

## **Municipal Solid Wastes (Management and Handling) Rules, 2000**

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## **Municipal Solid Wastes (Management and Handling) Rules, 2000**

S.O.908(E) New Delhi, the 25th September, 2000.- Whereas the draft of the Municipal Solid Wastes (Management and Handling) Rules, 1999 were published under the notification of the Government of India in the Ministry of Environment and Forests number S.O.783(E), dated the 27th September, 1999 in Gazette of India, Part II, Section 3, Sub-section (ii) of the same date inviting objections and suggestions from the persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which the copies of the Gazette containing the said notification are made available to the public; And whereas copies of the said Gazette were made available to the public on the 5th October, 1999; And whereas the objections and suggestions received from the public in respect of the said draft rules have been duly considered by the Central Government; Now, therefore, in exercise

of the powers conferred by section 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules to regulate the management and handling of the municipal solid wastes, namely:-

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

(1) These rules may be called the Municipal Solid Wastes (Management and Handling) Rules, 2000

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

**2. Application :-**

These rules shall apply to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.

**3. Definitions :-**

in these rules, unless the context otherwise requires,-

(i) "anaerobic digestion" means a controlled process involving microbial decomposition of organic matter in the absence of oxygen;

(ii) "authorization" means the consent given by the Board or Committee to the "operator of a facility"

(iii) "biodegradable substance" means a substance that can be degraded by micro organisms,

(iv) "biomethanation" means a process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas;

(v) "collection" means lifting and removal of solid wastes from collection points or any other location;

(vi) "composting" means a controlled process involving microbial decomposition of organic matter;

(vii) "demolition and construction waste" means wastes from building materials debris and rubble resulting from construction, re-modelling, repair and demolition operation;

(viii) "disposal" means final disposal of municipal solid wastes in terms of the specified measures to prevent contamination of ground

water, surface water and ambient air quality;

(ix) "Form" means a Form appended these rules;

(x) "generator of wastes" means persons or establishments generating municipal solid wastes;

(xi) "landfilling" means disposal of residual solid wastes on land in a facility designed with protective measures against pollution of ground, water, surface water and air fugitive dust, wind-blown litter, bad odour, fire hazard, bird menace, pests or rodents, greenhouse gas emissions, slope instability and erosion;

(xii) "leachate" means liquid that seeps through solid wastes or other medium and has extracts of dissolved or suspended material from it;

(xiii) "lysimeter" is a device used to measure rate of movement of water through or from a soil layer or is used to collect percolated water for quality analysis;

(xiv) "municipal authority" means Municipal Corporation, Municipality, Nagar Palika, Nagar Nigam, Nagar Panchayat, Municipal Council including notified area committee (NAC) or any other local body constituted under the relevant statutes and, where the management and handling of municipal solid waste is entrusted to such agency;

(xv) "municipal solid waste" includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes;

(xvi) "operator of a facility" means a person who owns or operates a facility for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes and also includes any other agency appointed as such by the municipal authority for the management and handling of municipal solid wastes in the respective areas;

(xvii) "pelletisation" means a process whereby pellets are prepared which are small cubes or cylindrical pieces made out of solid wastes and includes fuel pellets which are also referred as refuse derived fuel;

(xviii) "processing" means the process by which solid wastes are

transformed into new or recycled products;

(xix) "recycling" means the process of transforming segregated solid wastes into raw materials for producing new products, which may or may not be similar to the original products

(xx)"Schedule" means a Schedule appended to these rules:

(xxi)"segregation" means to separate the municipal solid waste into the groups of organic, inorganic, recyclables and hazardous wastes,

(xxii)"State Board of the Committee" means the state Pollution Control Board of a State, or as the case may be the Pollution Control Committee of a Union territory

(xxiii) "storage" means the temporary containment of municipal solid wastes in a manner so as to prevent littering, attraction to vectors, stray animals and excessive foul odour;

(xxiv) "transportation" means conveyance of municipal solid wastes from place to place hygienically through specially designed transport system so as to prevent foul odour, littering, unsightly conditions and accessibility to vectors

(xxv) "vadose water" water which occurs between the ground, surface, and the water table that is the unsaturated zone;

(xxvi) "vermicomposting" is a process of using earthworms for conversion of bio-degradable wastes into compost.

#### **4. Responsibility of municipal authority :-**

(1) Every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes.

