

## **MUNICIPAL SOLID WASTES (MANAGEMENT AND HANDLING) RULES, 1999**

### **CONTENTS**

1. Short title and commencement
2. Application
3. Definitions
4. Responsibility of Municipal authority
5. Power of the District Magistrate or the Deputy Commissioner
6. State Boards to monitor enforcement of rules
7. Central Pollution Control Board to co-ordinate with State Boards and Committees
8. Management of Municipal Solid Waste
9. Annual Reports
10. Accident Reporting

**SCHEDULE 1 :-** Implementation Schedule

**SCHEDULE 2 :-** Management of Municipal Solid Wastes

**SCHEDULE 3 :-** Specifications for Landfill Sites

**SCHEDULE 4 :-** Standards for Compost

## **MUNICIPAL SOLID WASTES (MANAGEMENT AND HANDLING) RULES, 1999**

The following draft of the Municipal Solid Wastes (Management and Handling Rules, 1999, which the Central Government proposes to make in exercise of the powers conferred by Sections 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), are hereby published for information of all persons likely to be affected hereby; and notice is hereby given that the said draft rules shall be taken into consideration after the expiry of period of sixty days from the date on which copies of the Gazette of India containing this notification are made available to the public; Any person desirous of making any suggestion or objection in respect to the said draft rules, may forward the same for consideration of the Central Government within the period so specified to the Secretary, Ministry of Environment and Forests, Paryavaran Bhawan, CGO Complex, Lodi Road, New Delhi-110 003.

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

(1) These rules may be called the Municipal Solid Wastes (Management and Handling) Rules, 1999.

(2) 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 digestion of organic matter in absence of molecular oxygen;

(ii) "Biodegradable substance" means a substance that can be degraded by Micro-organisms;

(iii) "Collection" means collection and removal of solid wastes from different collection points;

(iv) "Composting" means a controlled process involving microbial degradation of organic matter;

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

(vi) "Disposal" means final disposal of municipal solid waste;

(vii) "Form" means form appended to these rules;

(viii) "Landfilling" means disposal of solid wastes by spreading it in layers over a lined surface or land, compacting it to the smallest practical volume and covering it by impervious soil layer at the end of the day or more frequently. A landfill is operated to prevent leachate from contaminating ground water and maintaining ambient air quality;

(ix) "Leachate" means liquid that seeped through solid waste or other medium and has extracted dissolved or suspended material from it;

(x) "Lysimeter" A device used to measure rate of movement of

water through or from a soil layer or used to collect percolated water for quality analysis;

(xi) "Municipal authority" means Municipal Corporation, Municipality, Nagar Palika, Nagar Nigam, Nagar Panchayat/Municipal Council or any other local body and, where the management of municipal solid waste is entrusted to an agency; such agency;

(xii) "Municipal solid waste" includes commercial and residential wastes generated from a community;

(xiii) "Operator of the facility" Municipal Authority or any other agency appointed by the municipal authority for management and handling of municipal solid waste in the area;

(xiv) "Processing" means processed for making use by adopting process like recycling or composting, or both;

(xv) "Recycling" means the process by which waste materials are transformed into new products in such a manner that the original products lose their identity;

(xvi) "Schedule" means a schedule appended to these rules;

(xvii) "Vadose Water" water which occurs between the ground, surface and the water table i.e., the unsaturated zone;

(xviii) "Vermicomposting" is a process of using earthworms as a natural bioreactor to convert bio-degradable waste into bio-fertilizer (vermicasting).

#### **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 authorities shall comply with these rules as per the implementation schedule laid down in Schedule I.

(3) The Municipal authority shall furnish its annual report in Form I to the District Magistrate or the Deputy Commissioner, who shall forward the report to the State Pollution Control Board or as the case may be to the Pollution Control Committee in Union

Territories.

**5. Power of the District Magistrate or the Deputy Commissioner :-**

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.

**6. State Boards to monitor enforcement of rules :-**

The State Pollution Control Board or as the case may be, the Pollution Control Committee in the Union Territory shall monitor the collection of samples, their analysis and compliance with standards regarding ground water, ambient air and leachate quality, and from time to time require the District Magistrate or the Deputy Commissioner of the concerned district or the Municipal Authority to take steps as may be necessary for proper implementation of these rules.

