

Utility Regulatory Authority
Male',
Republic of Maldives



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**Waste Management Standards:
General Standards and Operational Requirements for Waste
Management Facilities**

Version 1.0, 2022

URA 3002:2022

Table of Contents

1. Introduction.....	3
2. Scope.....	3
3. Exclusion	3
4. General Facility standards.....	4
4.1 Legal requirements.....	4
4.2 General requirements.....	4
4.3 Operational Requirements	5
5. Waste Storage facilities	6
6. Waste Transfer stations.....	6
7. Waste Treatment Facilities.....	7
6.1 Waste Incineration facilities	7
6.2 Composting Facility.....	7
6.3 Anaerobic digestion / biogas production facility.....	8
8. Disposal Facility	8
7.1 Landfill facility.....	8
7.1.1 General Requirements	8
7.1.2 Landfill Operational Requirements.....	9
9. Closure of Facilities.....	11
10. Recordkeeping and Reporting.....	11
10.1 Record Keeping	11
10.2 Reporting.....	12
11. Definitions	13
12. References	16
Annex 1: Information Required in Facility Operation Plan	17
Annex 2: Emergency situations to be addressed in contingency and emergency plan.....	18

1. Introduction

This standard on general standards and operational requirements for waste management facilities provides guidance to facility owners and the operators on the design and operation of municipal solid waste management facilities. Issues of environmental and public health of these facilities are a critical consideration

These standards are formulated and implemented by Utility Regulatory Authority (URA) under the powers vested in it by section 4 (L) of the of Act Number 26/2020 (Utility Regulatory Act).

2. Scope

The requirements of these standards apply to all solid waste management facilities with exceptions of those facilities that have been listed under Section 2 of these standards. The requirements stipulated in this standard are the minimum requirements necessary for design and operation of all facilities subjected to these standards. For the purpose of these standards and the certification process, waste management facilities are classified as follow:

- a) Classification of waste management facilities by scale
 - I. Regional waste management facilities
Waste management facilities that handle, store, process, and discard waste on a regional scale with cutting-edge waste treatment technologies.
 - II. Island waste management facilities
Facilities established at Individual islands, cities, resorts, and commercial islands to collect and store waste. These facilities have limited waste treatment options, therefore waste that cannot be managed there must be transported to regional waste management facilities for processing and disposal.
 - III. Stand Alone facilities.
Specialized Facilities that manage waste substantially independent of the type of facilities stated in part (i) and (ii) of this section.
- b) Classification of waste management facilities by type
 - a) Waste Transfer Facility
 - b) Waste Storage Facility
 - c) Waste Treatment Facility
 - d) Disposal Facility

Waste management facilities might be of a single type or a mix of different types.

3. Exclusion

The following are excluded from regulation under these standards.

- 1) Waste recycling and recovery facilities
- 2) Hazardous and special waste management facilities

4. General Facility standards

4.1 Legal requirements

- a) a) If any of the solid waste management facilities listed below meets the requirements of the Environmental Protection and Preservation Act 4/93, any environmental clearance required by the act and its regulations must be obtained.
- b) The noise levels shall be maintained at the boundaries of the site as stipulated by national standards if available. In the absence of a national standard, "WHO Guidelines for Noise" shall be adhered to.
- c) Effluents or leachate quality should be monitored and treated to conform to the standards tolerance limits as prescribed in a **National Waste Water Quality Guideline 2007**.
- d) Prior to establishment of the facility, approval for the facility design needs to be obtained from URA
- e) Waste management facilities shall be registered and facility operation permit shall be taken as required by the regulation concerning utility operator licensing and facility registration prepared by URA.
- f) Facilities with hazardous waste treatment and storage, recycling and recovery components shall take relevant permits and approvals from relevant authorities.

4.2 General requirements

The following requirements apply to all waste management facilities unless otherwise stated in this standard.

