

MOST URGENT/ DATE BOUND

To

1. All the Commissioners of Municipal Corporations in the State of Haryana.
2. All the Executive Officers/Secretaries of Municipal Councils/ Committees in the State of Haryana.

Memo No. XEN-I/DULB/2018/5811

Dated: 09-07-2018

Subject: SWM Policy and Strategy under rule 11 and 15 of Solid Waste Management Rules 2016.

Reference on the subject cited above.

2. I have been directed to forward the Solid Waste Management Policy and Strategy under rule 11 and 15 of Solid Waste Management Rules 2016 for strict compliance.
3. You are requested to please send the action taken report to this office regularly.
4. This letter is being issued after getting the approval from the Hon'ble CM.

DA: As above.

Executive Engineer-1,
for Director General, Urban Local Bodies,
Haryana, Panchkula

Endst. No. XEN I/ DGULB/2018/5812

Dated: 09-07-2018

A copy of above alongwith copy of policy is forwarded to all the Deputy Commissioners and Additional Deputy Commissioners in the State of Haryana for information and necessary action please.

DA: As above.

Executive Engineer-I
for Director General, Urban Local Bodies,
Haryana, Panchkula

Endst. No. XEN I/ DGULB/2018/5813

Dated: 09-07-2018

A copy of above alongwith copy of policy is forwarded to all the Mayors / Presidents of Municipal Corporations/Councils/Committees (through concerned municipality) for information please.

Executive Engineer-I
for Director General, Urban Local Bodies,
Haryana, Panchkula

CC:

1. PS to ULBM for kind information of Hon'ble ULBM
2. PS to PSULB for kind information of W/PSULB
3. PA to DGULB for kind information of W/DGULB.
4. Steno to CE for kind information of CE.

**Haryana State Policy
and
Strategy
On
Solid Waste Management**

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Haryana State Policy and Strategy on Municipal Solid Waste Management

1. Introduction

In India, rapid population growth and expansion of developmental activities have both greatly aggravated resource depletion and degradation of the environment. In India (as elsewhere), development has caused rural-urban migration, urban poverty, and the unsustainable consumption of resources, with increased emission levels of greenhouse gases and other pollution which is caused by Municipal Solid Waste. The urban population in India is expected to increase to 40% from the current 31% of the total Indian population by the year 2030. India generates over 1, 43,449 metric tons of municipal solid waste (MSW) per day as per CPCB, 2014-2015. The per capita waste generation in cities varies from 0.2 kg to 0.6 kg per day based on the size of the population. To further add to the problem, the total no. of towns (statutory and census) in the country have also increased from 5,161 in 2001 to 7,936 in 2011, thus increasing the no. of municipal waste generation by 2,775 within a decade. It is estimated that if the waste is not disposed of in a more systematic manner, more than 1,400 km² of land, which is equivalent to the size of the city of Delhi, would be required in the country by the year 2047 for its disposal.

The management of municipal solid waste is one of the main functions of all Urban Local Bodies and all the ULBs are facing challenges in managing the chain of Municipal Solid Waste from Door to Door Collection, source segregation, secondary storage, secondary transportation, processing and finally scientific disposal. Segregation at source and storage is severely lacking and the biodegradable and non-biodegradable wastes are disposed of at common landfills. Urban Local Bodies (ULBs) are unable to provide effective services. Most ULBs spend nearly 60%-70% of their total overall budgetary allocation on collection, another 20%-30% on transportation, and often less than 10% on the treatment and final disposal of MSW. Transfer stations and formal recycling facilities do not exist in most parts of the country and the vehicles that collect waste from the communal bins also take it directly to unscientific disposal sites. Open, uncontrolled and poorly managed landfills are a common sight across many large urban centers. These open landfills or dumpyards pose severe environmental risks such as leachate generation, fires or emission of greenhouse gases, and hazards to public health through disease vectors such as flies & rodents. The state of MSW management is even more dismal in smaller towns and rural areas.

Haryana state came into being on 1st November 1966 and presently it has 22 districts. It is situated in North Western part of India. According to the census of 2001, the population of Haryana was 21.2 million, which increased to 25.4 million in the census of


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2011. At present, the population of Haryana is estimated to be 30 million. Out of total Population of Haryana, 34.88% lives in urban areas of Haryana. However, the state is urbanizing at a rapid pace and current growth trends indicate that the urban population is expected to grow exponentially in the upcoming years. Haryana has total 81 Urban Local Bodies. The urban areas of the State generate about 4500 tons of waste per day (TPD), which is managed by the urban local bodies at the local level and this quantity is expected to be more than 7500 TPD by 2035. The major sources include residential areas, commercial areas, offices, hotels, and institutions such as universities and schools. Several deficiencies have been identified in the existing solid waste management system in Haryana, which include a lack of waste generation statistics and waste composition data, lack of awareness of waste management amongst the residents, open dumping & burning of waste, inadequate infrastructure for collection and transportation and insufficient scientific processing and disposal facilities. Moreover, the implements, machinery or equipment used by the waste management staff consists of outdated technology that serves poorly in meeting new demands. To cope up with the burgeoning problems, there was an urgent need to revisit, develop and implement an appropriate policy and strategy for efficiently handling MSW in the state.

State level Integrated Solid Waste Management Action Plan for Haryana has been developed to provide strategic direction for solid waste management in Haryana. To improve the system, a well-defined strategy has been developed by Department of Urban Local Bodies, Haryana. Govt. of Haryana. A cluster based solid waste management approach is adopted.

2. Need for the Policy

The rapid development and increased waste generation of the State of Haryana is demanding for a renewed attention to the increasing problem of municipal solid waste management. Therefore, it is imperative to derive a vision and policy to structure the solid waste management system in Haryana in a sustainable manner. This policy will guide the local authorities in the state to implement waste management in the future in compliance with the regulatory framework of India.

3. Regulatory Mandates - SWM Rules, 2016

Unscientific disposal of municipal solid waste has serious consequences on the environment as well as human health. To tackle these problems, the Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India issued the Municipal Solid Waste (Management & Handling) Rules, 2000. These rules laid out a series of guidelines for scientific processing and disposal of waste. Recently, the Ministry issued Solid Waste Management (SWM) Rules, 2016 that supersede the MSW Rules,


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2000 and delineate duties of waste generators and authorities as well as specific parameters for composting, incineration and landfilling. This State Policy on Solid Waste Management shall comply with the SWM Rules, 2016.

I. Duties of Urban Development Departments in States

- Apply a 'waste hierarchical approach' to reduce, reuse, recycle and recover waste products in preference to disposal of waste to landfills and minimize impact of solid waste on human health and environment
- Acknowledge the primary role played by the informal sector of waste pickers, waste collectors, and the recycling industry in reducing waste and provide broad guidelines regarding integration of waste pickers or informal waste collectors in the formal waste management system
- Direct the town planning department of the State to ensure that the master plan of every city in the State provisions for setting up of solid waste processing and disposal facilities except for cities that are members of common waste processing facilities or regional sanitary landfills for a group of cities
- Ensure identification and allocation of suitable land to the local bodies for setting up of processing and disposal facilities for solid waste and incorporate them in the master plan (land use plan) of the State
- Direct the town planning department of the State and local bodies to ensure that a separate space for segregation, storage, and decentralized processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwellings or having a plot area over 5,000 sq. m.
- Direct the developers of Special Economic Zones, Industrial Estates, Industrial Parks to earmark at least 5% of their total area of the plot or minimum five plots or sheds for recovery and recycling facilities
- Facilitate establishment of common regional sanitary landfills 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 landfills.
- Arrange for capacity building of local bodies in managing solid waste, segregation, transportation, and processing of such waste at source
- A buffer zone shall be notified for solid waste and disposal facilities of more than 5 TPD in consultation with the state pollution control board
- Start a scheme for registration of waste pickers and waste dealers

II. Duties and responsibilities of local/ municipal authorities and village panchayats of census towns and urban agglomerations


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- Arrange for door-to-door collection of segregated solid waste from all households including slums, informal settlements, commercial, institutional and other non-residential premises. For multi-storied buildings, large commercial complexes, malls, housing complexes, etc., waste may be collected from the entry gate or any other designated location
- Establish a system to recognize organizations of waste pickers or informal waste collectors and introduce a system for integration of authorized waste-pickers and waste collectors to facilitate their participation in solid waste management especially in door-to-door collection of waste
- Facilitate formation of Self Help Groups, provide identity cards and thereafter encourage integration of waste pickers in solid waste management activities
- Frame bye-laws incorporating the provisions of these rules within one year from the date of notification of this policy and ensure its timely implementation
- Prescribe from time to time user fee as deemed appropriate and collect the fee from waste generators on its own or through an authorized agency
- Direct waste generators not to litter, burn or bury waste on streets, open public spaces, drains, water bodies, to segregate the waste at source and hand over the segregated waste to waste pickers or waste collectors authorized by the local body
- Setup material recovery facilities or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorized 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 green, those for storage of recyclable wastes shall be white and those for storage of domestic hazardous wastes shall be black
- Establish waste deposition centres for domestic hazardous waste and direct waste generators to deposit domestic hazardous wastes at this centre for its safe disposal. Such facilities shall be established in a city or town in a manner that one centre is set up for an area of twenty square km or part thereof and the timings of receiving domestic hazardous waste at such centres shall also be notified
- Ensure safe storage and transportation of domestic hazardous waste to the appropriate waste disposal facility or as may be directed by the State Pollution Control Board or the Pollution Control Committee
- Direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and handover to the waste collectors or agency authorized by local body
- Provide training on solid waste management to waste-pickers and waste collectors
- Collect waste from vegetable, fruit, flower, meat, poultry and fish markets 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

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- 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
- Set up covered secondary storage facilities 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
- Collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible
- 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
- Transport non-biodegradable waste to the respective processing facility or material recovery facilities or secondary storage facility
- Transport construction and demolition waste as per the provisions of the Construction and Demolition Waste Management Rules, 2016
- Involve communities in waste management and promotion of home composting, biogas generation, decentralised processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facility
- 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
- 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
- Undertake on their own or through any other agency construction, operation and maintenance of sanitary landfills and associated infrastructure as per Schedule 1 for disposal of residual wastes in a manner prescribed under SWM Rules, 2016
- 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 SWM Rules, 2016

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- 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
- Ensure that the operator of a facility provides personal protection equipment including uniforms, fluorescent jackets, hand gloves, raincoats, appropriate footwear and masks to all workers handling solid waste and the same to the workforce
- 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
- Frame bye-laws and prescribe criteria for levying of spot fines for persons who litter or fail to comply with the provisions of this policy and delegate powers to officers or local bodies to levy spot fines as per the bye laws framed by the state government
- 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. The sanitary landfill sites shall meet the specifications as given in Schedule-I of SWM Rules, 2016, however, every effort shall be made to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill
- Investigate and analyze all old open dumpsites and existing operational dumpsites for their potential of bio-mining and bio-remediation and wherever feasible, take necessary actions to bio-mine or bio-remediate the sites
- 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.

