for channelisation of e-waste from 'end-of-life' products including those from their service centres to authorised dismantler or recycler shall be in accordance with the Extended Producer Responsibility - Authorisation. In cases of fluorescent and other mercury containing lamps, where recyclers are not available, channelisation may be from collection centre to Treatment, Storage and Disposal Facility;

(c) for disposal in Treatment, Storage and Disposal Facility, a pre-treatment is necessary to immobilise the mercury and reduce the volume of waste to be disposed off;

(d) Extended Producer Responsibility - Authorisation should comprise of general scheme for collection of waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier, such as through dealer, collection centres, Producer Responsibility Organisation, through buy-back arrangement, exchange scheme, Deposit Refund System, etc. whether directly or through any authorised agency and channelising the items so collected to authorised recyclers;

(e) providing contact details such as address, e-mail address, toll-free telephone numbers or helpline numbers to consumer(s) or bulk consumer(s) through their website and product user documentation so as to facilitate return of end-of-life electrical and electronic equipment;

(f) creating awareness through media, publications, advertisements, posters, or by any other means of communication and product user documentation accompanying the equipment, with regard to -

(i) information on address, e-mail address, toll-free telephone numbers or helpline numbers and web site;

(ii) information on hazardous constituents as specified in sub-rule 1 of rule 16 in electrical and electronic equipment;

(iii) information on hazards of improper handling, disposal, accidental breakage, damage or improper recycling of e-waste;

(iv) instructions for handling and disposal of the equipment after its use, along with the Do's and Don'ts;

(v) affixing a visible, legible and indelible symbol given below on the products or product user documentation to prevent e-waste from being dropped in garbage bins containing waste destined for disposal;

(vi) means and mechanism available for their consumers to return e-waste for recycling including the details of Deposit Refund Scheme, if applicable;

(g) the producer shall opt to implement Extended Producer Responsibility individually or collectively. In individual producer responsibility, producer may set up his own collection centre or implement take back system or both to meet Extended Producer Responsibility. In collective system, producers may tie-up as a member with a Producer Responsibility Organisation or with e-waste exchange or both. It shall be mandatory upon on the individual producer in every case to seek Extended Producer Responsibility - Authorisation from Central Pollution Control Board in accordance with the Form-1 and the procedure laid down in sub-rule (1) of rule 13;

(2) to provide information on the implementation of Deposit Refund Scheme to ensure collection of end-of-life products and their channelisation to authorised dismantlers or recyclers, if such scheme is included in the Extended Producer Responsibility Plan.

Provided that the producer shall refund the deposit amount that has been taken from the consumer or bulk consumer at the time of sale, along with interest at the prevalent rate for the period of the deposit at the time of take back of the end-of-life product;

(3) the import of electrical and electronic equipment shall be allowed only to producers having Extended Producer Responsibility authorisation;

(4) maintaining records in Form-2 of the e-waste handled and make such records available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;

(5) filing annual returns in Form-3, to the Central Pollution Control Board on or before the 30th day of June following the financial year to which that return relates. In case of the Producer with multiple offices in a State, one annual return combining information from all the offices shall be filed;

(6) the Producer shall apply to the Central Pollution Control Board for authorisation in Form 1, which shall thereafter grant the Extended Producer Responsibility - Authorisation in Form 1(aa).

(7) Operation without Extended Producer Responsibility-Authorisation by any producer, as defined in this rule, shall be considered as causing damage to the environment.

6. **Responsibilities of collection centres.** - (1) collect e-waste on behalf of producer or dismantler or recycler or refurbisher including those arising from orphaned products;

Provided the collection centres established by producer can also collect e-waste on behalf of dismantler, refurbisher and recycler including those arising from orphaned products

(2) ensure that the facilities are in accordance with the standards or guidelines issued by Central Pollution Control Board from time to time;

(3) ensure that the e-waste collected by them is stored in a secured manner till it is sent to authorised dismantler or recycler as the case may be;

(4) ensure that no damage is caused to the environment during storage and transportation of e-waste;

(5) maintain records in Form-2 of the e-waste handled as per the guidelines of Central Pollution Control Board and make such records available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board as and when asked for.

7. **Responsibilities of dealers.** – (1) in the case the dealer has been given the responsibility of collection on behalf of the producer, the dealer shall collect the e-waste by providing the consumer a box, bin or a demarcated area to deposit e-waste, or through take back system and send the e-waste so collected to collection centre or dismantler or recycler as designated by producer;

(2) the dealer or retailer or e-retailer shall refund the amount as per take back system or Deposit Refund Scheme of the producer to the depositor of e-waste;

(3) every dealer shall ensure that the e-waste thus generated is safely transported to authorised dismantlers or recyclers;

(4) ensure that no damage is caused to the environment during storage and transportation of e-waste.

8. **Responsibilities of the refurbisher.** – (1) collect e-waste generated during the process of refurbishing and channelise the waste to authorised dismantler or recycler through its collection centre;

(2) make an application in Form 1(a) in accordance with the procedure laid down in sub-rule (4) of rule 13 to the concerned State Pollution Control Board for grant of one time authorisation;

(a) the concerned State Pollution Control Board shall authorise the Refurbisher on one time basis as per Form 1 (bb) and authorisation would be deemed as considered if not objected to within a period of thirty days;

(b) the authorised Refurbisher shall be required to submit details of e-waste generated to the concerned State Pollution Control Board on yearly basis;

(3) ensure that no damage is caused to the environment during storage and transportation of e-waste;

(4) ensure that the refurbishing process do not have any adverse effect on the health and the environment;

(5) ensure that the e-waste thus generated is safely transported to authorised collection centres or dismantlers or recyclers;
(6) file annual returns in Form-3 to the concerned State Pollution Control Board, on or before the 30th day of June following the financial year to which that return relates;
(7) maintain records of the e-waste handled in Form-2 and such records should be available for scrutiny by the appropriate authority.

9. Responsibilities of consumer or bulk consumer. – (1) consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelised through collection centre or dealer of authorised producer or dismantler or recycler or through the designated take back service provider of the producer to authorised dismantler or recycler;
(2) bulk consumers of electrical and electronic equipment listed in Schedule I shall maintain records of e-waste generated by them in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board;
(3) consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that such end-of-life electrical and electronic equipment are not admixed with e-waste containing radioactive material as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under;
(4) bulk consumers of electrical and electronic equipment listed in Schedule I shall file annual returns in Form-3, to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates. In case of the bulk consumer with multiple offices in a State, one annual return combining information from all the offices shall be filed to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates

10. Responsibilities of the dismantler. - (1)ensure that the facility and dismantling processes are in accordance with the standards or guidelines prescribed by Central Pollution Control Board from time to time;
(2) obtain authorisation from the concerned State Pollution Control Board in accordance with the procedure under sub-rule (3) of rule 13;
(3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
(4) ensure that the dismantling processes do not have any adverse effect on the health and the environment;
(5) ensure that dismantled e-waste are segregated and sent to the authorised recycling facilities for recovery of materials;
(6) ensure that non-recyclable or non-recoverable components are sent to authorised treatment storage and disposal facilities;
(7) maintain record of e-waste collected, dismantled and sent to authorised recycler in Form-2 and make such record available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;
(8) file a return in Form-3, to the concerned State Pollution Control Board as the case may be, on or before 30th day of June following the financial year to which that return relates;
(9) not process any e-waste for recovery or refining of materials, unless he is authorised with concerned State Pollution Control Board as a recycler for refining and recovery of materials;
(10) operation without Authorisation by any dismantler, as defined in this rule, shall be considered as causing damage to the environment.

11. Responsibilities of the recycler. – (1) shall ensure that the facility and recycling processes are in accordance with the standards or guidelines prescribed by the Central Pollution Control Board from time to time;

(2) obtain authorisation from concerned State Pollution Control Board in accordance with the procedure under the sub-rule (3) of rule 13;

(3) ensure that no damage is caused to the environment during storage and transportation of e-waste;

(4) ensure that the recycling processes do not have any adverse effect on the health and the environment;

(5) make available all records to the Central Pollution Control Board or the concerned State Pollution Control Board for inspection;

(6) ensure that the fractions or material not recycled in its facility is sent to the respective authorised recyclers;

(7) ensure that residue generated during recycling process is disposed of in an authorised treatment storage disposal facility;

(8) maintain record of e-waste collected, dismantled, recycled and sent to authorised recycler in Form-2 and make such record available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;

(9) file annual returns in Form-3, to the concerned State Pollution Control Board as the case may be, on or before 30th day of June following the financial year to which that return relates;

(10) may accept waste electrical and electronic equipment or components not listed in Schedule I for recycling provided that they do not contain any radioactive material and same shall be indicated while taking the authorisation from concerned State Pollution Control Board;

(11) operation without Authorisation by any recycler, as defined in this rule, shall be considered as causing damage to the environment.

12. Responsibilities of State Government for environmentally sound management of E-waste. – (1) Department of Industry in State or any other government agency authorised in this regard by the State Government, to ensure earmarking or allocation of industrial space or shed for e-waste dismantling and recycling in the existing and upcoming industrial park, estate and industrial clusters;

(2) Department of Labour in the State or any other government agency authorised in this regard by the State Government shall:

a. ensure recognition and registration of workers involved in dismantling and recycling;
b. assist formation of groups of such workers to facilitate setting up dismantling facilities;
c. undertake industrial skill development activities for the workers involved in dismantling and recycling;
d. undertake annual monitoring and to ensure safety & health of workers involved in dismantling and recycling;

(3) State Government to prepare integrated plan for effective implementation of these provisions, and to submit annual report to Ministry of Environment, Forest and Climate Change.

CHAPTER III

PROCEDURE FOR SEEKING AND GRANT OF AUTHORISATION FOR MANAGEMENT OF E-WASTE

13. Procedure for Seeking and Grant of Authorisation. -

(1) **Extended Producer Responsibility - Authorisation of Producers.** – (i) every producer of electrical and electronic equipment listed in Schedule I, shall make an application for Extended Producer Responsibility - Authorisation within a period of ninety days starting from the date of these rules coming into force in Form-1 to Central Pollution Control Board;

(ii) on receipt of the application complete in all respects, the Central Pollution Control Board will carry out evaluation of the Extended Producer Responsibility Plan and on being satisfied that the producer has detailed out an effective system to manage Extended Producer Responsibility in the country, shall grant Extended Producer Responsibility - Authorisation, in Form 1(aa) within a period of one hundred and twenty days. The Extended Producer Responsibility - Authorisation shall be valid for a period of five years;

This authorisation shall include among others the targeted quantity of e-waste, product code wise, to be collected during the year. The actual target for collection of e-waste for dismantling or recycling will be fixed on the basis of quantity of electrical and electronic equipment, product code wise, placed in the market in the previous years and taking into consideration the average life of the equipment. The estimated quantity of e-waste generated during the current year will be indicated by the producer and the quantity expected to be collected with the collection scheme proposed to be implemented by the producer will be indicated in the Extended Producer Responsibility plan. The Central Pollution Control Board shall fix the targets in accordance with Schedule III.

(iii) the Central Pollution Control Board, after giving reasonable opportunity of being heard to the applicant shall refuse to grant Extended Producer Responsibility – Authorisation;

(iv) in the event of refusal of Extended Producer Responsibility - Authorisation by the Central Pollution Control Board, the producer will forfeit his right to put any Electrical and Electronic Equipment in the market till such time the Extended Producer Responsibility - Authorisation is granted;

(v) the Central Pollution Control Board after grant of Extended Producer Responsibility - Authorisation shall forward the Extended Producer Responsibility Plan to respective State Pollution Control Board for monitoring;

(vi) an application for the renewal of Extended Producer Responsibility-Authorisation shall be made in Form-1 before one hundred and twenty days of its expiry to Central Pollution Control Board. The Central Pollution Control Board may renew the authorisation for a period of five years after receipt of compliance report from the concerned State Pollution Control Board which shall submit the compliance report to Central Pollution Control Board within sixty days from the date of the receipt of the application. In case of non receipt of the compliance report from the State Pollution Control Board within stipulated time period of sixty days, Central Pollution Control Board may renew the Extended Producer Responsibility-Authorisation after examining such case on merit basis, subject to no report of violation of the provisions of the Act or the rules made there under or the conditions specified in the Extended Producer Responsibility - Authorisation;

(vii) every producer of Electrical and Electronic Equipment listed in Schedule I, shall take all steps, wherever required, to comply with the conditions specified in the Extended Producer Responsibility – Authorisation;

(viii) the concerned State Pollution Control Board shall monitor the compliance of Extended Producer Responsibility - Authorisation, take cognizance of any non-compliance and inform Central Pollution Control Board for taking action, as necessary;

(ix) Central Pollution Control Board shall conduct random check and if in its opinion, the holders of the Extended Producer Responsibility - Authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the Extended Producer Responsibility - Authorisation issued under these rules for such period as it considers necessary in the public interest and inform the concerned State Pollution Control Board within ten days of cancellation.

(x) the Central Pollution Control Board shall maintain an online register of Extended Producer Responsibility - Authorisation granted with conditions imposed under these rules for environmentally sound management of e-waste, and which shall be accessible to any citizen of the country.

(xi) The producer authorised under the provision of this rule shall maintain records in Form-2 and shall file annual returns of its activities of previous year in Form-3 to the Central Pollution Control Board on or before 30th day of June of every year;

(2) **Authorisation of Manufacturer. –** (i) the manufacturer generating e-waste shall obtain an authorisation from the concerned State Pollution Control Board;

(ii) the manufacturer shall make an application for authorisation, within a period of ninety days from the date of these rules coming into force in Form 1(a) to the concerned State Pollution Control Board for grant of authorisation;

(iii) on receipt of the application complete in all respects for the authorisation, the concerned State Pollution Control Board may, after such enquiry as it considers necessary and on being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipment to handle e-waste safely, grant within a period of one hundred and twenty days an authorisation in Form 1(bb) to the applicant to carry out safe operations in the authorised place only, which shall be valid for a period of five years;

(iv) the concerned State Pollution Control Board after giving reasonable opportunity of being heard to the applicant may refuse to grant any authorisation;

(v) every person authorised under these rules shall maintain the record of e-waste handled by them in Form-2 and prepare and submit to the concerned State Pollution Control Board, an annual return containing the details specified in Form-3 on or before the 30th day of June following the financial year to which that return relates;

(vi) an application for the renewal of an authorisation shall be made in Form-1(a) before one hundred and twenty days of its expiry and the concerned State Pollution Control Board may renew the authorisation for a period of five years after examining each case on merit and subject to the condition that there is no report of violation of the provisions of the Act or the rules made thereunder or the conditions specified in the authorisation;

(vii) manufacturer shall take all steps to comply with the conditions specified in the authorisation;

(viii) the concerned State Pollution Control Board shall maintain an online register of authorisations granted with conditions imposed under these rules for

environmentally sound management of e-waste, and which shall be accessible to any citizen of the country.

(3) **Procedure for grant of authorisation to dismantler or recycler.** - (i) every Dismantler or Recycler of e-waste shall make an application, within a period of one hundred and twenty days starting from the date of coming into force of these rules, in Form-4 in triplicate to the concerned State Pollution Control Board accompanied with a copy of the following documents for the grant or renewal of authorisation, namely:-

(a) consent to establish granted by the concerned State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974, (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981(21 of 1981);
(b) certificate of registration issued by the District Industries Centre or any other government agency authorised in this regard;
(c) proof of installed capacity of plant and machinery issued by the District Industries Centre or any other government agency authorised in this behalf;
(d) in case of renewal, a certificate of compliance of effluent and emission standards, treatment and disposal of hazardous wastes as applicable from the concerned State Pollution Control Board or any other agency designated for this purpose:

Provided that any person authorised or registered under the provisions of the Hazardous Wastes (Management, Handling and Transboundary Movements) Rules, 2008, and the E-waste (Management & Handling) Rules, 2011 prior to the date of coming into force of these rules shall not be required to make an application for authorisation till the period of expiry of such authorisation or registration:

(ii) the concerned State Pollution Control Board, on being satisfied that the application is complete in all respects and that the applicant is utilising environmentally sound technologies and possess adequate technical capabilities, requisite facilities and equipment to dismantle or recycle and process e-waste in compliance to the guidelines specified by Central Pollution Control Board from time to time and through site inspection, may grant authorisation to such applicants stipulating therein necessary conditions as deemed necessary for carrying out safe operations in the authorised place only;
(iii) the concerned State Pollution Control Board shall dispose of the application for authorisation within a period of one hundred and twenty days from the date of the receipt of such application complete in all respects;
(iv) the authorisation granted under these rules shall be valid for a period of five years from the date of its issue and shall be accompanied with a copy of the field inspection report signed by that Board indicating the adequacy of facilities for dismantling or recycling of e-waste and compliance to the guidelines specified by Central Pollution Control Board from time to time;
(v) the concerned State Pollution Control Board may refuse, cancel or suspend an authorisation granted under these rules, if it has reasons to believe that the authorised dismantler or recycler has failed to comply with any of the conditions of authorisation, or with any provisions of the Act or rules made thereunder, after giving an opportunity to the dismantler or recycler to be heard and after recording the reasons thereof;
(vi) an application for the renewal of authorisation shall be made in Form - 4 before one hundred and twenty days of its expiry and the concerned State Pollution Control Board may renew the authorisation for a period of five years after

examining each case on merit and subject to the condition that there is no report of violation of the provisions of the Act or the rules made there under or the conditions specified in the authorisation;

(vii) the Dismantler and Recycler shall maintain records of the e-waste purchased, processed in Form-2 and shall file annual returns of its activities of previous year in Form-3 to the concerned State Pollution Control Board on or before 30th day of June of every year;

(viii) the Central Government and the Central Pollution Control Board may issue guidelines for standards of performance for dismantling and recycling processes from time to time.

(4) **Procedure for grant of authorisation to refurbisher.** – (i) every refurbisher of e-waste shall make an application, with in a period of one hundred and twenty days starting from the date of coming into force of these rules, in Form 1 (a) in triplicate to the concerned State Pollution Control Board accompanied with a copy of the following documents for the grant or renewal of authorisation, namely:-

(a) consent to establish granted by the concerned State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974, (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981);

(b) certificate of registration issued by the District Industries Centre or any other government agency authorised in this regard;

(c) proof of installed capacity of plant and machinery issued by the District Industries Centre or any other government agency authorised in this behalf.

(ii) the concerned State Pollution Control Board, on being satisfied that the application is complete in all respects and complies with the guidelines prescribed by Central Pollution Control Board from time to time, may grant one time authorisation in Form 1 (bb) to such applicants stipulating therein necessary conditions as deemed necessary for carrying out refurbishing activities in the authorised place only;

(iii) the concerned State Pollution Control Board shall dispose of the application for authorisation within a period of one hundred and twenty days from the date of the receipt of such application complete in all respects;

(iv) the concerned State Pollution Control Board may refuse, cancel or suspend a authorisation granted under these rules, if it has reasons to believe that the authorised refurbisher has failed to comply with any of the conditions of authorisation, or with any provisions of the Act or rules made thereunder, after giving an opportunity to the refurbisher to be heard and after recording the reasons thereof;

(v) the Refurbisher shall maintain records of the e-waste purchased and refurbished in Form-2 and shall file annual returns of its activities of previous year in Form-3 to the concerned State Pollution Control Board on or before 30th day of June of every year.

14. Power to suspend or cancel an authorisation.- (1) The State Pollution Control Board may, if in its opinion, the holder of Manufacturer or Dismantler or Recycler or Refurbisher Authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving a reasonable opportunity of being heard and after recording reasons thereof in writing

cancel or suspend the authorisation issued under these rules for such period as it considers necessary in the public interest and inform Central Pollution Control Board within ten days of cancellation;

(2) The Central Pollution Control Board, if in its opinion, the holders of the Extended Producer Responsibility- Authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the Extended Producer Responsibility- Authorisation issued under these rules for such period as it considers necessary in the public interest and inform State Pollution Control Boards or Pollution Control Committees within ten days of cancellation;

(3) Upon suspension or cancellation of the authorisation, the Central Pollution Control Board or State Pollution Control Board may give directions to the persons whose authorisation has been suspended or cancelled for the safe storage and management of the e-waste and such persons shall comply with such directions.

CHAPTER IV

15. Procedure for storage of e-waste. - Every manufacturer, producer, bulk consumer, collection centre, dealer, refurbisher, dismantler and recycler may store the e-waste for a period not exceeding one hundred and eighty days and shall maintain a record of collection, sale, transfer and storage of wastes and make these records available for inspection:

Provided that the concerned State Pollution Control Board may extend the said period up to three hundred and sixty five days in case the waste needs to be specifically stored for development of a process for its recycling or reuse.

CHAPTER V

REDUCTION IN THE USE OF HAZARDOUS SUBSTANCES IN THE MANUFACTURE OF ELECTRICAL AND ELECTRONIC EQUIPMENT AND THEIR COMPONENTS OR CONSUMABLES OR PARTS OR SPARES

16. Reduction in the use of hazardous substances in the manufacture of electrical and electronic equipment and their components or consumables or parts or spares. – (1) Every producer of electrical and electronic equipment and their components or consumables or parts or spares listed in Schedule I shall ensure that, new Electrical and Electronic Equipment and their components or consumables or parts or spares do not contain Lead, Mercury, Cadmium, Hexavalent Chromium, polybrominated biphenyls and polybrominated diphenyl ethers beyond a maximum concentration value of 0.1% by weight in homogenous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers and of 0.01% by weight in homogenous materials for cadmium.

(2) Components or consumables or parts or spares required for the electrical and electronic equipment placed in the market prior to 1st May, 2014 may be exempted from the provisions of sub-rule (1) of rule 16 provided Reduction of Hazardous Substances compliant parts and spares are not available.

(3) The applications listed in Schedule II shall be exempted from provisions of sub-rule (1) of rule 16.

(4) Every producer of applications listed in Schedule II shall ensure that the limits of hazardous substances as given in Schedule II are to be complied.
(5) Every producer shall provide the detailed information on the constituents of the equipment and their components or consumables or parts or spares alongwith a declaration of conformance to the Reduction of Hazardous Substances provisions in the product user documentation.
(6) Imports or placement in the market for new electrical and electronic equipment shall be permitted only for those which are compliant to provisions of sub-rule (1) and sub rule (4) of rule 16.
(7) Manufacture and supply of electrical and electronic equipment used for defence and other similar strategic applications shall be excluded from provisions of sub-rule (1) of rule 16.
(8) Every producer while seeking Extended Producer Responsibility - Authorisation will provide information on the compliance of the provisions of sub-rule (1) of rule 16. This information shall be in terms of self-declaration.
(9) Central Pollution Control Board shall conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify the compliance of Reduction of Hazardous Substances provisions and the cost for sample and testing shall be borne by the Producer. The random sampling shall be as per the guidelines of Central Pollution Control Board.
(10) If the product does not comply with Reduction of Hazardous Substances provisions, the Producers shall take corrective measures to bring the product into compliance and withdraw or recall the product from the market, within a reasonable period as per the guidelines of the Central Pollution Control Board.
(11) Central Pollution Control Board shall publish the methods for sampling and analysis of Hazardous Substances as listed in sub-rule(1) of rule 16 with respect to the items listed in Schedule I and II and also enlist the labs for this purpose.

CHAPTER VI

MISCELLANEOUS

17. Duties of authorities. - Subject to other provisions of these rules, the authorities shall perform duties as specified in Schedule IV.

18. Annual Report. – (1) The concerned State Pollution Control Board shall prepare and submit to the Central Pollution Control Board an annual report with regard to the implementation of these rules by the 30th day of September every year in Form-5.
(2) The Central Pollution Control Board shall prepare the consolidated annual review report on management of e-waste and forward it to the Central Government along with its recommendations before the 30th day of December every year.

19. Transportation of e-waste. –The transportation of e-waste shall be carried out as per the manifest system whereby the transporter shall be required to carry a document (three copies) prepared by the sender, giving the details as per Form-6:

Provided that the transportation of waste generated from manufacturing or recycling destined for final disposal to a treatment, storage and disposal facility shall follow the provisions under Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

20. Accident reporting.- Where an accident occurs at the facility processing e-waste or during transportation of e-waste, the producer, refurbisher, transporter, dismantler, or recycler, as the case may be, shall report immediately to the concerned State Pollution Control Board about the accident through telephone and e-mail.

21. Liability of manufacturer, producer, importer, transporter, refurbisher, dismantler and recycler.- (1) The manufacturer, producer, importer, transporter, refurbisher, dismantler and recycler shall be liable for all damages caused to the environment or third party due to improper handling and management of the e-waste;

(2) The manufacturer, producer, importer, transporter, refurbisher, dismantler and recycler shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

22. Appeal.- (1) Any person aggrieved by an order of suspension or cancellation or refusal of authorisation or its renewal passed by the Central Pollution Control Board or State Pollution Control Board may, within a period of thirty days from the date on which the order is communicated to him, prefer a appeal in Form 7 to the Appellate Authority comprising of the Environment Secretary of the State.

(2) The Appellate Authority may entertain the appeal after expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(3) Every appeal filed under this rule shall be disposed of within a period of sixty days from the date of its filing.

23. The collection, storage, transportation, segregation, refurbishment, dismantling, recycling and disposal of e-waste shall be in accordance with the procedures prescribed in the guidelines published by the Central Pollution Control Board from time to time. Implementation of e-waste (Management and Handling) Amendment Rules, 2011 shall be in accordance with the guidelines prescribed by the Central Pollution Control Board from time to time.

24. Urban Local Bodies (Municipal Committee or Council or Corporation) shall ensure that e-waste pertaining to orphan products is collected and channelised to authorised dismantler or recycler.