- a) All waste management facilities shall incorporate a collection system designed to collect leachate that maybe associated with incoming waste materials. leachate collection tanks utilized shall be
 - double-walled with an interstitial space;
 - sized appropriately for the facility and volume of waste managed;
 - of material compatible with the expected composition of the leachate; and
 - tested or inspected biennially for leak detection
- b) An efficient storm water management system shall be included in the facility, designed in a manner that storm water discharged from the facility shall be free of components which pose a serious danger to the environment.
- c) The facility shall have a wastewater treatment system for treating the effluent to achieve the **national discharge standards** or the effluent should be treated in a URA licensed waste water treatment facility as per the standards before disposal.
- d) Facility shall have necessary components as appropriate to the allocated area and use, i.e., office building, maintenance shop, vehicle parking area, truck wash bay, wheel cleaning equipment, staff rooms, gate, guard house, fence, green belt, buffer zone, landscaping, facility wide surveillance system and utilities as required.
- e) Facility shall have on-site road ways, odour controlling mechanism and the efficient on-site traffic control system.
- f) The base of the facility enclosure must be a level concrete pad with a minimum depth of 150 mm.
- g) All waste management facilities shall be properly enclosed by a perimeter fence or wall or combination of both with a minimum height of 2.2 meters.
- h) Access points to the facility shall be secured by locked gates or an equivalent access control.

- i) The gate and enclosure width must be sufficient for the waste collection vehicle to empty and return containers to the enclosure without requiring containers to be shuffled either manually or mechanically

4.3 Operational Requirements

The following requirements apply to all waste management facilities unless otherwise stated in this standard.

- a) An operation plan shall be developed for the facilities as per the requirements included in Annex 1 of this standard.
- b) Access points to the facility shall be secured by locked gates or an equivalent access control during times when the facility operator is not present.
- c) Unauthorized access shall be controlled during operating and non-operating hours at the waste reception point to control scavenging activities and prevent the entry of stray animals.
- d) Any infectious waste or hazardous waste should not be accepted into the facility, if the facility is not designed for the purpose. The facility owner and operator shall take all practicable steps to prevent the inclusion of hazardous wastes, into the municipal waste stream being managed by the facility.
- e) Appropriate signage must be placed at the entrance to the facility indicating the following information:
 - Business hours of waste management facility
 - Types of wastes accepted at the facility
 - Fee for disposal of waste
 - A notice stating that unauthorized persons are not allowed
 - Contact details of the facility
- f) Qualified personnel shall be retained to operate solid waste management facilities
- g) Personal Protection Equipment (PPE) appropriate to the materials being handled shall be available at all times for material handling and spill control. During duty hours, the employees shall wear appropriate PPE as required with the type of operation recommended by the relevant authorities
- h) Litter, spills, dust, insects, odor and vectors shall be controlled to prevent sanitary nuisance and unsightly appearance.
- i) The facility shall have a fire protection system / fire control system as per the requirements of relevant authorities
- j) A basic first aid kit with provisions for basic first aid shall be available and maintained at site at all times
- k) A contingency plan shall be in place that covers the machine/vehicle breakdown or any operation interruptions and delay.
- l) A maintenance service shall always be available at the facilities' during operational hours.
- m) Provision shall be made for weighing or measuring all incoming and transferred solid waste from and to the facility.
- n) Daily records of the quantity of solid waste received, the origin of waste, the quantity of solid waste stored, treated/processed, transferred, and disposed should be kept at the facility, depending on the type of facility. In addition, all the records required under waste management service regulation (..) must be kept.
- o) All solid waste leaving a facility shall be transferred to a managing facility that is permitted for solid waste management.

- p) Any major adverse environmental consequences disclosed by the control and monitoring methods must be reported to the URA and other environmental regulatory authorities, and the operator must follow the relevant authority's decision on the kind and timing of corrective measures to be taken. These actions will be carried out at the operator's expense.

5. Waste Storage facilities

In addition to the requirements under section 3 of these standards, the following requirements shall be applicable to the waste storage facilities:

- a) Waste kept in places built for waste storages shall be maintained in rain-proof, flood-proof and animal-proof condition.
- b) Waste shall be kept on a concrete floor with minimum thickness of 150mm.
- c) Where there are requirements to be fulfilled prior to the construction of waste storage places pursuant to any other regulation, such requirements shall be fulfilled.
- d) Permit should be taken from relevant authorities if the storage facility intends to store hazardous and special waste.
- e) Waste shall not be stored for a period of time which results in a condition adversely impacting the environment or public health and safety
- f) All solid waste leaving the storage facility shall be transferred to an appropriate managing facility or a regional waste management facility that is permitted for solid waste management.