4. Urban Challenge for Haryana

The guidelines and road maps prepared or available so far, by and large, satisfy the needs of the big ULBs only – those which are heavily stressed due to their huge waste quantities and shortage of land for sanitary landfills (SLF). It is pertinent to understand that only 2 ULBs out of 81 account for more than 1 million population, 18 account for more than 1 lakh and rest account even less than 1 lakh. Thus chunk of the ULBs are Municipal Councils and Nagar Panchayat level. With fast paced urbanization, the issue of scientific disposal / treatment of solid waste has become a greater cause of concern. The unsegregated and untreated waste disposal makes the environment more polluted leaving people of the area vulnerable to different kind of diseases.

To give a viable solution to the state, DULB formulated 14 cluster based on integrated solid waste management facilities for 81ULBs of Haryana. Out of 14 Clusters (4) will be Waste to Energy Plants and (10) will be Waste to Compost/RDF processing Plants. Number of ULBs that constitute a cluster was based on the projection of MSW generation, capacity of the existing treatment facilities, land available with ULBs for setting up new combined facilities and proximity of common facility to ULB's. An assessment of existing infrastructure

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for collection, transportation, treatment and disposal across all the ULBs has been done to identify gaps. waste characterization along with waste projections for 20 years have been done for all the ULBs, proposed ISWM plan for each cluster and estimations of capital costs for implementation of cluster based ISWM under PPP model etc. have been done. Projects in this sector mainly bid out on per ton tipping fee basis, which is more inclined towards collection of waste and getting paid with least emphasis on processing of waste. Output Based Incentive (OBI) concept is performance oriented and ensures processing of waste. Haryana is the first state to adopt OBI model for selection of developer for WTE projects.

Integrated solid waste management (ISWM) proposes a waste management hierarchy with the aim to reduce the amount of waste being disposed, while maximizing resource conservation and resource efficiency. The ISWM hierarchy ranks waste management operations according to their environmental, economic and energy impacts. Source reduction or waste prevention, which includes reuse, is considered the best approach (tier 1) followed by recycling (tier 2) and composting of organic matter of waste, resulting in recovery of material (tier 3). The components of waste that cannot be prevented or recycled can be processed for energy recovery (tier 4). Tier 5 is disposal of waste in sanitary landfill, which is the least preferred option. Moreover, solid waste management system shall be compliant with Solid Waste Management Rules, 2016 and the NGT Guidelines (and to amendments thereto).

When we compare our waste disposal habit vis-à-vis that in the developed countries, we find that in our context source segregation is not taking place. Wet and dry waste at the household level is kept in the same bin, resulting in mixed waste from households. After collection from households, waste is brought to a Dhalao, from where it is taken into bigger trucks and then carried to processing site or dumpsite or SLF. Road sweepings, drain silt, construction and demolition debris, dead animals etc. is also dumped at Dhalaos and it invariably gets mixed with the household waste and ends up in the same truck. Thus waste delivered at the processing site is very different due to high moisture content and various inert material mixed with it. ISWM approach gives lot of emphasise on source segregation. It also highlights that waste segregated at the source is not again mixed, but transported through the entire chain in a segregated manner.

5. Policy Aim and Objectives

State aims for effective solid waste management services, to protect public health, the environment and natural resources of the Earth. An effective MSWM services can be achieved through minimization of waste generation, segregation of waste and recyclable materials, recovery of compost or energy, and ultimately minimal waste going to landfills.

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The aim of this policy is to provide a set of guidelines which will help in the structuring of an efficient solid waste management system in the state.

The objectives of the State Municipal Solid Waste Management (MSWM) Policy are:

- a) Providing directions for carrying out the waste management activities (door to door collection, source segregation, transportation, processing and disposal) in an environmentally, socially and financially sustainable manner
- b) To enhance the capability of ULBs for the effective waste management services in the region.
- c) To practice scientific disposal of the waste lying on the existing dumpsites.
- d) Create public awareness through information, education and communication campaign and educate the waste generators.
- e) To introduce "Polluter Pays Principal" in the state, by collecting User Charges from the waste generators.
- f) To establish a self-contained and efficient operating framework for MSWM
- g) To make the task of solid waste management a safe and honorable occupation for the workers;
- h) To provide guidelines for bulk waste generators.

6. Underlying principles of waste management

The principles that will govern the future approach to provision of solid waste management services include the following:

- a) Promoting awareness of waste management principles and importance of the MSW hierarchy amongst citizens and other stakeholders
- b) Hierarchy of Waste Management

The waste management hierarchy aims to reduce the amount of waste being disposed, while maximizing resource conservation and resource efficiency. The ISWM hierarchy ranks waste management operations according to their environmental, economic and energy impacts. Source reduction or waste prevention, which includes reuse, is considered the best approach (tier 1) followed by recycling (tier 2) and composting of organic matter of waste, resulting in recovery of material (tier 3). The components of waste that cannot be prevented or recycled can be processed for energy recovery (tier 4). Tier 5 is disposal of waste in sanitary landfill, which is the least preferred option. Moreover, the solid waste management that adheres to this hierarchy becomes compliant with Solid Waste Management Rules, 2016 as well as International norms.

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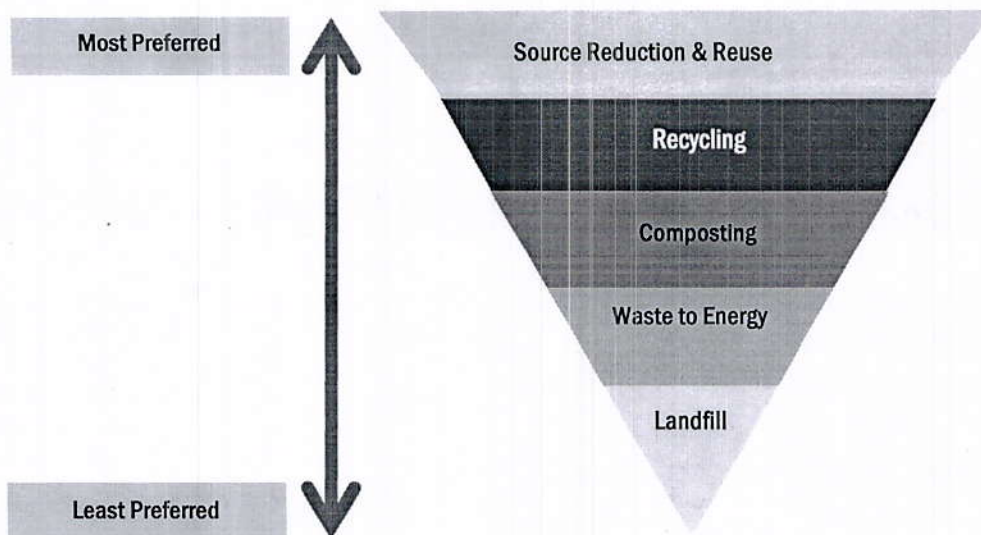


Figure: Municipal Solid Waste Management Hierarchy

- c) Minimizing multiple and manual handling of waste and designing a system to ensure that MSW does not touch the ground till treatment and final disposal
- d) Defining roles and responsibilities of various stakeholders and putting in place an operating framework
- e) Developing systems for effective resource utilization and deployment
- f) Promoting recovery of value from waste and developing scientific treatment and disposal facilities that adhere to statutory requirements and are environmentally and economically sustainable.

7. Stakeholder Involvement

Solid waste management depends as much upon organization and cooperation between households, communities, NGOs and ULBs as it does upon selection and application of appropriate technological solutions for various waste management activities. The State policy proposes the following innovations towards enhancing the stakeholders' involvement in SWM:

- a) Sensitization of municipal staff and waste workers about the primary collection, segregation, transportation of segregated waste, processing and scientific disposal of waste.
- b) Directing waste management initiatives at the waste generator level and entrusting the responsibility of source segregation and primary collection to the relevant community based organization or Resident Welfare Association (RWA) or Self Help Group (SHG), schools, commercial establishments, hospitals, colleges, vendor associations, market associations and bulk waste generators.

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- c) Developing and maintaining details of Information, Education and Communication (IEC) activities and awareness programs designed by Department of Urban Local Bodies, Govt. of Haryana.
- d) Utilizing services of NGOs to operate and coordinate between ULBs, communities, RWAs and SHGs in order to propagate awareness programs, IEC campaigns and provide support to the informal waste sector.
- e) ULBs would allow RWA/SHG to enter into contracts with the private operators for various waste management activities under specified guidelines and structure.
- f) In order to educate the community and bring awareness regarding modernization of SWM activities, the involvement of an intermediary such as a NGO is necessary. NGOs will help in effective propagation of awareness regarding SWM amongst various stakeholders so that Waste Management takes place according to the State policy as well as regulatory requirements.

8. Information, Education & Communication Activities (IEC)

IEC programme has been designed to inform, educate and persuade people to realize their roles and responsibilities, and benefits accruing from investing in right practices for the management of municipal solid waste. To bring awareness amongst the community on the modernization of MSWM a detailed and thorough understanding is required at every stage. It will take into account the barriers and variables related to infrastructure, socio-cultural practices and traditions. A mix of general, technological and marketing interventions will be proposed for effective reach and communication.

The focus of any communication activity is on awareness, sensitization and motivation of people to follow right hygiene practice in the region. IEC activities in the state are going to be taken up as a prelude to implementation of the MSWM system. This will involve participation of leading NGOs. In addition, effective use of social media, mobile applications, website development, etc. will be made to generate awareness amongst people. Materials required for IEC activities like manuals and other media communication shall be designed by Department of Urban Local Bodies, Govt. of Haryana.

Any activity and material must always be culturally sensitive and appropriate. The major steps to be followed when designing an IEC activity are:

- Conduct a needs assessment.
- Set the goal. This is a broad statement of what is to be accomplished with the target audience in the end.
- Establish behavioural objectives that will contribute to achieving the goal.
- Develop the IEC activities and involve as many other partners as possible. The IEC activities should be developed in such a way that once these activities are

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implemented these should make a significant impact on achieving the behavioural objectives.

- Identify potential barriers and ways of overcoming them.
- Identify potential partners, resources, and other forms of support for your activities and gain their sustained commitment.
- Establish an evaluation plan.

IEC Plan: Solid Waste Management is an activity in which volunteerism and public participation are the keys to success. It is not only the technology but public attitude and behaviour that are going to make the difference.