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16

SCHEDULE I

[See rules 2, 3(j), 3(y), 3(aa) and 3(ff); 5; 9; 11(10); 13 (1) (i), 13 (1) (vii) and 16(1), 16(11)]

Categories of electrical and electronic equipment including their components, consumables, parts and spares covered under the rules

Sr. No.	Categories of electrical and electronic equipment	Electrical and electronic equipment code
i.	**Information technology and telecommunication equipment :**	
	Centralised data processing: Mainframes, Minicomputers	ITEW1
	Personal Computing: Personal Computers (Central Processing Unit with input and output devices)	ITEW2
	Personal Computing: Laptop Computers(Central Processing Unit with input and output devices)	ITEW3
	Personal Computing: Notebook Computers	ITEW4
	Personal Computing: Notepad Computers	ITEW5
	Printers including cartridges	ITEW6
	Copying equipment	ITEW7
	Electrical and electronic typewriters	ITEW8
	User terminals and systems	ITEW9
	Facsimile	ITEW10
	Telex	ITEW11
	Telephones	ITEW12
	Pay telephones	ITEW13
	Cordless telephones	ITEW14
	Cellular telephones	ITEW15
	Answering systems	ITEW16
ii.	**Consumer electrical and electronics:**	
	Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology)	CEEW1
	Refrigerator	CEEW2
	Washing Machine	CEEW3
	Air-conditioners excluding centralised air conditioning plants	CEEW4
	Fluorescent and other Mercury containing lamps	CEEW5

SCHEDULE II

[See rules 16 (3), 16 (4) and 16 (11)]

Applications, which are exempted from the requirements of sub-rule (1) of rule 16	
	Substance
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):
1(a)	For general lighting purposes <30 W : 2.5 mg
1(b)	For general lighting purposes ≥ 30 W and <50 W : 3.5mg
1(c)	For general lighting purposes ≥ 50 W and <150 W : 5mg
1(d)	For general lighting purposes ≥150 W : 15 mg
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm : 7mg
1(f)	For special purposes:5 mg
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):
2(a)(1)	Tri-band phosphor with normal life time and a tube diameter < 9mm (e.g. T2): 4mg
2(a)(2)	Tri-band phosphor with normal life time and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg
2(a)(3)	Tri- band phosphor with normal life time and a tube diameter >17 mm and ≤ 28 mm(e.g. T8): 3.5 mg
2(a)(4)	Tri-band phosphor with normal life time and a tube diameter >28 mm (e.g. T 12):3.5 mg
2(a)(5)	Tri-band phosphor with long life time (≥25000 h):5mg
2(b)	Mercury in other fluorescent lamps not exceeding(per lamp):
2(b)(1)	Linear halophosphate lamps with tube >28 mm (e.g. T 10 and T12):10 mg
2(b)(2)	Non-linear halophosphate lamps(all diameters):15mg
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter >17 mm(e.g.T9): 15 mg
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps):15mg
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL)for special purposes not exceeding (per lamp):
3(a)	Short length(≤ 500 mm):3.5mg
3(b)	Medium length(>500 mm and≤1500 mm): 5mg
3(c)	Long length(>1500 mm): 13mg
4(a)	Mercury in other low pressure discharge lamps (per lamp): 15mg
4(b)	Mercury in High Pressure Sodium(vapour) lamps for general lighting purposes not exceeding (per burner)in lamps with improved colour rendering index Ra>60:

4(b)-I	P ≤155 W : 30 mg
4(b)-II	155 W < P ≤405 W : 40 mg
4(b)-III	P >405 W: 40 mg
4(c)	Mercury in other High Pressure Sodium(vapour)lamps for general lighting purposes not exceeding (per burner):
4(c)-I	P≤155 W:25mg
4(c)-II	155 W < P ≤ 405 W:30 mg
4(c)-III	P >405 W:40 mg
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)
4(e)	Mercury in metal halide lamps (MH)
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Schedule
5(a)	Lead in glass of cathode ray tubes
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2% by weight
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight
6(b)	Lead as an alloying element in aluminium containing up to 0.4% lead by weight
6(c)	Copper alloy containing up to 4% lead by weight
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs
8(b)	Cadmium and its compounds in electrical contracts
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) application.

11(a)	Lead used in C-press compliant pin connector systems
11(b)	Lead used in other than C-press compliant pin connector systems
12	Lead as a coating material for the thermal conduction module C- ring
13(a)	Lead in white glasses used for optical applications
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards.
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages.
16	Lead in linear incandescent lamps with silicate coated tubes
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications.
18(a)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as specialty lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ($(Sr, Ba)_2Mg\ Si_2O_7$:Pb)
18(b)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($Ba\ Si_2O_5$:Pb)
19	Lead with PbBiSn-Hg and PblnSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring.
26	Lead oxide in the glass envelope of black light blue lamps
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers
29	Lead bound in crystal glass

30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB(A) and more
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers
34	Lead in cermet-based trimmer potentiometer elements
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide
39	Cadmium in colour converting II-VI LEDs (<10 µg Cd per mm^2 of light-emitting area) for use in solid state illumination or display systems.

SCHEDULE III

[See rules 5 (1) (a) and 13 (1) (ii)]

Targets for Extended Producer Responsibility - Authorisation

No.	Year	E-Waste Collection Target (Number/Weight)
(i)	During first two year of implementation of rules	30% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(ii)	During third and fourth years of implementation of rules	40% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(iii)	During Fifth and Sixth years of implementation of rules	50% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(iv)	Seventh year onward of implementation of rules	70% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.

SCHEDULE IV

[See rule (17)]

LIST OF AUTHORITIES AND CORREPONDING DUTIES

Sr. No	AUTHORITY	CORRESPONDING DUTIES
1.	Central Pollution Control Board, Delhi	(i) Grant and Renewal of Extended Producer Responsibility - Authorisation and monitoring of its compliance. (ii) Maintain information on Extended Producer Responsibility - Authorisation on its web site. (iii) Set and revise targets for collection of e-waste from time to time. (iv) Coordination with State Pollution Control Boards (v) Preparation of Guidelines for Environmentally Sound Management of e-waste. (vi) Conduct random check for ascertaining compliance of the e-waste rules and identification of such importers or producers who have not applied for Extended Producer Responsibility authorisation or are not complying with RoHS provision. Wherever necessary, Central Pollution Control Board will seek the help of customs department or any other agency of the Government of India. (vii) Conduct random inspection of dismantler or recycler or refurbisher. (viii) Documentation, compilation of data on e-waste and uploading on websites of Central Pollution Control Board (ix) Actions against violation of these rules. (x) Conducting training programmes. (xi) Submit Annual Report to the Ministry. (xii) Enforcement of provisions regarding reduction in use of hazardous substances in manufacture of electrical and electronic equipment. (xiii) Interaction with IT industry for reducing hazardous substances. (xiv) Set and revise targets for compliance to the reduction in use of hazardous substance in manufacture of electrical and electronic equipment from time to time. (xv) Any other function delegated by the Ministry under these rules from time to time.
2.	State Pollution Control Boards or Committees of Union territories	(i) Inventorisation of e-waste. (ii) Grant and renewal of authorisation to manufacturers, dismantlers, recyclers and refurbishers. (iii) Monitoring and compliance of Extended Producer Responsibility - Authorisation as directed by Central Pollution Control Board and that of dismantlers, recyclers and refurbishers authorisation. (iv) Conduct random inspection of dismantler or recycler or refurbisher. (v) Maintain online information regarding authorisation granted to manufacturers, dismantlers, recyclers and refurbishers.

Sr. No	AUTHORITY	CORRESPONDING DUTIES
		(vi) Implementation of programmes to encourage environmentally sound recycling. (vii) Action against violations of these rules. (viii) Any other function delegated by the Ministry under these rules.
3.	Urban Local Bodies (Municipal Committee or Council or Corporation)	(i) To ensure that e-waste if found to be mixed with Municipal Solid Waste is properly segregated, collected and is channelised to authorised dismantler or recycler. (ii) To ensure that e-waste pertaining to orphan products is collected and channelised to authorised dismantler or recycler.
4.	Port authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962)	(i) Verify the Extended Producer Responsibility - Authorisation. (ii) Inform Central Pollution Control Board of any illegal traffic for necessary action. (iii) Take action against importer for violations under the Indian Ports Act, 1908/Customs Act, 1962.

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FORM-1

[See Rules 5(1) (g), 13(1) (i), 13(1) (vi)]

Applicable to producers seeking Extended Producer Responsibility - Authorisation

The application form should contain the following information:

1.	Name and full address along with telephone numbers, e-mail and other contact details of Producer (It should be the place from where sale in entire country is being managed)	:	
2.	Name of the Authorised Person and full address with e-mail, telephone and fax number	:	
3.	Name, address and contact details of Producer Responsibility Organisation, if any with full address, e-mail, telephone and fax number, if engaged for implementing the Extended Producer Responsibility	:	
4.	Details of electrical and electronic equipment placed on market year-wise during previous 10 years in the form of Table 1 as given below:	:	

Table 1: Details of Electrical and Electronic Equipment placed on the market in previous years - Code wise

Sr. No.	Electrical and Electronic Equipment Item	Electrical and Electronic Equipment Code	Quantity, number and weight placed on market (year-wise)									
A	**Information technology and telecommunication equipment:**											
1	Centralised data processing: Mainframes, Minicomputers	ITEW1										
2	Personal Computing: Personal Computers (Central Processing Unit with input and output devices)	ITEW2										
3	Personal Computing: Laptop Computers(Central Processing Unit with input and	ITEW3										

	output devices)											
4	Personal Computing: Notebook Computers	ITEW4										
5	Personal Computing: Notepad Computers	ITEW5										
6	Printers including cartridges	ITEW6										
7	Copying equipment	ITEW7										
8	Electrical and electronic typewriters	ITEW8										
9	User terminals and systems	ITEW9										
10	Facsimile	ITEW10										
11	Telex	ITEW11										
12	Telephones	ITEW12										
13	Pay telephones	ITEW13										
14	Cordless telephones	ITEW14										
15	Cellular telephones	ITEW15										
16	Answering systems	ITEW16										
B	**Consumer electrical and electronics:**											
17	Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology)	CEEW1										
18	Refrigerator	CEEW2										
19	Washing Machine	CEEW3										
20	Air-conditioners excluding centralised air conditioning plants	CEEW4										
21	Fluorescent and other Mercury containing lamps	CEEW5										

5. Estimated generation of Electrical and Electronic Equipment waste item-wise and estimated collection target for the forthcoming year in the form of Table 2 including those being generated from their service centres, as given below:

Table 2: Estimated generation of Electrical and Electronic Equipment waste item-wise and estimated collection target for the forthcoming year

Sr. No.	Item	Estimated waste electrical and electronic equipment generation Number and weight	Targeted collection Number and weight

6. Extended Producer Responsibility Plans:

(a) Please provide details of your overall scheme to fulfil Extended Producer Responsibility obligations including targets. This should comprise of general scheme of collection of used/waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier such as through dealers and collection centres, Producer Responsibility Organisation, through buy-back arrangement, exchange scheme, Deposit Refund Scheme, etc. whether directly or through any authorised agency and channelising the items so collected to authorised recyclers.

(b) Provide the list with addresses along with agreement copies with dealers, collection centres, recyclers, Treatment, Storage and Disposal Facility, etc. under your scheme.

7. Estimated budget for Extended Producer Responsibility and allied initiatives to create consumer awareness.

8. Details of proposed awareness programmes.

9. Details for Reduction of Hazardous Substances compliance (to be filled if applicable):

(a) Whether the Electrical and Electronic Equipment placed on market complies with the rule 16 (1) limits with respect to lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominateddiphenyl ethers;

(b)Provide the technical documents (Supplier declarations, Materials declarations/Analytical reports) as evidence that the Reduction of Hazardous Substances (RoHS) provisions are complied by the product based on standard EN 50581 of EU;

(c) Documents required:

i. Extended Producer Responsibility plan;
ii. Copy of the permission from the relevant Ministry/Department for selling their product;

iii. Copies of agreement with dealers, collection centre, recyclers, Treatment, Storage and Disposal Facility, etc.;
iv. Copy of Directorate General of Foreign Trade license/permission as applicable;
v. Self-declaration regarding Reduction of Hazardous Substances provision;
vi. Any other document as required.

(Authorised signature)

Place: _____

Date: _____

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FORM 1(a)

[See rules 4(2), 8 (2), 13(2) (ii), 13(2) (vi) and 13(4) (i)]

APPLICATION FOR OBTAINING AUTHORISATION FOR GENERATION OR STORAGE OR TREATMENT OR DISPOSAL OF E-WASTE BY MANUFACTURER OR REFURBISHER*

From: .....
.....

To

The Member Secretary,
..... Pollution Control Board or…… Pollution Control Committee
.....
.....

Sir,

I / We hereby apply for authorisation/renewal of authorisation under rule 13(2) (i) to 13(2) (viii) and/or 13 (4) (i) of the E-Waste (Management) Rules, 2016 for collection/storage/ transportation/ treatment/ refurbishing/disposal of e-wastes.

For Office Use Only

Code No. :

Whether the unit is situated in a critically polluted area as identified by Ministry of Environment and Forests (yes/no);

To be filled in by Applicant

1. Name and full address:
2. Contact Person with designation and contact details such as telephone Nos, Fax. No. and E-mail:
3. Authorisation required for (Please tick mark appropriate activity/ies*)
   (i) Generation during manufacturing or refurbishing* ☐
   (ii) Treatment, if any ☐
   (iii) Collection, Transportation, Storage ☐
   (iv) Refurbishing ☐

4. E-waste details:
   (a) Total quantity e-waste generated in MT/A
   (b) Quantity refurbished (applicable to refurbisher)
   (c) Quantity sent for recycling
   (d) Quantity sent for disposal

5. Details of Facilities for storage/handling/treatment/refurbishing:

6. In case of renewal of authorisation previous authorisation no. and date and details of annual returns:

Place : _____ Signature _____

(Name_____)

Date : _____

Designation: _____

Note:-

(1) * The authorisation for e-waste may be obtained along with authorisation for hazardous waste under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, if applicable.

(2) Wherever necessary, use additional sheets to give requisite and necessary details.

FORM 1 (aa)
[See rules 5 (6) and 13(1)(ii)]

FORMAT OF EXTENDED PRODUCER RESPONSIBILITY - AUTHORISATION

[Extended Producer Responsibility Authorisation for Producer of the Electrical & Electronic Equipment]

Ref: Your application for Grant of Extended Producer Responsibility - Authorisation for following Electrical & Electronic Equipment under E-Waste (Management) Rules, 2016

1. Number of Authorisation:

Date:

2. **M/s. ----------** is hereby granted Extended Producer Responsibility - Authorisation based on:
   (a) overall Extended Producer Responsibility plan
   (b) proposed target for collection of e-waste

3. The Authorisation shall be valid for a period of ___ years from date of issue with following conditions:

   (i) you shall strictly follow the approved Extended Producer Responsibility plan, a copy of which is enclosed herewith;

   (ii) you shall ensure that collection mechanism or centre are set up or designated as per the details given in the Extended Producer Responsibility plan. Information on collection mechanism/centre including the state-wise setup should be provided;

   (iii) you shall ensure that all the collected e-waste is channelised to authorised dismantler or recycler designated as per the details. Information on authorised dismantler or recycler designated state-wise should be provided;

   (iv) you shall maintain records, in Form-2 of these Rules, of e-waste and make such records available for scrutiny by Central Pollution Control Board;

   (v) you shall file annual returns in Form-3 to the Central Pollution Control Board on or before 30th day of June following the financial year to which that returns relates;

   (vi) General Terms & Conditions of the Authorisation:

   a. The authorisation shall comply with provisions of the Environment (Protection) Act, 1986 and the Rules made there under;

   b. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the Central Pollution Control Board;

   c. Any change in the approved Extended Producer Responsibility plan should be informed to Central Pollution Control Board on which decision

shall be communicated by Central Pollution Control Board within sixty days;

d. It is the duty of the authorised person to take prior permission of the concerned State Pollution Control Boards and Central Pollution Control Board to close down the facility;

e. An application for the renewal of authorisation shall be made as laid down in sub-rule (vi) of rule of 13(1) the E-Waste (Management) Rules, 2016;

f. The Board reserves right to cancel/amend/revoke the authorisation at any time as per the Policy of the Board or Government.

Authorized signatory
(with designation)

To,
Concerned Producer
Copy to:

1. Member Secretary, Concerned State.
2. In-charge, concerned Zonal Office, Central Pollution Control Board.

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FORM 1(bb)

[See rules 4(2), 8(2)(a), 13(2) (iii) and 13(4)(ii)]

FORMAT FOR GRANTING AUTHORISATION FOR GENERATION OR STORAGE OR TREATMENT OR REFURBISHING OR DISPOSAL OF E-WASTE BY MANUFACTURER OR REFURBISHER

Ref: Your application for Grant of Authorisation

1. (a) Authorisation no. ..... and (b) date of issue …….

2. ……..……of……is hereby granted an authorisation for generation, storage, treatment, disposal of e-waste on the premises situated at……. for the following:

a. quantity of e-waste;
b. nature of e-waste.

3. The authorisation shall be valid for a period from …… to ……

4. The e-waste mentioned above shall be treated/ disposed off in a manner ..... at .....

5. The authorisation is subject to the conditions stated below and such conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Signature ----------
Designation ---------- Date: ----------

Terms and conditions of authorisation

1. The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made thereunder.
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorized by the concerned State Pollution Control Board.
3. Any unauthorised change in personnel, equipment as working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorisation.
4. It is the duty of the authorised person to take prior permission of the concerned State Pollution Control Board to close down the operations.
5. An application for the renewal of an authorisation shall be made as laid down in sub-rule (vi) of rule 13(2).

FORM-2

[See rules 4(4), 5(4), 6(5), 8(7), 9(2), 10(7), 11(8), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13 (4)(v)]

FORM FOR MAINTAINING RECORDS OF E-WASTE HANDLED OR GENERATED

Generated Quantity in Metric Tonnes (MT) per year

1.	Name & Address: Producer or Manufacturer or Refurbisher or Dismantler or Recycler or Bulk Consumer*		
2.	Date of Issue of Extended Producer Responsibility Authorisation*/ Authorisation*		
3.	Validity of Extended Producer Responsibility Authorisation*/ Authorisation*		
4.	Types & Quantity of e-waste handled or generated**	Category	Quantity
		Item Description	
5.	Types & Quantity of e-waste stored	Category	Quantity
		Item Description	
6.	Types & Quantity of e-waste sent to collection centre authorised by producer/ dismantler/recycler / refurbisher or authorised dismantler/recycler or refurbisher**	Category	Quantity
		Item Description	
7.	Types & Quantity of e-waste transported*	Category	Quantity
		Quantity	
	Name, address and contact details of the destination		
8.	Types & Quantity of e-waste refurbished*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination of refurbished materials		
9.	Types & Quantity of e-waste dismantled*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		

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10.	Types & Quantity of e-waste recycled*	Category	Quantity
	Types & Quantity of materials recovered	Item Description	
		Quantity	
	Name, address and contact details of the destination		
11.	Types & Quantity of e-waste sent to recyclers by dismantlers	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
12.	Types & Quantity of other waste sent to respective recyclers by dismantlers/recyclers of e-waste	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
13.	Types & Quantity of e-waste treated & disposed	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		

Note:-

(1) * Strike off whichever is not applicable

(2) Provide any other information as stipulated in the conditions to the authoriser

(3) ** For producers this information has to be provided state-wise

FORM-3

[See rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted by producer or manufacturer or refurbisher or dismantler or recycler by 30th day of June following the financial year to which that return relates].

Quantity in Metric Tonnes (MT) and numbers

1	Name and address of the producer or manufacturer or refurbisher or dismantler or recycler			
2	Name of the authorised person and complete address with telephone and fax numbers and e-mail address			
3	Total quantity of e-waste collected or channelised to recyclers or dismantlers for processing during the year for each category of electrical and electronic equipment listed in the Schedule I (Attach list) by PRODUCERS			
	Details of the above	TYPE	QUANTITY	No.
3(A)*	BULK CONSUMERS: Quantity of e-waste			
3(B)*	REFURBISHERS: Quantity of e-waste:			
3(C)*	DISMANTLERS: i Quantity of e-waste processed (Code wise); ii. Details of materials or components recovered and sold; iii. Quantity of e-waste sent to recycler; iv. Residual quantity of e-waste sent to Treatment, Storage and Disposal Facility.			
3(D)*	RECYCLERS: i. Quantity of e-waste processed (Code wise); ii. Details of materials recovered and sold in the market; iii. Details of residue sent to Treatment, Storage and Disposal Facility.			
4	Name and full address of the destination with respect to 3(A)-3(D) above			
5	Type and quantity of materials segregated or recovered from e-waste of different codes as applicable to 3(A)-3(D)	Type	Quantity	

✔Enclose the list of recyclers to whom e-waste have been sent for recycling.

Place_____

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Date_____ **Signature of the authorised person**

Note:-

(1) * Strike off whichever is not applicable
(2) Provide any other information as stipulated in the conditions to the authoriser
(3) In case filing on behalf of multiple regional offices, Bulk Consumers and Producers need to add extra rows to 1 & 3(A) with respect to each office.

FORM-4

[See rules 13(3)(i) and 13(3)(vi)]

APPLICATION FORM FOR AUTHORISATION OF FACILITIES POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT PRACTICE FOR DISMANTLING OR RECYCLING OF E-WASTE

(To be submitted in triplicate)

1.	Name and Address of the unit			
2.	Contact person with designation, Tel./Fax			
3.	Date of Commissioning			
4.	No.of workers (including contract labour)			
5.	Consents Validity	a. Water (Prevention and Control of Pollution) Act, 1974; Valid up to _____ b. Air (Prevention and Control of Pollution) Act, 1981; Valid up to_____		
6.	Validity of current authorisation if any	e-waste (Management & Handling) Rules, 2011; Valid up to _____		
7.	Dismantling or Recycling Process	Please attach complete details		
8.	Installed capacity in MT/year	Products	Installed capacity (MTA)	
9.	E-waste processed during last three years	Year	Product	Quantity
10.	Waste Management:			
	a. Waste generation in processing e-waste	Please provide details material wise		
	b. Provide details of disposal of residue.	Please provide details		
	c. Name of Treatment Storage and Disposal Facility utilized for			
11.	Details of e-waste proposed to be procured from re-processing	Please provide details		
12.	Occupational safety and health aspects	Please provide details		
13.	Details of Facilities for dismantling both manual as well as mechanised:			

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14.	Copy of agreement with Collection Centre	
15.	Copy agreement with Producer	
16.	Details of storage for dismantled e-waste	
17.	Copy of agreement with Recycler	
18.	Details of Facilities for Recycling	
19.	Copy of agreement with Collection Centre	
20.	Copy agreement with Producer	
21.	Details of storage for raw materials and recovered materials	

II. In case of renewal of **authorisation, previous registration or authorisation no. and date**

I hereby declare that the above statements or information are true and correct to the best of my knowledge and belief.

Signature

Place:_____ Name:_____

Date:_____ Designation:_____

Form-5

[See rule 18 (1)]

FORM FOR ANNUAL REPORT TO BE SUBMITTED BY THE STATE POLLUTION CONTROL BOARD TO THE CENTRAL POLLUTION CONTROL BOARD

To,

The Chairman,
Central Pollution Control Board,
(Ministry of Environment And Forests)
Government Of India, 'Parivesh Bhawan', East Arjun Nagar,
Delhi- 110 0032

1.	Number of authorised manufacturer, refurbisher, collection centre, dismantler and recycler for management of e-waste in the State or Union territory under these rules	:	
2.	Categories of waste collected along with their quantities on a monthly average basis:	:	Please attach as Annexure-I
3.	A Summary Statement code-wise of e-waste collected	:	Please attach as Annexure-II
4.	Details of material recovered from recycling of e-waste	:	
5.	Quantity of CFL received at Treatment, Storage and Disposal Facility	:	
6.	The above report is for the period from ……to .....……		

Place: _____

Date: _____

Chairman or the Member Secretary
State Pollution Control Board

Form-6

[See rule 19]

E-WASTE MANIFEST

1.	Sender's name and mailing address (including Phone No.) :	
2.	Sender's authorisation No, if applicable. :	
3.	Manifest Document No. :	
4.	Transporter's name and address : (including Phone No.)	
5.	Type of vehicle :	(Truck or Tanker or Special Vehicle)
6.	Transporter/s registration No. :	
7.	Vehicle registration No. :	
8.	Receiver's name & address :	
9.	Receiver's authorisation No, if applicable. :	
10.	Description of E-Waste (Item, Weight/ Numbers) :	
11.	Name and stamp of Sender* (Manufacturer or Producer or Bulk Consumer or Collection Centre or Refurbisher or Dismantler): Signature: Month Day Year	
12.	Transporter acknowledgement of receipt of E-Wastes	
	Name and stamp: Signature: Month Day Year	
13.	Receiver* (Collection Centre or Refurbisher or Dismantler or Recycler) certification of receipt of E-waste	
	Name and stamp: Signature: Month Day Year	

* As applicable

Note:-

Copy number with colour code (1)	**Purpose (2)**
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
Copy 2 (Pink)	To be retained by the receiver after signature of the transporter.
Copy 3 (Orange)	To be retained by the transporter after taking signature of the receiver.
Copy 4 (Green)	To be returned by the receiver with his/her signature to the sender

FORM 7
[See rule 22]

APPLICATION FOR FILING APPEAL
AGAINST THE ORDER PASSED BY CENTRAL POLLUTION CONTROL BOARD/STATE POLLUTION CONTROL BOARD

1.	Name and address of the person making the appeal	:
2.	Number, date of order and address of the authority to which passed the order, against which appeal is	: (certified copy of the order be attached)
3.	Ground on which the appeal is being made	:
4.	Relief sought for	:
5.	List of enclosures other than the order referred in point 2 against which the appeal is being filed.	:

Signature……..

Name and address……

Place:

Date:

Bishwanath Sinha
Joint Secretary to Government of India
(F No. 12-6/2013-HSMD)

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[PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY PART-II, SECTION-3, SUB-SECTION (i)]

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 23rd March , 2016

G.S.R 338(E). - Whereas the draft rules, namely the e-waste (Management) Rules, 2015, were published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* number G.S.R. 472(E), dated the 10th June, 2015 in the Gazette of India, Extraordinary Part II, section 3, sub-section (ii) inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS the copies of the Gazette containing the said notification were made available to the public on the 10th day of June, 2015;

AND WHEREAS the objections and suggestions received within the specified period from the public in respect of the said draft rules have been duly considered by the Central Government;

NOW, THEREFORE, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the e-waste (Management and Handling) Rules, 2011, published in the Gazette of India, section 3, sub-section (ii), *vide* number S.O. 1035(E), dated the 12th May, 2011, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

CHAPTER I

PRELIMINARY

1. Short title and commencement. - (1) These rules may be called the E-Waste (Management) Rules, 2016.
(2) They shall come into force from the 1st day of October, 2016.

2. Application. - These rules shall apply to every manufacturer, producer, consumer, bulk consumer, collection centres, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational but shall not apply to -

(a) used lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001 made under the Act;
(b) micro enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006); and

[PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY PART-II, SECTION-3, SUB-SECTION (i)]

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(a) used lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001 made under the Act;
(b) micro enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006); and

Annexure 13

THE DRAFT GUIDELINES FOR REGULATION OF TYRE RETREADING ACTIVITIES IN THE STATE OF MAHARASHTRA

ENVIRONMENT DEPARTMENT
GOVT. OF MAHARASHTRA

Notification

Draft Guidelines for Regulation of Tyre Retreading Activities in the State of Maharashtra

No…….. Date: / /2014

Notification under Section 17(1) (b) and (h) of the Air (Prevention & Control of Pollution) Act,1981 in respect of prescribing draft Guidelines for the Regulation of the Tyre-Retreading Activity in the State of Maharashtra.

WHEREAS, the Maharashtra Pollution Control Board had constituted a Committee to propose suitable Draft Guidelines / Regulations for the activities of Tyre Retreading and Tyre Recycling (Pyrolysis) as well as to impose necessary prohibitions and restrictions on the activities of burning of tyres.

AND WHEREAS, the Committee constituted by the MPCB for the above purposes has submitted a detailed Report on Draft Guidelines for Tyre Retreading, Tyre Pyrolysis Process (Recycling) as well as Prohibitions & Restrictions on Burning of Tyres (June-2014) in pursuance of the order dtd.5/5/2014 passed by the Hon'ble National Green Tribunal, Western Zone Bench, Pune in the Application No.43/2013 filed by Asim Sarode & Anr. v/s MPCB & Ors.

AND WHEREAS, the Maharashtra Pollution Control Board has recommended to the Environment Deptt., Govt. of Maharashtra to issue appropriate Notification in respect of the Regulation of Tyre Retreading, Tyre Pyrolysis Process (Recycling) as well as Prohibitions & Restrictions on Burning of Tyres.