6. Waste Transfer stations

In addition to the requirements under section 3 of these standards, the following requirements shall be applicable to the waste transfer stations:

- a) The proposed unloading area in the transfer building shall accommodate at least two times of the hourly-average number of incoming collection vehicles of the normal weekday.
- b) Provisions shall be made for weighing or measuring all incoming and transferred solid waste from and to the transfer facility.
- c) Transfer vehicles/vessels shall be fully covered at loading compartment and leachate collection box shall also be prepared to prevent littering and leachate spill during transportation.
- d) If tipping floors where the waste is temporarily deposited pending transport are used, it shall be designed so that the tipping floor is within a building or covered by a roof to prevent exposure of waste to weather.
- e) All tipping floors should incorporate a collection system to collect leachate that may be associated with incoming waste materials. All leachate collected by transfer stations with tipping floors shall be disposed of in a treatment facility
- f) A waste tracking system shall be used to track waste incoming and leaving the transfer facility. The operator shall use a system of Waste Transfer Notes (WTNs). A copy of each WTN signed at the final treatment or disposal facility shall be returned to the URA as evidence of the waste's proper disposal

upon request. An example of WTN is given in Waste Collection and Transportation Standard (URA3000:2022).

7. Waste Treatment Facilities

In addition to the requirements under 3, the following requirements shall be applicable to the specific waste treatment facilities highlighted below.

6.1 Waste Incineration facilities

Waste incineration facilities shall meet all of the requirements set forth in the national standards developed, or, in the absence of a national standard, the "Directive 2000/76/EC on waste incineration" should be followed.

6.2 Composting Facility

- a) The composting method, processing period, solid waste sorting method, raw materials, and additives, capacity of the facility, total amount of the final product, all machineries and equipment's used in the facility, operating hours, number of working days, number of workers for each duty shall be detailed out in the operations plan for the facility.
- b) Where compost is produced using waste, from the onset, such waste shall be separated from other waste, especially from chemical and plastic waste or waste containing any poisonous substance
- c) Where compost is produced by piling up waste, it must be undertaken having an impermeable surface with a leachate collection mechanism so that the organic fluid generated from the waste pile is prevented from being absorbed into the ground.
- d) Waste piled up for the production of fertilizer shall be enclosed in such a manner whereby animals and organisms are prevented from entering the enclosure. Moreover, the pile shall be covered well by a layer of decomposing dry solids so that the spreading of its odour is prevented.
- e) Waste piled up for the production of compost shall be protectively enclosed so that it is prevented from spreading far and wide after rain.
- f) The facility shall have structures and areas designated for unloading, storage, sorting out, composting, processing, final product storage with all the instruments or devices which must be installed for ventilation, controlling dust, litter and odour.
- g) The composting area's base should be impermeable, and no leachate should be drained into the ground under any circumstances.
- h) Provision shall be made for weighing or measuring all incoming waste for composting.
- i) An adequate buffer zone, shall be maintained for visual screening or reducing scenery and odour problems as prescribed under relevant land use and planning regulations.
- j) The temperature of waste piled up for the production of compost shall be checked regularly and water shall be added to reduce heat where the temperature exceeds limits
- k) The quality of final compost should comply with the relevant local specifications or international standards accepted by relevant government authorities.

6.3 Anaerobic digestion / biogas production facility

- a) The anaerobic digestion method, processing period, solid waste sorting method, raw materials, additives, capacity of the facility, total amount of the final product (gas, organic fertilizers, residues, liquid or effluents), all machineries and equipment to be used in the facility, operating hours, number of working days, number of workers for each duty shall be detailed out in the facility operation plan
- b) The facility should have digester structures, gas collection facilities, gas utilization facilities, or alternative facilities for gas treatment if the amount of gas produced is insufficient for collection and reuse, and areas designated for unloading, storage, sorting out, processing, and final product storage, as well as all instruments or devices required for ventilation, dust, litter, and odor control.
- c) The digesters and gas collection facilities must be fully air tight and gases should not be released without utilization or appropriate treatment.
- d) During the planning and design of the biogas facility, all preventative measures must be considered to prevent mishaps.