- An IEC Plan focusing on solid waste management will therefore basically aim at the following:
- Creating behavioural change for scientific waste disposal. This will include (i) adoption of the 4R concept-reduce, reuse, recycle and recover the waste (ii) storage and segregation at source (iii) imbibing the civic responsibility of keeping the premises clean (iv) willingness to accept the civic responsibilities of citizens, and (v) willingness to part with the ad hoc approach of unscientific solid waste disposal.
- Awareness creation on the dangers of unscientific SWM. E.g., (i) health hazards (ii) aesthetic damage (iii) environmental issues.
- Awareness creation on the various technical options of solid waste management.
- Exploring the possibility of converting waste as a resource.
- Proximity theory of SWM. (Scientific disposal of waste at the nearest point of source. E.g., biogas plant at a market; composting at households etc.)
- Willingness to pay for services.
- Community adherence to rules, orders and directives
- Adoption of integrated approach e.g. (i) The institutional mechanism created for collection and transportation of waste could, in return, be used for sale of manure manufactured at the compost plant (ii) using recycled materials for manure packaging (iii) the manure packets could contain IEC messages etc.
- States/ULBs should involve key stakeholders from all RWAs, schools, commercial establishments, hospitals, colleges, vendor associations, market associations and bulk waste generators. These stakeholder meetings can be used as brainstorming sessions to come up with practical and sustainable solutions for source segregation. In addition to delegating responsibility.
- IEC activities shall be aimed at creating awareness among the community, and prepare residents for upcoming Project, inform about SWM Rules, source segregation, health and environment impacts, roles of ULB and Concessionaire in the Project, etc. through web site, mass media communication strategies such as newspapers releases, hoardings, glow sign boards, radio, TV, street plays, awareness campaigns at schools etc. At least one (1) advertisement in one (1)


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newspaper of at least 3 by 3 inches shall be released by the ULB every three months till the time 80-100% door to door collection and segregation is achieved.

- Organize training programs for RWAs to motivate the community towards waste management for ensuring the sustainability of a system at least once in three (3) months for first year of starting the segregation activity and thereafter at the interval of six months till the achievement of 100% collection
- All vehicles, devices, community bins shall display a logo of the Participating ULB and Swachh Bharat Abhiyan logo/ any SWM related logo.

Specifically, ULBs shall create public awareness through information, education and communication campaigns and educate waste generators about the following:

- i. Not to litter
- ii. Minimize generation of waste
- iii. Reuse waste to the largest extent possible
- iv. Practice segregation of waste into biodegradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous waste at source
- v. Wrap securely used sanitary waste in pouches provided by brand owners as and when generated and place such waste in the bin meant for biodegradable waste
- vi. Storage of segregated waste at source in separate bins
- vii. Handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies
- viii. Pay monthly user fee or charges to waste collectors or local bodies or any other person authorized by the local body for sustainability of solid waste management as per the notification (Annexure-VI)
- ix. Any other step as deemed necessary for information dissemination

9. Implementation Plan

Department of Urban Local Bodies (DULB), Govt. of Haryana is responsible for the implementation of the provisions of SWM Rules, 2016. Effective municipal solid waste management requires a number of actions to be carried out concurrently.

As a part of its project development activities for development of MSW management projects on regional basis, the entire State has been broadly divided into fourteen (14) clusters out of which (4) will be Waste to Energy i.e. Gurugram-Faridabad, Rohtak, Sonapat, Ambala-Karnal and (10) will be Waste to Compost/RDF processing i.e. Jind, Hisar, Dabwali with Sirsa, Rewari, Panchkula, Bhiwani, Farukhnagar, Karnal, Yamunanagar, Punhana, and Fatehabad.

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At regional level, a common processing cum disposal facility at or near to the major ULB (generating significant quantum of MSW) will be developed for each cluster. Depending on feasibility and land availability, some of the smaller ULBs of the cluster may have transfer stations which would also receive MSW from adjoining smaller towns/ cities. From the transfer station(s), MSW will be further transported to the common processing / disposal facility through bulk waste carriers.

The entire process of collection, storage, transportation, processing and disposal of MSW shall be responsibility of a private party/ concessionaire, which shall be selected through an open competitive bidding process. Details of clusters and the technology to process the waste along with the approximate waste quantities are given in Annexure-IV. Implementation contracts would be signed with by the concerned urban local bodies and state Govt. to ensure the optimal handling of waste in the state. A transparent bidding process should be followed, ensuring the performance benchmarks and appropriate monitoring mechanism for the successful implementation of the project.

10. Waste Generation and Segregation

The Solid Waste Management (SWM) Rules, 2016 define segregation as sorting and separate storage of various components of solid waste namely biodegradables waste including agricultural and dairy waste, non-biodegradable waste including recyclable waste, non-recyclable combustible waste, sanitary waste and non-recyclable inert waste, domestic hazardous waste, and construction and demolition waste. Reduction of waste generation and segregation of waste reduces the cost of treatment and final disposal of waste. The following activities shall be applicable to waste generators:

- a) Cities must ensure procurement of suitable equipment to facilitate source segregation such as blue and green dustbins, rickshaws with separate compartments for wet waste and dry waste, auto tippers with partitions, composting machines etc. ULBs can procure such equipment through DGS&D and Government e-Marketplace for ease of buying. The dustbins procured by ULBs should adhere to the Central Institute of Plastic Engineering & Technology (CIPET) approved virgin grade polypropylene copolymer (PPCP) or High Density Polyethylene (HDPE) material.
- b) ULBs may either follow the notification issued by the department for user fee (Annexure-VI) and spot fines for littering or non-segregation/ penalization to violators (Annexure-IV) or may amend the User Fee and Fine against violation as per their requirement.
- c) At least one (1) advertisement in one (1) newspaper of at least 3 by 3 inches shall be released related to source segregation and door to door collection by the ULB every


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three months till the time 80%-100% door to door collection and segregation is achieved.

- d) Organise training programs for RWAs to motivate the community towards waste management for ensuring the sustainability of a system at least once in three (3) months for first year of starting the segregation activity and thereafter at the interval of six months till the achievement of 80%-100% Door to door collection and segregation.
- e) Prepare and submit an annual program of the IEC activities planned for each year (on a monthly basis) to the department clearly notifying the components & expenditure under each head of expense.
- f) All staff uniform and vehicles involved in the Project shall have advisory messages about solid waste management
- g) Throwing, burning or burying solid waste on streets, open public spaces, in drains or water bodies shall not be tolerated and be punished with heavy fines. City specific charges should be formed.
- h) Store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per C&D Waste management Rules 2016. User charges for collection C&D waste shall be prepared by each ULB.
- i) Store garden waste and horticulture waste generated from his premises separately as per the direction of Urban Local Bodies.
- j) Bulk waste generators shall be responsible for segregating, sorting and managing their own waste in partnership with urban local bodies or authorized waste pickers or authorized recyclers. The detailed guidelines for bulk waste generators has already been notified by the department (Annexure-II), however ULBs may prepare city specific charges for the bulk waste generator.
- k) Sanitary wastes shall be packed in newspapers or any other material and marked with a large red dot to prevent waste pickers from manually handling such waste.

11. Primary Collection

Primary Collection means collecting, lifting and removal of segregated solid waste from source of its generation including household, shops, offices, and any other non-residential premises or from collection points specified by Urban local body. Where primary collection is concerned, reduction of manual handling and complete coverage of door-to-door collection shall be promoted. Kindly refer Annexure-I. For this purpose, the various activities proposed shall include the following:

- a) Primary collection vehicles such as tricycles and auto tippers shall be used for door-to-door collection. Residents shall be asked to deliver household waste at their doorsteps during a pre-specified time period.
- b) Collection routes shall be effectively planned to minimise transport distances and ensure an equitable distribution of workload among staff.

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- c) Waste collection from doorsteps shall take place in specialized vehicles with separate compartments for wet waste and dry waste. These vehicles will be primarily operated by women self-help groups (SHGs).
- d) In all towns, both wet and dry waste shall be collected separately on daily basis. However, the domestic hazardous waste will be collected as and when produced from individual households in a black bag. CGUAD shall form separate guidelines on the treatment of such waste.
- e) The procurement of Primary vehicles shall be carried out by the selected concessionaire/private operator or by the concerned ULB in consultation with DULB
- f) Municipal authorities and urban local bodies shall levy user fee from households, bulk generators, commercial establishments, shopkeepers etc. for collection of waste. The amount for the user fee is notified by the DULB based on affordability criteria (Annex-VI). ULBs may amend the User Fee Charges as per their city requirement.

12. Street sweeping and roadside drain cleaning

The street waste should ideally comprise of dust, leaves, and some litter; but, until door-to-door collection becomes effective, the street sweeping will also include sizeable portions of food waste, drain desilt as well as recyclable waste. Kindly refer Annexure-I. The following points should be adhered to for management of street sweeping & drainage waste:

- a) Waste from the street sweeping should also be collected in a segregated way till the door to door to collection becomes 100% effective
- b) Municipal authorities must avoid multiple handling of street sweeping & drainage waste by converting traditional handcarts into containerised handcarts to facilitate direct transfer of waste from handcart to a container of collection vehicle
- c) Street sweeping and Drain cleaning material should not be mixed. It should be collected in the separate containers of handcarts, as it can seriously hamper treatment and recycling options for the household and commercial waste and add to the cost of processing of waste.
- d) SWM authorities shall ensure that citizens and sweepers do not dispose waste into drains, through IEC activities: training, campaigning, statutory regulations, and monetary fines.
- e) Collected street waste shall be deposited directly into secondary collection points or secondary transportation vehicle, as per the local conditions approved by Municipality.
- f) Waste so collected shall be disposed of at regular intervals as decided by the local body.
- g) ULBs should determine the frequency of street cleaning based on local conditions for efficiency of staff. Also, the time of street cleaning should be carefully defined to avoid conflicts with traffic, parked vehicles, and pedestrians.


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- h) ULBs can enter into appropriate contractual agreements with private operators for street sweeping and should engage in fair wage practices.
- i) The tree leaves collected from roadside street sweeping shall not be burnt. This waste shall instead be stored separately and handed over to waste collectors or agencies authorized by the local body

13. Secondary Collection & Transportation, where required

Secondary collection involves collection of waste from community bins, storage depots, or transfer stations or MRFs or bins for transportation to processing or disposal sites. Kindly refer Annexure-I. The following points should be adhered to for management of street sweeping & drainage waste:

- a) The primary target of ULBs should be to make the cities "Bin free". Primary collection vehicles shall directly transfer the segregated household waste to secondary collection vehicles in order to promote a 'bin free' city.
- b) Secondary collection vehicles shall be parked daily at specific locations during primary collection.
- c) Dedicated mobile transfer stations/ dumper placers/ container bins of at least 2 cubic meters capacity or any such equipment which is suitable for storage of waste ("Equipment for secondary storage") shall be positioned at Secondary Collection Points to receive MSW from the vehicles and devices engaged in the primary collection of waste.
- d) The Transfer Stations/ Dhaloas/ Secondary transportation points shall be designed for all weather operations. The Transfer Station shall be operated under cover, so that dust, litter and noise could be effectively controlled. The Transfer Station shall be cleaned daily and the floors washed.
- e) All transportation of waste shall be carried out in covered vehicles to prevent spillage of MSW or leachate enroute to the processing or disposal facility.
- f) Transport vehicles should be compatible with equipment design at the waste storage depot and should be able to transport segregated waste.
- g) Specially designed and covered transported system shall carry and unload the waste mechanically at processing plants.

14. Waste Processing and Disposal

The focus of the state shall be majorly on selecting a suitable technology for the waste processing. The selection depends upon the nature of waste, waste quantities, availability of equipment for treatment on site and off site, regulations and constraints and cost consideration. The large ULBs and smaller ULBs after forming their clusters


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may adopt integrated waste management approach through suitable technologies such as aerobic composting, bio-methanation, waste to energy and sanitary landfilling (SLF).