NOW THEREFORE, in exercise of the powers conferred by Section 17(1)(b) & (h) of the Air (Prevention & Control of Pollution) Act, 1981, the State Govt., hereby issues the following Guidelines for Regulation of the following activities :

(A) Tyre Retreading, (B) Tyre Pyrolysis Process (Recycling) Activities and also (C) Imposition of Prohibitions & Restrictions on Burning of Tyres, as under :-

(A) **Guidelines for Tyre Retreading :** The process involved of tyre retreading is collecting tyres from the customers like transporters, fleet owners and travelers for the purpose of retreading of the damaged part of the tyre, which is simple repairing process, having very less pollution potential. MPCB on the basis of the Report submitted by the Committee has come to the conclusion that the criteria

for "Distinguishing emergency service tyre retreaders from commercial tyre retreaders" is necessary. The roadside or service area for vehicles or fuel in stations based on small scale tyre retreaders typically providing retreading services on emergency basis or help in performing the task of slack journey in the form of repairs to tyres on small scale basis are not to be covered under the grant of consent regime by the MPCB. The following Guidelines are recommended by the MPCB on the basis of the recommendations of the Committee accepted by the MPCB for proper regulation of retreading activity.

1) The activity of retreading should adopt complete Life Cycle Approach by keeping proper record of material balance of all the raw material.
2) Since, tyre is highly combustible material, high safety measures are required to be adopted. However, the small scale activity of tyre molding/repairing in garages in the small scale less than 15 tyres in the form of repair with molding small portion may not require to obtain consent from MPCB on account of its scale and the predominant nature of repairing activity.
3) The small shops by the Roadside doing tyre moulding only in the form of repairs and maintenance of tyres also may not require to obtain consent from MPCB.
4) However, if the garage is covered under grant of consent on account of its scale, the conditions for environment protection and compliance of environmental norms will be imposed in the Consent granted by MPCB. However, smaller re-trader without processing and doing manual operations are not covered under the consent regime as stated above, being recovery of metal/tyre waste/ engaged in manual repairs, may not be brought under consent regime.
5) The criteria for the "Distinguishing Emergency Service Tyre Retreaders'" from the "Commercial Tyre Retreaders", though nebulous need to be attributed for implementation of the said tyre retreading rules as under:

    a) The roadside or service area for vehicles or fuel in stations based on small scale tyre retreaders typically providing service for the vehicles, which would like to obtain retreading services on emergency service or help on the way to performing their task slack journey, such small scale re-treaders are found situated most likely next to tyre puncture repairer or vehicle maintenance garage on highways and vehicle rest stops. The small scale trading installations are typically retread 15 or less tyres (on an average on a daily basis). The burden of proof of proving that the installation happens to be the so called "Distinguishing Emergency Service Tyre Retreaders", lies on the entrepreneur and the supporting documents for the claim could be including vat returns, service tax returns etc. However, they should ensure

that waste tyre or its part in repairing should be sent for further recycling and nothing should be thrown unattended in the public premises and it should be properly disposed off, by way of adopting Life Cycle Approach.

b) The "commercial tyre retreaders" are distinguishing from the small scale retreaders above by the virtue of the capacity of retreading typically dozens of tyres per day. Such facilities received the end-of-life tyres through an organized network of service seekers network with them and sending them tyres for retreading.

It should, however, be remembered that both the retreaders described in sections a) and b) are covered under repairs and maintenance category of VAT. The distinctions between a) and b) as described above, stems from the scale of operation at these locations. That is the reason why MPCB shall monitor units described in the category as "Commercial Tyre Retreaders" and the consent may be considered under Orange Category.

c) Monitoring of "Distinguishing Emergency Service Tyre Retreaders'"

The monitoring of these category units shall be done by local authority, which is permitting them to construct and operate that establishment. The said local authority shall monitor following conditions.

(i) The retreading of one tyre generates 1 to 1.5 Kg. of scrap rubber. It shall be properly collected and disposed to recyclers. It should not dump in nearby areas unscientifically.

(ii) Fire wood, coal, fuel used for conducting retreading operations shall be properly stored and so as to minimize fire hazards.

(iii) Upon using the above fuel, fume and smoke will be generated. For the public health point of view, generated gaseous pollution should be vented off using chimney/stack having height from sealing should not be shorter than 1 meter. In case of taller adjacent buildings surrounding the installation, the stack height shall be maintained at 1 meter taller than the tallest adjoining building.

(B) **Tyre Pyrolysis Process (Tyre Recycling) :**The Tyre Pyrolysis Process devised for recovery of fuel oil, carbon black and scrap iron wires etc. There are two types of tyre pyrolysis plants in Maharashtra (a) Batch Process;& (b) Continuous Process. The Life Cycle Approach has been observed to be adopted in both the batch & continuous process of tyre pyrolysis. The feed stock (solid products& residue of waste tyres) continuously feed up. Polymer decomposed and vaporized through break-chemical bonds. The system operates within a

temperature range of 250^{0}C to 500^{0}C. At the temperature above 250^{0}C, shredded tyres release increasing amount of liquid oil products and gases. Pyrolysis process produces an excess of energy and it is safe to operate compare to high pressure blasting and other issues. In the process, oil, carbon black and gases in the form of energy generated. The Guidelines to regulate tyre pyrolysis activity are as under :

1) <u>Location of unit</u>:

The pyrolysis plants may be located away from habitation more particularly in MIDC and industrial areas

- The minimum area recommended for batch process plant is about 1000 sq.mt. for 10 Ton/day tyre consumption and 500 Sq Meters for every additional 10 MT waste tyre capacity.
- For continuous process plant 2000 sq.mt. for 10 Ton capacity and 500 Sq Mtrs for every additional 10 MT waste tyre capacity.

2) <u>Pollution Control Measures:-</u>

i. The tyre during process of pyrolysis at a temperature above approximately 250 ^{o}C release liquid oil, it shall be stored in a suitable tanks in a safe condition.

ii. Carbon Black shall be conveyed through hydraulic/screw conveyor in closed conditions. It can also be conveyed, collected and handled by using any advanced suitable technology. The carbon black shall be bagged in HDPE/ leak proof bags with proper sealing.

iii. The excess uncondensed gases from the reactor shall be stored under compressed conditions in a tank of suitable design. The collected gases can be used as a fuel instead of wood during the start up of the reactor. The excess uncondensed gases can be flared in a scientifically designed flaring system .

iv. No wood/coal allowed as fuel in such plants, however in case of startup, wood/coal may be permitted. The fuel gases generated from burning of fuel may be released through the stack of minimum height 11 meters from the ground level or as per local Regulation.

v. The oil mixed water shall be reused in the process. The obnoxious gases generation shall be avoided from the waste water. The product shall be stored in a covered shed only. They

shall not store in outside the shed. The raw material waste tyres shall be stored in earmarked open area.

vi. The industry shall ensure that there are no leakages from the reactor, pipelines etc. Adequate arrangements will also be made for control of fugitive emissions generated from handling of raw materials/products. In batch process, sufficient break about 12 hrs. is required to be kept from the safety point of view in order to avoid any sort of explosion due to continuous heating process. Therefore, the equipment after one batch process, can be kept unused to cool down it to the normal temperature of the environment.

vii. The unit will maintain log book of the plant operation, monitoring of the ambient air quality, generation and utilization of wastewater. The unit should able to demonstrate credible mass balance including solid, liquid, slurry generation during processing and production of these stipulated products and byproducts.

3) <u>Safety arrangements:-</u>

i. Suitable sensor for gas, temperature and pressure shall be installed inside the reactor to regulate safe operation of the reactor. All the relevant sensors for process and fugitive emissions including Carbon Monoxide, Hydro Carbon , Methane shall be installed.

ii. The adequate arrangement for firefighting approved by the competent authority shall be installed.

iii. Copy of certificate obtained from the relevant department for firefighting and other safety issues will be submitted to the State Board.

iv. Industry shall bring minimum 33% of the available open land under green coverage / plantation to curb smell if any being emitted from the process or stored tyres.

v. The applicant of pyrolysis units shall maintain good housekeeping and take adequate measures for the control of smell and other pollutants so as not to cause nuisance to surrounding areas/habitation.

4) Regulatory compliances:-

The unit shall comply with the Environment(Protection) Act, 1986, the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention

& Control of Pollution) Act, 1981 and Rules made there under. The units shall also obtain necessary consent from MPCB and comply with the conditions mentioned. They shall also comply with these guidelines.

(C) **Prohibitions and Restrictions on Burning of Tyres :-**The Committee constituted by MPCB has examined the main cause in respect of burning of tyres in an open area by miscreant elements or on a small scale typically for protection from severe cold during winter season, mostly by beggars, rag pickers and security guards.

The Committee was of the opinion that the reason behind throwing used tyres in waste dump sites should be curbed in the first place. This is a part of the larger phenomenon routinely occurring in our country including burning of Municipal Solid Waste (MSW) or burning of Combustible Waste Materials and Industrial Waste Residues. As regards to burning of the tyres by protestors, it is also part of a larger problem erupting once in a while at unspecified and non-predictable location. A look at the prints media and other historical data indicates that the protestors resort to burning of scrap plastic, vehicles parked on roads, railway wagons and bogies and even house property including foam couches and wooden furniture.

However, the Committee was of the view that the availabilities of tyres for burning as part of protest can be more effectively curbed through offering incentives and market based benefits and introduction of deposit schemes implemented at the time of buying of tyres, which can be further recycled, reprocessed and reused. The following Guidelines / Regulations are therefore recommended by the Committee and accepted by the MPCB:

1. To ta**ke action against hazardous emissions caused due to tyre burning in the public places** :- As per the recommendations of the committee duly accepted by the MPCB, the State Government in exercise of the powers conferred upon it under Sub Section 5 of Section 19 of the Air (Prevention and Control of Pollution) Act, 1981 and in consultation with MPCB hereby issues a Notification in the Official Gazette prohibiting burning of tyres in air pollution control areas.

   The Law and Order Enforcing Agencies particularly, the Police Department and the Office of District Collector are hereby directed to take appropriate action against the violators under the Bombay Police Act and the Criminal Procedure Code.

2. **Encouraging retreading, reusing & recycling of waste/used tyres** :- As per the recommendations of the Committee and duly accepted by MPCB, proper solution for minimizing the act of burning of tyres can be achieved only after creating an implementing a system for recycling, retreading & reuse of used tyres, more particularly, by adopting Life Cycle Approach by encouraging & facilitating reuse & recycle of tyres.

3. The proposal for imposing social responsibility and fine or penalty is forwarded to the Ministry of Environment & Forests, Govt. of India for the purpose of such tyre burning at public place like roads, during course of the protest or incidents of violations etc. should be banned and heavy penalty and punishment be imposed upon such type of violaters.

4. The culprits are to be identified by the Police Authorities and/or District Administration entrusted with the maintaining the law & order and they can proceed as per the provisions in force under various General Laws like Indian Penal Code, Criminal Procedure Code, Police Act or Municipal Laws.

(B. N. Patil)
Director (Environment)
Govt. of Maharashtra

Annexure 14

THE BATTERIES (MANAGEMENT AND HANDLING) RULES, 2001, AMENDED ON 2010

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 16th May, 2001

Amended by notification S.O.1002(E), dated 4th May, 2010)

S.O. 432(E).- Whereas a notification of the Government of India in the Ministry of Environment and Forests was published in the Gazette of India, Extraordinary, Part II-section 3, sub-section (ii) vide No. S.O. 491(E), dated 24th May, 2000 and corrigendum published in the Gazette of India Extraordinary Part-II section 3, sub-section (ii) vide No. S.O. 593(E), dated 23rd June, 2000 under powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), inviting objections from persons likely to be affected, within a period of sixty days from the date of publication of the said notification with regard to the Government's intention to notify the Battery (Management and Handling) Rules, 2000.

And, whereas all objections received have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby notifies the Batteries (Management and Handling) Rules, 2001.

1. SHORT TITLE AND COMMENCEMENT. –

(1) These rules may be called the **Batteries (Management and Handling) Rules, 2001.**

(2) They shall come into force on the date of their publication in the Official Gazette.

2. APPLICATION. –

These rules shall apply to every manufacturer, importer, re-conditioner, assembler, dealer, recycler, auctioneer, consumer, and bulk consumer involved in manufacture, processing, sale, purchase and use of batteries or components thereof.

3. DEFINITIONS.- In these rules, unless the context otherwise requires, -

(a) **'Act'** means the Environment (Protection) Act, 1986 (29 of 1986);

(b) **'assembler'** - means a person who manufactures lead acid batteries by assembling various components;

(c) **'auction'** - means bulk sale of used lead acid batteries or component (s) thereof by invitation of tenders or auction, contract or negotiation by individual(s), companies or Government Departments;

(d) **'auctioneer'-** means a person(s) who auctions used lead acid batteries or components, thereof;

(e) **'battery'-** means lead acid battery which is a source of electrical energy and contains lead metal;

[1][(f) **'bulk consumer'** - means a consumer such as the Departments of Central Government like Railways, Defence, Telecom, Posts and Telegraph, the Departments of State Government, the Undertakings, Boards and other agencies or companies who purchase hundred or more than hundred batteries per annum.]

(g) **'components'** means lead bearing components of a lead acid battery;

(h) **'consumer'**- means a person using lead acid batteries excluding bulk consumers;

(i) **'dealer'-** means a person who sells and receives lead acid batteries or components thereof to and from the consumers or other dealers or retailers on behalf of the manufacturers, importers, assemblers and reconditioners or otherwise;

(j) **'designated collection centre'**- means a collection centre established, individually or jointly by one or more manufacturers or importers, assemblers and re-conditioners in pursuance of their responsibilities under rule- 4 of these rules.

(k) **'importer'** -means a person who imports new lead acid batteries or components containing lead thereof for the purpose of sale;

[1] Substituted by the S.O.1002(E), dated 4.5.2010.

(l) **'manufacturer'-** in relation to any factory manufacturing lead acid batteries or components thereof means a person or Chief Executive Officer (CEO) of the company who has control over the affairs of the factory or the premises for sale and collection of lead acid batteries or components thereof,

(m) **'original equipment manufacturer'** - means manufacturer of equipment or product using lead acid batteries as a component;

(n) **'reconditioner'** -means a person involved in repairing of lead acid batteries for selling the same in the market;

(o) **'recycler'**-means an occupier who processes used lead acid batteries or components thereof for recovering lead;

(p) **'registered recycler'-** means a recycler registered with the Ministry of Environment and Forests or an agency designated by it for reprocessing used lead acid batteries or components thereof;

(q) **'State Board'**- means the concerned State Pollution Control Board or the Pollution Control Committee as the case may be;

(r) **'used batteries'** - means used, damaged and old lead acid batteries or components thereof; and

(s) the words not defined in these rules will have the same meaning as defined in the Environment (Protection) Act, 1986 and the rules framed thereunder.

4. RESPONSIBILITIES OF MANUFACTURER, IMPORTER, ASSEMBLER AND RE-CONDITIONER.-

It shall be the responsibility of a manufacturer, importer, assembler and re-conditioner to

(i) ensure that the used batteries are collected back as per the Schedule against new batteries sold excluding those sold to original equipment manufacturer and bulk consumer(s);

(ii) ensure that used batteries collected back are of similar type and specifications as that of the new batteries sold;

(iii) file a half-yearly return of their sales and buy-back to the State Board in Form- I latest by 30th June and 31st December of every year.

(iv) set up collection centres either individually or jointly at various places for collection of used batteries from consumers or dealers;

(v) ensure that used batteries collected are sent only to the registered recyclers,

(vi) ensure that necessary arrangements are made with dealers for safe transportation from collection centres to the premises of registered recyclers ;

(vii) ensure that no damage to the environment occurs during transportation;

(viii) create public awareness through advertisements, publications, posters or by other means with regard to the following:

(a) hazards of lead;
(b) responsibility of consumers to return their used batteries only to the dealers or deliver at designated collection centres; and
(c) addresses of dealers and designated collection centres.

(ix) use the international recycling sign on the Batteries;

(x) buy recycled lead only from registered recyclers; and

(xi) bring to the notice of the State Board or the Ministry of Environment and Forests any violation by the dealers.

[2][(xii) ensure that the new batteries shall be sold only to the registered dealers.]

Note: The assemblers and reconditioners are excluded from the purview of responsibilities as specified in sub-clauses (iv), (vii), (ix) and (xii).

[2] Inserted by the S.O.1002(E), dated 4.5.2010.

5. REGISTRATION OF IMPORTERS. –

[3][(i) the importers shall get registered as per Form I with the Central Pollution Control Board for a period of five years and a provision of cancellation for failure in collection of the required number of used batteries as per the said rules, non-submission of timely half yearly returns to the State Pollution Control Boards with a copy to the Central Pollution Control Board, renewal of the registration shall be as per the compliance status:
Provided that the registration granted to the importer shall not be cancelled unless he has been given a reasonable opportunity of hearing;

(ii) an appeal shall lie against any order of suspension or cancellation or refusal of registration passed by the Member-Secretary of the Central Pollution Control Board or any other officer designated by the Central Pollution Control Board;

(iii) the appeal shall be in writing and shall be accompanied with a copy of the order appealed against and shall be made within period of thirty days from the date of passing of the order.]

6. CUSTOMS CLEARANCE OF IMPORTS OF NEW LEAD ACID BATTERIES. –

Customs clearance of imports shall be contingent upon

(i) valid registration with the Reserve Bank of India (with Importer's Code Number);

(ii) one time registration with the Ministry of Environment and Forests or an agency designated by it in Form-II;

(iii) undertaking in Form-III; and

(iv) a copy of the latest half-yearly return in Form-IV.

7. RESPONSIBILITIES OF DEALER.–

It shall be the responsibility of a dealer to –

(i) ensure that the used batteries are collected back as per the Schedule against new batteries sold;

(ii) give appropriate discount for every used battery returned by the consumer;

(iii) ensure that used batteries collected back are of similar type and specifications as that of the new batteries sold;

(iv) file half-yearly returns of the sale of new batteries and buy-back of old batteries to the manufacturer in Form V by 31st May and 30th November of every year;

(v) ensure safe transportation of collected batteries to the designated collection centres or to the registered recyclers; and

(vi) ensure that no damage is caused to the environment during storage and transportation of used batteries.

[4][(vii) (a) registration with State Pollution Control Board for five years and a provision of cancellation for failure in collection of the required number of used batteries as per the said rules, non-submission of timely half yearly returns to the State Pollution Control Boards, renewal of the registration shall be as per the compliance status, to submit details as per Form IV, registration would be considered as deemed registered if not objected to within thirty days;

(b) an appeal shall lie against any order of suspension or cancellation or refusal of registration passed by the Member-Secretary of the State Pollution Control Board or any other officer designated by the State Pollution Control Board;

(c) the appeal shall be in writing and shall be accompanied with a copy of the order appealed against and shall be made within period of thirty days from the date of passing of the order.]

[3] Substituted by the S.O.1002(E), dated 4.5.2010.
[4] Inserted by the S.O.1002(E), dated 4.5.2010.

8. RESPONSIBILITIES OF RECYCLER. –

Each recycler shall -

(i) apply for registration to the Ministry of Environment and Forests or an agency designated by it if not applied already, by submitting information in Form VI;

(ii) ensure strict compliance of the terms and conditions of registration, however, those already registered with the Ministry of Environment and Forests or an agency designated by it for reprocessing used batteries would be bound by the terms and conditions of such registration;

(iii) submit annual returns as per Form VII to the State Board;

[5][(iv) make available all records relating to receipt of used batteries, sources, quantities and metal yield to be submitted to the State Pollution Control Board for inspection.]

(v) Mark 'Recycled' on lead recovered by reprocessing; and

(vi) Create public awareness through advertisements, publications, posters or others with regard to the following-
(a) hazards of lead; and
(b) obligation of consumers to return used batteries only to the registered dealers or deliver at the designated collection centres.

9. PROCEDURE FOR REGISTRATION/RENEWAL OF REGISTRATION OF RECYCLERS. –

(1) Every recycler of used lead acid batteries shall make an application in Form VI along with the following documents to the Joint Secretary, Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it for grant of registration or renewal;

(a) a copy of the valid consents under Water (Prevention and Control of Pollution) Act, 1974, as amended and Air (Prevention and Control of Pollution) Act, 1981, as amended;

(b) a copy of the valid authorization under Hazardous Wastes (Management and Handling) Rules, 1989 as amended;

(c) a copy of valid certificate of registration with District Industries Centre; and

(d) a copy of the proof of installed capacity issued by either State Pollution Control Board/District Industries Centre.

(2) The Joint Secretary, Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it shall ensure that the recyclers possess appropriate facilities, technical capabilities, and equipment to recycle used batteries and dispose of hazardous waste generated;

(3) The Joint Secretary , Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it shall take decision on application for registration within [6][90] days of receipt of application form with complete details;

(4) The registration granted under this rule shall be in force for a period of two years from the date of issue or from the date of renewal unless suspended or cancelled earlier;

(5) An application for the renewal of registration shall be made in Form VI atleast six months before its expiry. The Joint Secretary, Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it shall renew the registration of the recycler granted under sub rule(4) of this rule, after examining each case on merit;

(6) The Joint Secretary, Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it may, after giving reasonable opportunity to the applicant of being heard, refuse to grant registration;

(7) The Joint Secretary, Ministry of Environment and Forests or any officer designated by the Ministry or an agency designated by it may cancel or suspend a registration issued under these rules, if in his/her opinion, the registered recycler has failed to comply with any of the conditions of registration, or with any provisions of the Act or rules made thereunder after giving him an opportunity to explain and after recording the reasons therefor;

[5] Substituted by the S.O.1002(E), dated 4.5.2010.

[6] Substituted by the S.O.1002(E), dated 4.5.2010.

(8) It shall be the responsibility of the State Boards to monitor the compliance of conditions prescribed while according registration, and

(9) An appeal shall lie against any order of suspension or cancellation or refusal of registration passed by the Joint Secretary to the Ministry of Environment and Forests or any officer designated by the Ministry or agency designated by it. The appeal shall be in writing and shall be accompanied with a copy of the order appealed against and shall be presented within 30 days of passing of the order.

10. RESPONSIBILITIES OF CONSUMER OR BULK CONSUMER.-

(1) It shall be the responsibility of the consumer to ensure that used batteries are not disposed of in any manner other than depositing with the dealer, manufacturer, importer, assembler, registered recycler, re-conditioner or at the designated collection centres.

(2) It shall be the responsibility of the bulk consumer to –

(i) ensure that used batteries are not disposed of in any manner other than by depositing with the dealer/manufacturer/registered recycler/importer/ re-conditioner or at the designated collection centers,- and

(ii) file half-yearly return in Form VIII to the State Board .

(3) Bulk consumers or their user units may auction used batteries to registered recyclers only.

11. RESPONSIBILITIES OF AUCTIONEER.-

The auctioneer shall -

(i) ensure that used batteries are auctioned to the registered recyclers only-,

(ii) file half-yearly returns of their auctions to the State Boards in Form-IX; and

(iii) maintain a record of such auctions and make these records available to the State Board for inspection.

12. PRESCRIBED AUTHORITY.–

The prescribed authority for ensuring compliance of the provisions of these rules shall be the State Board. And, it shall file an annual compliance status report to the Central Pollution Control Board by 30th April of every year.

13. DUTIES OF CENTRAL POLLUTION CONTROL BOARD.-

The Central Pollution Control Board shall compile and publish the data received every year from the State Boards. It shall review the compliance of the rules periodically to improve the collection and recycling of used lead batteries and apprise the Ministry of Environment and Forests, Government of India.

14. COMPUTERISATION OF RECORDS AND RETURNS.–

Ministry of Environment and Forests or an agency designated by it shall develop a system for computerized tracking of-

(i) distribution and sale of batteries;

(ii) collection, auction, transport and re-processing of used batteries;

(iii) sale of re-processed lead by registered recyclers; and

(iv) sale of lead from all domestic producers or importers.

SCHEDULE

[See rule 4(i) and 7(i)]

Sl. No.	Year	Number of used batteries to be collected back
(i)	During first year of implementation of rules	50% of new batteries sold
(ii)	During second year of implementation of rules	75% of new batteries sold
(iii)	After second year of implementation of rules	90% of new batteries sold

FORM – I

[See rule 4(iii)]

FORM FOR FILING RETUNS OF SALE OF NEW BATTERIES AND COLLECTION OF USED BATTERIES

[To be submitted by [7][manufacturer/importer/bulk consumer] by 30th June (for the period October-March) and 31st December (for the period April-September) every year]

[8][1.	Name and Address of the manufacturer /importer/bulk consumer]	
2.	Name of the authorised person and complete address with telephone and fax numbers	
3.	Total number of new batteries sold [9][importers or consumers] during the period October-March/April-September in respect of the following categories Category (i) Automative (a) Four Wheeler (b) Two Wheeler (ii) Industrial (a) UPS (b) Motive power (c) Stand-by (iii) Others (inverters, etc.) Number of batteries sold to (i) dealers (ii) bulk consumers (iii) OEM (iv) Any other party for replacement should be indicated separately	(i) No. of Batteries (ii) Approximate weight (in Metric Tones)
4.	Name and full address of the designated collection centres	
5.	Total number of used batteries of different categories as at Sl. No.3 collected and sent to the registered recyclers*	

* enclose the list of recyclers to who batteries have been sent for recycling.

Place _____

Date _____ Signature of the authorised person

FORM – II

[See rule 5 & 6(ii)]

FORM FOR REGISTRATION OF IMPORTER OF NEW LEAD ACID BATTERIES / PRIMARY LEAD

[To be submitted in triplicate to the Ministry of Environment and Forests]

1.	Name and Address of the importer	
2.	Import / Export Licence No.	
3.	Name of person / owner / occupier as the case may be	

Date _____ Signature of the Importer

Place_____

[7] Substituted by the S.O.1002(E), dated 4.5.2010.

[8] Substituted by the S.O.1002(E), dated 4.5.2010.

[9] Inserted by the S.O.1002(E), dated 4.5.2010.

FORM – III

[see rule 6(iii)]

(to be submitted by importer of new lead acid batteries)

UNDERTAKING

To

The Member Secretary
State Pollution Control Board

1. I_____ of M/s _____ hereby submit that I am in the process of importing _____ (MT) of new lead acid batteries.

2. I undertake that I shall collect back the used batteries as per the schedule prescribed by the Government from time to time in lieu of the new batteries imported and sold, and shall send these only to the registered recyclers. I further undertake that I shall submit half-yearly returns as per item (iii) of rule 6 to the State Board and abide by their directions, if any

Date :
Place : Signature of the Importer

Copy to : The concerned Customs Authority

[10][FORM – IV

[See Rules 4 and 7 (vii)]

FORM FOR REGISTRATION OF DEALERS

[To be submitted by dealers to the State Pollution Control Boards/Pollution Control Committees]

1.	Name and address of the dealers with telephone and fax numbers	
2.	TIN / VAT number*	

* IF APPLICABLE (AS PER CURRENT STATE SALE TAX RULES, MANDATORY TIN/VAT NUMBER IS REQUIRED ONLY IF THE ANNUAL TURNOVER OF THE DEALER IS MORE THAN THE PRESCRIBED VALUE)

Signature of the authorised person

Place_____
Date_____

Note:- The principal rules were published in the Gazette of India, Extraordinary *vide* notification number S.O.432(E), dated the 16th May, 2001.

[10] Substituted by the S.O.1002(E), dated 4.5.2010.

FORM – V

[See rule 7(iv)]

FORM FOR FILING RETUNS OF SALE OF NEW BATTERIES AND COLLECTION OF OLD BATTERIES

[To be submitted by dealers to the manufacturers by 31st May (for sale during October-March) and 30th November (for sale during April-September) every year]

1.	Name and address of the dealer	
2.	Name of the authorised person and complete address with telephone and fax numbers	
3.	Number of new batteries sold during the period October-March/April-September in respect of the following categories; Category (i) Automative (a) Four Wheeler (b) Two Wheeler (ii) Industrial (a) UPS (b) Motive power (c) Stand-by (iii) Others Number of batteries sold (i) As replacement of used Batteries (ii) to bulk consumers (iii) to OEM (iv) to any other party	(i) No. of Batteries (ii) Approximate weight (in Metric Tones)
4.	Total number of used batteries of different categories as at Sl. No.3 collected and sent to registered recyclers */designated collection centres / manufacturers	

* enclose the list of recyclers to who batteries have been sent for recycling.