(2) The municipal authority or an operator of a facility shall make an application in Form-1, for grant of authorization for setting up waste processing and disposal facility including landfills from the State Board or the Committee in order to comply with the implementation programme laid down in Schedule I.

(3) The municipal authority shall comply with these rules as per the implementation schedule laid down in Schedule I

(4) The municipal authority shall furnish its annual report in Form-II,-

(a) to the Secretary-in-charge of the Department of Urban Development of the concerned State or as the case may be of the Union territory, in case of a metropolitan city;

(b) to the District Magistrate or the Deputy Commissioner concerned in case of all other town and cities, with a copy to the State Board or the Committee on or before the 30<sup>th</sup> day of June every year.

**5. Responsibility of the State Government and the Union territory Administrations :-**

(1) The Secretary-in-charge of the Department of Urban Development of the concerned State or the Union territory, as the case may be, shall have the overall responsibility for the enforcement of the provisions of these rules in the metropolitan cities.

(2) The District Magistrate or the Deputy Commissioner of the concerned district shall have the overall responsibility for the enforcement of the provisions of these rules within the territorial limits of their jurisdiction.

**6. Responsibility of the Central Pollution Control Board and the State Board or the Committees :-**

(1) The State Board or the Committee shall monitor the compliance of the standards regarding ground water, ambient air, leachate quality and the compost quality including incineration standards as specified under Schedules II, III and IV.

(2) The State Board or the Committee, after the receipt of application from the municipal authority or the operator of a facility in Form I, for grant of authorization for setting up waste processing and disposal facility including landfills, shall examine the proposal taking into consideration the views of other agencies like the State Urban Development Department the Town and Country Planning Department, Air Port or Air Base Authority, the Ground Water Board or any such other agency prior to issuing the authorization.

(3) The State Board or the Committee shall issue the authorization in Form-III to the municipal authority or an operator of a facility within forty-five days stipulating compliance criteria and standards

as specified in Schedules II, III and IV including such other conditions, as may be necessary.

(4) The authorization shall be valid for a given period and after the validity is over, a fresh authorization shall be required.

(5) The Central Pollution Control Board shall co-ordinate with the State Boards and the Committees with particular reference to implementation and review of standards and guidelines and compilation of monitoring data.

## **7. Management of municipal solid wastes :-**

(1) Any municipal solid waste generated in a city or a town, shall be managed and handled in accordance with the compliance criteria and the procedure laid down in Schedule-11.

(2) The waste processing and disposal facilities to be set up by the municipal authority on their own or through an operator of a facility shall meet the specifications and standards as specified in Schedules III and IV.

## **8. Annual Reports :-**

(1) The State Boards and the Committees shall prepare and submit to the Central Pollution Control Board and annual report with regard to the implementation of these rules by the 15<sup>th</sup> of September every year in Form-IV.

(2) The Central Pollution Control Board shall prepare the consolidated annual review report on management of municipal solid wastes and forward it to the Central Government alongwith its recommendations before the 15<sup>th</sup> of December every year.

## **9. Accident Reporting :-**

When an accident occurs at any municipal solid wastes collection, segregation, storage, processing, treatment and disposal facility or landfill site or during the transportation of such wastes, the municipal authority shall forthwith report the accident in Form-V to the Secretary in-charge of the Urban Development Department in metropolitan cities, and to District Collector or Deputy Commissioner in all other cases.

## **SCHEDULE 1**

### **Implementation Schedule**

Serial	Compliance Criteria	Schedule
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No.		
1.	Setting up of waste processing and disposal facilities	By 31.12.2003 or earlier
2.	Monitoring the performance of waste processing and disposal facilities	Once in six months
3.	Improvement of existing landfill sites as per provisions of these rules	By 31.12.2001 or earlier
4.	Identification of landfill sites for future use and making site(s) ready for operation	By 31.12.2002 or earlier

