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UR.-Nr. /2018 des amtierenden Notars Friedrich Harre mit dem Amtssitz in 21244
Buchholz/Norheide

Tatsachenbestätigung:

1.

Vorwort:

Dieses Dokument dient nach Mitteilung meines Auftraggebers, der Firma ALENGO, dem Zweck, darzustellen, dass es gutachterliche Stellungnahmen und Aussagen zu der Technologie der Müllkonvertierung oder auch mit MK-Pallettierung oder auch mit Brikozit oder auch mit Brikothem: gibt.

Desweiteren soll dieses Dokument nach Angabe von ALENGO feststellen, dass die von ALENGO gemachten Aussagen (in Abschnitt1) Auszüge aus einem Gutachten (in Abschnitt 2) sind. Damit zeigt ALENGO, dass die Technologie erprobt und überprüft und begutachtet ist. ALENGO stellt dem Kunden lediglich die nachfolgend dargestellten Auszüge aus besagtem Gutachten zur Verfügung. Das dient ALENGO nach eigenen Angaben ausschließlich der Sicherung der Technologie, welche maßgeblich auf die Verwendung und der Rezeptur von verschiedenen, handelsüblichen Zuschlagstoffen beruht.

Dieses Dokument soll nur auf Anweisung von ALENGO an Dritte heraus gegeben werden.

2.

Gegenstand meiner Tatsachenfeststellung:

Mir wurden von der Firma ALENGO Kopien von Schriftstücken in einem Ordner vorgelegt. Darin befindet sich unterteilt in zwei Abschnitte folgendes:

Abschnitt 1:

Im ersten Abschnitt dieses Dokumentes befindet sich die Unterlage „Waste Processing Plan“.

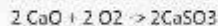
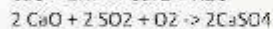
Abschnitt 2:

Im zweiten Abschnitt befinden sich Abbildungen von Professor Dr. Thome-Kozmiensky zum Gutachten über das MK-Pellet-Verfahren zur Brennstoffherstellung aus unsortierten Haus- und Gewerbeabfällen, hier "Brikozit" genannt.

3.

In vorgenanntem Abschnitt 1 auf Seite 27 findet sich folgender Text:

... pressing takes place hermetically sealed and under high pressure. In this oxygen-deficient atmosphere and temperatures of over 100 °C, especially halogens and SO² are first released and then compounded, for instance:

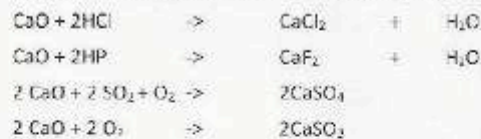


... this conversion is brought forward and accelerated by the catalysts admixed. Degraded material produced while pelletising, is fed back into the rotary drum and pressed again. In combination with the heating, the shift of the ph-value by the chemical process, causes the

optimal hygienisation of the product, thus effectuating - together with the drying - an unlimited storability. When stored sheltered outside for more than three years, no biological reaction processes such as mildew or self-heating were observed.
... the heavy metals integrated chemically are not leachable from the combustion products like Puzolanas and cinder under ecological conditions.
... the pollutants of the WP Fuel, of the slack gases emitted and of the combustion residues, have been analysed repeatedly by external analyses of scientific institutes and chartered experts ...

Zu dieser Textpassage stellt mir, dem amtierenden Notar, die Firma ALENGO folgende Übersetzung in die deutsche Sprache zur Verfügung:

... die Pressung erfolgt unter Sauerstoffabschluss und bei hohem Druck. Durch diese reduzierende Atmosphäre und Temperaturen von über 100° C werden vor allem Halogene und SO₂ zunächst freigesetzt und anschließend gebunden, zum Beispiel:



... diese Umwandlung wird durch die beigemengten Katalysatoren begünstigt und beschleunigt. Bei der Pelletierung entstehendes Ausschussmaterial wird in die Mischtrommel zurückgeführt und noch einmal pelletiert. Gemeinsam mit der Erhitzung führt die durch die chemische Verarbeitung verursachte Verschiebung des pH-Werts zur optimalen Hygienisierung des Produktes, wodurch gemeinsam mit der Trocknung eine unbegrenzte Haltbarkeit erreicht wird. Bei der Lagerung im Freien unter Dach wurden über einen Zeitraum von mehr als drei Jahren keinerlei biologische Reaktionsprozesse, wie Schimmel oder Hitzebefall, festgestellt.