Place_____
Date_____ Signature of the authorised person

FORM – VI

[see rule 8(i), 9(1) & 9(5)]

FORM FOR APPLICATION FOR REGISTRATION OF FACILITIES POSSESSING ENVIRNMENTALLY SOUND MANAGEMENT PRACTIVE FOR RECYCLING OF USED LEAD ACID BATTERIES

(To be submitted in triplicate)

1.	Name and Address of the unit			
2.	Contact person with designation, Tel./Fax			
3.	Date of Commissioning			
4.	No. of Workers (including contract labourers)			
5.	Consent Validity	a) Under Air Act, 1981; Valid up to – b) Under Water Act, 1974; Valid up to -		
6.	Validity of Authorisation under rule 5 of the Hazardous Wastes (Management and Handling) Rules, 1989	Valid up to -		
7.	Installed capacity of production in (MTA)			
8.	Products manufactured Name : (a) (b) (c)	Year –1	Year-2	Year-3
9.	Raw material consumed (Tones/year) Name : (a) (b) (c)	Year –1	Year-2	Year-3
10.	Manufacturing Process	Please attach manufacturing process flow diagram for each product(s)		
11.	Water consumption	Industrial - m^3/day Domestic - m^3/day		
12.	Water Cess paid up to			
13.	Waste water generation a) as per consent m^3/day b) actual m^3 /day (average of last three months)	Industrial - Domestic -		
14.	Waste water treatment (please provide flow diagram of the treatment scheme)	Industrial - Domestic -		
15.	Waste water discharge	Quantity m^3/day Location- Analysis of treated waste water – PH_2, BOD,COD, SS, O&G, Any other (indicate the corresponding standards applicable)		
16.	Air Pollution Control a. Please provide flow diagram for emission control system(s) installed for each process unit, utilities etc. b. Details for facilities provided for control of fugitive emission due to material handling, process, utilities etc. c. Fuel consumption d. Stack emission monitoring results vis-à-vis the standards applicable e. Ambient air quality	S.No. Name of Fuel Quantity / day S.No Stack attached to Emission g/Nm^3 S.No Location Results ug/m^3		
17.	Hazardous Waste Management a) Waste generation b) Details of collection, treatment c) Disposal (including point of final discharge) (i) Please provide details of the disposal facility (ii) Whether facilities provided are in compliance of the conditions issued by the SPCB in Authorization (iii) Please attach analysis report of characterization of hazardous waste generated (including leachate test if applicable)	S.No Name of Process Quantity / y Waste category		

9

18.	Details of waste proposed to be taken in auction or import, as the case may be, for use as raw material	1. Name - 2. Quantity required /- 3. Position in List A/List as per Basel Convention (BC) – 4. Nature as per Annexure III of BC
19.	Occupational safety and health aspects	Please provide details of facilities provided.
20.	Remarks (i) Whether industry has provided adequate pollution control system / equipment to meet the standards of emission / effluent. (ii) Whether industry is in compliance with conditions laid down in the Hazardous Waste Authorization (iii) Whether Hazardous Waste collection and Treatment, Storage and Disposal Facility (TSDF) are operating satisfactorily. (iv) Whether conditions exist or likely to exists of the material being handled / processed of posing immediate or delayed adverse impacts on the environment. (v) Whether conditions exist or is likely to exist of the material being handled / processed by any means capable of yielding another material e.g., leachate which may possess eco-toxicity.	Yes/No If Yes, please furnish details Yes / No Yes / No Yes / No Yes / No
21.	(i) Cost of the unit (ii) Cost of pollution control equipment including environmental safeguard measures a) Capital : b) Recurring :	
22	Any Other Information : i) ii) iii)	

I hereby declare that the above statements/informations are true and correct to the best of my knowledge and belief.

Date :
Place: Signature Name Designation

FORM – VII

[see rule 8(iii)]

FORM FOR FILING RETURNS BY RECYCLERS OF USED BATTERIES

[To be submitted by recyclers by 30th June and 31st December of every year]

1.	Name and address of the recycler	
2.	Name of the Authorised person and full address with telephone and fax number	
3.	Installed annual capacity to recycle used battery scrap (in MTA)	
4.	Total quantity of used battery scrap purchased from/sent for processing during the period from October – March / April-September	(i) Quantity of used batteries sent by/purchased from the manufacturers (ii) Quantity of used batteries purchased from the dealers (iii) Quantity of used batteries purchased from auctioneers (iv) Quantity of used batteries obtained from any other source -
5.	Quantity of lead recovered from the used battery scrap (in MTA)	
6.	Quantity of recycled lead sent back to	(i) the manufacturer of batteries (ii) other agencies * -

* enclose list of other agencies.

Place _____ Signature of the authorised person
Date _____

FORM – VIII

[see rule 10 (2)(ii)]

FORM FOR FILING RETURNS FOR BULK CONSUMER OF BATTERIES

[To be submitted by the bulk consumer to the State Board by 30th June (for the period October-March) and 31st December (for the period April-September) every year]

1.	Name and address of the bulk consumer	
2.	Name of the Authorised person and full address with telephone and fax number	
3.	Number of new batteries of different categories purchased from the manufacturer/importer/dealer or any other agency during October-March and April-September Category (i) Automative (a) Four wheelers (b) Two wheelers (ii) Industrial (a) UPS (b) Motive power (c) Stand-by (iii) Others	(i) No. of Batteries (ii) Approximate weight (in Metric Tonnes)
4.	Number or used batteries of categories mentioned in Sl. No. 3 and Tonnage of scrap sent to manufacturer/dealer /importer/registered recycler/or any other agency to whom the used batteries scrap was sent*.	

* Enclose list of manufacture/dealer/importer/registered recyclers/or any other agency to whom the used batteries scrap was sent.

Place _____ Signature of the authorised person
Date _____

FORM – IX

[see rule 11 (ii)]

FORM FOR FILING RETURNS BY AUCTIONEER OF USED BATTERIES

[To be submitted by the auctioneer to State Board by 30th June and 31st December of every year]

1.	Name and address of the auctioneer	
2.	Name of the Authorised person and full address with telephone and fax number	
3.	Number of used batteries and total Tonnage (of MT) available during the period from October-March and April-September	
4.	Sources of the used battery scrap	
5.	Number of used batteries and total Tonnage (of MT) auctioned during the period from October-March and April-September	
6.	Number of used batteries and total Tonnage of (MT) sent to the registered recyclers *	

* enclose a list.

Place _____
Date _____ Signature of the authorized Person

11

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 837] नई दिल्ली, मंगलवार, मई 4, 2010/वैशाख 14, 1932
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पर्यावरण और वन मंत्रालय

अधिसूचना

नई दिल्ली, 4 मई, 2010

का.आ. 1002(अ).—केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 6, धारा 8 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, बैटरी (प्रबंधन और हथालन) नियम, 2001 का संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात् :—

1. (1) इन नियमों का संक्षिप्त नाम बैटरी (प्रबंधन और हथालन) संशोधन नियम, 2010 है।

(2) ये राजपत्र में प्रकाशन की तारीख को प्रवृत्त होंगे।

2. बैटरी (प्रबंधन और हथालन) नियम, 2001 (जिसे इसमें इसके पश्चात् उक्त नियम कहा गया है) के नियम 3 में, खंड (च) के स्थान पर निम्नलिखित खंड रखा जाएगा, अर्थात् :—

"(च) प्रयुज्य उपयोक्ता से केन्द्रीय सरकार के रेल, रक्षा, दूरसंचार, डाक तथा तार जैसे विभागों राज्य सरकार के विभागों उपक्रमों, बोर्डों तथा अन्य अधिकरणों या कंपनियों जैसे ऐसे उपयोक्ता अभिप्रेत हैं, जो प्रतिवर्ष एक सौ या एक सौ से अधिक बैटरियां क्रय करते हैं"।

3. उक्त नियमों के नियम 4 में,—

(i) उप-नियम (xi) के पश्चात् निम्नलिखित उप-नियम अंतःस्थापित किया जाएगा अर्थात् :—

"(xii) यह सुनिश्चित करें कि नई बैटरियां केवल रजिस्ट्रीकृत व्यौहारियों को ही विक्रीत की जाएंगी।"

(ii) इस प्रकार अंतःस्थापित उप-नियम (xii) के पश्चात् निम्नलिखित टिप्पण अंतःस्थापित किया जाएगा, अर्थात् :—

"टिप्पण :—समायोजकों तथा मरम्मतकर्ताओं को ऐसे दायित्वों की परिधि से अपवर्जित किया गया है जो उप-खंड (iv), उप-खंड (vii), उप-खंड (ix) तथा (xii) में विनिर्दिष्ट हैं।

4. उक्त नियमों के नियम 5 के स्थान पर निम्नलिखित नियम रखा जाएगा, अर्थात् :—

"5. **आयात कर्ताओं का रजिस्ट्रीकरण.**—(i) आयातकर्ता प्ररूप I के अनुसार पांच वर्ष की अवधि के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड के पास रजिस्टर करेगा और उक्त नियमों के अनुसार अपेक्षित संख्या में प्रयुक्त बैटरियों के संग्रहण में असफलता, केन्द्रीय प्रदूषण नियंत्रण बोर्ड को एक प्रति सहित राज्य प्रदूषण नियंत्रण बोर्ड को समय पर अर्धवार्षिक विवरणियां प्रस्तुत न करने के लिए रद्दकरण, रजिस्ट्रीकरण के नवीकरण का उपबंध अनुपालन प्राम्भिति के अनुसार होगा :

परन्तु आयातकर्ता प्रदत्त रजिस्ट्रीकरण तब तक रद्द नहीं किया जाएगा जब तक उसे सुनवाई का युक्ति युक्त अवसर प्रदान नहीं कर दिया गया हो;

(ii) कोई अपील, केन्द्रीय प्रदूषण नियंत्रण बोर्ड के सदस्य सचिव या केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा पदाभिहित किसी

अन्य अधिकारी द्वारा पारित किया गया रजिस्ट्रीकरण के निलम्बन या रद्दकरण या इंकार किए जाने के किसी आदेश के विरुद्ध होगी;

(iii) अपील लिखित में होगी और उसके साथ उस आदेश की एक प्रति संलग्न की जाएगी जिसके विरुद्ध अपील की गई है और यह आदेश पारित किए जाने की तारीख से तीस दिन की अवधि के भीतर की जाएगी ।

5. उक्त नियमों के नियम 7 में, खंड (vi) के पश्चात निम्नलिखित खंड अंतःस्थापित किया जायेगा अर्थात् :

"(vii) (क) प्रकप के अनुसार ब्यौरे प्रस्तुत करने के लिए राज्य प्रदूषण नियंत्रण बोर्ड के पास पांच वर्ष की अवधि के लिए रजिस्ट्रीकरण और उक्त नियमों के अनुसार अपेक्षित संख्या राज्य प्रदूषण नियंत्रण बोर्डों को समय पर अर्धवार्षिक विवरणियां प्रस्तुत न करने के लिए रद्दकरण, रजिस्ट्रीकरण के नवीकरण का उपबंध अनुपालन प्रास्थिति के अनुसार होगा, यदि तीस दिन की अवधि के भीतर आक्षेप नहीं किया जाता है तो रजिस्ट्रीकरण को रजिस्ट्रीकृत समझा जाएगा ।"

परन्तु व्यौहारी को प्रदत्त रजिस्ट्रीकरण तब तक रद्द नहीं किया जाएगा जब तक उसे सुनवाई का युक्ति युक्त अवसर प्रदान नहीं कर दिया जाता;

(ख) कोई अपील, राज्य प्रदूषण नियंत्रण बोर्ड के सदस्य सचिव या राज्य प्रदूषण नियंत्रण बोर्ड द्वारा पदाभिहित किसी अन्य अधिकारी द्वारा पारित रजिस्ट्रीकरण के निलम्बन या रद्दकरण या इंकार किए जाने के किसी आदेश के विरुद्ध होगी;

(ग) अपील लिखित में होगी और उसके साथ उस आदेश की एक प्रति संलग्न की जाएगी जिसके विरुद्ध अपील की गई है और यह आदेश पारित किए जाने की तारीख से तीस दिन की अवधि के भीतर की जाएगी ।

6. उक्त नियमों के नियम 8 के खंड (iv) में निम्नलिखित खंड रखा जायेगा, अर्थात् :—

"(iv) उपयोग की गई बैटरियों की प्राप्ति, स्रोत, मात्रा तथा धातु प्रतिफल से संबंधित सम्पूर्ण अभिलेख निरीक्षण हेतु राज्य प्रदूषण नियंत्रण बोर्ड को प्रस्तुत करने हेतु उपलब्ध कराना ।"

7. उक्त नियमों के नियम 9 के उप-नियम (3) में से संख्या "120" के स्थान पर "90" रखा जायेगा ।

8. उपर्युक्त नियम के प्रकप I में ,—

(i) "नई बैटरियों के विक्रय और उपयोगी हुई बैटरियों की विवरणियां फाइल करने के लिए प्रकप, से संबंधित शीर्षक के नीचे विनिर्माता/संयोजक और मरम्मत करने वाली" शब्दों के स्थान पर "विनिर्माता/आयातकर्ता/प्रपुंज उपभोक्ता" शब्द रखे जाएंगे;

(ii) स्तम्भ 1 में विद्यमान प्रविष्टि के स्थान पर "विनिर्माता/आयातकर्ता/प्रपुंज उपभोक्ता का नाम और पता" प्रविष्टि रखी जाएगी;

(iii) स्तम्भ 3 में विद्यमान प्रविष्टि में शब्द "बेची गई" शब्द के पश्चात् "आयातकर्ता या उपभोक्ता" शब्द अंतः स्थापित किए जाएंगे ।

9. उपर्युक्त नियमों में, प्रकप (iv) और उससे संबंधित प्रविष्टियों के स्थान पर निम्नलिखित प्रकप और प्रविष्टियां रखी जाएंगी, अर्थात् :—

प्रकप IV

[नियम 4 और नियम 7 (vii) देखें]

व्यौहारियों के रजिस्ट्रीकरण के लिए प्रकप

[व्यौहारियों द्वारा राज्य प्रदूषण नियंत्रण बोर्ड/प्रदूषण नियंत्रण समितियों के समक्ष प्रस्तुत किया जाए]

1. व्यौहारियों का नाम और पता, दूरभाष तथा फैक्स संख्या सहित

2. टिन/वैट संख्या*

*यदि लागू हो (वर्तमान राज्य बिक्री कर नियमों के अनुसार, अनिवार्य टिन/वैट संख्या केवल तभी अपेक्षित है जब व्यौहारियों का वार्षिक आवर्त विहित मूल्य से अधिक हो) ।

प्राधिकृत व्यक्ति के हस्ताक्षर ।

स्थान .....

तारीख .....

[23-22/2005-एचएसएमडी]

राजीव गौबा, संयुक्त सचिव

टिप्पण : मूल नियम भारत के राजपत्र, असाधारण में अधिसूचना संख्या सं. का.आ. 432 (अ) तारीख 16 मई, 2001 द्वारा प्रकाशित किए गए थे ।

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 4th May, 2010

S.O. 1002 (E).–In exercise of the powers conferred by Sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby make the following rules to amend the Batteries (Management and Handling) Rules, 2001 namely,—

1. (1) These rules may be called Batteries (Management and Handling) Amendment Rules, 2010.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Batteries (Management and Handling) Rules, 2001(hereinafter referred to as the said rules), in rule 3, for clause (f), the following clause shall be substituted, namely,—

"(f) bulk consumer-means a consumer such as the Departments of Central Government like Railways,

Defence, Telecom, Posts and Telegraph, the Departments of State Government, the Undertakings, Boards and other agencies or companies who purchase hundred or more than hundred batteries per annum;".

3. In the said rules, in rule 4,—

(i) after sub-rule (xi), the following sub-rule shall be inserted, namely.'—

"(xii) ensure that the new batteries shall be sold only to the registered dealers";

(ii) after sub-rule (xii) as so inserted, the following Note shall be inserted, namely.'—

"Note: The assemblers and reconditioners are excluded from the purview of responsibilities as specified in sub-clauses (iv), (vii), (ix) and (xii).".

4. In the said rules, for rule 5, the following rule shall be substituted, namely,.'—

"5. Registration of importers. —(i) the importers shall get registered as per Form I with the Central Pollution Control Board for a period of five years and a provision of cancellation for failure in collection of the required number of used batteries as per the said rules, non-submission of timely half yearly returns to the State Pollution Control Boards with a copy to the Central Pollution Control Board, renewal of the registration shall be as per the compliance status:

Provided that the registration granted to the importer shall not be cancelled unless he has been given a reasonable opportunity of hearing;

(ii) an appeal shall lie against any order of suspension or cancellation or refusal of registration passed by the Member-Secretary of the Central Pollution Control Board or any other officer designated by the Central Pollution Control Board;

(iii) the appeal shall be in writing and shall be accompanied with a copy of the order appealed against and shall be made within period of thirty days from the date of passing of the order.".

5. In the said rules, in rule 7, after clause (vi), the following clause shall be inserted, namely,—

"(vii) (a) registration with State Pollution Control Board for five years and a provision of cancellation for failure in collection of the required number of used batteries as per the said rules, non-submission of timely half yearly returns to the State Pollution Control Boards, renewal of the registration shall be as per the compliance status, to submit details as per Form IV, registration would be considered as deemed registered if not objected to within thirty days:

Provided that the registration granted to the dealer shall not be cancelled unless he has been given a reasonable opportunity of hearing;

(b) an apeal shall lie against any order of suspension or cancellation or refusal of registration passed by the Member-Secretary of the State Pollution Control Board or any other officer designated by the State Pollution Control Board;

(c) the appeal shall be in writing and shall be accompanied with a copy of the order appealed against and shall be made within period of thirty days from the date of passing of the order.".

6. In the said rules, in rule 8 for clause (iv), following clause shall be substituted, namely,—

"(iv) make available all records relating to receipt of used batteries, sources, quantities and metal yield to be submitted to the State Pollution Control Board for inspection;".

7. In the said rules, in rule 9, in sub-rule (3), for the figures "120", the figures "90" shall be substituted.

8. In the said rule, in Form I,—

(i) under the heading relating to "Form for filling returns of sale of new batteries and collection of used batteries, for the words manufacturer/ assembler/reconditioner", the words "manufacturer/ importer/ bulk consumer" shall be substituted;

(ii) in column 1, for the existing entry, the entry "Name and Address of the manufacturer/importer/bulk consumer" shall be substituted;

(iii) in column 3, in the existing entry, after the word "sold", the words "importers or consumers" shall be inserted.

9. In the said rules, for the Form IV and the entries relating thereto, the following Form and entries shall be substituted, namely:—

"FORM-IV

[See Rules 4 and 7 (vii)]

FORM FOR REGISTRATION OF DEALERS

[To be submitted by dealers to the State Pollution Control Boards/Pollution Control Committees].

1. Name and address of the dealers with telephone and fax numbers

2. TIN/VAT number*

*IF APPLICABLE (AS PER CURRENT STATE SALE TAX RULES, MANDATORY TIN/VAT NUMBER IS REQUIRED ONLY IF THE ANNUAL TURNOVER OF THE DEALER IS MORE THAN THE PRESCRIBED VALUE)

Signature of the authorized person.".

Place .....

Date .....

[No. 23-22/2005-HSMD]

RAJIV GAUBA, Jt. Secy.

Note :— The principal rules were published in the Gazette of India, Extraordinary *vide* notification number S.O. 432 (E), dated the 16th May, 2001.

Printed by the Manager, Government of India Press, Ring Road, Mayapuri, New Delhi-110064 and Published by the Controller of Publications, Delhi-110054.

Annexure 15

THE HAZARDOUS AND OTHER WASTE (MANAGEMENT AND TRANSBOUNDARY MOVEMENT) RULES 2016

[PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART II, SECTION 3, SUB-SECTION (i)]

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 04th April, 2016

G.S.R No. 395 (E). - Whereas the draft rules, namely the Hazardous And Other Wastes (Management and Transboundary Movement) Rules, 2015, were published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* number G.S.R. 582(E), dated the 24th July, 2015 in the Gazette of India, Extraordinary Part II, section 3, sub-section (ii) inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS the copies of the said Gazette containing the said notification were made available to the public on the 24th day of July, 2015;

AND WHEREAS the objections and suggestions received within the specified period from the public in respect of the said draft rules have been duly considered by the Central Government;

NOW, THEREFORE, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

CHAPTER I

PRELIMINARY

1. Short title and commencement. - (1) These rules may be called the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Application. - These rules shall apply to the management of hazardous and other wastes as specified in the Schedules to these rules but shall not apply to -

(a) waste-water and exhaust gases as covered under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder and as amended from time to time;

(b) wastes arising out of the operation from ships beyond five kilometres of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 1958 (44 of 1958) and the rules made thereunder and as amended from time to time;

(c) radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and the rules made thereunder and as amended from time to time;
(d) bio-medical wastes covered under the Bio-Medical Wastes (Management and Handling) Rules, 1998 made under the Act and as amended from time to time; and
(e) wastes covered under the Municipal Solid Wastes (Management and Handling) Rules, 2000 made under the Act and as amended from time to time.

3. Definitions. - (1) In these rules, unless the context otherwise requires,-

1. "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

2. "actual user" means an occupier who procures and processes hazardous and other waste for reuse, recycling, recovery, pre-processing, utilisation including co-processing;

3. "authorisation" means permission for generation, handling, collection, reception, treatment, transport, storage, reuse, recycling, recovery, pre-processing, utilisation including co-processing and disposal of hazardous wastes granted under sub-rule (2) of rule 6;

4. "Basel Convention" means the United Nations Environment Programme Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal;

5. "captive treatment, storage and disposal facility" means a facility developed within the premises of an occupier for treatment, storage and disposal of wastes generated during manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of hazardous and other wastes;

6. "Central Pollution Control Board" means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

7. "common treatment, storage and disposal facility" means a common facility identified and established individually or jointly or severally by the State Government, occupier, operator of a facility or any association of occupiers that shall be used as common facility by multiple occupiers or actual users for treatment, storage and disposal of the hazardous and other wastes;

8. "co-processing" means the use of waste materials in manufacturing processes for the purpose of energy or resource recovery or both and resultant reduction in the use of conventional fuels or raw materials or both through substitution;

9. "critical care medical equipment" means life saving equipment and includes such equipment as specified by the Ministry of Health and Family Welfare from time to time;

10. "disposal" means any operation which does not lead to reuse, recycling, recovery, utilisation including co-processing and includes physico-chemical treatment, biological treatment, incineration and disposal in secured landfill;

11. “export”, with its grammatical variations and cognate expressions, means taking out of India to a place outside India;

12. “exporter” means any person or occupier under the jurisdiction of the exporting country who exports hazardous or other wastes, including the country which exports hazardous or other waste;

13. “environmentally sound management of hazardous and other wastes” means taking all steps required to ensure that the hazardous and other wastes are managed in a manner which shall protect health and the environment against the adverse effects which may result from such waste;

14. “environmentally sound technologies” means any technology approved by the Central Government from time to time;

15. “facility” means any establishment wherein the processes incidental to the generation, handling, collection, reception, treatment, storage, reuse, recycling, recovery, pre-processing, co-processing, utilisation and disposal of hazardous and, or, other wastes are carried out;

16. “Form” means a form appended to these rules;

17. “hazardous waste” means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances, and shall include -
    (i) waste specified under column (3) of Schedule I;
    (ii) waste having equal to or more than the concentration limits specified for the constituents in class A and class B of Schedule II or any of the characteristics as specified in class C of Schedule II; and
    (iii) wastes specified in Part A of Schedule III in respect of import or export of such wastes or the wastes not specified in Part A but exhibit hazardous characteristics specified in Part C of Schedule III;

18. “import”, with its grammatical variations and cognate expressions, means bringing into India from a place outside India;

19. “importer” mean any person or occupier who imports hazardous or other waste;

20. “manifest” means transporting document prepared and signed by the sender authorised in accordance with the provisions of these rules;

21. “occupier” in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous and other wastes, the person in possession of the hazardous or other waste;

22. “operator of disposal facility” means a person who owns or operates a facility for collection, reception, treatment, storage and disposal of hazardous and other wastes;

23. “other wastes” means wastes specified in Part B and Part D of Schedule III for import or export and includes all such waste generated indigenously within the country;

24. “pre-processing” means the treatment of waste to make it suitable for co-processing or recycling or for any further processing;

25. “recycling” means reclamation and processing of hazardous or other wastes in an environmentally sound manner for the originally intended purpose or for other purposes;

26. “reuse” means use of hazardous or other waste for the purpose of its original use or other use;

27. “recovery” means any operation or activity wherein specific materials are recovered;

28. “Schedule” means a Schedule appended to these rules;

29. “State Government” in relation to a Union territory means, the Administrator thereof appointed under article 239 of the Constitution;

30. “State Pollution Control Board” means the State Pollution Control Board constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and includes, in relation to a Union territory, the Pollution Control Committee;

31. “storage” mean storing any hazardous or other waste for a temporary period, at the end of which such waste is processed or disposed of;

32. “transboundary movement” means any movement of hazardous or other wastes from an area under the jurisdiction of one country to or through an area under the jurisdiction of another country or to or through an area not under the jurisdiction of any country, provided that at least two countries are involved in the movement;

33. “transport” means off-site movement of hazardous or other wastes by air, rail, road or water;

34. “transporter” means a person engaged in the off-site transportation of hazardous or other waste by air, rail, road or water;

35. “treatment” means a method, technique or process, designed to modify the physical, chemical or biological characteristics or composition of any hazardous or other waste so as to reduce its potential to cause harm;

36. “used oil” means any oil-

    (i) derived from crude oil or mixtures containing synthetic oil including spent oil, used engine oil, gear oil, hydraulic oil, turbine oil, compressor oil, industrial gear oil, heat transfer oil, transformer oil and their tank bottom sludges; and
    (ii) suitable for reprocessing, if it meets the specification laid down in Part A of Schedule V but does not include waste oil;

37. “utilisation” means use of hazardous or other waste as a resource;

38. "waste" means materials that are not products or by-products, for which the generator has no further use for the purposes of production, transformation or consumption.

Explanation.- for the purposes of this clause,

(i) waste includes the materials that may be generated during, the extraction of raw materials, the processing of raw materials into intermediates and final products, the consumption of final products, and through other human activities and excludes residuals recycled or reused at the place of generation; and

(ii) by-product means a material that is not intended to be produced but gets produced in the production process of intended product and is used as such;

39. "waste oil" means any oil which includes spills of crude oil, emulsions, tank bottom sludge and slop oil generated from petroleum refineries, installations or ships and can be used as fuel in furnaces for energy recovery, if it meets the specifications laid down in Part-B of Schedule V either as such or after reprocessing.

(2) Words and expressions used in these rules and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.

CHAPTER II

PROCEDURE FOR MANAGEMENT OF HAZARDOUS AND OTHER WASTES

4. Responsibilities of the occupier for management of hazardous and other wastes.-

(1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely:-

(a) prevention;
(b) minimization;
(c) reuse,
(d) recycling;
(e) recovery, utilisation including co-processing;
(f) safe disposal.

(2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes.

(3) The hazardous and other wastes generated in the establishment of an occupier shall be sent or sold to an authorised actual user or shall be disposed of in an authorised disposal facility.