**7. Central Pollution Control Board to co-ordinate with State Boards and Committees :-**

The Central Pollution Control Board shall co-ordinate with the State Pollution Control Boards and the Pollution Control Committees in the matters of municipal solid waste disposal and its management and handling.

**8. Management of Municipal Solid Waste :-**

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

(2) The disposal of municipal solid wastes of the specified categories shall be through landfill as per specifications and standards laid down in Schedule III.

(3) The standards for compost and disposal of treated leachate to be followed by the Municipal Authorities shall be as laid down in Schedule IV.

**9. Annual Reports :-**

(1) The State Pollution Control Boards and Pollution Control Committees of Union Territories shall prepare and submit to the Central Pollution Control Board an Annual Review Report with regard to the implementation of these rules every year on or before 30th June in Form II.

(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 along with its recommendations before 15th September every year.

### **10. Accident Reporting :-**

When any 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 III to the District Magistrate or the Deputy Commissioner of the concerned District.

### **SCHEDULE 1**

#### **Implementation Schedule**

<b>SCHEDULE 1</b>				
[See Rule 4(2)]				
<b>Implementation Schedule</b>				
Compliance Criteria	Cities/towns with population			
	more than 10 lakhs	1 to 10 lakhs	0.5 to 1.0 lakhs	Less than 0.5 lakhs
Setting up of suitable composing facilities to make use of waste	by 31-12-2001 or earlier	by 31-12-2001 or earlier	By 31-12-2001 or earlier	by 31-12-2001 or earlier
Monitoring of disposal facilities set up to meet laid down standards	Once in four months on yearly basis	Once in six months on yearly basis	Once in a year on annual basis	Once in a year on annual basis
Existing landfill sites to be improved as per existing provisions of the rules	by 31-12-2001 or earlier	by 31-12-2001 or earlier	by 31-12-2001 or earlier	by 31-12-2001 or earlier
Identification of landfill sites for future use	by 31-12-2000 or earlier	by 31-12-2000 or earlier	by 31-12-2000 or earlier	by 31-12-2000 or earlier

### **SCHEDULE 2**

#### **Management of Municipal Solid Wastes**

<b>SCHEDULE 2</b>
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**Management of Municipal Solid Wastes**

SI. No.	Parameters	Compliance Criteria
1.	Collection of Municipal Solid Wastes	<p>1. Littering of municipal solid waste shall be prohibited in cities, towns and in urban areas notified by the Government. To prohibit littering, following steps shall be taken, namely.</p> <p>(i) Organising house to house collection of garbage through any of the methods, like containerised collection, community bin collection (central bin), house to house collection, collection on regular preinformed timings and scheduling by using bell ringing/musical vehicle (without exceeding permissible noise levels).</p> <p>(ii) Collection of waste from slums and squatter areas /localities including hotels/restaurants/office complexes and commercial areas shall be devised in consultation with municipal authority.</p> <p>(iii) Wastes from slaughter houses, fruits and vegetable markets, which are biodegradable in nature, shall be managed to make use of such wastes.</p> <p>(iv) Bio-medical wastes and industrial wastes shall not be mixed with municipal solid wastes and such wastes shall follow rules specified separately for the purpose.</p> <p>(v) Collected waste from residential and other areas shall be transferred to community bin by hand-driven containerised Carts.</p> <p>(vi) Horticultural and construction /demolition wastes/debris shall be separately collected and disposed off following proper norms. Similarly, activities relating to dairies (milking of cows/buffaloes) shall be regulated in accordance with State laws.</p> <p>(vii) Waste (garbage, dry leaves) shall not be burnt.</p> <p>(viii) Stray animals shall not be allowed to move around waste storage facilities or at any other place in city/town and shall be managed as per State laws.</p> <p>2. Municipal authority shall notify waste collection schedule and the likely method to be adopted for public benefit in a city/town.</p>
2.	Segregation of Municipal Solid Wastes	<p>In order to encourage public, municipal authority shall organise awareness programmes for segregation of wastes and shall encourage recycling/reuse of segregated materials. Municipal authority shall undertake phased programme to ensure that community is fully involved in waste segregation.</p>
3.	Storage of Municipal Solid Wastes	<p>Municipal authorities shall establish and maintain storage facilities in such a manner as they do not create unhygienic/insanitary conditions around it. Following criteria shall be taken into account while establishing and maintaining storage facilities:</p>