8. Disposal Facility

In addition to the requirements under 3.3, the following requirements shall be applicable to the disposal facilities

- a) Facilities shall comply with all the relevant health and safety, and environmental regulations and standards.
- b) Facilities shall be designed to protect surface water, groundwater and the air, by detecting, through monitoring where appropriate, the emission or discharge of contaminants.
- c) New landfills¹ or new operational units at an existing facility, shall have liner and leachate collection systems and appropriate provisions for leachate treatment.
- d) Expansion of an existing plant with verified groundwater pollution may be allowed. It must be proven that the planned expansion activities will not aggravate the existing pollution and that remediation, containment, and/or monitoring of the existing contamination will take place concurrently with the expansion operations. The design for expansion at a facility with existing contamination must provide:
 - 1) sufficient environmental monitoring to assess the impacts of the expansion prior to a point or points of compliance and provide for the capability of remediation within property boundaries if necessary;
 - 2) any additional monitoring systems necessary to monitor the proposed expansion area independently of preexisting operational units (monitoring systems beneath the liner of the expansion area, expanded monitoring well networks, tracer systems etc.);
 - 3) demonstration through modelling, or other means, that existing contamination will not be worsened by the expansion

7.1 Landfill facility

7.1.1 General Requirements

- a) Landfills shall not be established in inhabited islands.

¹ Land fill does not imply land reclamation using waste

- b) Prior to the establishment of the facility, hydrogeological investigations shall be conducted for the proposed landfill site, including groundwater levels, quality of groundwater and surface water, topography, public and private water wells within 30-meter radius of the landfill site.
- c) Prior to the establishment of the facility, geotechnical Investigation shall be conducted exploring the subsurface conditions, groundwater table conditions, soil permeability, landslide areas, sink holes, fault areas, foundation analysis to support the loads and stress from the landfill and sub-grade settlement after land filling.

d) Landfills shall have a Liner System where liners shall be constructed of materials that have appropriate properties to prevent failure due to physical contact with the waste or leachate to which they are exposed. Liners must be installed upon the geologic condition that can support the applied stress and to cover all surrounding earth which could come into contact with the waste or leachate. Any environmentally accepted technology which totally prevents pollution by way of the leachate coming into contact with the groundwater shall be applied.

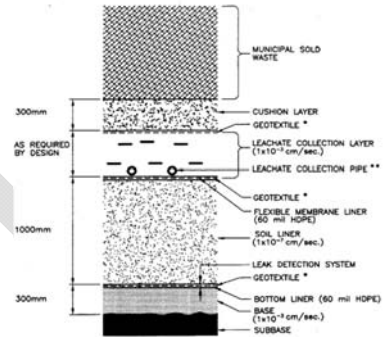


Figure 1: Cross section of a typical landfill liner system

e) Landfills shall have a Leachate collection and removal system which shall be constructed of materials that are chemically resistant to leachate and have sufficient mechanical properties to prevent collapse under pressure exerted by overlying wastes, cover materials, and by any equipment used at the landfill.

f) The facility shall have a Leachate treatment system to control and treat the leachate from the leachate collection and removal system. The effluent shall be treated to achieve the national waste water standards (no.).

g) Landfills shall have gas monitoring and control system installed that minimize both gas migration and emissions. The system shall be able to limit the concentration of methane gas as per national or international standards accepted by relevant environmental authorities.

h) Landfill shall have a storm water management system that shall include detention/retention ponds and drainage ways and shall be able to, at a minimum, prevents storm water from running on to those portions of the landfill which have not been closed. And this system shall collect and control, at a minimum, the volume of runoff from a storm event and prevent the mixing of storm water with leachate

i) The fire control system in the landfill facility shall control surface fires and sub surface fires

j) The land fill final cover system shall be placed above the waste material to control the amount of surface water infiltration, limit erosion and sedimentation and control the release of methane gas from the facility and protect the underlying waste from exposure. The cover system shall consist of a grading pad, low hydraulic conductivity layer, drainage layer and vegetative layer.