The following points shall be considered during treatment and landfilling of MSW:

- a) The technology adopted shall be as per the waste quantities, waste characterization and as per the approval of State Pollution Control Board/ Ministry of Environment & Forest/ Any other competent authority.
- b) According to the size of the city/town and waste quantity generated, cluster size is decided, the technology options for those clusters can be created.
- c) In the case of private participation for treatment and processing of waste, ULBs shall enter into contractual arrangements (management contract/ DBOT) as per the guidelines of MoUD.
- d) All composting facilities, bio-methanation plants, waste-to-energy plants, and landfills shall adhere to the parameters and standards for pollution control laid out in the Solid Waste Management Rules, 2016 (refer Annexure III) and as per the approvals received from State Pollution Control Board/ Ministry of Environment & Forest/ Any other competent authority.
- e) Compost produced shall meet the quality criteria specified by the Fertilizer Control Order, 2009 and 2013 (refer Annexure III). A market for compost shall be ascertained before sizing the compost plants.
- a) Landfill sites shall not be constructed near water bodies, highways, habitations, public parks, water supply wells and airports. Construction of landfills in hilly areas shall also be avoided.
- b) A buffer zone shall be notified for solid waste and disposal facilities of more than 5 TPD in consultation with the state pollution control board and town planning department.
- c) Old and abandoned dumpsites shall compulsorily undergo bio-remediation, reclamation or capping.

15. Management of Special Waste including Domestic Hazardous Waste

Domestic hazardous wastes means discarded paint drums, pesticides cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge etc. generated at a household level. Special waste including Domestic hazardous waste requires special handling and disposal because of their one of the mentioned characteristics i.e. i) ignitability ii) corrosivity iii) reactivity and iv) toxicity , in order to protect human health as well as the environment and additionally, ensure that it is recycled in the proper manner.

Special Waste includes

1. Domestic Hazardous Waste


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2. Bleaches, chemicals and solvents and their empty containers
3. Photographic chemical
4. Plastic waste
5. E-waste
6. Used tyres

For the proper management of these wastes, the SWM hierarchy dictates that any waste which cannot be minimized or reduced should be reused or recycled.

- a) Special wastes shall not enter into the main stream of Municipal Solid Waste (MSW)
- b) Waste generators shall also collect such waste in a separate container from MSW at the household or commercial level.
- c) ULBs shall collect domestic hazardous waste like sanitary napkins, bandages, etc. from households as and when generated from individual households in a separate container/ black bag.
- d) In case of any small scale industry or factory, ULBs shall ensure that special waste is collected separately by authorized vendors or agencies only and deposited at the designated collection centres.
- e) Mixing of domestic hazardous waste in the MSW stream from any household shall be penalized.
- f) Plastic Waste shall be recycled.
- g) Other hazardous wastes such as biomedical waste and battery waste shall be treated and disposed according to the respective management rules to prevent adverse health and environmental impacts. Needles and syringes shall be compulsorily broken, disinfected and sent to a sanitary disposal facility.

16. Financing Mechanism

Adequate provisioning of funds for capital investment (wherever required) as well as operation and maintenance of solid waste management services in the annual budget is required. Annual budget shall ensure that funds for discretionary functions of the local body only be allocated after meeting with the requirement of funds for solid waste management and other obligatory functions.

Following ways have been identified for the financing of MSWM programmes in the State:

- a) **Local Taxes:** in few of the states, local taxes such as the property tax consists of a clearly identifiable portion known as conservancy tax, may be utilized for financing solid waste.
- b) **User Charges:** Notified User charges which are levied on various urban services. Draft notification is annexed at Annexure- VI.

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- c) **Grants and Subsidies:** Conservancy taxes and user charges can only be used to defray operating costs. But, the capital cost of collection (vehicles and equipment), treatment and disposal do require external source of finance. For this, SBM Grants and other Subsidies from Gol will be used.
- a) **EPR (Extended Producer Responsibility):** The SWM Rules, 2016 mandated all the manufacturers of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market for providing necessary financial assistance to local authorities for establishment of waste management system.

17. Monitoring

MSW service provision should be monitored centrally and continuously to ensure desired service levels on a regular basis. DULB along with the ULBs shall strive to improve service delivery, management and monitoring by introducing technological interventions. Simple as well as advanced Management Information Systems (MIS) including Geographic Information Systems (GIS), Global Positioning Systems (GPS), Radio Frequency Identification (RFID), and General Packet Radio Services (GPRS) are essential tools for ULBs to manage MSW in the State.

18. Star Rating Protocol

Ministry of Housing and Urban Affairs, Government of India has launched protocols for "Star rating of Garbage Free Cities" on 23rd January 2018 under Swachh Bharat Mission. To achieve garbage free and clean cities, it is imperative that requisite process and systems are in place across the Municipal Solid Waste Management chain. In this context, a seven rating framework has been devised by Ministry of Housing and Urban Affairs (MoHUA) to rate cities on key components on MSWM. Necessary conditions for achieving Garbage free star rating are mentioned in Annexure-VII.

On the basis of star rating, awards of excellence to ULB officials from DULB will be given and incentives will also be given to the concerned ULBs.

19. Way Forward

Following from the principles outlines here, extensive effort towards the enforcement of integrated solid waste strategy and addressing the aspects mentioned below:

- a) Setting operational targets for waste management activities (collection, transportation, processing and disposal) and indicating means of achieving the same for various regions


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- b) Setting roles and responsibilities for various stakeholders in waste management, including the informal waste sector
- c) Developing IEC material and promotional or awareness campaigns for the enforcement of MSW Rules 2016.
- d) Setting operational guidelines for procurement of equipment and services
- e) Shifting to smart systems of waste management gradually

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Annexure - I

Normative Standards and Procedures for Collection, Storage and Transportation of MSW

1.0 Primary collection of waste

1.1 From slums and other BPL settlements

- People living in slums and informal settlements, devoid of basic services, may be considered to be eligible to pay lower rates of user fee for waste collection. Besides slum dwellers, residents in dwelling units smaller than 25 m² could also be given such benefits
- Collection of waste shall be carried out predominantly by authorized waste pickers
- 2 community bins or containers of 60 – 120 litre capacity for 20 – 40 dwelling units shall be provided
- 2 domestic bins for storage of waste at source – 5, 10, 15 or 20 l capacity (for 2-8 kg waste), as per Central Institute of Plastics Engineering & Technology (CIPET) specifications
- Handcarts, pushcarts, tricycles or small mechanised vehicles such as e-rickshaws, auto tippers shall be used for door-to-door collection of waste. The waste may be transferred to a larger vehicle parked nearby if the distance to the processing facility or transfer station is too much. Where the access to houses is difficult, handcarts or tricycles shall be made to stand at designated spots.
- The handcarts, pushcarts, tricycles or auto tippers used for collection shall have two separate compartments, one for wet waste and the other for dry waste.
- One tricycle/e-rickshaw should be able to cover 200 – 250 houses in one shift.
- Manpower handling MSW must wear safety gears i.e. gloves, shoes and uniform covering the entire body.

1.2 From residential areas and societies/apartment complexes

- Proper door-to-door collection services for segregated waste with a minimum of 2 bins for collection of wet waste and dry waste
- 12 – 15 l capacity domestic bins with lids, made as per CIPET specifications
- For societies and apartments, a pair of community bins ranging from capacities of 60 litres to 1.1 cu.m. may be provided depending on the number of houses in the residential area.
- Handcarts, pushcarts, tricycles or small mechanised vehicles such as auto tippers shall be used for door-to-door collection of waste. The waste may be

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transferred to a larger vehicle parked nearby if the distance to the processing facility is too much.

- The handcarts, pushcarts, tricycles or auto tippers used for collection shall have two separate compartments, one for wet waste and the other for dry waste. Tricycle / E-Rickshaw comprises of 2 compartments of 120 litres each shall be used
- One tricycle should be able to cover 200 – 250 houses in one shift.
- Light commercial vehicles with hydraulic tipping containers with a carrying capacity not less than 1.2 cm per trip shall be deployed. One such vehicle should be able to cover 700 household per trip.
- The timing for collection of domestic waste should be in the morning hours.
- Manpower handling MSW must wear safety gears i.e. gloves, shoes and uniform covering the entire body.
- Collection bins, vehicles and devices are cleaned on a daily basis using disinfectants

1.3 From Commercial Establishments

- Waste from commercial areas should be collected between 10 am and 2 pm daily or even twice a day.
- For large commercial complexes, 1.1 m³, 3.0 m³, 4.5 m³ and 7.0 m³ containers shall be provided by ULBs as per the location requirement.
- It is advisable to place back up collection bins in commercial or high footfall areas to cater to unexpected waste generation.
- Handcarts, pushcarts, tricycles or small mechanised vehicles such as auto tippers shall be used for door-to-door collection of waste. The waste may be transferred to a larger vehicle parked nearby if the distance to the processing facility is too much.
- The handcarts, pushcarts, tricycles or auto tippers used for collection shall have two separate compartments, one for wet waste and the other for dry waste. Tricycle / E-Rickshaw comprises of 2 compartments of 120 litres each shall be used
- One tricycle should be able to cover 200 – 250 houses in one shift.
- Light commercial vehicles with hydraulic tipping containers with a carrying capacity not less than 1.2 cm per trip shall be deployed. One such vehicle should be able to cover 700 establishments per trip.
- Manpower handling MSW must wear safety gears i.e. gloves, shoes and uniform covering the entire body.
- Collection bins, vehicles and devices are cleaned on a daily basis using disinfectants

1.4 From Market/Bulk Waste Generators

- Galvanized iron mobile garbage bins ranging from 0.5 – 7 m³ capacity should be used , which would be lifted by mechanized container lifting devices.

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- Bulk Waste Generator includes buildings or places having an average waste generation rate exceeding 100kg per day
- For markets, 1.1 – 4.5 m³ covered bins for storage of waste as per quantity of waste generated in the market
- Vegetable market waste should be collected in non-peak hours (early morning, late afternoon, or night). Market waste may need to be collected more than once a day.
- Handcarts, pushcarts, tricycles or small mechanised vehicles such as auto tippers shall be used for door-to-door collection of waste. The waste may be transferred to a larger vehicle parked nearby if the distance to the processing facility is too much.
- The handcarts, pushcarts, tricycles or auto tippers used for collection shall have two separate compartments, one for wet waste and the other for dry waste. Tricycle / E-Rickshaw comprises of 2 compartments of 120 litres each shall be used
- A minimum of 2 workers shall be required for collecting waste in tricycles./ E-rickshaws.
- Typically four wheeled, HDPE, injection or roto model, international standard, UV tested bins or metal bins of different capacity i.e. 240 l, 600 l, 770 l, 1100 l may be used for bulk waste.
- Collection bins, vehicles and devices are cleaned on a daily basis using disinfectants

1.5 From hilly areas

- Door-to-door collection services in hilly areas for segregated waste shall involve manual collection or with small motorised vehicles.
- Bins of capacity 5, 10, 15 or 20 litres (for 2 – 8 kg waste), HDPE, injection molded, tested bins shall be used.
- In hilly areas where many houses are accessible only through footpaths or steps, segregated waste shall be collected in backpacks with small leakproof containers up to 50 litre capacity. The waste collector shall be provided with separate bags for wet waste and dry waste. This waste shall then be transferred to a tricycle or e-rickshaw or larger vehicle parked at the nearest accessible point.
- A minimum of 2 workers shall be required for collecting waste in tricycles.
- The waste collection route or “beat” shall be planned well to facilitate efficient door-to-door collection e.g. in hilly areas, waste collection should start at the highest point and proceed downwards from there.
- Collection bins, vehicles and devices are cleaned on a daily basis using disinfectants

Note:

2.0 Secondary Collection Points/ Waste Storage Depots/ Transfer Stations

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Secondary Collection Points / Storage depots and transfer stations are required for secondary collection in areas and gradually the bins may be reduced by improving the efficiency of door to door collection. In most cities, the following types of secondary collection points exist.