		<p>(i) Storage facilities shall be created/established by taking into account quantities of waste generation in a given area and the population densities. A storage facility shall be so placed that user finds it easy to approach within the walking range.</p> <p>(ii) Storage facilities to be set up by Municipal authorities or any other agency shall be so designed that waste stored shall not be exposed to open atmosphere and shall be aesthetically acceptable and user-friendly.</p> <p>(iii) Storage facilities or 'bins' shall have 'easy to operate' design for handling, transfer and transportation of waste.</p> <p>(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.</p>
4.	Transportation of Municipal Solid wastes	<p>Vehicles used for transportation of wastes shall be covered. Waste should not be visible to public, nor exposed to open environment preventing their scattering. The following criteria shall be met.</p> <p>(i) The storage facilities set up by Municipal authorities shall be daily attended for clearing of wastes.</p> <p>(ii) Collection and transportation vehicles shall be so designed that multiple handling of wastes, prior to final disposal, is avoided.</p>
5.	Processing of Municipal Solid Wastes	<p>Municipal authorities shall adopt suitable technology or combination of such technologies to make use of wastes so as to minimize burden on landfill. Following criteria shall be adopted.</p> <p>(i) The biodegradable wastes, invariably segregated waste and waste not containing any toxic contaminants, shall be processed by composting, vermicomposting, anaerobic digestion or any other appropriate biological processing for stabilization of waste. It shall be ensured that compost shall be free from contamination due to heavy metals, pesticides or any other contaminants. Standards in respect of compost are laid down in Schedule IV for compliance.</p> <p>(ii) Waste containing recoverable material shall follow the route of recycling.</p>
6.	Disposal of Municipal Solid Wastes	<p>Land filling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Land filling shall also be carried out for residues of waste processing facilities as well as pre-processing rejects from waste processing facilities. Land filling of mixed waste shall be avoided unless same is found unsuitable for waste processing. Under unavoidable circumstances or till installation of alternate facilities, land-filling shall be done following proper norms. Land filling shall meet the following criteria;</p>

		<p>(i) Land siting and construction shall be done after proper care. However, in respect of cities having population over five lakh, proper environmental impact assessment shall be conducted by Municipal authority before selecting a site.</p> <p>(ii) Provision for future land filling sites shall be included in the land use plan of city/town.</p> <p>(iii) The future and existing landfill site shall comply with the norms for control of air and water (ground and surface water) pollution and other environmental norms as laid down in specifications/standards (Schedule II).</p> <p>(iv) Waste at disposal site shall not be burnt. Sites where, waste is to be burnt as an interim measure, shall not cause air pollution. Ambient air quality shall be monitored for compliance.</p>
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### **SCHEDULE 3**

#### **Specifications for Landfill Sites**

#### **SCHEDULE 3**

[See Rule 8(2)]

#### **Specifications for Landfill Sites**

1. The Municipal authority of the concerned district and town shall identify, develop and maintain one or more landfill sites as the case may be for the disposal of municipal solid wastes. Prior to commencement of land filling, the landfill site shall be planned and designed with proper documentation of a phased construction plan as well as a closure plan.
2. The Municipal authority shall identify the disposal site after environment impact assessment in a city/town having population more than five lakh and taking into consideration the views of the competent town planning authority. The identified sites shall be brought into public notice for their views.
3. 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.
4. The existing landfill sites that continue to be used for more than five years, shall be improved in accordance of these specifications.
5. The landfill sites in municipal bodies having more than 5 lakh population shall be used only for those municipal solid wastes that are not suitable for bio-composting or recycling.
6. Biomedical waste, slaughter house waste (including fish, meat, poultry processing), industrial wastes, sludge and other hazardous wastes shall not be dumped at landfill site meant for disposal of non-hazardous and non-biodegradable wastes. Biomedical wastes shall be disposed off as per the Bio-medical Wastes (Management and Handling) Rules, 1998. Hazardous wastes shall be managed as per the Hazardous Wastes (Management and Handling)



### **Site Selection**

7. The landfill site shall be large enough to last for 20-25 years and preferably within 5 km from present city limits.
8. The site shall be at least 0.5 km away from habitation clusters, forest areas, monuments, National Parks, Wetlands and places of important cultural, historical or religious interest.
9. Landfill site shall be at least 20 km away from airport including airbase. Municipal authorities shall obtain approval of airport/airbase authorities prior to the setting up of the landfill site.
10. A 500 meter wide buffer zone of no-development be maintained around landfill site and shall be incorporated in the Town Planning Department's land-use plans.