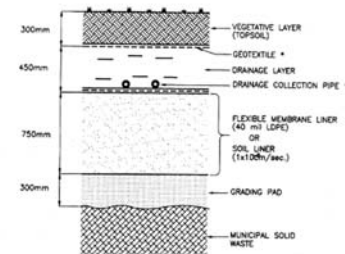


Figure 2: Cross section of a typical final cover system

7.1.2 Landfill Operational Requirements

a) Landfills shall have waste inspection facility to monitor waste brought in for landfill, office facility for record keeping and shelter for keeping equipment and machinery including pollution monitoring equipment's

- b) To prevent unauthorized waste disposal, public access and receipt of wastes shall occur only when a supervisor is on duty. Owners/operators must control public access and prevent unauthorized vehicular traffic and illegal dumping of waste by using official barriers, natural barriers or both as appropriate to protect human health and the environment. Landfill site shall be fenced/hedged and provided with proper gate to monitor incoming vehicles or other mode of transportation.
- c) During Landfill operation, the first layer of waste placed above the liner and leachate collection system shall be at least 1 meter in compacted thickness and consist of selected waste containing no large rigid objects that may damage the liner or leachate collection system.
- d) During landfill operation, solid waste shall be formed into cells to construct horizontal lifts. The waste shall be spread as a thin layer as practical before the next layer is applied.
- e) The daily cover shall be applied at least once per day of operation and this cover must be at least 15 cm of thickness. If necessary, it should be covered at more frequent intervals to control disease vectors, fires, odour, etc. (here disease vectors mean any rodents, flies, mosquitoes or other animals including insects, capable of transmitting disease to humans)
- f) Whenever, leachate or any wastewater contaminated with the solid waste is meant to be discharged into the environment, it shall be treated to achieve the national wastewater standards (S.No.).
- g) Gas monitoring for landfill receiving organic waste.
 - a. Location of gas monitoring: 4 sides of property boundary, at least 4 monitoring points, and inside the property at least 1 monitoring point.
 - b. Random sampling the gas at least twice a year.
 - c. If the measured methane gas concentrations exceed those specified in the national/international standards accepted by the relevant authorities, corrective action shall be initiated immediately.
- h) When practicing active gas extraction method, a suitable technology shall be applied for prevention from over extraction of landfill gases. Efficiency of the gas extraction system should be checked regularly.
- i) Water Quality Monitoring Requirements:
 - a. The operator shall perform random sampling and analysis of monitoring well, surface water, leachate, and effluent from waste-water treatment plant at least semiannually.
 - b. Groundwater monitoring: The monitoring well shall be installed to detect leachate releases. At least 3 monitoring wells shall be selected, out of which 2 wells in the down gradient direction and 1 well in the up-gradient direction at the boundary of the site.
 - c. Surface water monitoring: All surface water bodies that may be affected by a contaminant release from the facility shall be monitored. In bodies of standing water, at least 1 representative monitoring point shall be located as close as practical to the facility.
 - d. Assessment monitoring and corrective action. If monitoring parameters are detected in concentrations, which are significantly above background water quality, they shall be checked and investigated and initiate corrective actions immediately.
- j) For Fire protection, the facility shall establish and maintain a fire prevention and remediation plan as per the requirements of the relevant authority. All site personal need to be aware of and trained in its application.
- k) A contingency plan should be in place to tackle any accident or disaster such as fire, explosion, leachate leakage, spills, flood, uncontrolled gas emissions, and describe appropriate remedial measures required to prevent damages to the landfill and the surrounding.

- l) The post-closure care of landfill site shall be conducted for at least 10 years and long-term monitoring /care plan shall consist of the following
 - a. Maintaining the integrity and effectiveness of final cover, making repairs and preventing run-off and run-off from eroding or otherwise damaging the final cover.
 - b. Maintaining leachate collection system to achieve the limits of waste water quality standards
 - c. Monitoring of groundwater in accordance with the requirements and maintaining groundwater quality
 - d. Maintaining and operating the landfill gas collection system to meet the standards
- m) Use of closed landfill sites for activities that involve human or otherwise shall be considered after ensuring the gaseous and leachate analysis comply with the standards laid down for such purposes.

9. Closure of Facilities

(a) All facilities shall be closed in a manner that:

- (1) Minimizes the need for further maintenance related to the waste facility; and
- (2) Controls, minimizes, or eliminates post-closure emission or discharge of waste, waste constituents, leachate, contaminated runoff, and/or waste decomposition products into the groundwater, surface waters or the atmosphere. Such actions shall be completed to the extent necessary to prevent threats to public health and safety and the environment.

(b) Facilities shall be closed according to the approved closure plan and as per the relevant regulations. In case there are no relevant regulation or an approved closure plan, the operator shall contact URA for guidance on closure of the facility.