(4) The hazardous and other wastes shall be transported from an occupier's establishment to an authorised actual user or to an authorised disposal facility in accordance with the provisions of these rules.

(5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal.

(6) The occupier shall take all the steps while managing hazardous and other wastes to-

(a) contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(b) provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

5. Responsibilities of State Government for environmentally sound management of hazardous and other wastes. – (1) Department of Industry in the State or any other government agency authorised in this regard by the State Government, to ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilisation of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters;

(2) Department of Labour in the State or any other government agency authorised in this regard by the State Government shall,-

(a) ensure recognition and registration of workers involved in recycling, pre-processing and other utilisation activities;
(b) assist formation of groups of such workers to facilitate setting up such facilities;
(c) undertake industrial skill development activities for the workers involved in recycling, pre-processing and other utilisation;
(d) undertake annual monitoring and to ensure safety and health of workers involved in recycling, pre-processing and other utilisation.

(3) Every State Government may prepare integrated plan for effective implementation of these provisions and to submit annual report to the Ministry of Environment, Forest and Climate Change, in the Central Government.

6. Grant of authorisation for managing hazardous and other wastes.- (1) Every occupier of the facility who is engaged in handling, generation, collection, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other wastes shall be required to make an application in **Form 1** to the State Pollution Control Board and obtain an authorisation from the State Pollution Control Board within a period of sixty days from the date of publication of these rules. Such application for authorisation shall be accompanied with a copy each of the following documents, namely:-

(a) consent to establish granted by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981);
(b) Consent to operate granted by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and/or Air (Prevention and Control of Pollution) Act, 1981, (21 of 1981);
(c) in case of renewal of authorisation, a self-certified compliance report in respect of effluent, emission standards and the conditions specified in the authorisation for hazardous and other wastes:

Provided that an application for renewal of authorisation may be made three months before the expiry of such authorisation:

Provided further that-

(i) any person authorised under the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, prior to the date of commencement

of these rules, shall not be required to make an application for authorisation till the period of expiry of such authorisation;

(ii) any person engaged in recycling or reprocessing of the hazardous waste specified in Schedule IV and having registration under the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, shall not be required to make an application for authorisation till the period of expiry of such registration.

(2) On receipt of an application complete in all respects for the authorisation, the State Pollution Control Board may, after such inquiry as it considers necessary, and on being satisfied that the applicant possesses appropriate facilities for collection, storage, packaging, transportation, treatment, processing, use, destruction, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other waste, as the case may be, and after ensuring technical capabilities and equipment complying with the standard operating procedure or other guidelines specified by the Central Pollution Control Board from time to time and through site inspection, grant within a period of one hundred and twenty days, an authorisation in **Form 2** to the applicant, which shall be valid for a period of five years subject to such conditions as may be laid down therein. For commonly recyclable hazardous waste as given in Schedule IV, the guidelines already prepared by the Central Pollution Control Board shall be followed:

Provided that in the case of an application for renewal of authorisation, the State Pollution Control Board may, before granting such authorisation, satisfy itself that there has been no violation of the conditions specified in the authorisation earlier granted by it and same shall be recorded in the inspection report.

(3) The authorisation granted by the State Pollution Control Board under sub-rule (2) shall be accompanied by a copy of the field inspection report signed by that Board indicating the adequacy of facilities for collection, storage, packaging, transportation, treatment, processing, use, destruction, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other wastes and compliance to the guidelines or standard operating procedures specified by the Central Pollution Control Board from time to time.

(4) The State Pollution Control Board may, for the reasons to be recorded in writing and after giving reasonable opportunity of being heard to the applicant, refuse to grant any authorisation under these rules.

(5) Every occupier authorised under these rules, shall maintain a record of hazardous and other wastes managed by him in **Form 3** and prepare and submit to the State Pollution Control Board, an annual return containing the details specified in **Form 4** on or before the 30th day of June following the financial year to which that return relates.

(6) The State Pollution Control Board shall maintain a register containing particulars of the conditions imposed under these rules for management of hazardous and other wastes and it shall be open for inspection during office hours to any interested or affected person.

(7) The authorised actual user of hazardous and other wastes shall maintain records of hazardous and other wastes purchased in a passbook issued by the State Pollution Control Board along with the authorisation.

(8) Handing over of the hazardous and other wastes to the authorised actual user shall be only after making the entry into the passbook of the actual user.

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7. Power to suspend or cancel an authorisation.- (1) The State Pollution Control Board, may, if in its opinion the holder of the authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving him a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorisation issued under rule 6 for such period as it considers necessary in the public interest.

(2) Upon suspension or cancellation of the authorisation, the State Pollution Control Board may give directions to the person whose authorisation has been suspended or cancelled for the safe storage and management of the hazardous and other wastes, and such occupier shall comply with such directions.

8. Storage of hazardous and other wastes.- (1) The occupiers of facilities may store the hazardous and other wastes for a period not exceeding ninety days and shall maintain a record of sale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilisation of such wastes and make these records available for inspection:

Provided that the State Pollution Control Board may extend the said period of ninety days in following cases, namely:-

(i) small generators (up to ten tonnes per annum) up to one hundred and eighty days of their annual capacity;
(ii) actual users and disposal facility operators up to one hundred and eighty days of their annual capacity,
(iii) occupiers who do not have access to any treatment, storage, disposal facility in the concerned State; or
(iv) the waste which needs to be specifically stored for development of a process for its recycling, recovery, pre-processing, co-processing or utilisation;
(v) in any other case, on justifiable grounds up to one hundred and eighty days.

9. Utilisation of hazardous and other wastes.- (1) The utilisation of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use, including within the premises of the generator (if it is not part of process), shall be carried out only after obtaining authorisation from the State Pollution Control Board in respect of waste on the basis of standard operating procedures or guidelines provided by the Central Pollution Control Board.

(2) Where standard operating procedures or guidelines are not available for specific utilisation, the approval has to be sought from Central Pollution Control Board which shall be granting approval on the basis of trial runs and thereafter, standard operating procedures or guidelines shall be prepared by Central Pollution Control Board:

Provided, if trial run has been conducted for particular waste with respect to particular utilisation and compliance to the environmental standards has been demonstrated, authorisation may be granted by the State Pollution Control Board with respect to the same waste and utilisation, without need of separate trial run by Central Pollution Control Board and such cases of successful trial run, Central Pollution Control Board shall intimate all the State Pollution Control Board regarding the same.

(3) No trial runs shall be required for co-processing of waste in cement plants for which guidelines by the Central Pollution Control Board are already available; however, the actual users shall

ensure compliance to the standards notified under the Environment (Protection) Act,1986 (29 of 1986), for cement plant with respect to co-processing of waste:

Provided that till the time the standards are notified, the procedure as applicable to other kind of utilisation of hazardous and other waste, as enumerated above shall be followed.

10. Standard Operating Procedure or guidelines for actual users.- The Ministry of Environment, Forest and Climate Change or the Central Pollution Control Board may issue guidelines or standard operating procedures for environmentally sound management of hazardous and other wastes from time to time.

CHAPTER III

IMPORT AND EXPORT OF HAZARDOUS AND OTHER WASTES

11. Import and export (transboundary movement) of hazardous and other wastes.- The Ministry of Environment, Forest and Climate Change shall be the nodal Ministry to deal with the transboundary movement of the hazardous and other wastes in accordance with the provisions of these rules.

12. Strategy for Import and export of hazardous and other wastes.- (1) No import of the hazardous and other wastes from any country to India for disposal shall be permitted.

(2) The import of hazardous and other wastes from any country shall be permitted only for recycling, recovery, reuse and utilisation including co-processing.

(3) The import of hazardous waste in Part A of Schedule III may be allowed to actual users with the prior informed consent of the exporting country and shall require the permission of the Ministry of Environment, Forest and Climate Change.

(4) The import of other wastes in Part B of Schedule III may be allowed to actual users with the permission of the Ministry of Environment, Forest and Climate Change.

(5) The import of other wastes in Part D of Schedule III will be allowed as per procedure given in rule 13 and as per the note below the said Schedule.

(6) No import of the hazardous and other wastes specified in Schedule VI shall be permitted.

(7) The export of hazardous and other wastes from India listed in Part A and Part B of Schedule III and Schedule VI shall be with the permission of Ministry of Environment, Forest and Climate Change. In case of applications for export of hazardous and other waste listed in Part A of Schedule III and Schedule VI, they shall be considered on the basis of prior informed consent of the importing country.

(8) The import and export of hazardous and other wastes not specified in Schedule III, but exhibiting the hazardous characteristics outlined in Part C of Schedule III shall require prior written permission of the Ministry of Environment, Forest and Climate Change before it is imported to or exported from India, as the case may be.

13. Procedure for import of hazardous and other wastes.- (1) Actual users intending to import or transit for transboundary movement of hazardous and other wastes specified in Part A and Part B of Schedule III shall apply in **Form 5** along with the documents listed therein, to the Ministry of Environment, Forest and Climate Change for the proposed import together with the prior informed consent of the exporting country in respect of Part A of Schedule III waste, and shall send a copy of the application, simultaneously, to the concerned State Pollution Control Board for information and the acknowledgement in this respect from the concerned State Pollution Control Board shall be submitted to the Ministry of Environment, Forest and Climate Change along with the application.

(2) For the import of other wastes listed in Part D of Schedule III, the importer shall not require the permission of the Ministry of Environment, Forest and Climate Change. However, the importer shall furnish the required information as per **Form 6** to the Customs authorities, accompanied with the following documents in addition to those listed in Schedule VIII, wherever applicable. For used electrical and electronic assemblies listed at serial numbers 4 (e) to 4(i) of Schedule VIII (Basel No. B1110), there is no specific requirement of documentation under these rules:

(a) the import license from Directorate General of Foreign Trade, if applicable;
(b) the valid consents under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981)and the authorisation under these rules as well as the authorisation under the E-Waste (Management and Handling) Rules, 2011, as amended from time to time, whichever applicable;
(c) importer who is a trader, importing waste on behalf of actual users, shall obtain one time authorisation in **Form 7** and copy of this authorisation shall be appended to **Form 6**.

(3) For Part B of Schedule III, in case of import of any used electrical and electronic assemblies or spares or part or component or consumables as listed under Schedule I of the E-Waste (Management and Handling) Rules, 2011, as amended from time to time, the importer need to obtain extended producer responsibility-authorisation as producer under the said E-Waste (Management and Handling) Rules, 2011.

(4) Prior to clearing of consignment of wastes listed in Part D of Schedule III, the Custom authorities shall verify the documents as given in column (3) of Schedule VIII.

(5) On receipt of the complete application with respect to Part A and Part B of Schedule III, the Ministry of Environment, Forest and Climate Change shall examine the application considering the comments and observations, if any, received from the State Pollution Control Boards, and may grant the permission for import within a period of sixty days subject to the condition that the importer has -

(i) the environmentally sound facilities;
(ii) adequate arrangements for treatment and disposal of wastes generated;
(iii) a valid authorisation and consents from the State Pollution Control Board;
(iv) prior informed consent from the exporting country in case of Part A of Schedule III wastes.

(6) The Ministry of Environment, Forest and Climate Change shall forward a copy of the permission to the concerned Port and Customs authorities, Central Pollution Control Board and the concerned State Pollution Control Board for ensuring compliance with respect to their respective functions given in Schedule VII.

(7) The importer of the hazardous and other wastes shall maintain records of the hazardous and other waste imported by him in **Form 3** and the record so maintained shall be made available for inspection.

(8) The importer of the hazardous and other wastes shall file an annual return in **Form 4** to the State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

(9) Samples of hazardous and other wastes being imported for testing or research and development purposes up to 1000 gm or 1000 ml shall be exempted from need of taking permission for import under these rules.

(10) The Port and Customs authorities shall ensure that shipment is accompanied with the movement document as given in **Form 6** and the test report of analysis of the waste, consignment, wherever applicable, from a laboratory accredited or recognised by the exporting country. In case of any doubt, the customs may verify the analysis.

14. Procedure for Export of hazardous and other wastes from India.- (1) Any occupier intending to export waste specified in Part A of Schedule III, Part B of Schedule III and Schedule VI, shall make an application in **Form 5** along with insurance cover to the Ministry of Environment, Forest and Climate Change for the proposed transboundary movement of the hazardous and other wastes together with the prior informed consent in writing from the importing country in respect of wastes specified in Part A of Schedule III and Schedule VI.

(2) On receipt of an application under sub-rule (1), the Ministry of Environment, Forest and Climate Change may give permission for the proposed export within a period of sixty days from the date of submission of complete application and may impose such conditions as it may consider necessary.

(3) The Ministry of Environment, Forest and Climate Change shall forward a copy of the permission granted under sub-rule (2) to the State Pollution Control Board of the State where the waste is generated and the Pollution Control Board of the State where the port of export is located and the concerned Port and Customs authorities for ensuring compliance of the conditions of the export permission.

(4) The exporter shall ensure that no consignment is shipped before the prior informed consent is received from the importing country, wherever applicable.

(5) The exporter shall also ensure that the shipment is accompanied with movement document in **Form 6.**

(6) The exporter of the hazardous and other wastes shall maintain the records of the hazardous or other waste exported by him in **Form 3** and the record so maintained shall be available for inspection.

15. Illegal traffic.- (1) The export and import of hazardous or other wastes from and into India, respectively shall be deemed illegal, if,-

(i) it is without permission of the Central Government in accordance with these rules; or
(ii) the permission has been obtained through falsification, mis-representation or fraud; or
(iii) it does not conform to the shipping details provided in the movement documents; or

(iv) it results in deliberate disposal (i.e., dumping) of hazardous or other waste in contravention of the Basel Convention and of general principles of international or domestic law.

(2) In case of illegal import of the hazardous or other waste, the importer shall re-export the waste in question at his cost within a period of ninety days from the date of its arrival into India and its implementation will be ensured by the concerned Port and the Custom authority. In case of disposal of such waste by the Port and Custom authorities, they shall do so in accordance with these rules with the permission of the Pollution Control Board of the State where the Port exists.

(3) In case of illegal import of hazardous or other waste, where the importer is not traceable then the waste either can be sold by the Customs authority to any user having authorisation under these rules from the concerned State Pollution Control Board or can be sent to authorised treatment, storage and disposal facility.

CHAPTER - IV

TREATMENT, STORAGE AND DISPOSAL FACILITY FOR HAZARDOUS AND OTHER WASTES

16. Treatment, storage and disposal facility for hazardous and other wastes.- (1) The State Government, occupier, operator of a facility or any association of occupiers shall individually or jointly or severally be responsible for identification of sites for establishing the facility for treatment, storage and disposal of the hazardous and other waste in the State.

(2) The operator of common facility or occupier of a captive facility, shall design and set up the treatment, storage and disposal facility as per technical guidelines issued by the Central Pollution Control Board in this regard from time to time and shall obtain approval from the State Pollution Control Board for design and layout in this regard.

(3) The State Pollution Control Board shall monitor the setting up and operation of the common or captive treatment, storage and disposal facility, regularly.

(4) The operator of common facility or occupier of a captive facility shall be responsible for safe and environmentally sound operation of the facility and its closure and post closure phase, as per guidelines or standard operating procedures issued by the Central Pollution Control Board from time to time.

(5) The operator of common facility or occupier of a captive facility shall maintain records of hazardous and other wastes handled by him in **Form 3.**

(6) The operator of common facility or occupier of a captive facility shall file an annual return in **Form 4** to the State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

CHAPTER - V

PACKAGING, LABELLING, AND TRANSPORT OF HAZARDOUS AND OTHER WASTES.

17. Packaging and Labelling.- (1) Any occupier handling hazardous or other wastes and operator of the treatment, storage and disposal facility shall ensure that the hazardous and other wastes are packaged in a manner suitable for safe handling, storage and transport as per the guidelines issued by the Central Pollution Control Board from time to time. The labelling shall be done as per **Form 8.**

(2) The label shall be of non-washable material, weather proof and easily visible.

18. Transportation of hazardous and other wastes.- (1) The transport of the hazardous and other waste shall be in accordance with the provisions of these rules and the rules made by the Central Government under the Motor Vehicles Act, 1988 and the guidelines issued by the Central Pollution Control Board from time to time in this regard.

(2) The occupier shall provide the transporter with the relevant information in **Form 9,** regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall label the hazardous and other wastes containers as per **Form 8**.

(3) In case of transportation of hazardous and other waste for final disposal to a facility existing in a State other than the State where the waste is generated, the sender shall obtain 'No Objection Certificate' from the State Pollution Control Board of both the States.

(4) In case of transportation of hazardous and other waste for recycling or utilisation including co-processing, the sender shall intimate both the State Pollution Control Boards before handing over the waste to the transporter.

(5) In case of transit of hazardous and other waste for recycling, utilisation including co-processing or disposal through a State other than the States of origin and destination, the sender shall give prior intimation to the concerned State Pollution Control Board of the States of transit before handing over the wastes to the transporter.

(6) In case of transportation of hazardous and other waste, the responsibility of safe transport shall be either of the sender or the receiver whosoever arranges the transport and has the necessary authorisation for transport from the concerned State Pollution Control Board. This responsibility should be clearly indicated in the manifest.

(7) The authorisation for transport shall be obtained either by the sender or the receiver on whose behalf the transport is being arranged.

19. Manifest system (Movement Document) for hazardous and other waste to be used within the country only.- (1) The sender of the waste shall prepare seven copies of the manifest in **Form 10** comprising of colour code indicated below and all seven copies shall be signed by the sender:

Copy number with colour code	Purpose
(1)	(2)
Copy 1 (White)	To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies.
Copy 2 (Yellow)	To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter.
Copy 3 (Pink)	To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy 4 (Orange)	To be handed over to the transporter by the receiver after accepting waste.
Copy 5 (Green)	To be sent by the receiver to the State Pollution Control Board.
Copy 6 (Blue)	To be sent by the receiver to the sender.
Copy 7 (Grey)	To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

(2) The sender shall forward copy 1 (white) to the State Pollution Control Board, and in case the hazardous or other wastes is likely to be transported through any transit State, the sender shall intimate State Pollution Control Boards of transit States about the movement of the waste.

(3) No transporter shall accept waste from the sender for transport unless it is accompanied by signed copies 3 to 7 of the manifest.

(4) The transporter shall submit copies 3 to 7 of the manifest duly signed with date to the receiver along with the waste consignment.

(5) The receiver after acceptance of the waste shall hand over copy 4 (orange) to the transporter and send copy 5 (green) to his State Pollution Control Board and send copy 6 (blue) to the sender and the copy 3 (pink) shall be retained by the reciever.

(6) The copy 7 (grey) shall only be sent to the State Pollution Control Board of the sender, if the sender is in another State.

CHAPTER VI
MISCELLANIOUS

20. Records and returns.- (1) The occupier handling hazardous or other wastes and operator of disposal facility shall maintain records of such operations in **Form 3.**

(2) The occupier handling hazardous and other wastes and operator of disposal facility shall send annual returns to the State Pollution Control Board in **Form 4.**

(3) The State Pollution Control Board based on the annual returns received from the occupiers and the operators of the facilities for disposal of hazardous and other wastes shall prepare an annual inventory of the waste generated; waste recycled, recovered, utilised including co-processed; waste re-exported and waste disposed and submit to the Central Pollution Control Board by the 30th day of September every year. The State Pollution Control Board shall also prepare the inventory of hazardous waste generators, actual users, and common and captive

disposal facilities and shall submit the information to Central Pollution Control Board every two years.

(4) The Central Pollution Control Board shall prepare the consolidated review report on management of hazardous and other wastes and forward it to the Ministry of Environment, Forest and Climate Change, along with its recommendations before the 30th day of December once in every year.

21. Responsibility of authorities. - The authority specified in column (2) of Schedule VII shall perform the duties as specified in column (3) of the said Schedule subject to the provisions of these rules.

22. Accident reporting. - Where an accident occurs at the facility of the occupier handling hazardous or other wastes and operator of the disposal facility or during transportation, the occupier or the operator or the transporter shall immediately intimate the State Pollution Control Board through telephone, e-mail about the accident and subsequently send a report in **Form 11.**

23. Liability of occupier, importer or exporter and operator of a disposal facility.-

(1) The occupier, importer or exporter and operator of the disposal facility shall be liable for all damages caused to the environment or third party due to improper handling and management of the hazardous and other waste.

(2) The occupier and the operator of the disposal facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

24. Appeal.- (1) Any person aggrieved by an order of suspension or cancellation or refusal of authorisation or its renewal passed by the State Pollution Control Board may, within a period of thirty days from the date on which the order is communicated to him, prefer an appeal in **Form 12** to the Appellate Authority, namely, the Environment Secretary of the State.

(2) The Appellate Authority may entertain the appeal after expiry of the said period of thirty days, if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(3) Every appeal filed under this rule shall be disposed of within a period of sixty days from the date of its filing.

SCHEDULE I

[See rule 3 (1) (17) (i)]

List of processes generating hazardous wastes

S.No.	Processes	Hazardous Waste*
(1)	(2)	(3)
1.	Petrochemical processes and pyrolytic operations	1.1 Furnace or reactor residue and debris 1.2 Tarry residues and still bottoms from distillation 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels

(1)	(2)	(3)
		1.6 Spent catalyst and molecular sieves 1.7 Oil from wastewater treatment
2.	Crude oil and natural gas production	2.1 Drill cuttings excluding those from water based mud 2.2 Sludge containing oil 2.3 Drilling mud containing oil
3.	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	3.1 cargo residue, washing water and sludge containing oil 3.2 cargo residue and sludge containing chemicals 3.3 Sludge and filters contaminated with oil 3.4 Ballast water containing oil from ships
4.	Petroleum refining or re-processing of used oil or recycling of waste oil	4.1 Oil sludge or emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residue from processes 4.5 Spent clay containing oil
5.	Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications	5.1 Used or spent oil 5.2 Wastes or residues containing oil 5.3 Waste cutting oils
6.	Secondary production and / or industrial use of zinc	6.1 Sludge and filter press cake arising out of production of Zinc Sulphate and other Zinc Compounds. 6.2 Zinc fines or dust or ash or skimmings in dispersible form 6.3 Other residues from processing of zinc ash or skimmings 6.4 Flue gas dust and other particulates
7.	Primary production of zinc or lead or copper and other non-ferrous metals except aluminium	7.1 Flue gas dust from roasting 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Non-ferrous metal bearing sludge and residue. 7.5 Sludge from scrubbers
8.	Secondary production of copper	8.1 Spent electrolytic solutions 8.2 Sludge and filter cakes 8.3 Flue gas dust and other particulates
9.	Secondary production of lead	9.1 Lead bearing residues 9.2 Lead ash or particulate from flue gas 9.3 Acid from used batteries
10.	Production and/or industrial use of cadmium and arsenic and their compounds	10.1 Residues containing cadmium and arsenic
11.	Production of primary and secondary aluminum	11.1 Sludges from off-gas treatment 11.2 Cathode residues including pot lining wastes 11.3 Tar containing wastes 11.4 Flue gas dust and other particulates 11.5 Drosses and waste from treatment of salt sludge

(1)	(2)	(3)
		11.6 Used anode butts 11.7 Vanadium sludge from alumina refineries
12.	Metal surface treatment, such as etching, staining, polishing, galvanizing, cleaning, degreasing, plating, etc.	12.1 Acidic and alkaline residues 12.2 Spent acid and alkali 12.3 Spent bath and sludge containing sulphide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge from staining bath 12.7 Copper etching residues 12.8 Plating metal sludge
13.	Production of iron and steel including other ferrous alloys (electric furnace; steel rolling and finishing mills; Coke oven and by products plant)	13.1 Spent pickling liquor 13.2 Sludge from acid recovery unit 13.3 Benzol acid sludge 13.4 Decanter tank tar sludge 13.5 Tar storage tank residue 13.6 Residues from coke oven by product plant.
14.	Hardening of steel	14.1 Cyanide-, nitrate-, or nitrite -containing sludge 14.2 Spent hardening salt
15.	Production of asbestos or asbestos-containing materials	15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust or particulates from exhaust gas treatment.
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge generated from mercury cell process 16.2 Residue or sludges and filter cakes 16.3 Brine sludge
17.	Production of mineral acids	17.1 Process acidic residue, filter cake, dust 17.2 Spent catalyst
18.	Production of nitrogenous and complex fertilizers	18.1 Spent catalyst 18.2 Carbon residue 18.3 Sludge or residue containing arsenic 18.4 Chromium sludge from water cooling tower
19.	Production of phenol	19.1 Residue or sludge containing phenol 19.2 Spent catalyst
20.	Production and/or industrial use of solvents	20.1 Contaminated aromatic, aliphatic or napthenic solvents may or may not be fit for reuse. 20.2 Spent solvents 20.3 Distillation residues 20.4 Process Sludge
21.	Production and/or industrial use of paints, pigments, lacquers, varnishes and inks	21.1 Process wastes, residues and sludges 21.2 Spent solvent
22.	Production of plastics	22.1 Spent catalysts 22.2 Process residues
23.	Production and /or industrial use of glues, organic cements,	23.1 Wastes or residues (not made with vegetable or animal materials)

(1)	(2)	(3)
	adhesive and resins	23.2 Spent solvents
24.	Production of canvas and textiles	24.1 Chemical residues
25.	Industrial production and formulation of wood preservatives	25.1 Chemical residues 25.2 Residues from wood alkali bath
26.	Production or industrial use of synthetic dyes, dye-intermediates and pigments	26.1 Process waste sludge/residues containing acid, toxic metals, organic compounds 26.2 Dust from air filtration system 26.3 Spent acid 26.4 Spent solvent 26.5 Spent catalyst
27.	Production of organic-silicone compound	27.1 Process residues
28.	Production/formulation of drugs/pharmaceutical and health care product	28.1 Process Residue and wastes 28.2 Spent catalyst 28.3 Spent carbon 28.4 Off specification products 28.5 Date-expired products 28.6 Spent solvents
29.	Production, and formulation of pesticides including stock-piles	29.1 Process wastes or residues 29.2 Sludge containing residual pesticides 29.3 Date-expired and off-specification pesticides 29.4 Spent solvents 29.5 Spent catalysts 29.6 Spent acids
30.	Leather tanneries	30.1 Chromium bearing residue and sludge
31.	Electronic Industry	31.1 Process residue and wastes 31.2 Spent etching chemicals and solvents
32.	Pulp and Paper Industry	32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Process sludge containing adsorbable organic halides(AO_X)
33.	Handling of hazardous chemicals and wastes	33.1 Empty barrels/containers/liners contaminated with hazardous chemicals /wastes 33.2 Contaminated cotton rags or other cleaning materials
34.	De-contamination of barrels / containers used for handling of hazardous wastes/chemicals	34.1 Chemical-containing residue arising from decontamination. 34.2 Sludge from treatment of waste water arising out of cleaning / disposal of barrels / containers
35.	Purification and treatment of exhaust air/gases, water and waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	35.1 Exhaust Air or Gas cleaning residue 35.2 Spent ion exchange resin containing toxic metals 35.3 Chemical sludge from waste water treatment 35.4 Oil and grease skimming 35.5 Chromium sludge from cooling water
36.	Purification process for organic	36.1 Any process or distillation residue

(1)	(2)	(3)
	compounds/solvents	36.2 Spent carbon or filter medium
37.	Hazardous waste treatment processes, e.g. pre-processing, incineration and concentration	37.1 Sludge from wet scrubbers 37.2 Ash from incinerator and flue gas cleaning residue 37.3 Concentration or evaporation residues
38.	Chemical processing of Ores containing heavy metals such as Chromium, Manganese, Nickel, Cadmium etc.	38.1 Process residues 38.2 Spent acid