- Dhalaos
- Metal bins or containers

Dhalaos are being replaced by metal containers as they are considered unhygienic. The norms for secondary collection points shall be as follows:

- In general, waste storage containers should be covered and designed to facilitate mechanical lifting to avoid multiple handling and environmental harm.
- Equipment for secondary storage shall be designed for at least twice the designed capacity (as per the CPHEEO manual specifications). Waste density to be assumed as 500 kg/ cum.
- The design of bins or waste storage containers or depots (secondary collection points) should be synchronous with the design of vehicles deployed for both primary and secondary waste collection.
- All equipment for secondary storage shall be covered and colour coded as per SWM Rules. All equipment for secondary storage shall be marked with ULB and Swachh Bharat Abhiyan logo of at least 12 inches by 12 inches (font size of 6-9 inches) size.
- Bins for community places on public roads in big cities and for bulk generators shall be galvanised iron mobile bins ranging from 1.1 m³ to 7 m³ capacities.
- Four wheeled mobile compactor containers shall be used for transfer points on public roads as they are suitable for biodegradable and recyclable waste.
- These containers are available at 7 m³ to 10 m³ or larger capacities. These bins are designed for lifting through a universal hook lift system mounted on heavy duty trucks and made for carrying all types of waste in bulk and depositing debris and biodegradable waste components of MSW.
- The Transfer Station shall be operated under cover, so that dust, litter and noise could be effectively controlled. The Transfer Station shall be cleaned daily and the floors washed.
- The walls of the Transfer Station / Dhalaos shall be white-washed every six months for the duration of Concession Period. And all the vehicles/ equipment shall be re-painted every six months.
- The Transfer Station shall be equipped with internal roads, ramp and platforms at different levels. These shall be concrete built with a capacity to withstand the load of moving machineries/vehicles.
- At least one (1) signboard with details (capacity, contact details and warnings) about the transfer station in local language, Hindi and English of a size not less than 2 ft. by 4 ft. each, adjacent to the main entrance to in a manner that it is ordinarily visible to any person using such entrance.

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- The workers involved in MSW handling shall be provided with gloves, masks, uniforms, aprons and other safety gear.
- Provisions to restrict entry of stray animals into the transfer stations, e.g. animal catchers, etc.
- The Transfer Station shall display a logo of the Participating ULB and Swachh Bharat Abhiyan of at least 12 inches X 12 inches each (font size of 6-9 inches) size on the outside of all of its walls. Additionally, all the outer walls of the transfer station shall also be painted with this advisory about solid waste management.

3.0 Secondary Transportation of Waste to the Processing Facility

- Large capacity vehicles shall transport waste from secondary or tertiary collection points (depots or transfer stations) to the processing or treatment facilities and landfills. The selection of vehicles should be based on the quantity of waste to be transported, travel distance, road widths, road conditions etc.
- Dumper placers shall be used to lift waste containers having densities up to 1000 kg per m³. It should be able to make at least 5-6 trips in an 8 hour shift within a radius of 15 km. Twin dumper placers can also be used to lift twice the number of containers at one time.
- Refuse compactors shall be used in places with container sizes of 0.5 to 1.1 m³.
- Compactor trucks are used for transportation of waste from small transfer points either to larger transfer stations or directly to treatment and disposal sites. Their features are: a) the loading hopper in compactor trucks should be suitable for unloading tipper vehicles and handheld bins, as appropriate for primary collection. b) their compaction capability should be between 800 and 900 kg/m³.
- The types of compactor trucks used in India include:
 - small compactors of 5 – 6 m³ for 4.5 – 5.5 tonnes of waste per trip;
 - medium compactors of 8 – 10 m³ with a payload capacity of 7 – 7.5 tonnes of waste per trip; and
 - large compactors of 12 – 16 m³ with a payload capacity of 10 – 12 tonnes of waste per trip.
- In small cities with poor repair and maintenance facilities, where high-tech vehicles may not work efficiently, tractor-trolley combination for lifting of containers or towing of containers maybe used. Simple hydraulic tipping trailers are recommended to avoid manual unloading at processing plants or disposal sites.
- All vehicles shall have High Security Registration Plate and be equipped with electronic toll collection tag.
- All vehicles shall have Global Positioning System (GPS) technology which shall ensure automatic tracking and recording of vehicle identification and movement in all vehicles.

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4.0 Street Sweeping

A variety of tools, equipment and methods are available for street sweeping. However, manual sweeping is more commonly practiced in India because streets in many cities and small towns are congested and narrow.

- ULBs shall need to adjust the frequency of street cleaning based on local conditions. Roads can be divided into three types:
 - Low Density Roads – Roads with low footfall or low traffic or no establishments on each side. These can be swept once a week. Highways & open spaces can be swept as and when required (e.g. once in 2 weeks)
 - Medium Density Roads – Roads such as residential streets or minor streets can be swept 3 or 4 times a week as per the requirement. Sweeping in residential areas shall be carried out in 2 spells
 - High Density Roads – Roads with high footfall or high frequency of traffic such as market areas and the city centre should be swept daily or even twice a day depending on the need. Tourist areas will require cleaning 2 - 3 times a day during the week and even on weekends.
- Street sweeping should be carried out during less activity hours (e.g. early morning or late night). At night, sweeping should be carried out preferably on well-lit main roads or commercial roads.
- ULBs shall define the route or “beat” for workers engaged in street sweeping.
- ULBs shall ensure safety of their workers by providing them with the appropriate personal protective equipment (PPE). Workers shall be provided with proper uniforms with reflectors for night work, and ID cards.
- Staff engaged for street sweeping shall also be responsible for drain cleaning (up to 18” depth).
- The local sanitary inspector shall be responsible for inspecting and maintaining records on the extent of service provision.
- All waste from street sweeping shall be transported separately without mixing with domestic or other commercial establishment waste. This will ensure efficient waste processing and prevent mixing of inert materials with other waste thereby minimising expenditure on segregation.
- Street sweepings and drain silt shall be transferred in wheel barrows to a designated black storage bin or container at the waste storage depot. The size of the bins shall be decided by the type of road and the activity on it.
- The MSWM authorities shall impose monetary fines on citizens and sweepers who dispose waste into drains.
- The staff requirement for cleaning drains shall depend on the length of drain. As a general rule, one person shall be responsible for cleaning up to 500 m of a


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shallow drain (45 – 60 cm) per day. This can be adjusted according to local conditions.

- The biodegradable or recyclable waste present in street sweepings shall be segregated and sent to the respective processing facilities. Silt collected from surface drains shall not be allowed to stay on open roads or footpaths for more than 4 hours to prevent health and environmental hazards.

Street sweeping norms according to the Central Public Health and Environmental Engineering Organization (CPHEEO) are as follows:

	Small Town	Medium City	Mega City
Equipment	<ul style="list-style-type: none"> • Long handled broom • Metal tray & metal plate • Containerised handcart or tricycle • Tractor with covered trolley • Container lifting device 	<ul style="list-style-type: none"> • Long handled broom • Metal tray & metal plate • Containerised handcart or tricycle • Secondary storage bin • Dumper placer or compactor • Mechanical street sweeper • Container lifting device 	<ul style="list-style-type: none"> • Long handled broom • Metal tray & metal plate • Containerised handcart or tricycle • Secondary storage bins • Dumper placers or compactors • Container lifting device • Mechanical street sweeper
Staff requirement based on road density	<ul style="list-style-type: none"> • High density roads: 1 person per 300 – 350 running meters of road length • Medium density roads: 1 person per 500 running meters of road length • Low density roads: 1 person per 750 – 1000 meters of road length 	<ul style="list-style-type: none"> • High density roads: 1 person per 300 – 350 running meters of road length • Medium density roads: 1 person per 500 running meters of road length • Low density roads: 1 person per 750 – 1000 meters of road length 	<ul style="list-style-type: none"> • High density roads: 1 person per 300 – 350 running meters of road length • Medium density roads: 1 person per 500 running meters of road length • Low density roads: 1 person per 750 – 1000 meters of road length

5.0 Procurement of Equipment and Vehicles

- As per the ISWM (Integrated Solid Waste Management) approach adopted in Haryana state, the procurement of equipment and vehicles have to be made by


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- the private party, which has to be selected on a transparent bidding process and performance benchmarks combined with stringent monitoring.
- However, Municipalities in consultation with DULB may take the decision of procurement of limited equipment and vehicles till the completion of selection process of private party, for healthy and hygienic environment in the city. This procurement shall be as per specific provisions with adequate safeguards.



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Annexure - II

Guidelines for Bulk Waste Generators

According to Solid Waste Management Rules, 2016, "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 100 kg per day.**

1. Bulk Waste Generators shall be under an obligation to ensure that all steps are taken to keep their premises free from accumulation of MSW in any form. For this purpose, a time bound Action Plan and 'Standard Operating Procedures' for proper collection, segregation, transportation, storage, processing and disposal of municipal solid waste must be developed.
2. All waste generators shall be liable to pay a user fee for solid waste management, as specified in the bye-laws of the State.
3. All bulk waste generators (i.e. generating >100 kg waste/day) must ensure segregation of waste at source as prescribed in Solid Waste Management (SWM) Rules 2016, facilitate collection of segregated waste in separate streams, and handover recyclable material to either the authorized waste pickers or the authorized recyclers. The bio-degradable waste must be processed, treated and disposed of through composting or bio-methanation within the premises as far as possible. The residual waste may be given to the waste collectors or authorized agency as directed by ULBs.
4. No waste generator shall throw, burn or bury the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.
5. All bulk waste generators must be required to segregate and store the waste generated in two separate streams, namely wet (bio-degradable) waste and dry (non-biodegradable) waste in suitable bins.
6. Wet waste and garden waste generated must be composted at source or processed using bio-methanation. Where it is not possible to compost wet waste at site due to space constraint, alternate arrangements shall be made by the generators to hand over wet waste to private composters or ULBs wet waste collectors, on payment, as specified by concerned officers. Mixing waste shall attract fines as determined by the Municipal Authority.
7. Dry waste must be segregated in separate containers and such segregated wastes shall be either processed by the bulk generator as per their own arrangement or have the same transported at their cost for processing or handling the same, as the


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- case may be. In this regard, services of empanelled agencies/ULBs may be obtained by the Bulk Generators on mutually agreed terms.
8. Construction and demolition waste/inert waste must be stored separately by bulk generators, in their own premises and disposed of as per the Construction and Demolition Waste Management Rules, 2016.
 9. Further segregation of waste shall be done as notified by the ULB from time to time, based on the facility developed for its management.
 10. A suitable technology for processing of waste must be worked out that is environmentally sound and economically feasible e.g. composting, vermicomposting, bio-methanation or a combination of these.
 11. Special attention must be given to plastic bag segregation which will not be mixed with the Municipal Solid Waste stream. Usage of plastic bags, carry bags etc. shall be banned in the interest of preserving the environment. Plastic Waste Management Rules, 2016 shall be followed in this regard.
 12. Proper treatment facilities for leachate shall be provided at appropriate places and it shall not be allowed to mix with surface water bodies or groundwater located near the premises..