10. Recordkeeping and Reporting

10.1 Record Keeping

- a) The records identified in this section shall be maintained by the owner and/or the operator of the facility. Such records shall be made for review upon request by the URA
 - 1. All information that demonstrates compliance with these standards, relevant regulations and conditions of the operating license and permit
 - 2. Copies of any reports, records, data or other information required to be submitted to the URA as a requirement of the permit or under relevant regulations and standards.
- b) All records shall be kept from the date on which the application for initial certification/license/permit is signed through the date of closure of the facility/cancellation of permit/license/registration, with the following exception of the landfills. For landfills, such records shall be maintained through the post-closure period and shall cease upon written notification by the URA of the completion of post-closure care
- c) Unless otherwise stated in any other regulation or any term or condition of a permit, the record keeping and reporting mechanism in Table 1 shall be followed.

10.2 Reporting

- a) The owner and/or operator the facility, shall make reports to the URA according to the relevant regulations.
- b) Each owner and operator shall ensure that activities conducted as a facility comply at all times with the following standards.
 - (1) The owner and/or operator shall submit a report to the URA within five working days of the receipt of any information indicating non-compliance with any term or condition of permit, relevant regulations and standards
 - (2) Report of discharge.
Any unpermitted discharge from a facility or facility activities which poses a threat to public health, public safety, or the environment shall be reported within 24 hours to the URA. Additional notification shall be made to, the appropriate emergency response authorities and other relevant local and national authorities.
Within 7 days of a discharge, a written report shall be submitted to the parties required to be notified as per the relevant regulations. The report shall identify the discharge that occurred, the type, quantity, and quality of waste discharged, and the actions taken by the owner, operators, or other responders to correct the problem
 - (3) Accident reporting
Unless stated otherwise in these standards, in case of an accident at any solid waste processing or treatment or disposal facility or landfill site, the Officer- in- charge of the facility shall report to the URA and relevant authorities and the URA shall review and issue instructions if any, to the in- charge of the facility
- d) Unless otherwise stated in any other regulation or any term or condition of a permit, the record keeping and reporting mechanism in Table 1 shall be followed.

Table 1: Record Keeping and Reporting requirements

Data	Record keeping frequency	Reporting frequency
Transfer Stations		
Quantity of solid waste received and the origin of waste	Daily	Biannually
Quantity of solid waste transferred to disposal/processing	Daily	Biannually
Storage		
Quantity of solid waste received and the origin of waste	Daily	Biannually
Quantity of solid waste stored	Monthly	Biannually
Quantity of solid waste transferred to disposal site/processing	Daily	Biannually
Processing facilities		
Quantity of waste received at processing facilities	Daily	Biannually
Quantity of end products produced at the facility	Monthly and per batch	Biannually
Quantity of end products sold	Monthly	As required by URA
Quantity of reject material	Monthly	As required by URA
Any irregularities noticed	Monthly	As required by URA
Environmental Monitoring records	As per the standards	Biannually
Disposal sites		
Quantity of waste disposed	daily	Biannually

Environmental Monitoring Records	As per the standards	Biannually
Financial Aspects		
Cost of operations and maintenance for services managed by the operator (recurrent fuel, electricity, and any other consumables, maintenance cost, human resource, etc.,)	Monthly	Annually
Cost recovery for MSWM service through tax, user fees, grants & subsidies etc.,	Quarterly	Annually
Allocation of revenue and capital budget	Quarterly	Annually
Complaints		
Number of complaints received	Daily	As required by URA
Type of complaints received	Daily	As required by URA
Time taken for issues to be resolved and appropriate actions taken	Daily	As required by URA
Legal matters		
Number of cases filed in courts for violation of applicable laws and regulations	Monthly	As required by URA
Corrective measures taken	Monthly	As required by URA
Other records		
Maintenance logs	Daily	As required by URA
Records of incidents and accidents	Daily	As required by URA
Inspection of machinery and equipment Logs	As required	As required by URA
Compliance inspection	Annually	As required by URA
Health and Safety inspection	As per the standards	As required by URA
Training records	Annually	As required by URA
Inventory	Monthly	NA

11. Definitions

Active life: the period of operation beginning with the initial receipt of solid waste and ending at completion of closure activities.