## SCHEDULE 2

### Management of Municipal Solid Wastes

s. No.	Parameters	Compliance criteria
	Collection of municipal solid wastes	1. Littering of municipal solid waste shall be prohibited in cities, towns and in urban areas notified by the State Governments. To prohibit littering and facilitate compliance,
		the following steps shall be taken by be municipal authority,
		namely: -
		(i) Organising house-to-house collection of municipal solid wastes
		through any of the methods, like community bin collection
		(central bin), house-to-house collection, collection on regular
		pre-informed timings and scheduling by using bell ringing of
		musical vehicle (without exceeding permissible noise levels);
		(ii) Devising collection of waste from slums and squatter areas or
		localities including hotels, restaurants, office complexes and
		commercial areas;
		(iii) Wastes from slaughter houses, meat and fish markets, fruits
		and vegetable markets, which are biodegradable in
		nature, shall be managed to make use of such wastes;
		(iv) Bio-medical wastes and industrial wastes shall not be
		mixed with municipal solid wastes and such wastes shall
		follow the rules separately specified for the purpose;
		(v) Collected waste from residential and other areas shall be

		transferred to community bin by hand-driven containerised
		carts or other small vehicles;
		(vi) Horticultural and construction or demolition wastes or
		debris shall be separately collected and disposed off
		following proper norms. Similarly, wastes generated at
		dairies shall be regulated in accordance with the State laws;
		(vii) Waste (garbage.dry leaves) shall not be burnt;
		(viii) Stray animals shall not be allowed to move around waste storage
		facilities or at any other place in the city or town and shall be
		managed in accordance with-the State laws.
		2. The municipal authority shall notify waste collection
		schedule and the likely method to be adapted for public
		benefit in a city or town.
		3. It shall be the reponsibility of generator of wastes to avoid
		littering and ensure delivery of wastes in accordance with the
		collection and segregation system to be notified by the
		municipal authority as per para 1 (2) of this Schedule.
2.	Segregation of	In order to encourage the citizens, municipal authority shall
	municipal solid	organise awareness programe for segregation of wastes
	wastes	and shall promote recycling or reuse of segregated materials.
		The municipal authority shall undertake phased programme
		to ensure community participation in waste segregation. For
		this purpose, regular meetings at quarterly intervals shall be
		arranged by the municipal authorities with representatives of
		local resident welfare associations and non-governmental
		organizations. ,
3.	Storage of	Municipal authorities shall establish and maintain Storage

	municipal solid wastes	facilities in such a manner as they do not create unhygienic and insanitary conditions around it. Following criteria shall
		be taken into account while establishing and maintaining
		storage facilities, namely:-
		(i) Storage facilities shall be created and established by taking
		into account quantities of waste generation in a given area
		and the population densities. A storage facility shall so
		placed that it is accessible to users.
		(ii) Storage facilities to be set up by municipal authorities or any
		other agency shall be so designed that wastes stored are not
		exposed to open atmosphere and shall be aesthetically
		acceptable and user-friendly;
		(iii) Storage facilities or 'bins' shall have 'easy to operate' design
		for handling, transfer and transportation of waste. Bins for
		storage of bio-degradable wastes shall be painted green, those
		for storage of recyclable wastes shall be painted white and
		those for storage of other wastes shall be painted black;
		(iv) Manual handling of waste shall be prohibited. If unavoidable
		due to constraints, manual handling shall be carried out under
		proper precaution with due care for safety of workers.
4.	Transportation	Vehicles used for transportation of wastes shall be covered.
	of municipal	Waste should not be visible to public, nor exposed to open
	solid wastes	environment preventing their scattering. The following criteria
		shall be met, namely:-
		(i) The storage facilities set up by municipal authorities shall be
		daily attended for clearing of wastes. The bins or containers
		wherever placed shall be cleaned before they start

		overflowing;
		(ii) Transportation vehicles shall be so designed that multiple
		handling of wastes, prior to final disposal, is avoided.
5.	Processing of	Municipal authorities shall adopt suitable or combination of such
	municipal solid	technologies to make use of wastes so as to minimize burden on
	wastes.	landfill. Following criteria shall be adopted, namely:-
		(i) The biodegradable wastes shall be processed by composting,
		vermicomposting, anaerobic digestion or any other appropriate
		biological processing for stabilization of wastes. It shall be
		ensured that compost or any other end product shall comply
		with standards as specified in Schedule-IV;
		(ii) Mixed waste containing recoverable resources shall follow the
		route of recycling. Incineration with or without energy recovery
		including pelletisation can also be used for processing wastes
		in specific cases. Municipal authority or the operator of a facility
		wishing to use other state-of-the-art technologies shall approach
		the Central Pollution Control Board to get the standards laid
		down before applying for grant of authorisation.
6.	Disposal of	Land filling shall be restricted to non-biodegradable, inert waste
	municipal solid	and other waste that are not suitable either for recycling or for
	wastes	recycling or for biological processing. Land filling shall also be
		carried out for residues of waste processing facilities as well as pro
		cessing rejects from waste processing facilities. Land filling of
		mixed waste shall be avoided unless the same is found unsuitable for
		waste processing. Under unavoidable circumstances or till installation of alternate facilities, land-filling shall be done following proper norms. Landfill sites shall meet the specifications as given in Schedule-111.