*** The inclusion of wastes contained in this Schedule does not preclude the use of Schedule II to demonstrate that the waste is not hazardous. In case of dispute, the matter would be referred to the Technical Review Committee constituted by Ministry of Environment, Forest and Climate Change.**

Note: *The high volume low effect wastes such as fly ash, Phosphogypsum, red mud, jarosite, Slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastes shall be issued by Central Pollution Control Board.*

SCHEDULE II

[See rule 3 (1) (17) (ii)]

List of waste constituents with concentration limits

Class A: Based on leachable concentration limits [Toxicity Characteristic Leaching Procedure (TCLP) or Soluble Threshold Limit Concentration (STLC)]

Class	Constituents	Concentration in mg/l
(1)	(2)	(3)
A1	Arsenic	5.0
A2	Barium	100.0
A3	Cadmium	1.0
A4	Chromium and/or Chromium (III) compounds	5.0
A5	Lead	5.0
A6	Manganese	10.0
A7	Mercury	0.2
A8	Selenium	1.0
A9	Silver	5.0
A10	Ammonia	50*
A11	Cyanide	20*
A12	Nitrate (as nitrate-nitrogen)	1000.0
A13	Sulphide (as H_2S)	5.0
A14	1,1-Dichloroethylene	0.7
A15	1,2-Dichloroethane	0.5
A16	1,4-Dichlorobenzene	7.5
A17	2,4,5-Trichlorophenol	400.0
A18	2,4,6-Trichlorophenol	2.0
A19	2,4-Dinitrotoluene	0.13
A20	Benzene	0.5
A21	Benzo (a) Pyrene	0.001
A22	Bromodicholromethane	6.0
A23	Bromoform	10.0
A24	Carbon tetrachloride	0.5
A25	Chlorobenzene	100.0
A26	Chloroform	6.0
A27	Cresol (ortho+ meta+ para)	200.0
A28	Dibromochloromethane	10.0
A29	Hexachlorobenzene	0.13
A30	Hexachlorobutadiene	0.5
A31	Hexachloroethane	3.0
A32	Methyl ethyl ketone	200.0
A33	Naphthalene	5.0
A34	Nitrobenzene	2.0
A35	Pentachlorophenol	100.0
A36	Pyridine	5.0
A37	Tetrachloroethylene	0.7
A38	Trichloroethylene	0.5

(1)	(2)	(3)
A39	Vinyl chloride	0.2
A40	2,4,5-TP (Silvex)	1.0
A41	2,4-Dichlorophenoxyacetic acid	10.0
A42	Alachlor	2.0
A43	Alpha HCH	0.001
A44	Atrazine	0.2
A45	Beta HCH	0.004
A46	Butachlor	12.5
A47	Chlordane	0.03
A48	Chlorpyriphos	9.0
A49	Delta HCH	0.004
A50	Endosulfan (alpha+ beta+ sulphate)	0.04
A51	Endrin	0.02
A52	Ethion	0.3
A53	Heptachlor (& its Epoxide)	0.008
A54	Isoproturon	0.9
A55	Lindane	0.4
A56	Malathion	19
A57	Methoxychlor	10
A58	Methyl parathion	0.7
A59	Monocrotophos	0.1
A60	Phorate	0.2
A61	Toxaphene	0.5
A62	Antimony	15
A63	Beryllium	0.75
A64	Chromium (VI)	5.0
A65	Cobalt	80.0
A66	Copper	25.0
A67	Molybdenum	350
A68	Nickel	20.0
A69	Thallium	7.0
A70	Vanadium	24.0
A71	Zinc	250
A72	Fluoride	180.0
A73	Aldrin	0.14
A74	Dichlorodiphenyltrichloroethane (DDT), Dichlorodiphenyldichloroethylene (DDE), Dichlorodiphenyldichloroethane (DDD)	0.1
A75	Dieldrin	0.8
A76	Kepone	2.1
A77	Mirex	2.1
A78	Polychlorinated biphenyls	5.0

Class B: Based on Total Threshold Limit Concentration (TTLC)

Class	Constituent	Concentration in mg/kg
(1)	**(2)**	**(3)**
B1	Asbestos	10000
B2	Total Petroleum Hydrocarbons (TPH) (C5 - C36)	5,000

Note:

(1) The testing method for list of constituents at A1 to A61 in Class-A, shall be based on Toxicity Characteristic Leaching Procedure (TCLP) and for extraction of leachable constituents, USEPA Test Method 1311 shall be used.
(2) The testing method for list of constituents at A62 to A79 in Class- A, shall be based on Soluble Threshold Limit Concentration (STLC) and Waste Extraction Test (WET) Procedure given in Appendix II of section 66261 of Title 22 of California Code regulation (CCR) shall be used.
(3) In case of ammonia (A10), cyanide (A11) and chromium VI (A64), extractions shall be conducted using distilled water in place of the leaching media specified in the TCLP/STLC procedures.
(4) A summary of above specified leaching/extraction procedures is included in manual for characterization and analysis of hazardous waste published by Central Pollution Control Board and in case the method is not covered in the said manual, suitable reference method may be adopted for the measurement.
(5) In case of asbestos, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state.
(6) The hazardous constituents to be analyzed in the waste shall be relevant to the nature of the industry and the materials used in the process.
(7) Wastes which contain any of the constituents listed below shall be considered as hazardous, provided they exhibit the characteristics listed in Class-C of this Schedule :

1.	Acid Amides
2.	Acid anhydrides
3.	Amines
4.	Anthracene
5.	Aromatic compounds other than those listed in Class A
6.	Bromates, (hypo-bromites)
7.	Chlorates (hypo-chlorites)
8.	Carbonyls
9.	Ferro-silicate and alloys
10.	Halogen- containing compounds which produce acidic vapours on contact with humid air or water e.g. silicon tetrachloride, aluminum chloride, titanium tetrachloride
11.	Halogen- silanes
12.	Halogenated Aliphatic Compounds
13.	Hydrazine (s)

14.	Hydrides
15.	Inorganic Acids
16.	Inorganic Peroxides
17.	Inorganic Tin Compounds
18.	Iodates
19.	(Iso- and thio-) Cyanates
20.	Manganese-silicate
21.	Mercaptans
22.	Metal Carbonyls
23.	Metal hydrogen sulphates
24.	Nitrides
25.	Nitriles
26.	Organic azo and azooxy Compounds
27.	Organic Peroxides
28.	Organic Oxygen Compounds
29.	Organic Sulphur Compounds
30.	Organo- Tin Compounds
31.	Organo nitro- and nitroso compounds
32.	Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese, magnesium, calcium
33.	Phenanthrene
34.	Phenolic Compounds
35.	Phosphate compounds except phosphates of aluminum, calcium and iron
36.	Salts of pre-acids
37.	Total Sulphur
38.	Tungsten Compounds
39.	Tellurium and tellurium compounds
40.	White and Red Phosphorus
41.	2-Acetylaminofluorene
42.	4-Aminodiphenyl
43.	Benzidine and its salts
44.	Bis (Chloromethyl) ether
45.	Methyl chloromethyl ether
46.	1,2-Dibromo-3-chloropropane
47.	3,3'-Dichlorobenzidine and its salts
48.	4-Dimethylaminoazobenzene
49.	4-Nitrobiphenyl
50.	Beta-Propiolactone

CLASS C : Based on hazardous Characteristics

Apart from the concentration limit given above, the substances or wastes shall be classified as hazardous waste if it exhibits any of the following characteristics due to the presence of any hazardous constituents:

Class C1: Flammable- A waste exhibits the characteristic of flammability or ignitability if a representative sample of the waste has any of the following properties, namely:-

(i) flammable liquids, or mixture of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc; but not including substances or wastes otherwise classified on account of their dangerous characteristics), which give off a flammable vapour at temperature less than 60°C. This flash point shall be measured as per ASTM D 93-79 closed-cup test method or as determined by an equivalent test method published by Central Pollution Control Board;
(ii) it is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns vigorously and persistently creating a hazard;
(iii) it is an ignitable compressed gas;
(iv) It is an oxidizer and for the purposes of characterisation is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

Class C2: Corrosive- A waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties, namely:-

(i) it is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5;
(ii) it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm per year at a test temperature of 55 °C;
(iii) it is not aqueous and, when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2 or greater than or equal to 12.5;
(iv) it is not a liquid and, when mixed with an equivalent weight of water, produces a liquid that corrodes steel (SAE1020) at a rate greater than 6.35 mm per year at a test temperature of 55 °C.
Note:
For the purpose of determining the corrosivity, the Bureau of Indian Standard 9040 C method for pH determination, NACE TM 01 69 : Laboratory Corrosion Testing of Metals and EPA 1110A method for corrosivity towards steel (SAE1020) to establish the corrosivity characteristics shall be adopted.

Class C3: Reactive or explosive- A waste exhibits the characteristic of reactivity if a representative sample of the waste it has any of the following properties, namely:-

(i) it is normally unstable and readily undergoes violent change without detonating;
(ii) it reacts violently with water or forms potentially explosive mixtures with water;
(iii) when mixed with water, it generates toxic gases, vapours or fumes in a quantity sufficient to present a danger to human health or the environment;
(iv) it is a cyanide or sulphide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapours or fumes in a quantity sufficient to present a danger to human health or the environmental;
(v) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;
(vi) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure;
(vii) it is a forbidden explosive.

Class C4: Toxic- A waste exhibits the characteristic of toxicity, if, :-

(i) the concentration of the waste constituents listed in Class A and B (of this schedule) are equal to or more than the permissible limits prescribed therein;
(ii) it has an acute oral LD50 less than 2,500 milligrams per kilogram;
(iii) it has an acute dermal LD50 less than 4,300 milligrams per kilogram;
(iv) it has an acute inhalation LC50 less than 10,000 parts per million as a gas or vapour;
(v) it has acute aquatic toxicity with 50% mortality within 96 hours for zebra fish (*Brachidanio rerio*) at a concentration of 500 milligrams per litre in dilution water and test conditions as specified in BIS test method 6582 – 2001.
(vi) it has been shown through experience or by any standard reference test- method to pose a hazard to human health or environment because of its carcinogenicity, mutagenecity, endocrine disruptivity, acute toxicity, chronic toxicity, bio-accumulative properties or persistence in the environment.

Class C5: Substances or Wastes liable to spontaneous combustion - Substances or Wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

Class C6: Substances or Wastes which, in contact with water emit flammable gases- Substances or Wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

Class C5: Oxidizing - Substances or Wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

Class C8: Organic Peroxides - Organic substances or Wastes which contain the bivalent O−O structure, which may undergo exothermic self-accelerating decomposition.

Class C9: Poisons (acute) - Substances or Wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

Class C10: Infectious ~~substances~~ - Substances or Wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

Class C11: Liberation of toxic gases in contact with air or water - Substances or Wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

Class C12: Eco-toxic- Substances or Wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

Class C13: Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

SCHEDULE III

[See rules 3 (1) (17) (iii), 3 (23), 12, 13 and 14]

Part A

List of hazardous wastes applicable for import and export with Prior Informed Consent [Annexure VIII of the Basel Convention*]

Basel No.	Description of Hazardous Wastes
(1)	(2)
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D
	- Antimony
	- Cadmium
	- Lead
	- Tellurium
A1020	Waste having as constituents or contaminants, excluding metal wastes in massive form, any or the following:
	- Antimony, antimony compounds
	- Cadmium, cadmium compounds
	- Lead, lead compounds
	- Tellurium, tellurium compounds
A1040	Waste having metal carbonyls as constituents
A1050	Galvanic sludges
A1070	Leaching residues from zinc processing, dust and sludges such as jarosite, hematite, etc.
A1080	Waste zinc residues not included in Part B, containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part C
A1090	Ashes from the incineration of insulated copper wire
A1100	Dusts and residues from gas cleaning systems of copper smelters
A1120	Waste sludges, excluding anode slimes, from electrolyte purification systems in copper electrorefining and electrowinning operations
A1140	Waste cupric chloride and copper cyanide catalysts not in liquid form note the related entry in Schedule VI
A1150	Precious metal ash from incineration of printed circuit boards not included in Part B
A1160	Waste lead acid batteries, whole or crushed
A1170	Unsorted waste batteries excluding mixtures of only Part B batteries. Waste batteries not specified in Part B containing constituents mentioned in Schedule II to an extent to render them hazardous
A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2010	Glass waste from cathode-ray tubes and other activated glasses
A2030	Waste catalysts but excluding such wastes specified in Part B
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3010	Waste from the production or processing of petroleum coke and bitumen
A3020	Waste mineral oils unfit for their originally intended use
A3050	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives excluding such wastes specified in Part B (B4020)
A3120	Fluff-light fraction from shredding

(1)	(2)
A3130	Waste organic phosphorus compounds
A4	**Wastes which may contain either inorganic or organic constituents**
A4010	Wastes from the production, preparation and use of pharmaceutical products but excluding such waste specified in Part B
A4040	Wastes from the manufacture, formulation and use of wood-preserving chemicals (does not include wood treated with wood preserving chemicals)
A4070	Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in Part B (B4010)
A4100	Wastes from industrial pollution control devices for cleaning of industrial off-gases but excluding such wastes specified in Part B
A4120	Wastes that contain, consist of or are contaminated with peroxides.
A4130	Wastes packages and containers containing Schedule II constituents in concentration sufficient to exhibit Part C of Schedule III hazard characteristics.
A4140	Waste consisting of or containing off specification or outdated chemicals (unused within the period recommended by the manufacturer) corresponding to constituents mentioned in Schedule II and exhibiting Part C of Schedule III hazard characteristics.
A4160	Spent activated carbon not included in Part B, B2060

*This List is based on Annexure VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes characterized as hazardous under Article I, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard.
Characteristics given in Annexure VIII of the Basel Convention (Part C of this Schedule) to demonstrate that the wastes are not hazardous. **Hazardous wastes in Part-A are restricted and cannot be allowed to be imported without permission from the Ministry of Environment, Forest and Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Part B

List of other wastes applicable for import and export and not requiring Prior Informed Consent [Annex IX of the Basel Convention*]

Basel No.	Description of wastes
(1)	(2)
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Thorium scrap
	- Rare earths scrap
B1020	Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plates, beams, rods, etc.), of:
	- Antimony scrap
	- Beryllium scrap
	- Cadmium scrap
	- Lead scrap (excluding lead acid batteries)
	- Selenium scrap
	- Tellurium scrap
B1030	Refractory metals containing residues

(1)	(2)
B1031	Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal and metal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in Part A under entry A1050, Galvanic sludges
B1040	Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing cadmium, antimony, lead & tellurium mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics
B1060	Waste selenium and tellurium in metallic elemental form including powder
B1070	Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Schedule II to an extent that they exhibit Part C characteristics
B1080	Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Schedule II in concentration such as to exhibit Part C characteristics
B1090	Waste batteries conforming to a standard battery specification, excluding those made with lead, cadmium or mercury
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Slags from copper processing for further processing or refining containing arsenic, lead or cadmium
	- Slags from precious metals processing for further refining
	- Wastes of refractory linings, including crucibles, originating from copper smelting
	- Tantalum-bearing tin slags with less than 0.5% tin
B1110	Used Electrical and electronic assemblies other than those listed in Part D of Schedule III
	Electronic assemblies consisting only of metals or alloys Waste electrical and electronic assemblies or scrap (including printed circuit boards) not containing components such as accumulators and other batteries included in Part A of Schedule III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with Schedule II constituents such as cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Part C of Schedule III (note the related entry in Schedule VI, A1180)
B1120	Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) in Part A and Schedule VI: - Scandium - Titanium - Vanadium - Chromium - Manganese - Iron - Cobalt - Nickel - Copper - Zinc - Yttrium - Zirconium - Niobium - Molybdenum - Hafnium - Tantalum

(1)	(2)
	- Tungsten - Rhenium Lanthanides (rare earth metals): - Lanthanum - Cerium
	- Praseodymium - Neodymium - Samarium - Europium - Gadolinium - Terbium - Dysprosium - Holmium - Erbium - Thulium - Ytterbium - Lutetium
B1130	Cleaned spent precious metal bearing catalysts
B1140	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold , silver, the platinum group but not mercury) in a dispersible form, non-liquid form with appropriate packaging and labelling
B1160	Precious metal ash from the incineration of printed circuit boards (note the related entry in Part A A1150)
B1170	Precious metal ash from the incineration of photographic film
B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slags as a source of Titanium dioxide and Vanadium
B1220	Slag from zinc production, chemically stabilised, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction
B1230	Mill scale arising from the manufacture of iron and steel
B1240	Copper Oxide mill-scale
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2010	Wastes from mining operations in non-dispersible form:
	- Natural graphite waste
	- Slate wastes
	- Mica wastes
	- Leucite, nepheline and nepheline syenite waste
	- Feldspar waste
	- Fluorspar waste
	- Silica wastes in solid form excluding those used in foundry operations
B2020	Glass wastes in non-dispersible form: - Cullet and other waste and scrap of glass except for glass from cathode-ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form: - Cermet wastes and scrap (metal ceramic composites) - Ceramic based fibres
B2040	Other wastes containing principally inorganic constituents: - Partially refined calcium sulphate produced from flue gas desulphurization (FGD) - Waste gypsum wallboard or plasterboard arising from the demolition of buildings

(1)	(2)
	- Slag from copper production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction and abrasive applications - Sulphur in solid form - Limestone from production of calcium cyanamide (pH<9) - Sodium, potassium, calcium chlorides - Carborundum (silicon carbide) - Broken concrete - Lithium-tantalum and lithium-niobium containing glass scraps
B2060	Spent activated carbon not containing any of Schedule II constituents to the extent they exhibit Part C characteristics, for example, carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry in Part A A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes not included in Schedule VI (note the related entry in A2040)
B2090	Waste anode butts from steel or aluminium production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolyses and from metallurgical industry)
B2100	Waste hydrates of aluminium and waste alumina and residues from alumina production, excluding such materials used for gas cleaning, flocculation or filtration processes
B2130	Bituminous material (asphalt waste) from road construction and maintenance, not containing tar (note the related entry in Schedule VI, A3200)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3027	Self-adhesive label laminate waste containing raw materials used in label material production
B3030	Textile wastes The following materials, provided they are not mixed with other wastes and are prepared to a specification: - Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock) • not carded or combed • other - Waste of wool or of fine or coarse animal hair, including yarn waste but excluding garnetted stock • noils of wool or of fine animal hair • other waste of wool or of fine animal hair • waste of coarse animal hair - Cotton waste (including yarn waste and garnetted stock) • yarn waste (including thread waste) • garnetted stock • other - Flax tow and waste - Tow and waste (including yarn waste and garnetted stock) of true hemp (Cannabis sativa L.) - Tow and waste (including yarn waste and garnetted stock) of jute and other textile bast fibres (excluding flax, true hemp and ramie) - Tow and waste (including yarn waste and garnetted stock) of sisal

(1)	(2)
	and other textile fibres of the genus Agave - Tow, noils and waste (including yarn waste and garneted stock) of coconut - Tow, noils and waste (including yarn waste and garneted stock) of abaca (Manila hemp or Musa textilis Nee) - Tow, noils and waste (including yarn waste and garneted stock) of ramie and other vegetable textile fibres, not elsewhere specified or included - Waste (including noils, yarn waste and garnetted stock) of man-made fibres • of synthetic fibres • of artificial fibres - Worn clothing and other worn textile articles - Used rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables of textile materials • sorted • other
B3035	Waste textile floor coverings, carpets
B3040	Rubber Wastes The following materials, provided they are not mixed with other wastes: - Waste and scrap of hard rubber (e.g., ebonite) - Other rubber wastes (excluding such wastes specified elsewhere)
B3050	Untreated cork and wood waste: - Wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms - Cork waste: crushed, granulated or ground cork
B3060	Wastes arising from agro-food industries provided it is not infectious: - Wine lees - Dried and sterilized vegetable waste, residues and by-products, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included - Degras: residues resulting from the treatment of fatty substances or animal or vegetable waxes - Waste of bones and horn-cores, unworked, defatted, simply prepared (but not cut to shape), treated with acid or degelatinised - Fish waste - Cocoa shells, husks, skins and other cocoa waste - Other wastes from the agro-food industry excluding by-products which meet national and international requirements and standards for human or animal consumption
B3070	The following wastes: - Waste of human hair - Waste straw - Deactivated fungus mycelium from penicillin production to be used as animal feed
B3080	Waste parings and scrap of rubber
B3090	Paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, excluding leather sludges, not containing hexavalent chromium compounds and biocides (note the related entry in Schedule VI, A3100)

(1)	(2)
B3100	Leather dust, ash, sludges or flours not containing hexavalent chromium compounds or biocides (note the related entry in Schedule VI, A3090)
B3110	Fellmongery wastes not containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Schedule VI, A3110)
B3120	Wastes consisting of food dyes
B3130	Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
B3140	Waste pneumatic and other tyres, excluding those which do not lead to resource recovery, recycling, reclamation but not for direct reuse
B4	**Wastes which may contain either inorganic or organic constituents**
B4010	Wastes consisting mainly of water-based or latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry in Part A, A4070)
B4020	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives, not listed in Part A, free of solvents and other contaminants to an extent that they do not exhibit Part C characteristics (note the related entry in Part A, A3050)
B4030	Used single-use cameras, with batteries not included in Part A

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-I of the Basel Convention. **The wastes in Part- B are restricted and cannot be allowed to be imported without permission from the Ministry of Environment, Forest and Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Note:

(1) Copper dross containing copper greater than 65% and lead and Cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without Director General of Foreign Trade license to units (actual users) authorised by State Pollution Control Board and with the Ministry of Environment, Forest and Climate Change's permission. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted category for which import is permitted only against Director General of Foreign Trade license for the purpose of processing or reuse by units permitted with the Ministry of Environment, Forest and Climate Change (actual users).

(2) Zinc ash or skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without Director General of Foreign Trade license to units authorised by State Pollution control Board, Ministry of Environment, Forest and Climate Change's permission (actual users) upto an annual quantity limit indicated in registration letter. Zinc ash and skimmings containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against Director General of Foreign Trade license and only for purpose of processing or reuse by units registered with the Ministry of Environment Forest and Climate Change (actual users).

Part C
List of Hazardous Characteristics

Code	Characteristic
H 1	**Explosive** An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surrounding.
H 3	**Flammable liquids** The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5ºC, closed-cup test, or not more than 65.6ºC, open-cup test. (Since the results of open-cups tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).
H 4.1	**Flammable solids** Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
H 4.2	**Substances or wastes liable to spontaneous combustion** Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
H 4.3	**Substances or wastes which, in contact with water emit flammable gases** Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.
H 5.1	**Oxidizing** Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion or other materials.
H 5.2	**Organic Peroxides** Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

H 6.1 **Poisons (acute)**

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

H 6.2 **Infectious substances**

Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

H 8 **Corrosives**

Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

H 10 **Liberation of toxic gases in contact with air or water**

Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

H 11 **Toxic (delayed or chronic)**

Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).

H 12 **Eco-toxic**

Substances or wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

H 13 **Capable,** by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

Part D

List of other wastes applicable for import and export without permission from Ministry of Environment, Forest and Climate Change [Annex IX of the Basel Convention*]

Basel No.	Description of wastes
(1)	(2)
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form :
	- Precious metals (gold, silver, platinum but not mercury) * *
	- Iron and steel scrap * *
	- Nickel scrap * *
	- Aluminium scrap* *
	- Zinc scrap * *
	- Tin scrap * *
	- Tungsten scrap * *
	- Molybdenum scrap * *
	- Tantalum scrap * *
	- Cobalt scrap * *
	- Bismuth scrap * *
	- Titanium scrap * *
	- Zirconium scrap * *
	- Manganese scrap * *
	- Germanium scrap * *
	- Vanadium scrap * *
	- Hafnium scrap * *
	- Indium scrap * *
	- Niobium scrap * *
	- Rhenium scrap * *
	- Gallium scrap * *
	- Magnesium scrap * *
	- Copper scrap * *
	- Chromium scrap * *
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics* *
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Hard Zinc spelter * *
	- Zinc-containing drosses * *: ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~ Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn) ~ Zinc skimmings
	– Aluminium skimmings (or skims) excluding salt slag

(1)	(2)
B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal
	- Used electrical and electronic assemblies imported for repair and to be re-exported back after repair within one year of import * * *
	- Used electrical and electronic assemblies imported for rental purpose and re-exported back within one year of import * * *
	- Used electrical and electronic assemblies exported for repair and to be re-import after repair
	- Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import * * *
	- Spares imported for warranty replacements provided equal number of defective or non-functional parts are exported back within one year of the import * * *
	- Used electrical and electronic assemblies imported by Ministry of Defence, Department of Space and Department of Atomic Energy * * *
	- Used electrical and electronic assemblies (not in bulk; quantity less than or equal to three) imported by the individuals for their personal uses
	- Used Laptop, Personal Computers, Mobile, Tablet up to 01 number each imported by organisations in a year
	- Used electrical and electronic assemblies owned by individuals and imported on transfer of residence
	- Used multifunction print and copying machines (MFDs)* * * *
	- Used electrical and electronic assemblies imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas.
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3020	Paper, paperboard and paper product wastes * * The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap
B3140	Aircraft Tyres exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas

Note:

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-I of the Basel Convention.

* * Import permitted in the country to the actual user or to the trader on behalf of the actual users authorised by SPCB on one time basis and subject to verification of documents specified in Schedule VIII of these rules by the Custom Authority.

* * * Import permitted in the country only to the actual users from Original Equipment Manufacturers (OEM) and subject to verification of documents specified in Schedule VIII of these rules by the Custom Authority.

* * * * Import permitted in the country to the actual users or trader on behalf of the actual user in accordance with the documents required and verified by the Custom Authority as specified under Schedule VIII of these rules. The policy for free trade for multifunction print and copying machine to be reviewed once the MFDs are domestically manufactured.

All other wastes listed in Part D of Schedule III having no "Stars" are permitted without any documents from MoEF&CC subject to compliance of the conditions of the Customs Authority, if any.

SCHEDULE IV

[*See rules 6 (1) (ii) and 6 (2)*]

List of commonly recyclable hazardous wastes

S.No.	Wastes
(1)	(2)
1.	Brass Dross
2.	Copper Dross
3.	Copper Oxide mill scale
4.	Copper reverts, cake and residue
5.	Waste Copper and copper alloys in dispersible from
6.	Slags from copper processing for further processing or refining
7.	Insulated Copper Wire Scrap or copper with PVC sheathing including ISRI-code material namely "Druid"
8.	Jelly filled Copper cables
9.	Spent cleared metal catalyst containing copper
10.	Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt
11.	Zinc Dross-Hot dip Galvanizers SLAB
12.	Zinc Dross-Bottom Dross
13.	Zinc ash/Skimmings arising from galvanizing and die casting operations
14.	Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining
15.	Zinc ash and residues including zinc alloy residues in dispersible from
16.	Spent cleared metal catalyst containing zinc
17.	Used Lead acid battery including grid plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "rains".