Cell: a discrete, confined portion of compacted solid waste within a landfill. A cell is a subpart of an operational unit within a landfill

Closure: the activities and requirements that a facility shall complete, as prescribed by the approved Facility Management Plan or otherwise by the Secretary, when a portion of the facility or the entire facility is no longer receiving, processing or disposing of solid waste. "Clean Wood" means untreated and unpainted wood including dimensional lumber, and other natural woody debris. This term includes trees, tree stumps, brush and limbs (≥ 1 inch in diameter), root mats, and logs.

Composting: the controlled aerobic biological decomposition of organic matter through active management to produce compost (as that term is defined in 10 V.S.A. §6602 and subchapter 11 of these Rules)

Cover Material: earthen material, or other material approved by the Secretary, that is used to cover compacted solid wastes in a landfill in order to control fire, disease vectors and odors, to prevent blowing litter, to discourage scavenging by animals, and to assure an aesthetic appearance

Discharge: the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a waste, or waste constituent, into or on any land or water, or into the air.

Disposal: the discharge, deposit, injection, dumping, spilling, leaking or placing of any solid waste into or on any land or water so that such solid waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any ground or surface waters.

Domestic Wastes: wastes originating from bathrooms, kitchens, showers, toilets or other sanitary facilities (public or private) regardless of the degree of treatment.

Facility: all contiguous land, structures, other appurtenances and improvements on the land, used for treating, storing or disposing of solid waste. A facility may consist of several treatment, storage or disposal operational units.

Final Closure: the completion of all closure activities.;

Hazardous Waste: any waste or combination of wastes of a solid, liquid, contained gaseous, or semi-solid form, including but not limited to those which are toxic, corrosive, ignitable, reactive, strong sensitizers, or which generate pressure through decomposition, heat or other means, which may cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, taking into account the toxicity of such waste, its persistence and degradability in nature, and its potential for assimilation, or concentration in tissue, and other factors that may otherwise cause or contribute to adverse acute or chronic effects on the health of persons or other living organisms, or any matter which may have an unusually destructive effect on water quality if discharged to ground or surface waters.

Incinerator: any structure or furnace in which combustion takes place, the primary purpose of which is the reduction in volume and weight of a solid waste and is considered a disposal facility

Leachate: liquid that passes through or emerges from a solid waste, such as dissolved, suspended or miscible materials, chemicals or biologic products, or other materials that have been derived from the waste.

Organic Solid Waste: any solid waste that is a carbon-based plant or animal material or byproduct thereof which will decompose into soil and is therefore free of non-organic materials and contamination. Examples of organic materials include food residuals, leaf and yard residuals, grass clippings, and paper products. Domestic waste (human and pet feces) is not included in this definition.

Operator: the person responsible for the overall operation of the facility and whose actions or failure to act may result in non-compliance with these Rules or the facility certification. Operators must have the minimum required training as required by the training plan submitted with the facility application for certification.

Post-Closure: the regulated time period following landfill closure.

Sanitary Landfill or Landfill: a disposal site employing an engineered method of disposal of solid waste on land in a manner that minimizes environmental hazards by spreading the solid waste in thin layers, compacting the solid waste to the smallest practical volume, and applying and compacting cover material at the end of each operating day

Storage: the actual or intended containment of wastes, either on a temporary basis or for a period of years, in such a manner as not to constitute disposal of such wastes.

Transfer: to carry, remove, transport, or shift solid waste from one place, facility, vehicle, trailer, or container to another.

Transfer Stations: Facilities where solid waste is collected, aggregated, sorted, stored and/or processed for the purpose of subsequent transfer to another solid waste management facility for further processing, treatment, transfer or disposal.

Treatment: any method, technique, or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous or solid waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste safer for transport, amenable for recovery, storage, or reduced in volume, or for hazardous wastes, so as to render such waste non-hazardous.

Vectors: organisms or media (e.g., air, water, soil) that serve to transmit disease organisms.

Waste: a material that is discarded or is being accumulated, stored or physically, chemically or biologically treated prior to being discarded or that has served its originally intended use and is normally discarded or that is a manufacturing or mining by-product and is normally discarded.

Municipal Solid Waste: The discarded materials, substances or objects which originate (or refuse) from domestic, business and industrial sources, including household wastes which are typically disposed of in municipal type landfills, but not including industrial hazardous or 'special wastes.