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Annexure - III

Guidelines for Establishment and Operation of Treatment and Landfill Facilities

In compliance with SWM Rules, 2016, the focus shall be on scientific treatment and landfilling of municipal solid waste. This will include technologies such as aerobic and anaerobic composting, vermi-composting, incineration etc. All operators of facilities based on such technologies shall adhere to the standards specified in the SWM Rules, 2016 and the Solid Waste Management manual issued by the Ministry of Urban Development.

In addition, all industrial units using fuel and located within 100 km from a solid waste based refuse derived fuel (RDF) plant shall make arrangements to replace at least 5% of their fuel requirements by the RDF produced.

Landfill sites shall also be established in conformity with the provisions of SWM Rules, 2016. It shall be ensured that the discharge from sanitary landfills in the form of leachate will adhere to the standards of treated leachate in the SWM Rules, 2016 before being disposed in any water body.

1. Composting

Composting is the natural process of decomposition of organic matter by microorganisms under controlled conditions. Raw organic materials such as crop residues, animal wastes, food garbage, municipal wastes and suitable industrial wastes enhance their suitability for application to the soil as a fertilizer after having undergone composting.

The SWM Rules, 2016 state that waste processing facilities shall include composting as one of the technologies for processing of biodegradable waste. The incoming waste shall be composted using aerobic composting technique and the final product shall be sold in the market, while the rejects will be landfilled. The partially digested aerobic compost can be converted to vermi-compost based on the demand. The procedures and standards for the types of composting are described below:

1.1 Aerobic Composting

Aerobic composting occurs in the presence of ample oxygen. In this process, microorganisms that operate in the presence of air break down organic matter and release carbon dioxide (CO₂), ammonia, water, heat, and compost, the pathogen-free, relatively stable organic end product. Compost can be used as potting soil, soil amendments (e.g. to lighten and improve soil structure of clay soils), and mulch.


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Intermediate compounds such as organic acids that are produced during this process are decomposed further by aerobic microorganisms. The heat generated in this process accelerates the breakdown of proteins, fats and complex carbohydrates such as complex carbohydrates and hemi-cellulose. Hence the processing time will be shorter.

Aerobic composting involves placing the organic waste in piles or windrows, which are trapezoidal heaps of MSW with a base of 4 - 5 m and height of 2.5 - 3 m. These dimensions can increase or decrease depending on the amount of waste being handled per day. Natural microbial action causes the pile to heat up to 60 – 70°C, killing most pathogens and weed seeds. These windrows are placed on a specially constructed impermeable platform of concrete or compacted clay. The base is provided with 1 – 2% slope and circled with lined drains for collection of leachate or surface run-off. Windrows are systematically turned every 6-7 days over a period of 6 weeks. This systematic turning of waste helps in mixing of different components and aerates the piles. This process accelerates the process of breaking down the organic fraction and maintains a proper carbon/nitrogen balance in the feedstock, which ensures complete and rapid composting.

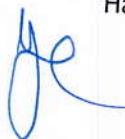
1.2 Anaerobic Composting

Anaerobic composting occurs when oxygen is absent or in limited supply. In this method, micro-organisms breakdown biodegradable materials by a series of decomposition processes into methane and carbon dioxide. A first group of micro-organisms breaks down large organic molecules into small units like sugar in a process called hydrolysis. Another group of bacteria converts the resulting smaller molecules into volatile fatty acids, mainly acetate, but also Hydrogen (H₂) and CO₂. This process is known as acidification. The last group of bacteria, the methane producers or methanogens, produce biogas (methane and CO₂). This biogas can be used to fuel boilers or reciprocating engines with minimal pre-treatment. In addition to biogas, anaerobic bioconversion generates a residue consisting of inorganics, non-degradable organics, and bacterial biomass. If the feedstock entering the process is sufficiently free of objectionable materials like colourful plastic, this residue can have market value as compost. The anaerobic digestion process is also referred to as 'bio-methanation'.

1.3 Vermicomposting

Vermicomposting is carried out by introducing earthworms into the organic waste. These earthworms ingest the partially decomposed organic waste and give out

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castings, which is collected for use in soil as organic manure. In this process, the incoming municipal waste has to be composted aerobically for about 2 – 3 weeks to ensure partial decomposition. This waste is then fed to earthworms that convert it to casting over 4 – 6 weeks. The castings have to be collected manually at periodic intervals. Since these earthworms require protection from the sun, rain and predators, a covered pit over the ground is preferred for storing the partially decomposed waste. The inorganic part of waste which is not digested by the worms is removed and sent to a landfill. The worms from each cycle are collected and used again in the next cycle.

Standards for Composting:

The criteria for composting facilities in the State shall be as per Schedule II of Solid Waste Management Rules, 2016. The end product as compost must meet the standards prescribed by the Fertilizer Control Order as mentioned below:

Parameters	Organic Compost (FCO 2009)	Phosphate Rich Organic Manure (FCO 2013)
Arsenic (mg/Kg)	10.0	10.0
Cadmium (mg/Kg)	5.0	5.0
Chromium (mg/Kg)	50.0	50.0
Copper (mg/Kg)	300.0	300.0
Lead (mg/Kg)	100.0	100.0
Mercury (mg/Kg)	0.15	0.15
Nickel (mg/Kg)	50.0	50.0
Zinc (mg/Kg)	1000.0	1000.0
C/N Ratio	<20	Less than 20:1
pH	6.5 – 7.5	(1:5 solution) max 6.7
Moisture % by weight,	15.0 – 25.0	25.0
Bulk Density (g/cm ³)	<1.0	Less than 1.6
Total Organic Carbon % by weight, min.	12.0	7.9
Total Nitrogen (as N), % by weight, min.	0.8	0.4
Total Phosphate (as P ₂ O ₅), % by weight, min.	0.4	10.4
Total Potassium (as K ₂ O), % by weight, min.	0.4	-
Colour	Dark Brown to Black	-
Odour	Absence of foul odour	-


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Particle Size	Min. 90% material should pass through 4 mm IS sieve	Min. 90% material should pass through 4 mm IS sieve
Conductivity (as dsm-1), not more than	4.0	8.2

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

2. Waste-to-Energy

2.1 Mass Incineration

Mass-burn systems are the predominant form of MSW incineration to produce electricity. Mass-burn systems generally consist of either two or three incineration units ranging in capacity from 50 to 1,000 tons per day; thus, the capacity of facilities ranges from about 100 to 3,000 tons per day. It involves combustion of unprocessed or minimally processed refuse. The major components of a mass burn facility include: (1) Refuse receiving, handling, and storage systems; (2) Combustion and steam generation system (a boiler); (3) Flue gas cleaning system; (4) Power generation equipment (steam turbine and generator); (5) Condenser cooling water system; and (6) Residue hauling and storage system.

2.2 Pyrolysis

In pyrolysis, at high temperatures of 700°C to 1200°C, thermal degradation of organic carbon-based materials is achieved through the use of an indirect, external source of heat, in the absence or almost complete absence of free oxygen. This thermally decomposes and drives off the volatile portions of the organic materials, resulting in a syngas composed primarily of hydrogen (H₂), carbon monoxide (CO), carbon dioxide (CO₂), and methane (CH₄). Some of the volatile components form tar and oil, which can be removed and reused as a fuel. Most pyrolysis systems are closed systems and there are no waste gases or air emission sources (if the syngas is combusted to produce electricity, the power system will have air emissions through a stack and air emission control system). After cooling and cleaning in emission control systems, the syngas can be utilized in boilers, gas turbines, or internal combustion engines to generate electricity or used as raw stock in chemical industries. The balance of the organic materials that are non-volatile or liquid that is left as a char material, can be further processed or used for its adsorption properties (activated carbon). Inorganic materials form a bottom ash that requires disposal, although some pyrolysis ash can be used for manufacturing brick materials.

2.3 Gasification

In the gasification process, thermal conversion of organic carbon based materials is

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achieved in the presence of internally produced heat, typically at temperatures of 660°C to 1800°C, and in a limited supply of air/oxygen (less than stoichiometric, or less than what is needed for complete combustion) to produce a syngas composed primarily of H₂ and CO. Inorganic materials are converted either to bottom ash (low-temperature gasification) or to a solid, vitreous slag (high temperature gasification that operates above the melting temperature of inorganic components). Some of the oxygen injected into the system is used in reactions that produce heat, so that pyrolysis (endothermic) gasification reactions can initiate; after which, the exothermic reactions control and cause the gasification process to become self-sustaining. Most gasification systems, like pyrolysis, are closed systems and do not generate waste gases or air emission sources during the gasification phase. After cooling and cleaning in emission control systems, the syngas can be utilized in boilers, gas turbines, or internal combustion engines to generate electricity, or to make chemicals.

2.4 Refuse Derived Fuel

The RDF process typically includes thorough pre-separation of recyclables, shredding, drying, and densification to make a product that can be easily handled. Glass and plastics are removed through manual picking and by commercially available separation devices. This is followed by shredding to reduce the size of the remaining feedstock to about eight inches or less, for further processing and handling. Magnetic separators are used to remove ferrous metals. Eddy-current separators are used for aluminium and other non-ferrous metals. The resulting material contains mostly food waste, non-separated paper, some plastics (recyclable and non-recyclable), green waste, wood, and other materials. Drying to less than 12% moisture is typically accomplished through the use of forced-draft air. Additional sieving and classification equipment may be utilized to increase the removal of contaminants. After drying, the material often undergoes densification processing such as pelletizing to produce a pellet that can be handled with typical conveying equipment and fed through bunkers and feeders. The RDF can be immediately combusted on-site or transported to another facility for burning, alone or with other fuels. The densification is even more important when RDF is transported off-site to another facility, in order to reduce volume being transported. RDF is often used in waste to energy plants as the primary or supplemental feedstock, or co-fired with coal or other fuels in power plants, in kilns of cement plants, and with other fuels for industrial steam production.

Criteria for Waste-to-Energy Processes: Waste-to-Energy processes in the State shall follow the criteria prescribed in Solid Waste Management Rules, 2016 as stated below:

- Non-recyclable waste that have a calorific value of 1500 Kcal/kg or more shall not be disposed at landfill sites. These wastes shall be used for generating energy either or through RDF or by giving away as feedstock for preparing RDF.