### SCHEDULE 3

#### Specifications for Landfill Sites

Site Selection 1. In areas falling under the jurisdiction of 'Development Authorities,' it shall be the responsibility of such Development Authorities to identify the landfill sites and hand over the sites to the concerned municipal authority for development, operation and maintenance. Elsewhere, this responsibility shall lie with the concerned municipal authority. 2. Selection of landfill sites shall be based on examination of environmental issues. The Department of Urban Development of the State or the Union territory shall co-ordinate with the concerned organisations for obtaining the necessary approvals and clearances. 3. The landfill site shall be planned and designed with proper documentation of a phased construction plan as well as a closure plan. 4. The landfill sites shall be selected to make use of nearby wastes processing facility. Otherwise, wastes processing facility shall be planned as an integral part of the landfill site. 5. The existing landfill sites which continue to be used for more than five years, shall be improved in accordance of the specifications given in this Schedule. 6. Biomedical wastes shall be disposed off in accordance with the Bio-medical Wastes (Management and Handling) Rules, 1998 and hazardous wastes shall be managed in accordance with the Hazardous Wastes (Management and Handling) Rules, 1989, as amended from time to time. 7. The landfill site shall be large enough to last for 20-25 years. 8. The landfill site shall be away from habitation clusters, forest areas, water bodies, monuments, National parks. Wetlands and places of important cultural, historical or religious interest. 9. A buffer zone of no-development shall be maintained around landfill site and shall be incorporated in the Town Planning Department's land-use plans. 10. Landfill site shall be away from airport including airbase. Necessary approval of airport or airbase authorities prior to the setting up of the landfill site shall be obtained in cases where the site is to be located within 20 km of an airport or airbase. Facilities at the Site 11. Landfill site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation. 12. The landfill site shall be well protected to prevent entry of unauthorised persons and stray animals. 13. Approach and other internal roads for free movement of vehicles and other machinery shall exist at the landfill site. 14. The landfill site shall have wastes inspection facility to monitor wastes brought in for landfill, office facility for record keeping and shelter for keeping equipment .and machinery including pollution monitoring equipments. 15. Provisions like weigh bridge to measure quantity of waste brought at landfill site, fire protection equipments and other facilities as may be requested shall be provided. 16. Utilities such as drinking waster (preferably bathing facilities for workers) and lighting arrangements for easy landfill operations when carried out in night hours shall be provided. 17. Safety provisions including health inspections of wokrs at landfill site shall be periodically made. Specifications (or land filling 18. Wastes subjected to land filling shall be compacted in thin layers using landfill compactors to achieve high density of the wastes In high rainfall areas where heavy compactors cannot be used alternative measures shall be adopted. 19. Wastes shall be covered immediately or at the end of each working day with minimum 10cm of soil, inert debris or construction material till such time waste processing facilities for composting or recycling or energy recovery are set up as per Schedule I. 20. Prior to the commencement of monsson season, an intermediate cover of 40-65 cm thickness of soil shall be placed on the landfill with