(1)	(2)
18.	Components of waste electrical and electronic assembles comprising accumulators and other batteries included in Part A of Schedule III, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of Schedule III.
19.	Paint and ink Sludge/residues
20.	Used oil and waste oil

SCHEDULE V

[See rules 3 (36) and 3 (39)]

PART A

Specifications of Used Oil Suitable for recycling

S.No.	Parameter	Maximum permissible Limits
(1)	(2)	(3)
1.	Polychlorinated biphenyls (PCBs)	< 2ppm *
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%

Part B

Specification of fuel derived from waste oil

S.No.	Parameter	Maximum permissible limits
(1)	(2)	(3)
1.	Sediment	0.25%
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%
6.	Total halogents	4000 ppm
7.	Polychlorinated biphenyls (PCBs)	<2 ppm *
8.	Sulfur	4.5%
9.	Water Content	1%

***The detection limit is 2 ppm by gas Liquid Chromatography (GLC) using Electron Capture detector (ECD)**

SCHEDULE VI

[See rules 12 (6), 12 (7) and 14(1)]

Hazardous and Other wastes prohibited for import

Basel No	Description of hazardous and other wastes
(1)	**(2)**
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D of Schedule III
	- Arsenic
	- Beryllium
	- Mercury
	- Selenium
	- Thallium
A1020	Wastes having as constituents or contaminants, excluding metal wastes in massive form, any of the following:
	- Beryllium; beryllium compounds
	- Selenium; selenium compounds
A1030	Wastes having as constituents or contaminants any of the following:
	- Arsenic; arsenic compounds
	- Mercury; mercury compounds
	- Thallium; thallium compounds
A1040	Waste having hexavalent chromium compounds as constituents
A1140	Waste cupric chloride and copper cyanide catalysts in liquid form (note the related entry in Part A of Schedule III)
A1060	Wastes liquors from the pickling of metals
A1110	Spent electrolytic solutions from copper electrorefining and electrowinning operations
A1130	Spent etching solutions containing dissolved copper
A1180	Waste electrical and electronic assembles or scrap (does not include scrap assemblies from electric power generation) containing components such as accumulators and other batteries included in Part A of Schedule III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Schedule II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in Part C of Schedule III (note the related entry in Part B B1110)
A1190	Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB, lead, cadmium, other organohalogen compounds or other constituents as mentioned in Schedule II to the extent that they exhibit hazard characteristics indicated in Part C of Schedule III
A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2020	Waste inorganic fluorine compounds in the form of liquids or sludges but excluding such wastes specified in Part B

(1)	(2)
A2040	Waste gypsum arising from chemical industry processes, if it contains any of the constituents mentioned in Schedule 2 to the extent that they exhibit hazard characteristics indicated in Part C of Schedule III (note the related entry in Part B B2080)
A2050	Waste asbestos (dusts and fibres)
A2060	Coal-fired power plant fly-ash containing Schedule II constituents in concentrations sufficient to exhibit Part C characteristics
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3030	Wastes that contain, consist of or are contaminated with leaded anti-knock compounds sludges.
A3040	Waste thermal (heat transfer) fluids
A3060	Waste nitrocellulose
A3070	Waste phenols, phenol compounds including chlorophenol in the form of liquids or sludges
A3080	Waste ethers not including those specified in Part B
A3090	Waste leather dust, ash, sludges and flours when containing hexavalent chromium compounds or biocides (note the related entry in Part B B3100)
A3100	Waste paring and other waste of leather or of composition leather not suitable for the manufacture of leather articles, containing hexavalent chromium compound and biocides (note the related entry in Part B B3090)
A3110	Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Part B B3110)
A3140	Waste non-halogenated organic solvents but excluding such wastes specified in Part B
A3150	Waste halogenated organic solvents
A3160	Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
A3170	Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethane, dichloro-ethane, vinyl chloride, vinylidene chloride, allyl chloride and epichlorhydrin)
A3180	Wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyl (PCB), polychlorinated terphenyl (PCT), polychlorinated naphthalene (PCN) or polybrominated biphenyl (PBB) or any other polybrominated analogues of these compounds
A3190	Waste tarry residues (excluding asphalt cements) arising from refining, distillation and any pyrolytic treatment of organic materials
A3200	Bituminous material (asphalt waste) from road construction and maintenance, containing tar (note the related entry in Part B, B2130)
A4	**Wastes which may contain either inorganic or organic constituents**
A4020	Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices, and wastes generated in hospitals or other facilities during the investigation or treatment of patients, or research projects.
A4030	Waste from the production, formulation and use of biocide and phyto-pharmaceuticals, including waste pesticides and herbicides which are off-specification, out-dated (unused within the period recommended by the manufacturer), or unfit for their originally intended use,

(1)	(2)
A4050	Wastes that contain, consist of, or are contaminated with any of the following: - Inorganic cyanides, excepting precious-metal-bearing residues in solid form containing traces of inorganic cyanides. - Organic cyanides
A4060	Waste oils/water, hydrocarbons/water mixtures, emulsions
A4080	Wastes of an explosive nature (but excluding such wastes specified in Part B)
A4090	Waste acidic or basic solutions, other than those specified at B2120 of this Schedule
A4110	Wastes that contain, consist of or are contaminated with any of the following: - Any congenor of polychlorinated dibenzo-furan. - Any congenor of polychlorinated dibenzo-P-dioxin.
A4150	Waste chemical substances arising from research and development or teaching activities which are not identified and /or are new and whose effects on human health and /or the environment are not known
B1	**Metal and Metal bearing wastes**
B 1110	Used critical care medical equipment for re-use
B1115	Waste metal cables coated or insulated with plastics, not included in A1190 of this schedule, excluding those destined for operations which do not lead to resource recovery, recycling, reclamation, direct re-use or alternative uses or any other disposal operations involving, at any stage, uncontrolled thermal processes, such as open-burning.
B1250	Waste end-of-life motor vehicles, containing neither liquids nor other hazardous components
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2050	Coal-fired power plant fly-ash, note the related entry at A2060 of this Schedule
B2110	Bauxite residue (red mud) (pH moderated to less than 11.5)
B2120	Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry at A4090 of this schedule)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3010	Solid plastic waste The following plastic or mixed plastic waste, prepared to a specification: - Scrap plastic of non-halogenated polymers and co-polymers, including but not limited to the following: Ethylene, Styrene, Polypropylene, polyethylene terephthalate, Acrylonitrile, Butadiene, Polyacetals, Polyamides, polybutylene tere-phthalate, Polycarbonates, Polyethers, polyphenylene sulphides, acrylic polymers, alkanes C10-C13 (plasticiser), polyurethane (not containing CFC's), Polysiloxanes, polymethyl methacrylate, polyvinyl alcohol, polyvinyl butyral, Polyvinyl acetate - Cured waste resins or condensation products including the following: urea formaldehyde resins, phenol formaldehyde resins, melamine formaldehyde resins, epoxy resins, alkyd resins, polyamides - The following fluorinated polymer wastes (excluding post-consumer wastes):

(1)	(2)
	perfluoroethylene/ propylene, perfluoro alkoxy alkane, tetrafluoroethylene/per fluoro vinyl ether (PFA), tetrafluoroethylene/per fluoro methylvinyl ether (MFA), polyvinylfluoride , polyvinylidenefluoride
B3026	The following waste from the pre-treatment of composite packaging for liquids, not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics: - Non-separable plastic fraction - Non-separable plastic-aluminium fraction -
B3065	Waste edible fats and oils of animal or vegetable origin (e.g. frying oil)
B3140	Waste pneumatic tyres for direct reuse
Y 46	Wastes collected from household/municipal waste
Y 47	Residues arising from the incineration of household wastes

SCHEDULE VII

[*See rules 13 (6) and 21*]

List of authorities and corresponding duties

S. No.	Authority	Corresponding Duties
(1)	(2)	(3)
1.	Ministry of Environment, Forests and Climate Change under the Environment (Protection)Act, 1986	(i) Identification of hazardous and other wastes (ii) Permission to exporters of hazardous and other wastes (iii) Permission to importer of hazardous and other wastes (iv) Permission for transit of hazardous and other wastes through India. (v) Promote environmentally sound management of hazardous and other waste. (vi) Sponsoring of training and awareness programme on Hazardous and Other Waste Management related activities.
2.	Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974	(i) Co-ordination of activities of State Pollution Control Boards (ii) Conduct training courses for authorities dealing with management of hazardous and other wastes (iii) Recommend standards and specifications for treatment and disposal of wastes and leachates, recommend procedures for characterisation of hazardous wastes.

(1)	(2)	(3)
		(iv) Inspection of facilities handling hazardous waste as and when necessary. (v) Sector specific documentation to identify waste for inclusion in these rules. (vi) Prepare and update guidelines to prevent or minimise the generation and handling of hazardous and other wastes. (vii) Prepare and update guidelines/ Standard Operating Procedures (SoPs) for recycling, utilization, pre-processing, co-processing of hazardous and other wastes. (viii) To prepare annual review report on management of hazardous waste. (ix) Any other function assigned by the Ministry of Environment, Forest and Climate Change, from time to time.
3.	State Government/Union Territory Government/Administration	(i) Identification of site (s) for common Hazardous and Other Waste Treatment Storage and Disposal Facility (TSDF) (ii) Asses Environment Impact Assessment (EIA) reports and convey the decision of approval of site or otherwise Acquire the site or inform operator of facility or occupier or association of occupiers to acquire the site (iii) Notification of sites. (iv) Publish periodically an inventory of all potential or existing disposal sites in the State or Union Territory
4.	State Pollution Control Boards or Pollution Control Committees constituted under the Water (Prevention and Control of Pollution) Act, 1974	(i) Inventorisation of hazardous and other wastes (ii) Grant and renewal of authorisation (iii) Monitoring of compliance of various provisions and conditions of permission including conditions of permission for issued by Ministry of Environment, Forest and Climate Change for exports and imports (iv) Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Environment, Forest and Climate Change (v) Implementation of programmes to prevent or reduce or minimise the generation of hazardous and other wastes. (vi) Action against violations of these rules. (vii) Any other function under these Rules assigned by Ministry of Environment, Forest and Climate Change from time to time.
5.	Directorate General of Foreign	(i) Grant of licence for import of hazardous

(1)	(2)	(3)
	Trade constituted under the Foreign Trade (Development and Regulation) Act, 1992	and other wastes (ii) Refusal of licence for hazardous and other wastes prohibited for imports and export
6.	Port authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962)	(i) Verify the documents (ii) Inform the Ministry of Environment, Forests and Climate Change of any illegal traffic (iii) Analyse wastes permitted for imports and exports, wherever required. (iv) Train officials on the provisions of these rules and in the analysis of hazardous and other wastes (v) Take action against exporter or importer for violations under the Indian Ports Act, 1908 or Customs Act, 1962

SCHEDULE VIII

[*See rules 13(2) and 13 (4)*]

List of documents for verification by Customs for import of other wastes specified in Part D of Schedule III

S. No.	Basel No.	Description of other wastes	List of Documents
(1)	(2)	(3)	(4)
1	B1010	Metal and metal-alloy wastes in metallic, non-dispersible form: - Precious metals (gold, silver, platinum) - Iron and steel scrap - Nickel scrap - Aluminium scrap - Zinc scrap - Tin scrap - Tungsten scrap - Molybdenum scrap - Tantalum scrap - Cobalt scrap - Bismuth scrap - Titanium scrap - Zirconium scrap - Manganese scrap - Germanium scrap - Vanadium scrap - Hafnium scrap - Indium scrap - Niobium scrap - Rhenium scrap - Gallium scrap - Magnesium scrap - Copper scrap - Chromium scrap	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (a) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid one time authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned State Pollution Control Board for import in the last financial year.

(1)	(2)	(3)	(4)
2	B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics* *	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (b) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
3	B1100	Metal bearing wastes arising from melting, smelting and refining of metals: - Hard Zinc spelter - Zinc-containing drosses: ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn) ~ Zinc skimmings – Aluminium skimmings (or skims) excluding salt slag	(c) Duly filled up Form 6 - Movement document; (d) The import license from Directorate General of Foreign Trade, wherever applicable; (e) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (f) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (g) The chemical analysis report of the waste being imported; (h) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
4	B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal	
(a)		Used electrical and electronic assemblies imported for repair and	(a) Duly filled up Form 6 - Movement document;

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(1)	(2)	(3)	(4)
		to be re-exported after repair within one year of import	(b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year (e) Certificate from exporting company for accepting the repaired and unrepairable electrical and electronic assemblies and the spares or part or component or consumables being re-exported.
(b)		Used electrical and electronic assemblies imported for rental purpose and re-exported back within one year of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year
(c)		Used electrical and electronic assemblies exported for repair and to be re-imported after repair	(a) Duly filled up Form 6 - Movement document; (b) Proof of export of the defective electrical and electronic assemblies i.e. shipping or airway document authenticated by Customs
(d)		Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Chartered Engineer Certificate or certificate from accredited agency of exporting country indicating the functionality, manufacturing date, residual life and serial number; (e) an acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year; (f) Certificate from exporting company for accepting the second hand functional or non-functional electrical and electronic assemblies and/or the spares or part or component or consumables being

(1)	(2)	(3)	(4)
			re-exported at the end of three years.
(e)		Spares imported for warranty replacements provided equal number of defective / non-functional parts are exported back within one year of the import.	(a) Duly filled up Form 6 - Movement document; (b) if refurbished components being imported as replacement to defective component then undertaking for export of equivalent numbers of defective components; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Certificate from exporting company for accepting the re-export of defective or non-functional spares or part or component or consumables being re-exported; (e) Documents on the declared policy regarding the use of second hand or refurbished spare parts for repair of electrical and electronic assemblies during warranty period.
(f)		Used electrical and electronic assemblies imported by Ministry of Defence, Department of Space and Department of Atomic Energy.	---
(g)		Used electrical and electronic assemblies (not in bulk; quantity less than or equal to three) imported by the individuals for their personal uses.	---
(h)		Used Laptop, Personal Computers, Mobile, Tablet up to 03 number each imported by organisations in a year.	---
(i)		Used electrical and electronic assemblies owned by individuals and imported on transfer of residence.	As per existing guidelines of Custom Authority
(j)		Used electrical and electronic assemblies, spares, imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas.	----

(1)	(2)	(3)	(4)
(j)		Used multifunction print and copying machines (MFDs)*	(a) The country of Origin Certificate along with bill of lading and packaging; (b) The certificate issued by the inspection agency as certified by the exporting country or the inspection and certification agency approved by Directorate General Foreign Trade (DGFT) for functionality, having residual life of not less than five years and serial number; (c) Extended Producer Responsibility-Authorisation under e-waste (Management and Handling) Rules, 2011 as amended from time to time as Producer; (d) The MFDs shall be for printing A 3 size and above; (e) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
5	B3020	Paper, paperboard and paper product wastes The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap	(a) Duly filled up Form 6 – Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (i) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned State Pollution Control Board for import in the last financial year.
6.	B3140	Aircraft Tyres exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft	As per existing guidelines of Custom Authority

(1)	(2)	(3)	(4)
		maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas	

Note: * The policy for free trade for multifunction print and copying machine to be reviewed once the MFDs are domestically manufactured.

FORM 1

[See rule 6 (1)]

Application required for grant/renewal of authorisation for generation or collection or storage or transport or reception or recycling or reuse or recovery or pre-processing or co-processing or utilisation or treatment or disposal of hazardous and other waste

Part A: General (to be filled by all)

1. (a) Name and address of the unit and location of facility :
   (b) Name of the occupier of the facility or operator of disposal facility with designation, Tel, Fax and e-mail:
   (c) Authorisation required for (Please tick mark appropriate activity or activities:

(i) Generation	☐
(ii) Collection	☐
(iii) Storage	☐
(iv) Transportation	☐
(v) Reception	☐
(vi) Reuse	☐
(vii) Recycling	☐
(viii) Recovery	☐
(ix) Pre-processing	☐
(x) Co-processing	☐
(xi) Utilisation	☐
(xii) Treatment	☐
(xiii) Disposal	☐
(xiv) Incineration	☐

(d) In case of renewal of authorisation previous authorisation numbers and dates and provide copies of annual returns of last three years including the compliance reports with respect to the conditions of Prior Environmental Clearance, wherever applicable:

2. (a) Nature and quantity of waste handled per annum (in metric tonne or kilo litre)
   (b) Nature and quantity of waste stored at any time (in metric tonne or kilo litre)

3. (a) Year of commissioning and commencement of production:
   (b) Whether the industry works:

(i) 01 Shift	☐
(ii) 02 Shifts	☐
(iii) Round the clock	☐

4. Provide copy of the Emergency Response Plan (ERP) which should address procedures for dealing with emergency situations (viz. Spillage or release or fire) as specified in the guidelines of Central Pollution Control Board. Such ERP shall comprise the following, but not limited to:

- Containing and controlling incidents so as to minimise the effects and to limit danger to the persons, environment and property;
- Implementing the measures necessary to protect persons and the environment;
- Description of the actions which should be taken to control the conditions at events and to limit their consequences, including a description of the safety equipment and resources available;
- Arrangements for training staff in the duties which they are expected to perform;

- Arrangements for informing concerned authorities and emergency services; and
- Arrangements for providing assistance with off-site mitigatory action.

5. Provide undertaking or declaration to comply with all provisions including the scope of submitting bank guarantee in the event of spillage, leakage or fire while handling the hazardous and other waste.

Part B: To be filled by hazardous waste generators

1. (a) Products and by-products manufactured (names and product wise quantity per annum):
   (b) Process description including process flow sheet indicating inputs and outputs (raw materials, chemicals, products, by-products, wastes, emissions, waste water etc.) Please attach separate sheets:
   (c) Characteristics (waste-wise) and Quantity of waste generation per annum:
   (d) Mode of management of (c) above:
   i. Capacity and mode of secured storage within the plant;
   ii. Utilisation within the plant (provide details);
   iii. If not utilised within the plant, please provide details of what is done with this waste;
   iv. Arrangement for transportation to actual users/ TSDF;

   (e) Details of the environmental safeguards and environmental facilities provided for safe handling of all the wastes at point (c) above;

2. Hazardous and other wastes generated as per these rules from storage of hazardous chemicals as defined under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989

Part C: To be filled by Treatment, storage and disposal facility operators

1. Provide details of the facility including:
   (i) Location of site with layout map;
   (ii) Safe storage of the waste and storage capacity;
   (iii) The treatment processes and their capacities;
   (iv) Secured landfills;
   (v) Incineration, if any;
   (vi) Leachate collection and treatment system;
   (vii) Fire fighting systems;
   (viii) Environmental management plan including monitoring; and
   (ix) Arrangement for transportation of waste from generators.

2. Provide details of any other activities undertaken at the Treatment, storage and disposal facility site.

3. Attach a copy of prior Environmental Clearance.

Part D: To be filled by recyclers or pre-processors or co-processors or users of hazardous or other wastes

1. Nature and quantity of different wastes received per annum from domestic sources or imported or both:

2. Installed capacity as per registration issued by the District Industries Centre or any other authorised Government agency. Provide copy:

3. Provide details of secured storage of wastes including the storage capacity:

4. Process description including process flow sheet indicating equipment details, inputs and outputs (input wastes, chemicals, products, by-products, waste generated, emissions, waste water, etc.). Attach separate sheets:

5. Provide details of end users of products or by-products:

6. Provide details of pollution control systems such as Effluent Treatment Plant, scrubbers, etc. including mode of disposal of waste:

7. Provide details of occupational health and safety measures:

8. Has the facility been set up as per Central Pollution Control Board guidelines? If yes, provide a report on the compliance with the guidelines:

9. Arrangements for transportation of waste to the facility:

Signature of the Applicant
Designation

Date……..

Place…….

FORM 2

[See rule 6(2)]

FORM FOR GRANT OR RENEWAL OF AUTHORISATION BY STATE POLLUTION CONTROL BOARD TO THE OCCUPIERS, RECYCLERS, REPROCESSORS, REUSERS, USER AND OPERATORS OF DISPOSAL FACILITIES

1. Number of authorisation and date of issue :
2. Reference of application (No. and date) :
3. ……of ……..is hereby granted an authorisation based on the enclosed signed inspection report for generation, collection, reception, storage, transport, reuse, recycling, recovery, pre-processing, co-processing, utilisation, treatment, disposal or any other use of hazardous or other wastes or both on the premises situated at……....

Details of Authorisation

Sl. No.	Category of Hazardous Waste as per the Schedules I, II and III of these rules	Authorised mode of disposal or recycling or utilisation or co-processing, etc.	Quantity (ton/annum)

(1) The authorisation shall be valid for a period of ……

(2) The authorisation is subject to the following general and specific conditions (Please specify any conditions that need to be imposed over and above general conditions, if any):

A. General conditions of authorisation:

1. The authorised person shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under.
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the State Pollution Control Board.
3. The person authorised shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this authorisation.
4. Any unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised shall constitute a breach of his authorisation.
5. The person authorised shall implement Emergency Response Procedure (ERP) for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
6. The person authorised shall comply with the provisions outlined in the Central Pollution Control Board guidelines on “Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty”
7. It is the duty of the authorised person to take prior permission of the State Pollution Control Board to close down the facility.
8. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.

9. The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
10. The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilisation of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorisation.
11. The importer or exporter shall bear the cost of import or export and mitigation of damages if any.
12. An application for the renewal of an authorisation shall be made as laid down under these Rules.
13. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.
14. Annual return shall be filed by June 30th for the period ensuring 31st March of the year.

B. Specific conditions:

Date:

Signature of Issuing Authority
Designation and Seal

FORM 3

[See rules 6(5), 13(7), 14(6), 16(5) and 20 (1)]

FORMAT FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES

1. Name and address of the facility :
2. Date of issuance of authorisation and its reference number :
3. Description of hazardous and other wastes handled (Generated or Received)

Date	**Type of waste with category as per Schedules I, II and III of these rules**	**Total quantity (Metric Tonnes)**	**Method of Storage**	**Destined to or received from**

* *Fill up above table separately for indigenous and imported waste.*

4. Date wise description of management of hazardous and other wastes including products sent and to whom in case of recyclers or pre-processor or utiliser:
5. Date of environmental monitoring (as per authorisation or guidelines of Central Pollution Control Board):

Signature of occupier

Date……..

Place…….

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FORM 4

[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted to State Pollution Control Board by 30th day of June of every year for the preceding period April to March]

1. Name and address of facility:

2. Authorisation No. and Date of issue:

3. Name of the authorised person and full address with telephone, fax number and e-mail:

4. Production during the year (product wise), wherever applicable

Part A. To be filled by hazardous waste generators

1. Total quantity of waste generated category wise

2. Quantity dispatched
   (i) to disposal facility
   (ii) to recycler or co-processors or pre-processor
   (iii) others

3. Quantity utilised in-house, if any -

4. Quantity in storage at the end of the year –

Part B. To be filled by Treatment, storage and disposal facility operators

1. Total quantity received -

2. Quantity in stock at the beginning of the year -

3. Quantity treated –

4. Quantity disposed in landfills as such and after treatment –

5. Quantity incinerated (if applicable) -

6. Quantity processed other than specified above -

7. Quantity in storage at the end of the year -

Part C. To be filled by recyclers or co-processors or other users

1. Quantity of waste received during the year –
   (i) domestic sources
   (ii) imported (if applicable)

2. Quantity in stock at the beginning of the year -

3. Quantity recycled or co-processed or used –

4. Quantity of products dispatched (wherever applicable) –

5. Quantity of waste generated -

6. Quantity of waste disposed -

7. Quantity re-exported (wherever applicable)-

8. Quantity in storage at the end of the year -

Signature of the Occupier or Operator of the disposal facility

Date……..

Place…….

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FORM 5

[See rules 13 (1) and 14 (1)]

APPLICATION FOR IMPORT OR EXPORT OF HAZARDOUS AND OTHER WASTE FOR REUSE OR RECYCLING OR RECOVERY OR CO-PROCESSING OR UTILISATION

TO BE FILLED IN BY APPLICANT

S. No.	Description	Details to be furnished by the importer or exporter
(1)	(2)	(3)
1.	Importer or Exporter (name and address) in India	
	Contact person	
	Tel, fax and e-mail	
	Facility location/address	
	Reason for import or export	
2.	Importer or exporter (name and address) outside of India	
3.	Details of waste to be imported or exported	
	(a) Quantity (b) Basel No. (c) Single/multiple movement (d) Chemical composition of waste (attach details), where applicable (e) Physical characteristics (f) Special handling requirements, if applicable	
4.	For Schedule III A hazardous waste whether Prior Informed Consent has been obtained	
5.	**For importer** (a) Process details along with environmental safeguard measures (attach separate sheet) (b) Capacity of recycling or co-processing or recovery or utilization **Enclose a copy each of valid authorisation and valid consent to operate from SPCB**	
6.	Details of import against the Ministry of Environment, Forest and Climate Change permission in the previous three years	
7.	Port of entry	

9. Undertaking :

I hereby solemnly undertake that:

(i) The information is complete and correct to the best of my knowledge and legally-enforceable written contractual obligations have been entered into and that my applicable insurance or other financial guarantees are or shall be in force covering the transboundary movement.

(ii) The waste permitted shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.

(iii) The record of consumption and fate of the imported waste shall be recorded and report sent to the SPCB every quarter.
(iv) The hazardous or other waste which gets generated in our premises by the use of imported hazardous or other wastes in the form of raw material shall be treated and disposed of as per conditions of authorisation.
(v) I agree to bear the cost of export and mitigation of damages if any.
(vi) I am aware that there are significant penalties for submitting a false certificate/ undertaking/ disobedience of the rules and lawful orders including the possibility of fine and imprisonment.
(vii) The exported wastes shall be taken back, if it is not acceptable to the importer.

Signature of the Applicant
Designation

Date……..

Place…….

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FORM – 6

[See rules 13(2), 13 (10) and 14 (5)]

TRANSBOUNDARY MOVEMENT- MOVEMENT DOCUMENT

S.No	Description		Details to be furnished by the exporter or importer
(1)	(2)		(3)
1	Exporter (Name and Address) Contact Person Tele, Fax and email	: : :	
2.	Generator(s) of the waste (Name and Address)[1] Contact Person Tele, Fax and email	: : :	
	Site of generation	:	
3.	Importer or Actual user (Name and Address) Contact person Tele, Fax and email	: : :	
4.	Trader (Name and Address) Contact person Tele, Fax and email	: : :	
	Details of actual user (Name, Address, Telephone and email)	:	
5.	Corresponding to applicant Ref. No., If any	:	
6.	Bill of lading (attach copy)	:	
7.	Country of import/export	:	
8.	General description of waste	:	
	(a) Quantity (b) Physical characteristics (c) Chemical composition of waste (attach details), where applicable (d) Basel No. (e) UN Shipping name (f) UN Class (g) UN No (h) H Number (i) Y Number (j) ITC (HS) (k) Customs Code (H.S.) (l) Other (specify)		
9.	Type of packages	:	
	Number	:	
10.	Special handling requirements including emergency provision in case of accidents	:	
11.	Movement subject to single/multiple consignment		
	In case of multiple movement- (a) Expected dates of each shipment or expected frequency of the shipments (b) Estimated total quantity and quantities for each individual shipment	: :	

(1)	(2)		(3)
12.	Transporter of waste (Name and Address)[1] Contact Person Tele, Fax and email	:	
	Registration number	:	
	Means of transport (road, rail, inland waterway, sea, air)[2]	:	
	Date of Transfer	:	
	Signature of Carrier's representative	:	
13.	**Exporter's declaration for hazardous and other waste:**		
	I certify that the information in Sl. Nos. 1 to 12 above are complete and correct to my best knowledge. I also certify that legally-enforceable written contractual obligations have been entered into and are in force covering the transboundary movement regulations/rules. Date:..... Signature:..... Name:.....		
TO BE COMPLETED BY IMPORTER (ACTUAL USER OR TRADER)			
14.	Shipment received by importer/ actual user/trader[2 / 3]		
	Quantity received.....Kg/litres Date: Name: Signature:		
15.	Methods of recovery		
	R code*		
	Technology employed (Attached details if necessary)		
16.	I certify that nothing other than declared goods covered as per these rules is intended to be imported in the above referred consignment and will be recycled /utilized. Signature: Date:		
17.	SPECIFIC CONDITIONS ON CONSENTING TO THE MOVEMENT if applicable.		(attach details)
Notes:-(1) Attach list, if more than one; (2) Select appropriate option; (3) Immediately contact competent authority in case of any emergency; (4) If more than one transporter carriers, attach information as required in SL. No. 12.			