### **Facilities at the Site**

11. Landfill site shall be fenced/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 stray animals.
13. Approach and other internal roads for free flow 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 equipment.
15. Provisions like weigh bridge to measure quantity of waste brought at landfill site, fire protection equipments and other facilities as required, shall be provided for all cities with more than 5 lakhs population. For setting up of the weigh bridge, following schedule shall apply.
  - (a) cities having population of more than ten lakhs shall provide weigh bridge by 31st December, 2002 or earlier;
  - (b) cities having population between one and ten lakhs shall install weigh bridge by 31st December, 2003 or earlier; and
  - (c) cities having population between fifty thousand and one lakh shall make arrangements for weigh-ment of wastes collected and brought at landfill site by 2004 or earlier.
16. Utilities, such as drinking water (preferably bathing facilities to workers) and lighting arrangements for easy landfill operations when carried out in night hours, shall be provided.
17. Safety provisions including health inspections of workers at landfill site shall be periodically made.

### **Specifications for Land filling**

18. Wastes subjected to land filling shall be compacted in thin layers using landfill compactors to achieve high density of the wastes.

19. Wastes shall be covered immediately or at the end of each working day with 7.5-10 cm of soil/sweet earth. In case of non-availability of such material, demolition and construction material shall be used.

20. Prior to the commencement of monsoon season, an intermediate cover of 40-65 cm thickness of soil shall be placed on the landfill with proper compaction and grading to prevent infiltration during monsoon. Proper drainage 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.

(a) The final cover shall have a barrier soil layer comprising of 60 cms of clay/amended soil with permeability less than  $1 \times 10^{-10}$  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.

(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 wall of waste disposal area. The low permeability lining system must have barrier soil layer (clay/amended soil) of minimum 60 cm thickness with permeability not greater than  $1 \times 10^{-10}$  cm per second if, waste reaching the landfill is non-biodegradable and inert. 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/amended soil) having permeability not greater than  $1 \times 10^{-10}$  cm/sec. The highest level of water table shall be at least 2.0 meter below the base of clay/amended soil barrier layer.

(c) Provisions for management of leachates collection and treatment. The treated leachates shall meet the standards laid down in Schedule IV.

(d) Prevention of run-off from landfill area entering any stream, river, lake or pond.

### **Water Quality Monitoring**

23. Monitoring of ground water quality shall be done in cities having population of more than ten lakh during pre-landfill operations, filling and also during operational and post-operational period at such locations preferably, to cover one upgradient and two downgradient monitoring wells.

24. The monitoring schedule for cities having population less than ten lakhs, shall be worked out by Pollution Control Boards in States and Pollution Control Committees in Union Territories in consultation with municipal bodies.

25. Ground water in and around landfill site shall not be used for drinking purposes or otherwise, unless it meets specified standards for that particular use. The ground water quality shall conform to following maximum acceptable limits.

Sl. No.	Parameters	Maximum Acceptable limit
1.	Arsenic	0.02 mg/1
2.	Cadmium	0.01 mg/1
3.	Chromium (hexavalent)	0.02 mg/1
4.	Fluoride	1.5 mg/1
5.	Lead	0.05 mg/1
6.	Mercury	0.001 mg/1
7.	Nitrate	10.0 mg/1
8.	PH	6.5 - 7.5
9.	Conductivity	100-200 u mhos/cm.
10.	Total dissolved solids	500 mg/1
11.	Chlorides	250 mg/1
12.	Sulphates	1000 mg/1
13.	Colour	5 Hazon units
14.	Bio-chemical oxygen demand	30 mg/1 or lower
15.	Chemical oxygen demand	250 mg/1 or lower

#### **SCHEDULE 4**

#### **Standards for Compost**

<b>SCHEDULE 4</b>	
[See Rule 8(3)]	
<b>Standards for Compost</b>	
1. In order to ensure safe application of compost, the following standards for production of compost may be ensured.	
Parameters	Maximum acceptable Concentration (in parts per million)
Arsenic	20
Cadmium	20
Chromium	300
Copper	500
Lead	500
Mercury	10
Nickel	100

Nickel	100
Zinc	2500