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- Wastes with high calorific value shall be used for co-processing in cement or thermal power plants
- The local authority or operator of a facility or an agency designated by them proposing to set up a waste-to-energy plant of more than 5 TPD processing capacity shall submit an application in Form-1 of SWM Rules, 2016 to the SPCB for authorization.
- The SPCB shall examine the application for setting up such facility and grant permission within 60 days.

Standards for Incineration:

Emissions from waste-to-energy processes through incineration shall meet the below mentioned standards as per Schedule II of SWM Rules, 2016:

Parameter		Emission Standard
Particulates	50 mg/Nm ³	Standard refers to half hourly average value
HCl	50 mg/Nm ³	Standard refers to half hourly average value
SO ₂	200 mg/Nm ³	Standard refers to half hourly average value
CO	100 mg/Nm ³	Standard refers to half hourly average value
Total Organic Carbon	50 mg/Nm ³	Standard refers to daily average value
HF	20 mg/Nm ³	Standard refers to half hourly average value
NO _x (NO and NO ₂ expressed as NO ₂)	4 mg/Nm ³	Standard refers to half hourly average value
	400 mg/Nm ³	Standard refers to half hourly average value
Total Dioxins & Furans	0.1 ng TEQ/Nm ³	Standard refers to 6 – 8 hour 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 & 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


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**All values corrected to 11% oxygen on a dry basis*

Note:

- Suitably designed pollution control devices shall be installed with the incinerator to achieve the above emission limits.
- Waste to be incinerated shall not be treated with any chlorinated disinfectants
- Incineration of chlorinated plastics shall not be permitted
- Only low sulphur fuel like LDO, LSHS, Diesel, biomass, coal, LNG, CNG, RDF and biogas shall be used as fuel in the incinerator
- The CO₂ concentration in tail gases shall not be more than 7%
- All facilities shall be designed to achieve a minimum temperature of 950°C in the secondary combustion chamber and with a gas residence time of not less than 2 seconds.
- Incineration plants shall be operated with such temperature, retention time and turbulence so as to achieve total organic carbon content in the slag and bottom ash less than 3%, or the loss on ignition is less than 5% of the dry weight.
- Odour from the sites shall be managed as per the guidelines of CPCB issued from time to time.

3. Landfill

At present, solid waste generated in the cities of Haryana is being transported to designated disposal sites in the respective cities and being dumped crudely or indiscriminately. As per this State Policy, landfilling of waste shall be only used as an option for disposal of non-biodegradable components of waste (inerts) and processing rejects. Common sanitary landfills and engineered landfills shall be planned and developed for all cities and towns in the state. It is envisaged that a common sanitary landfill site shall be able to accommodate about 20% of processing rejects or inerts per day from total MSW processed. Additionally, the existing dumpsites in the state that have reached full capacity shall compulsorily undergo closure through the following options:

- Reduction of waste through bio-mining and waste processing followed by placement of residues in new landfills or capping
- Capping with solid waste cover or solid waste cover enhanced with geomembrane to enable collection and flaring or utilization of methane
- Capping with additional measures (in alluvial and other coarse grained soils) e.g. with cut off walls and extraction wells for pumping and treating contaminated ground water
- Any other method suitable for reducing environmental impacts to the acceptable levels

3.1 Sanitary Landfill

According to Solid Waste Management Rules, 2016, "sanitary landfilling" means the final and safe disposal of residual solid waste and inert wastes on land in a facility


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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.

The primary concept is based on isolation of the landfill from surface water and containment of waste within the landfill. The landfill shall be developed with a 20-25 year perspective. The entire facility shall involve development of the landfill site with provision of basic infrastructure such as proper road access, gatehouse with weighbridge, buildings with record rooms, storage facilities and facilities for the staff. The landfill shall also include liner systems with a system for leachate collection and treatment facility. The incoming waste shall be tipped according to a plan and covered daily. Waste placement plans during the monsoon season shall also be made. Once the planned waste levels are attained a cover liner shall be provided.

The landfill development strategy for Haryana shall be formulated to satisfy the regulatory requirements of MoEFCC and the guidelines of CPHEEO, with the following objectives:

- Environmental protection and protection from flooding
- Physical acceptability
- Technical standards of site engineering required
- Operational and management standards desirable
- Appropriateness and sustainability of the method
- Volumetric capacity of the site
- Longevity of the method
- Cost effectiveness of recommended measures

Protection of the surrounding environment of the landfill site shall be effectively achieved through segregation and isolation of potentially polluting waste from the surrounding strata of surface water and ground water. The principal means of achieving this are provision of sealing layers at the base, side walls and at the top of the landfill. Appropriate and secure operational management of the site to minimize the following aspects shall further supplement these measures:

- Water ingress into the landfill
- Leachate generation and uncontrolled dispersion
- Accumulation and uncontrolled release of landfill gas into the surrounding atmosphere

While the appropriate liners and other containment measures are expected to provide the desired levels of environmental safety, it shall be noted that no industrial or biomedical wastes will be allowed to mix with the solid waste being disposed of at the landfill site. The mixing of any of these wastes shall render the entire waste


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hazardous, thereby requiring the use of highly expensive synthetic liners for containment.

Criteria for Landfilling: Landfilling processes in the State shall follow the criteria prescribed in Schedule I of Solid Waste Management Rules, 2016.

3.2 Leachate Generation and Treatment

As per the Solid Waste Management Rules, 2016, leachate is defined as the liquid that seeps through solid waste or other medium and has extracts of dissolved or suspended materials from it. Landfill leachate is the highly complex and toxic waste water that displays substantial variations in composition and volumetric flow. Typically, it contains toxic matter, suspended solids or other dissolved components assimilated from the waste/dump. It also contains heavy metals, salts, nitrogen compounds and various types of organic materials. This polluted waste water poses a threat to the surrounding ecosystem. It poses a major threat as it percolates down and contaminates the groundwater and runs as a stream into the surrounding water bodies.

The quantity of leachate generated from the landfill will depend on annual precipitation rates and active or exposed area of the landfill. This will require preparation of the complete water balance of the landfill site in accordance with the development phases of the project. However, it shall be noted that the leachate generation trends vary drastically depending on the quantity of waste deposited every day and the actual quantity shall be estimated by considering the cumulative quantity of waste deposited in the landfill.

Standards for Treated Leachates:

The disposal of leachates generated from landfills shall meet the below mentioned parameters after treatment as per the SWM Rules, 2016:

S. No.	Parameter (mg/l, max.)	Standards (Mode of Disposal)		
		Inland surface water	Public sewer	Land disposal
1.	Suspended solids	100	600	200
2.	Dissolved solids (inorganic)	2100	2100	2100
3.	pH value	5.5 – 9.0	5.5 – 9.0	5.5 – 9.0
4.	Ammonical nitrogen (as N)	50	50	-

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5.	Total Kjeldahl nitrogen (as N)	100	-	-
6.	Biochemical oxygen demand (3 days at 27°C)	30	350	100
7.	Chemical oxygen demand	250	-	-
8.	Arsenic (as As)	0.2	0.2	0.2
9.	Mercury (as Hg)	0.01	0.01	-
10.	Lead (as Pb)	0.1	1.0	-
11.	Cadmium (as Cd)	2.0	1.0	-
12.	Total Chromium (as Cr)	2.0	2.0	-
13.	Copper (as Cu)	3.0	3.0	-
14.	Zinc (as Zn)	5.0	15	-
15.	Nickel (as Ni)	3.0	3.0	-
16.	Cyanide (as CN)	0.2	2.0	0.2
17.	Chloride (as Cl)	1000	1000	600
18.	Fluoride (as F)	2.0	1.5	-
19.	Phenolic compounds (as C ₆ H ₅ OH)	1.0	5.0	-

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

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Annexure-IV Details of Clusters

Sr. No	Name of Cluster	Waste Generated (In TPD)	Technology Proposed
1.	Faridabad-Gurugram	1236	Waste to Energy (15 MW)
2.	Sonepat	435	Waste to Energy (7 MW)
3.	Ambala	363	Waste to Energy
	Karnal	242	Waste to Compost + RDF
4.	Bhiwani	154	Waste to Compost + RDF
5.	Rewari	197	Waste to Compost+RDF
6.	Fatehabad-Bhuna	112	Waste to Compost+RDF
7.	Panchkula	180	Waste to Compost+RDF
8.	Rohtak	425	Waste to Energy (5 MW)
9.	Hisar	244	Waste to Compost+RDF
10.	Yamunanagar	289	Waste to Compost+RDF
11.	Dabwali+Sirsa	172	Waste to Compost+RDF
12.	Farukhnagar	70	Waste to Compost+RDF
13.	Punhana	132	Waste to Compost+RDF
14.	Jind	263	Waste to Compost+RDF

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Annexure – V

Schedule of Fines- Penalization to the violators

(As per draft Model Municipal Solid Waste cleanliness and Sanitation Rules/Bye-laws)

SCHEDULE – I (Schedule of Fines)

Sr.No.	Rule/ Byelaw No.	Sub-Division/ Description of Rules/Byelaws	Municipal corporation Population ≥ 10 Lakhs	Municipal corporation population ≥ 1 Lakh < 10 Lakhs	Municipality Population < 1 Lakhs
Rule/ Byelaws No. 4 : 1: Littering, Creating Nuisance and clean Aangan Violation					
1	No.4.1 to 4.4	Littering on roads / streets	Rs.500	Rs.200	Rs.100
2	No. 4.5 Creating Nuisance	Spitting	Rs.250	Rs.100	Rs.50
3		Bathing	Rs.300	Rs.100	Rs.50
4		Urinating	Rs.500	Rs.200	Rs.100
5		Defecating	Rs.500	Rs.200	Rs.100
6		Feeding animals / birds in non- designated Local Body	Rs.500	Rs.200	Rs.100
7		Washing Utensils/ clothes/ any other object	Rs.300	Rs.100	Rs.50
Rule/ Byelaws No. 5: Segregation, storage, delivery and collection violations					
8	No. 5.1 and 5.2	For delivering waste that is not segregated and not stored in separate bins: 1) Individual 2) Bulk Generator	Rs.200 Rs.1000	Rs.100 Rs.500	Rs.50 Rs.300
9	No. 5.3	For not delivering bio-degradable waste in a segregated manner as specified	Rs.300	Rs.100	Rs.50
10	No. 5.7	For not storing and delivering construction and demolition waste in segregated manner	Rs.2000	Rs.1500	Rs.500
11	No. 5.8	For not delivering "Dry" waste in a segregated manner as specified	Rs.200	Rs.100	Rs.50
12	No. 5.9	For not delivering garden waste and tree trimmings as specified	Rs.200	Rs.100	Rs.50
13	No. 5.10	For burning waste	Rs.500	Rs.200	Rs.100
Rule/ Byelaws No. 7: Specific Categories/ Situations					
14	No.7.2	For not delivering (non-household) fish, poultry and meat waste in a segregated manner as	Rs.750	Rs.300	Rs.150