List of abbreviations used in the Movement Document

Recovery Operations (*)

R1 Use as a fuel (other than in direct incineration) or other means to generate energy.
R2 Solvent reclamation/regeneration.

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R3 Recycling/reclamation of organic substances which are not used as solvents.
R4 Recycling/reclamation of metals and metal compounds.
R5 Recycling/reclamation of other inorganic materials.
R6 Regeneration of acids or bases.
R7 Recovery of components used for pollution abatement.
R8 Recovery of components from catalysts.
R9 Used oil re-refining or other reuses of previously used oil.
R10 Land treatment resulting in benefit to agriculture or ecological improvement
R11 Uses of residual materials obtained from any of the operations numbered R 1 to R 10

Date: **Signature:**

Place: **Designation:**

FORM 7

[See rule 13 (2) (c)]

APPLICATION FORM FOR ONE TIME AUTHORISATION OF TRADERS FOR PART- D OF SCHEDULE III, WASTE

[To be submitted by trader to the State Pollution Control Board]

1.	Name and address of trader with Telephone, Fax Number and e-mail	:	
2.	TIN/VAT Number/Import/ Export Code	:	
3.	Description and quantity of other waste to be imported	:	
4.	Details of storage, if any	:	
5.	Names and address of authorised actual user (s)	:	

Signature of the authorised person

Date:

Place:

FORM 8

[See rules 17 (1) and 18 (2)]

LABELLING OF CONTAINERS OF HAZARDOUS AND OTHER WASTE

Handle with care

Waste category and characteristics as per Part C of Schedules II and III of these rules ……..	Incompatible wastes and substances …….
Total quantity ……..	Date of storage
Physical State of the waste (Solid/Semi-solid/liquid):	
Sender's name and address	Receiver's name and address
Phone……	Phone……
E-mail…….	E-mail…….
Tel. and Fax No…….	Tel. and Fax No…….
Contact person……	Contact person……
In case of emergency please Contact ……	

Note:

1. *Background colour of label - fluorescent yellow.*
2. *The word, 'HAZARDOUS WASTES' and 'HANDLE WITH CARE' to be prominent and written in red, in Hindi, English and in vernacular language.*
3. *The word 'OTHER WASTES' to be written prominently in orange, in Hindi, English and in vernacular language.*
4. *Label should be of non-washable material and weather proof.*

FORM 9

[See rule 18 (2)]

TRANSPORT EMERGENCY (TREM) CARD

[To be carried by the transporter during transportation of hazardous and other wastes, provided by the sender of waste]

1. Characteristics of hazardous and other wastes:

S. No.	Type of waste	Physical properties/	Chemical constituents	Exposure hazards	First Aid requirements

2. Procedure to be followed in case of fire :
3. Procedure to be followed in case of spillage/accident/explosion :
4. For expert services, please contact :
   (i) Name and Address :
   (ii) Telephone No. :

(Name, contact number and signature of sender)

Date……..

Place…….

65

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail) :	
2.	Sender's authorisation No. :	
3.	Manifest Document No. :	
4.	Transporter's name and address: (including Phone No. and e-mail)	
5.	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No. :	
7.	Vehicle registration No. :	
8.	Receiver's name and mailing address (including Phone No. and e-mail) :	
9.	Receiver's authorisation No. :	
10.	Waste description :	
11.	Total quantity : No. of Containers :	……..m^3 or MT ……..Nos.
12.	Physical form :	(Solid/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information :	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: Month Day Year	
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature: Month Day Year	
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: Month Day Year	

FORM 11

[See rule 22]

FORMAT FOR REPORTING ACCIDENT

[To be submitted by the facility or sender or receiver or transporter to the State Pollution Control Board]

1. The date and time of the accident :
2. Sequence of events leading to accident :
3. Details of hazardous and other wastes involved in accident :
4. The date for assessing the effects of the accident on health or the environment :
5. The emergency measures taken :
6. The steps taken to alleviate the effects of accidents :
7. The steps take to prevent the recurrence of such an accident :

Date: **Signature:**

Place: **Designation:**

67

FORM 12
[See rule 24 (1)]

APPLICATION FOR FILING APPEAL
AGAINST THE ORDER PASSED BY STATE POLLUTION CONTROL BOARD

1.	Name and address of the person making the appeal	:	
2.	Number, date of order and address of the authority which passed the order, against which appeal is being made	:	(certified copy of the order be attached)
3.	Ground on which the appeal is being made	:	
4.	Relief sought for	:	
5.	List of enclosures other than the order referred in point 2 against which the appeal is being filed.	:	

Signature…….

Name and address……

Date:

----------x----------x----------

[23-16/2009- HSMD]

(Bishwanath Sinha)
Joint Secretary to Government of India

Annexure 16

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT RULES, 2016

[Published In the Gazette of India, Part-II, Section-3, Sub-section (ii)]
Ministry of Environment, Forest and Climate Change

NOTIFICATION

New Delhi, the 29th March, 2016

G.S.R. 317(E).-Whereas the Municipal Solid Wastes (Management and Handling) Rules, 2000 published vide notification number S.O. 908(E), dated the 25th September, 2000 by the Government of India in the erstwhile Ministry of Environment and Forests, provided a regulatory frame work for management of Municipal Solid Waste generated in the urban area of the country;

And whereas, to make these rules more effective and to improve the collection, segregation, recycling, treatment and disposal of solid waste in an environmentally sound manner, the Central Government reviewed the existing rules and it was considered necessary to revise the existing rules with a emphasis on the roles and accountability of waste generators and various stakeholders, give thrust to segregation, recovery, reuse, recycle at source, address in detail the management of construction and demolition waste.

And whereas, the draft rules, namely, the Solid Waste Management Rules, 2015 with a separate chapter on construction and demolition waste were published by the Central Government in the Ministry of Environment, Forest and Climate Change vide G.S.R. 451 (E), datedthe 3rd June, 2015 inviting objections or suggestions from the public within sixty days from the date of publication of the said notification;

And Whereas, the objections or suggestions received within the stipulated period were duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sections 6, 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Municipal Solid Wastes (Management and Handling) Rules, 2000, except as respect things done or omitted to be done before such supersession, the Central Government hereby notifies the following rules for Management of Construction and Demolition Waste –

1. Short title and commencement.-(1) These rules shall be called the Construction and Demolition Waste Management Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Application.-The rules shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organisation or authority who generates construction and demolition waste such as building materials, debris, rubble.

3. Definitions –(1) In these rules, unless the context otherwise requires,-

(a) " ACT' means the Environment (Protection) Act, 1986 (29 of 1986);

(b) "**construction**" means the process of erecting of building or built facility or other structure, or

building of infrastructure including alteration in these entities,;

(c) "**construction and demolition waste**" means the waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure;

(d) **"de-construction"** means a planned selective demolition in which salvage, re-use and recycling of the demolished structure is maximized;

(e) **"demolition"** means breaking down or tearing down buildings and other structures either manually or using mechanical force (by various equipment) or by implosion using explosives.

(f) **"form" means a Form annexed to these rules;**

(g) **"local authority"** means an urban local authority with different nomenclature such as municipal corporation, municipality, nagarpalika, nagarnigam, nagarpanchayat, municipal council including notified area committee and not limited to or any other local authority constituted under the relevant statutes such as gram panchayat, where the management of construction and demolition waste is entrusted to such agency;

(h) **" schedule"** means a schedule annexed to these rules;

(i) **"service provider'** means authorities who provide services like water, sewerage, electricity, telephone, roads, drainage etc. often generate construction and demolition waste during their activities, which includes excavation, demolition and civil work;

(j) **"waste generator" means any person or association of persons** or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defence establishments who undertakes construction of or demolition of any civil structure which generate construction and demolition waste.

(2) Words and expressions used but not defined herein shall have the same meaning defined in the ACT.

(4) Duties of the waste generator -

(1) Every waste generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority in consonance with these rules.

(2) The generator shall ensure that other waste (such as solid waste) does not get mixed with this waste and is stored and disposed separately.

(3) Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar and shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work and keep the concerned

authorities informed regarding the relevant activities from the planning stage to the implementation stage and this should be on project to project basis.

(4) Every waste generator shall keep the construction and demolition waste within the premise or get the waste deposited at collection centre so made by the local body or handover it to the authorised processing facilities of construction and demolition waste; and ensure that there is no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.

(5) Every waste generator shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities; Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall have to pay for the processing and disposal of construction and demolition waste generated by them, apart from the payment for storage, collection and transportation. The rate shall be fixed by the concerned local authority or any other authority designated by the State Government.

(5) Duties of service provider and their contractors -

(1) The service providers shall prepare within six months from the date of notification of these rules, a comprehensive waste management plan covering segregation, storage, collection, reuse, recycling, transportation and disposal of construction and demolition waste generated within their jurisdiction.

(2) The service providers shall remove all construction and demolition waste and clean the area every day, if possible, or depending upon the duration of the work, the quantity and type of waste generated, appropriate storage and collection, a reasonable timeframe shall be worked out in consultation with the concerned local authority.

(3) In case of the service providers have no logistics support to carry out the work specified in sub-rules (1) and (2) , they shall tie up with the authorised agencies for removal of construction and demolition waste and pay the relevant charges as notified by the local authority.

(6) Duties of local authority-The local authority shall,-

(1) issue detailed directions with regard to proper management of construction and demolition waste within its jurisdiction in accordance with the provisions of these rules and the local authority shall seek detailed plan or undertaking as applicable, from generator of construction and demolition waste;

(2) chalk out stages, methodology and equipment, material involved in the overall activity and final clean up after completion of the construction and demolition ;

(3c) seek assistance from concerned authorities for safe disposal of construction and demolition waste contaminated with industrial hazardous or toxic material or nuclear waste if any;

(4) shall make arrangements and place appropriate containers for collection of waste and shall remove at regular intervals or when they are filled, either through own resources or by appointing private operators;

(5) shall get the collected waste transported to appropriate sites for processing and disposal either through own resources or by appointing private operators;

(6) shall give appropriate incentives to generator for salvaging, processing and or recycling preferably in-situ;

(7) shall examine and sanction the waste management plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission;

(8) shall keep track of the generation of construction and demolition waste within its jurisdiction and establish a data base and update once in a year;

(9) shall device appropriate measures in consultation with expert institutions for management of construction and demolition waste generated including processing facility and for using the recycled products in the best possible manner;

(10) shall create a sustained system of information, education and communication for construction and demolition waste through collaboration with expert institutions and civil societies and also disseminate through their own website;

(11) shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads.

(7) Criteria for storage, processing or recycling facilities for construction and demolition waste and application of construction and demolition waste and its products-

(1) The site for storage and processing or recycling facilities for construction and demolition waste shall be selected as per the criteria given in **Schedule I**;

(2) The operator of the facility as specified in sub- rules (1) shall apply in **Form I** for authorization from State Pollution Control Board or Pollution Control Committee.

(3) The operator of the facility shall submit the annual report to the State Pollution Control Board in **Form II.**

(3) Application of materials made from construction and demolition waste in operation of sanitary landfill shall be as per the criteria given in **Schedule II.**

(8) Duties of State Pollution Control Board or Pollution Control Committee-

(1) State Pollution Control Board or Pollution Control Committee shall monitor the implementation of these rules by the concerned local bodies and the competent authorities and the annual report shall be sent to the Central Pollution Control Board and the State Government or Union Territory or any other State level nodal agency identified by the State Government or Union Territory administration for generating State level comprehensive data. Such reports shall also contain the comments and suggestions of the State Pollution Control Board or Pollution Control Committee with respect to any comments or changes required;

(2) State Pollution Control Board or Pollution Control Committee shall grant authorization to construction and demolition waste processing facility in **Form-III** as specified under these rules after examining the application received in **Form I**;

(3) State Pollution Control Board or Pollution Control Committee shall prepare annual report in **Form IV** with special emphasis on the implementation status of compliance of these rules and forward report to Central Pollution Control Board before the 31st July for each financial year.

(9) Duties of State Government or Union Territory Administration-

(1) The Secretary in-charge of development in the State Government or Union territory administration shall prepare their policy document with respect to management of construction and demolition of waste in accordance with the provisions of these rules within one year from date of final notification of these rules.

(2) The concerned department in the State Government dealing with land shall be responsible for providing suitable sites for setting up of the storage, processing and recycling facilities for construction and demolition waste.

(3) The Town and Country planning Department shall incorporate the site in the approved land use plan so that there is no disturbance to the processing facility on a long term basis.

(4) Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.

(10) Duties of the Central Pollution Control Board - (1) The Central Pollution Control Board shall,-

(a) prepare operational guidelines related to environmental management of construction and demolition waste management;

(b) analyze and collate the data received from the State Pollution Control Boards or Pollution Control Committee to review these rules from time to time;

(c) coordinate with all the State Pollution Control Board and Pollution Control Committees for any matter related to development of environmental standards;

(d) forward annual compliance report to Central Government before the 30th August for each financial year based on reports given by State Pollution Control Boards of Pollution Control Committees.

(11) Duties of Bureau of Indian Standards and Indian Roads Congress -The Bureau of Indian Standards and Indian Roads Congress shall be responsible for preparation of code of practices and standards for use of recycled materials and products of construction and demolition waste in respect of construction activities and the role of Indian Road Congress shall be specific to the standards and practices pertaining to construction of roads.

(12) Duties of the Central Government -

(1) The Ministry of Urban Development, and the Ministry of Rural Development, Ministry of Panchayat Raj, shall be responsible for facilitating local bodies in compliance of these rules;

(2) The Ministry of Environment, Forest and Climate Change shall be responsible for reviewing implementation of these rules as and when required.

13. Timeframe for implementation of the provisions of these rules -The timeline for implementation of these rules shall be as specified in **Schedule III:**

14. Accident reporting by the construction and demolition waste processing facilities-In case of any accident during construction and demolition waste processing or treatment or disposal facility, the officer in charge of the facility in the local authority or the operator of the facility shall report of the accident in **Form-V** to the local authority. Local body shall review and issue instruction if any, to the in-charge of the facility.

Schedule I
Criteria for Site Selection for Storage and Processing or Recycling Facilities for construction and demolition Waste
[See Rule 7(1)]

(1) The concerned department in the State Government dealing with land shall be responsible for providing suitable sites for setting up of the storage, processing and recycling facilities for construction and demolition and hand over the sites to the concerned local authority for development, operation and maintenance, which shall ultimately be given to the operators by Competent Authority and wherever above Authority is not available, shall lie with the concerned local authority.

(2) The Local authority shall co-ordinate (in consultation with Department of Urban Development of the State or the Union territory) with the concerned organizations for giving necessary approvals and clearances to the operators.

(3) Construction and demolition waste shall be utilized in sanitary landfill for municipal solid waste of the city or region as mentioned at Schedule I of thse rule. Residues from construction and demolition waste processing or recycling industries shall be land filled in the sanitary landfill for solid waste.

(4) The processing or recycling shall be large enough to last for 20-25 years (project based on-site recycling facilities).

(5) The processing or recycling site shall be away from habitation clusters, forest areas, water bodies, monuments, National Parks, Wetlands and places of important cultural, historical or religious interest.

(6) A buffer zone of no development shall be maintained around solid waste processing and disposal facility, exceeding five Tonnes per day of installed capacity. This will be maintained within the

total area of the solid waste processing and disposal facility. The buffer zone shall be prescribed on case to case basis by the local authority in consultation with concerned State Pollution Control Board.

(7) Processing or recycling site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.

(8) The approach and or internal roads shall be concreted or paved so as to avoid generation of dust particles due to vehicular movement and shall be so designed to ensure free movement of vehicles and other machinery.

(9) Provisions of weigh bridge to measure quantity of waste brought at landfill site, fire protection equipment and other facilities as may be required shall be provided.

(10) Utilities such as drinking water and sanitary facilities (preferably washing/bathing facilities for workers) and lighting arrangements for easy landfill operations during night hours shall be provided and Safety provisions including health inspections of workers at landfill sites shall be carried out made.

(11) In order to prevent pollution from processing or recycling operations, the following provisions shall be made, namely:

(a) Provision of storm water drains to prevent stagnation of surface water;
(b) Provision of paved or concreted surface in selected areas in the processing or recycling facility for minimizing dust and damage to the site.
(c) Prevention of noise pollution from processing and recycling plant:
(d) provision for treatment of effluent if any, to meet the discharge norms as per Environment (Protection) Rules, 1986.

(12) Work Zone air quality at the Processing or Recycling site and ambient air quality at the vicinity shall be monitored.

(13) The measurement of ambient noise shall be done at the interface of the facility with the surrounding area, i.e., at plant boundary.

(14) The following projects shall be exempted from the norms of pollution from dust and noise as mentioned above:

For construction work, where at least 80 percent construction and demolition waste is recycled or reused in-situ and sufficient buffer area is available to protect the surrounding habitation from any adverse impact.

(15) A vegetative boundary shall be made around Processing or Recycling plant or site to strengthen the buffer zone.

Schedule II

Application of materials made from construction and demolition waste and its products.

[See Rule 7(3)]

Sl. No.	Parameters	Compliance Criteria
1	Drainage layer in leachate collection system at bottom of Sanitary Landfill Gas Collection Layer above the waste at top of Sanitary Landfill and Drainage Layer in top Cover System above Gas Collection Layer of Sanitary Landfill For capping of sanitary landfill or dumpsite, drainage layer at the top	Only crushed and graded hard material (stone, concrete etc.) shall be used having coarse sand size graded material (2mm – 4.75mm standard sieve size). Since the coarse sand particles will be angular in shape (and not rounded as for riverbed sand), protection layers of non-woven geo-textiles may be provided, wherever required, to prevent puncturing of adjacent layers or components.
2	Daily cover	Fines from construction and demolition processed waste having size up to 2 mm shall be used for daily cover over the fresh waste. Use of construction and demolition fines as landfill cover shall be mandatory where such material is available. Fresh soil (sweet earth) shall not be used for such places and borrow-pits shall not be allowed. Exception – soil excavated during construction of the same landfill. During hot windy days in summer months, some fugitive dust problems may arise. These can be minimised by mixing with local soil wherever available for limited period.
3	Civil construction in a sanitary landfill	Non-structural applications, such as kerb stones, drain covers, paving blocks in pedestrian areas.

Schedule III
Timeframe for Planning and Implementation
[See Rule 13]

Sl. No.	Compliance Criteria	Cities with population of 01 million and above	Cities with population of 0.5-01 million	Cities with population of less than 0.5 million
1	Formulation of policy by State Government	12 months	12 months	12 months
2	Identification of sites for collection and processing facility	18 months	18 months	18 months
3	Commissioning and implementation of the facility	18 months	24 months	36 months
4	Monitoring by SPCBs	3 times a year – once in 4 months	2 times a year – once in 6 months	2 times a year – once in 6 months

The time Schedule is effective from the date of notification of these rules.

FORM – I
See [Rule 7 (2)]
Application for obtaining authorisation

To,
The Member Secretary

_____Name of the local authority or Name of the agency : appointed by the municipal authority

Correspondence address Telephone No. Fax No.	
Nodal Officer and designation (Officer authorized by the competent authority or agency responsible for operation of processing or recycling or disposal facility)	
Authorisation applied for (Please tick mark)	Setting up of processing or recycling facility of construction and demolition waste
Detailed proposal of construction and demolition waste processing or recycling facility to include the following Location of site approved and allotted by the Competent Authority. Average quantity (in tons per day) and composition of construction and demolition waste to be handled	

at the specific site. Details of construction and demolition waste processing or recycling technology to be used. Quantity of construction and demolition waste to be processed per day. Site clearance from Prescribed Authority. Salient points of agreement between competent authority or local authority and operating agency (attach relevant document). Plan for utilization of recycled product. Expected amount of process rejects and plan for its disposal (e.g., sanitary landfill for solid waste). Measures to be taken for prevention and control of environmental pollution. Investment on project and expected returns. Measures to be taken for safety of workers working in the processing or recycling plant. Any preventive plan for accident during the collection, transportation and treatment including processing and recycling should be informed to the Competent Authority (Local Authority) or Prescribed Authority	
Date:	**Signature of Nodal Officer**

Form-II

See [Rule (7) (3)]
Format for Issue of Authorisation to the Operator

File No.: _____
Date : _____

To,

_____
_____
_____

Ref : Your application number _____Dt. ……

The _____ State Pollution Control Board or Pollution Control Committee after examining the proposal hereby authorizes _____ having their administrative office at _____ to set up and operate construction and demolition waste processing facility at_____ on the terms and conditions (including the standards to comply) attached to this authorisation letter.

1. The validity of this authorisation is till _____. After expiry of the validity period, renewal of authorisation is to be sought.

2. The _____ State Pollution Control Board or Pollution Control Committee may, at any time, for justifiable reason, revoke any of the conditions applicable under the authorisation and shall communicate the same in writing.

3. Any violation of the provision of the construction and demolition Waste Management Rules, 2016 shall attract the penal provision of the Environment (Protection) Act, 1986 (29 of 1986).

Date: **(Member Secretary)**
Place: **State Pollution Control Board/**
Pollution Control Committee

Form –III

See [Rule 8(2)]

Format of Annual Report to be submitted by Local Authority to the State Pollution Control Board

(i) Name of the City or Town…….
(ii) Population……
(iii) Name and address of local authority or competent authority

Telephone No : ……
Fax : …….
Email ID: …….
Website: ……..

(iv) Name of In-charge or Nodal Officer dealing with construction and demolition wastes management with designation ……

1. Quantity and composition of construction and demolition waste including any deconstruction waste

(a) Total quantity of construction and demolition waste generated during the whole year in metric ton

Any figures for lean period and peak period generation per day ……..
Average generation of construction and demolition waste (TPD)
Total quantity of construction and demolition waste collected per day
Any Processing / Recycling Facility set up in the city ……
Status of the facility

(b) Total quantity of construction and demolition waste processed / recycled (in metric ton)

Non-structural concrete aggregate :
Manufactured sand :
Ready-mix concrete (RMC) :
Paving blocks :
GSB :

Others, if any, please specify :

(c) Total quantity of Construction & Demolition waste disposed by land filling without processing (last option) or filling low lying areas

---

No of landfill sites used :
Area used :
Whether weigh-bridge : Yes No
facility used for quantity estimation?

(d) Whether construction and demolition waste used in sanitary landfill (for solid waste) as per Schedule III
: Yes No

2. Storage facilities

(a) Area orlocation or plot or societies covered for collection of Construction and Demolition waste

(b) No. of large Projects (including roadways project) covered

(c) Whether Area or location or plot or societies collection is
Practiced (if yes, whether done by
Competent Authority or Local Authority or through Private Agency
or Non-Governmental Organization) :

(d) Storage Bins : ----------

	Specifications (Shape & Size)	Existing Number	Proposed for future
(i) Containers or receptacle (Capacity) :			
(ii) Others, please specify :			

(e) Whether all storage bins/collection spots are
attended for daily lifting : Yes No

(e) Whether lifting of Construction & Demolition
Waste from Storage bins is manual or mechanical
(please tick mark) please specify mode : Manual Mechanical Others,
and equipment used (specify equipment)

3. Transportation

	Existing Actually Required/Proposed number
Truck :	
Truck-Hydraulic :	
Tractor-Trailer :	
Dumper-placers :	
Tricycle :	

Refuse-collector :
Others (Please specify) :

4. Whether any proposal has been made to improve Construction and Demolition waste management practices

5. Have any efforts been made to involve PPP for processing of Construction & Demolition waste : If yes, what is (are) the technologies being used, such as:

Processing / recycling Technology	(Quantity to be processed)	Steps taken
Dry Process	:	
Wet Process	:	
Others, if any, Please specify	:	

6. What provisions are available to check unauthorized operations of:

Encroachment on river bank or wet bodies :
Unauthorized filling of low line areas :
Mixing with solid waste :
Encroachment in Parks, Footpaths etc. :

7. How many slums are provided with construction and demolition waste receptacles facilities:

8. Are municipal magistrates appointed for taking penal action for non-compliance with these rules: Yes No
[If yes, how many cases registered & settled during last three years (give year wise details)]

Dated: **Signature of Municipal Commissioner**

Form –IV

See [Rule (8)(3)]

Format of Annual Report to be submitted by the State Pollution Control Board / Committees to the Central Pollution Control Board

To,

The Chairman,
Central Pollution Control Board,
PariveshBhawan, East Arjun Nagar,
Delhi-110032

1. Name of the State/Union territory :

2. Name & address of the State Pollution Control Board/Pollution Control Committee :

3. Number of municipal authorities responsible for management of municipal solid wastes in the State/Union territory under these rules :

4. A Summary Statement on progress made by municipal authorities in respect of implementation of **Schedule III**] : Please attach as Annexure-I

5. A Summary Statement on progress made by municipal authorities in respect of implementation of **Schedule IV** : Please attach as Annexure-II

Date:

Place:

Chairman or the Member Secretary
State Pollution Control Board/
Pollution Control Committee

Form –V
See [Rule14]
<u>Accident reporting</u>

1. Date and time of accident :

2. Sequence of events leading to accident :

3. The type of construction and demolition waste involved in accident :

4. Assessment of the effects of the accidents
   a. on traffic, drainage system and the environment :

5. Emergency measures taken :

6. Steps taken to alleviate the effects
   a. of accidents :

7. Steps taken to prevent the recurrence
   a. of such an accident :

8. Regular monthly health checkup of workers at

a. Processing / recycling site shall be made

9. Any accident during the collection,
    a. transportation and treatment including
    b. processing and recycling should be informed
    c. to the Competent Authority (Local Authority) or
    d. Prescribed Authority

Date : Authorized Signatory
Place: Designation

[18-6/2014-HSMD]
Bishwanath Sinha, Joint Secretary

सत्यमेव जयते

GOVERNMENT OF INDIA

स्वच्छ भारत

एक कदम स्वच्छता की ओर

CLEANLINESS PLEDGE

Mahatma Gandhi dreamt of an India which was not only free but also clean and developed. Mahatma Gandhi secured freedom for Mother India.

Now it is our duty to serve Mother India by keeping the country neat and clean.

I take this pledge that I will remain committed towards cleanliness and devote time for this.

I will devote 100 hours per year, that is two hours per week, to voluntarily work for cleanliness. I will neither litter not let others litter.

I will initiate the quest for cleanliness with myself, my family, my locality, my village and my work place.

I believe that the countries of the world that appear clean are so because their citizens don't indulge in littering nor do they allow it to happen. With this firm belief, I will propagate the message of Swachh Bharat Mission in villages and towns.

I will encourage 100 other persons to take this pledge which I am taking today.

I will endeavour to make them devote their 100 hours for cleanliness.

I am confident that every step I take towards cleanliness will help in making my country clean.

Do's

- Start cleanliness from home
- Keep surroundings clean and green
- Keep work place neat and clean
- Devote 2 hours a week on sanitation
- Dispose garbage in designated places.

Don'ts

- Don't litter and don't let others litter
- Don't defecate and urinate in open
- Don't deface public properties
- Don't spit in public places
- Don't dump garbage in drains/water bodies

Eligible Components Under Swachh Bharat Mission in Urban Local Bodies

Individual Household Toilets | Community Toilets | Public Toilets | Solid Waste Management

MINISTRY OF URBAN DEVELOPMENT

Nirman Bhawan, New Delhi 110 011, India

www.moud.gov.in

www.swachhbharaturban.gov.in