Compost: a relatively stable decomposed/processed product resulting from composting with similar characteristics as humus, made from constituents of plants, animal or biodegradable municipal solid waste/ agricultural waste which contain considerable amounts of nutrients. Composting is a degradation process brought about by micro-organisms.

Special wastes: Wastes (not hazardous) that require special handling considerations during disposal.

12. References

Central Environmental Authority. (n.d). Technical Guidelines on Solid Waste Management in Sri Lanka. Battaramulla, Sri Lanka: Hazardous Waste Management Unit.

Guidelines and Design Standards for Waste Management Facilities (2001), Community Service Department, Oshwa City, Canada.

Municipal Solid Waste Management Manual (2016), Central Public Health and Environmental Engineering Organization, Ministry of Urban Development, India

Council directive 1999/31/EC on the landfill of waste' (1999) Official Journal L182, p. 1-19.

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Annex 1: Information Required in Facility Operation Plan

Each WMF shall prepare a written Operations Plan that includes operation, maintenance and emergency response procedures and drawings and description for safe and efficient operations.

The minimum requirements that should be addressed in the Facility Operations Plan is listed below

1. Site security, manpower, supervision, access and signage
2. Unacceptable/prohibited activities e.g., no open burning or smoking on-site
3. Control systems for nuisance factors including vectors, rodents, scavenging, illegal dumping, malodor, dust and litter
4. Description of acceptable and unacceptable wastes, and procedures for diverting restricted waste before and after unloading.
5. Operating methods for each component of the facility, including waste-screening methods, weighing procedures, tipping floor operations, machinery/vehicle loading, onsite and offsite litter cleanup, and wastewater collection system operations.
6. Description of maintenance procedures for each component, including the building, mobile equipment, utilities, and landscaping.
7. Safety rules and regulations.
8. Environmental monitoring program(s)
9. Facility operating schedule, including days of the week, hours each day, and holidays
10. Site and equipment maintenance schedule / regime
11. Staffing plan that lists duties by job title, minimum staffing levels, and typical work schedules.
12. Staff/operator training in facility operations, & environmental health and safety
13. Record keeping and Reporting procedures
14. Contingency and Emergency plans (A list of emergency situations that must be addressed in the emergency plan are given in annex 2)
15. Contact information for the owner/operator and site managers / supervisors
16. On-going Quality Control / Quality Assurance protocol (Plan, do, check, repair/revise/repeat where appropriate).
17. A copy of the facility operation permit
18. Depending on the type of facility the requirements included in section 6.3.1(c), 6.5.1(a), 7.3.2 (a)

Annex 2: Emergency situations to be addressed in contingency and emergency plan

Operators should prepare for emergencies and include emergency procedures in their written operations plans. At minimum, the following emergency events should be anticipated:

1. Power failure: The plan should address how to record customer information, collect fees, and load transfer vehicles during a power outage. Larger facilities shall have backup power generators so at least some operations can continue during a power failure.
2. Unavailability of transfer vehicles/vessels/disposal facilities: The plan should address what to do if bad weather, road closures, or strikes prevent transfer vehicles from arriving at the facilities. The plan should also address when the facilities should stop accepting waste deliveries, if the waste cannot be hauled out in a timely manner.
3. Unavailability of scales: The plan should describe recordkeeping and fee assessment in the event that scales are inoperable.
4. Fire: Fire response and containment procedures should address fires found in incoming loads, temporary storage at the facilities, compaction equipment, transfer vehicles, and other locations. Fire procedures shall focus on protecting human health and calling professional fire departments. Ceiling sprinkler systems, fire hoses or other firefighting equipment (as required by the relevant authorities) shall be readily available at facilities.
5. Spill containment: Spills can occur from waste materials or from vehicles delivering waste. Spill containment plans should address spill identification, location of spills, deployment of absorbent materials, and cleanup procedures. For large spills, the plan should also address preventing the spill from entering storm drains or sewers.
6. Discovery of hazardous materials: Hazardous materials plans should include methods to identify and isolate hazardous materials, temporary storage locations and methods, and emergency phone numbers.
7. Injuries to employees or customers: The plan should include first aid procedures, emergency phone numbers, and routes to nearby hospitals.
8. The contingency plan shall address any additional anticipated events listed in any other section of these standards.