proper compaction and grading to prevent infiltration during monsoon. Proper drainage berms shall be constructed to divert run-off away from the active cell of the landfill. 21. After completion of landfill, a final cover shall be designed to minimize infiltration and erosion. The final cover shall meet the following specifications, namely:- (a) The final cover shall have a barrier soil layer comprising of 60 cms of clay or amend soil with permeability coefficient less than  $1 \times 10^{-7}$  cm/sec. (b) On top of the barrier soil layer, there shall be a drainage layer of 15 cm. (c) On top of the drainage layer, there shall be a vegetative layer of 45 cm to support natural plant growth and to minimize erosion. Pollution prevention 22. In order to prevent pollution problems from landfill operations, the following provisions shall be made, namely:- (a) Diversion of storm water drains to minimize leachate generation and prevent pollution of surface water and also for avoiding flooding and creation of marshy conditions; (b) Construction of a non-permeable lining system at the base and wells of waste disposal area. For landfill receiving residues of waste processing facilities or mixed waste or waste having contamination of hazardous materials (such as aerosols, bleaches, polishes, batteries, waste oils, paint products and pesticides) minimum liner specifications shall be a composite barrier having 1.5 mm high density polyethylene (HDPE) geomembrane, or equivalent, overlying 90 cm of soil (clay or amended soil) having permeability coefficient not greater than  $1 \times 10^{-7}$  cm/sec. The highest level of water table shall be at least two meter below the base of clay or amended soil barrier layer; (c) Provisions for management of leachates collection and treatment shall be made. The treated leachates shall meet the standards specified in Schedule-IV; (d) Prevention of run-off from landfill area entering any stream, river, lake or pond. Water Quality Monitoring 23. Before establishing any landfill site, baseline data of ground water quality in the area shall be collected and kept in record for future reference. The ground water quality within 50 metres of the periphery of landfill site shall be periodically monitored to ensure that the ground water is not contaminated beyond acceptable limit as decided by the Ground Water Board or the State Board or the Committee. Such monitoring shall be carried out to cover different seasons in a year that is, summer, monsoon and post-monsoon period. 24. Usage of groundwater in and around landfill sites for any purpose (including drinking and irrigation) is to be considered after ensuring its quality. The following specifications for drinking water quality shall apply for monitoring purpose, namely:-

S.No.	Parameters	IS 10500: 1991
		Desirable limit (mg/l except for pH)
1.	Arsenic	0.05
2.	Cadmium	0.01
3.	Chromium	0.05
4.	Copper	0.05
5.	Cyanide	0.05
6.	Lead	0.05
7.	Mercury	0.001
8.	Nickel	
9.	Nitrate as N03	45.0
10	PH	6.5-8.5

11.	Iron	0.3
12. 13.	Total hardness (as CaCO <sub>3</sub> ) Chlorides	300.0 250
14.	Dissolved solids	500
15.	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH	0.001
16.	Zinc	5.0
17.	Sulphate (as SO <sub>4</sub> )	200

#### SCHEDULE 4

#### Standards for Composting, Treated Leachates and Incineration

1 The waste processing or disposal facilities shall include composting, incineration, pelletisation, energy recovery or any other facility based on state-of-the-art technology duly approved by the Central Pollution Control Board. 2. In case of engagement of private agency by the municipal authority, a specific agreement between the municipal authority and the private agency shall be made particularly, for supply of solid waste and other relevant terms and conditions. 3. In order to prevent pollution from compost plant and other processing facilities, the following shall be complied with, namely:- (i)The incoming wastes at site shall be maintained prior to further processing. To the extent possible, the waste storage area should be covered. If, such storage is done in an open area, it shall be provided with impermeable base with facility for collection of leachate and surface water run-off into lined drains leading to a leachate treatment and disposal facility; (ii) Necessary precautions shall be taken to minimise nuisance of odour, flies, rodents, bird menace and fire hazard; (iii) In case of breakdown or maintenance of plant, waste intake shall be stopped and arrangement be worked out for diversion of wastes to the landfill site; (iv) Pre-process and post-process rejects shall be removed from the processing facility on regular basis and shall not be allowed to pile at the site. Recyclables shall be routed through appropriate vendors. The non-recyclables shall be sent for well designed landfill site(s). (v) In case of compost plant, the windrow area shall be provided with impermeable base. Such a base shall be made of concrete or compacted clay, 50 cm thick, having permeability coefficient less than 10<sup>-7</sup> cm/sec. The base shall be provided with 1 to 2 per cent slope and circled by lined drains for collection of leachate or surface run-off; (vi) Ambient air quality monitoring shall be regularly carried out particularly for checking odour nuisance at down-wind direction on the boundary of processing plant. (vii) In order to ensure safe application of compost, the following specifications for compost quality shall be met, namely:-

Parameters	Concentration not to exceed (mg/kg dry basis, except pH value and C/N ratio)
Arsenic	10.00
Cadmium	5.00
Chromium	50.00
Copper	300.00
Lead	100.00
Mercury	0.15
Nickel	50.00
Zinc	1000.00

C/N ratio	20-40
PH	5:5.8.5