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15	No.7.3	For a vendor /Hawker without a container / waste basket	Rs.750	Rs.300	Rs.150
		For a vendor/hawker who doesn't deliver waste in a segregated manner as specified	Rs.750	Rs.300	Rs.150
16	No.7.4	For not keeping a house gully clean	Rs.500	Rs.200	Rs.100
17	No.7.5	For littering/defecation by pet /owned animals	Rs.1000	Rs.500	Rs.300
18	No.7.6	For not cleaning up after public gatherings / events within 4 hours	Forfeiture of the cleanliness deposit		

SCHEDULE – II

Illustrative list of bio-degradable and recyclable waste

<p>Biodegradable waste "Biodegradable waste" means wet waste of plants and animals origin.</p> <ul style="list-style-type: none"> • Kitchen waste including tea leaves, egg shells, fruit and vegetables peels • Meat and bones • Garden and leaf litter, including flowers • Soiled paper • House dust after cleaning • Coconut shells • ashes 	<p>Recyclable waste "Recyclable waste" means dry waste that can be transformed through a process into raw material for producing new products which may or may not be similar to the original product.</p> <ul style="list-style-type: none"> • newspapers • papers, books and magazines • metal objects and wires • plastic • cloth bags • leather • Rexene • Rubber • Wood/furniture • packaging
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SCHEDULE – III

Specified Hazardous waste

<ul style="list-style-type: none"> • Aerosol cans • Batteries and button cells • Bleaches and household kitchen and dry cleaning agents and its containers • Car batteries, oil filters and car care products and consumables • Chemical and solvents and their containers • Cosmetic items, chemical-based insecticides and their containers • Light bulbs, tube-lights and compact fluorescent lamps(CFL) • Discarded medicines and their containers • Paints, oils lubricants, glues, thinners and their containers • Pesticides , herbicides and their containers • Photographic audio/video tapes and their containers • Styrofoam and soft foam packaging of furniture, packaging and equipment • Thermometers and mercury-containing products

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SCHEDULE – IV

List of Bio-Medical waste (Extract from the Bio-Medical waste rules)

Bio Medical waste

Bio medical waste means any waste which is generated during the diagnosis , treatment or immunization of human beings or animals or in research activities pertaining there to or in the production or testing of biological.

Category No.4 Waste Sharps

(Needles, syringes, scalpels, blades etc., that may cause puncture and cuts. This includes both used and unused sharps)

Category No. 5 Discarded medicines , cytotoxic drugs(waste comprising of outdated, contaminated and discarded medicines)

Category No. 6 Solid Waste

(Items contaminated with blood and body fluids including cotton, dressings, soiled plaster casts, lines, beddings and other material contaminated with blood

Category No. 7 Solid Waste

(waste generated from disposable items other than the waste sharps such as tubing's, catheters, intravenous sets etc..


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Annexure - VI

Notification of User Charges for various Waste Generators

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HARYANA GOVERNMENT
URBAN LOCAL BODIES DEPARTMENT

~~Notified~~

Dated the 24.10.2011

No.14/153/2011-4C 1:-In the State Government, acting upon the powers conferred under provisions of the Haryana Municipal Act, 1973 and Haryana Municipal Corporation Act, 1994, hereby notify the user charges for solid waste management in Urban areas of Haryana as under with immediate effect:-

Monthly user Charges for Door to Door Solid Waste Collection		
Sr. No.	Property Description	Rs.Per Month
RESIDENTIAL		
1.	Bpl Houses, Notified Slums, Malin Bastis & EWS flats	5*
2.	Residential Houses including hostels upto 100 Sq. mtrs. (plot area)	20
3.	Residential Houses including hostels upto 100 Sq. mtrs but upto 200 Sq. mtrs (plot area)	40
4.	Residential Houses including hostels more than 200 Sq. mtrs but upto 400 Sq. mtrs (plot area)	50
5.	Residential Houses including hostels more than 400 Sq. mtrs (plot area)	100
6.	Apartments, flats having covered area upto 2000 Sq. ft. except EWS flats	50 Per flat
7.	Apartments, flats having covered area more than 2000 Sq. ft.	100 Per flat
COMMERCIAL		
8.	Individual Shops and private offices upto 200 Sq. feet covered area including service stations, restaurants, dhabas, fishery shops, Shops in grain market and vegetable market ect.	25
9.	Individual Shops and private offices more than 200 Sq. feet covered area including service stations, restaurants, dhabas, fishery shops, Shops in grain market and vegetable market ect.	100
10.	Nursing Homes, Clinics/Hospitals/Aushdhalays without indoor facilities. Hospitals upto 50 beds	1500
11.	Hospitals more than 50 beds but upto 100 beds	3000
12.	Hospitals more than 100 beds	5000
13.	Shopping Complexes including Malls, Cinema Halls and notified Slaughter houses	Rs.0.50 per Sq. ft of Covered area
14.	Factories, Mills	Rs.0.50 per Sq. mtr of Plot area
15.	Banks, Auditoriums, Guest Houses, Hotels(upto 10 rooms)	500
16.	Marriage Halls, Banquet Halls, Hotels (above 10 rooms), Commercial Party Lawns	4000
17.	Clubs with restaurants facilities having membership upto 500 nos.	500
18.	Clubs with restaurants facilities having membership more than 500 nos.	1000

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19.	Petrol Pumps, Gas Stations.	1000
INSTITUTIONAL		
20.	Central and State Govt. and Public Sector Offices/ Complexes, Welfare Organizations/Societies.	150
21.	All educational institutes of any type having plot area upto 2 acres	500
22.	All educational institutes of any type having plot area more than 2 acres but upto 5 acres	1000
23.	All educational institutes of any type having plot area more than 5 acres	2000
24.	All dharamshalas, religious places, sports clubs	These are exempted

In addition to above, the other rates shall be as under:-

2. Removal of Malba of Construction material during new construction/repair/renovation Rs. 300/-per trolley.

*NOTE:- In case of units mentioned under Sr. No. 1, the Committee/Council/Corporation will deposit this amount for these sections of society in user charges fund and will not collect from the owners of these houses.

Other Terms and Conditions:-

1. The user charges suggested above are only indicative and concerned Municipal Authorities may levy the user charges at its own within the provision of the Haryana Municipal Act, 1973 and Haryana Municipal Corporation Act, 1994 and revise the same periodically.
2. The users, who opt to pay user charges in advance for a period of at least one year, will be eligible for a discount of 10%.
3. The non payment of user fee will be recovered within various provisions for the recovery of fee contained in Haryana Municipal Act, 1973 and Haryana Municipal Corporation Act, 1994 as the case may be.
4. The Municipal Authorities may levy and collect the user charges at its own or may authorize any private party engaged to handle solid waste and its processing through open tenders for this purpose. The Commissioner, Municipal Corporations/Executive Officers, Municipal Councils, Secretary, Municipal Committees are authorized to issue such instructions.
5. The users will have to deliver the solid waste at designated places fixed by the Municipality and in the manner as guided by Municipalities.
6. The solid waste under this notification will only include domestic solid waste and will not include any hazardous solid waste or medical hazardous waste or industrial

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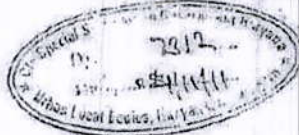
Waste as defined under Environment (Protection) Act, 1986 as amended from time to time.
7. In case of any dispute, the appeals shall be heard and disposed off by the appellant authority as per the provisions of the Haryana Municipal Act, 1973 and Haryana Municipal Corporation Act, 1994.

S.S.DHILLON
Financial Commissioner & Principal Secretary to
Govt. Haryana, Urban Local Bodies Deptt.

Endst. No.14/153/2011-4C-I

Dated 24-10-2011

A copy is forwarded to the Controller, Printing and Stationery Department Haryana, Chandigarh with the request that above notification (both Hindi & English) may please be published in the Haryana Govt. Gazette (Extra Ordinary). He is requested to supply 100 copies of the said notification to this office for record.



Gandola
Under Secretary
for Financial Commissioner & Principal Secretary to
Govt. Haryana, Urban Local Bodies Deptt.

Endst. No.14/153/2011-4C-I

Dated 24-10-2011

A copy is forwarded to following for information & necessary action:-

- 1) Director, Urban Local Bodies, Haryana Chandigarh.
- 2) All the Divisional Commissioners in the State.
- 3) All the Deputy Commissioners in the State.
- 4) The Commissioners, Municipal Corporation, Faridabad, Gurgaon, Rohtak, Hisar, Panipat, Karnal, Ambala, Yamuna Nagar and Panchkula.
- 5) Executive Officers/Secretaries, Municipal Councils/Committees in the State.

Gandola
Under Secretary
for Financial Commissioner & Principal Secretary to
Govt. Haryana, Urban Local Bodies Deptt.

2-11-2011

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Annexure-VII

Star Rating Criteria for ULBs (as per MoHUA)

Star Rating Conditions	1 Star	2 Star	3 star	4 Star	5 Star	7 Star
Door to Door Collection	60%	80%	100%			
Segregation at Source	25%	50%	80%	100%		
Litter Bins	25%	50%	80%	100%		
Waste Processing	25%	50%	75%	100%		
Citizen Grievance Redressal	App download 5% HHs	App download 5% HHs Complaints resolved 50%	App download 10% HHs Complaints resolved 75%	App download 25% HHs Complaints resolved 75%	App download 25% HHs Complaints resolved 90%	App download 50% HHs Complaints resolved 100%
Sweeping of Public, Commercial and Residential areas	Public & Commercial areas: 100%		Public, Commercial & Residential areas: 100%		Public & commercial areas: 100%, twice daily sweeping, Residential areas: 100%, daily sweeping	
Waste Storage	100% (Waste storage bins are placed at all strategic locations. City is exempted if it is binless.)					
No visible solid waste in Drains & Water Bodies	100% water bodies		100% water bodies and storm water drains			
User Charges for Waste collection and transportation	Byelaws framed	Commercial, institutional and industrial establishments	All households/premises including residential, commercial, institutional and industrial establishments			
Penalties &	Penalties/ Spot fines		Penalties/ Spot fines		Penalties/ Spot fines	

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Spot Fines	framed For Non Segregation, anti-littering including water bodies and non compliance of SWM Rules 2016 in 100% premises	framed For Non Segregation, anti-littering including Storm water drains, water bodies and non-compliance of SWM Rules 2016 in 100% premises	framed For Non Segregation, anti-littering including drains, water bodies and non-compliance of SWM Rules 2016 in 100% premises
Plastic Ban	Notification and enforcement of ban on the use, sale and storage of non-biodegradable plastic bags less than 50 microns (carry bags made of virgin and recyclable plastic shall not be less than 50 microns) in compliance with PWM Rules 2016,	Notification and enforcement of ban on the use, sale and storage of non-biodegradable plastic bags less than 50 microns (carry bags made of virgin and recyclable plastic shall not be less than 50 microns) in compliance with PWM Rules 2016, as well as enforcement of user fee by ULB on use , sale, storage of collections in the city must not be less than the sum of the litter spots	Complete Ban on all Plastic

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