... die chemisch eingebundenen Schwermetalle sind aus den Verbrennungsprodukten, wie Puzolanas und Schlacke, unter ökologischen Bedingungen nicht auslaugbar.

... die Schadstoffgehalte des MK-Brennstoffes, der emittierten Rauchgase und der festen Verbrennungsrückstände wurden mehrfach durch externe Analysen wissenschaftlicher Institute und vereidigter Sachverständiger untersucht ...

4. Tatsachenbestätigung:

Ich, Notar Friedrich Harre mit dem Amtssitz in 21244 Buchholz/Nordheide, Innungsstraße 9, bestätige aufgrund persönlicher Inaugenscheinnahme in meinem Hause am 14. Mai 2018, dass sich die Übersetzung (von wenigen redaktionellen Abweichungen abgesehen) unter

vorstehender Ziffer 3, auf den mit „129“ und „130“ beschriebenen Seiten des Abschnitts 2
dokument von Professor Dr. Thome-Kozmiensky zum Gutachten über das MK-Pellet-
Verfahren) befindet.

Buchholz, den 14. Mai 2018


Harre, Notar



Urkunden-Nummer 149/2018



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2.

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Mir wurden von der Firma ALENGO Kopien von Schriftstücken in einem Ordner vorgelegt. Darin befindet sich unterteilt in zwei Abschnitte folgendes:

Abschnitt 1:

Im ersten Abschnitt dieses Dokumentes befindet sich die Unterlage „Waste Processing Plan“.

Abschnitt 2:

Im zweiten Abschnitt befinden sich die Abbildungen des Untersuchungstests von CHEMISCH-TECHNOLOGISCHES LABORATORIUM, Dr. WOLFGANG MELZER, ÖFFENTLICH BESTELLTER UND VERDICTIGSTER HANDELSCHEMIKER DER FRIHLIEN HANSESTADT BREMEN zur Bestimmung und zur Prüfung der Presslinge (MK-Pellets) auf Schadstoffe.

3.

In vorgenanntem Abschnitt 1 auf Seiten 29 und 30 findet sich folgender Text:

Analysis of the WP fuel pellets

Substance	Proportion	Method of Determination
water	8.7%	DIN 51718

Heavy Metals

Heavy Metals	In WP, ppm	In Stack Gas
lead	0.03	unvariable
cadmium	0.003	unvariable
chromium	0.045	unvariable
mercury	unvariable	unvariable
zinc	0.110	0.02 ppm
nickel	0.01	unvariable
arsenic	unvariable	unvariable

Hierzu gibt mir ALENGO folgende Übersetzung in die deutsche Sprache:

Analyse der MK-Brennstoff-Pellets

Substanz	Anteil	Bestimmungsverfahren
Wasser	8,7 %	DIN 51718
Puzolanas	34,6 %	DIN 51719
flüchtige Bestandteile	40,2 %	Ermittlung unter Luftabschluss nach DIN 51720
Brennwert	15,018 kJ	nach DIN 51900
brennbarer Anteil	56,7 %	ermittelt durch Berechnung
Koks	51,1 %	ermittelt durch Berechnung
fixer Kohlenstoff	16,5 %	ermittelt durch Berechnung
oxidativer Glühverlust	66,13 %	Ausglühen bei 800° C
Schwefel	0,3 - 0,6	
Chlor (gesamt)	0,3 - 0,5	

Analyse der Rauchgase
Verbrennung unter Luftüberschuss bei 900° C)

Substanz	Anteil in %
SO ₂	0,08
berechnet als S	0,04
Gesamtchlor	< 0,1
NO _x	3,31
berechnet als N	1,008
berechnet als C	32,0

Vergleich mit Kohle, Erdgas und Heizöl

	Kohle	Erdgas	Heizöl (EL)	Heizöl (S)	MK-Pellets
Schwefel	0,8 % - 1,5 %	als H ₂ S je nach Provenienz	0,5	2,8	0,04
Stickstoff	1,0 % - 1,5 %	7 % - 1,5 %	0,2 %	0,5 %	1 %
Chlor	0,1 %	< 0,1 %	< 0,1 %	< 0,1 %	< 0,1 %

puzolanes	34.6 %	DIN 51719
volatile components	40.2 %	determ. hermetically sealed acc. to DIN 51720
fuel value	15,018 KJ	acc. to nach DIN 51900
combustible content	56.7 %	determ. by calculation
coke	51.1 %	determ. by calculation
fixed carbon	16.5 %	determ. by calculation
oxidative loss on ignition	66.13 %	annealing at 800°C
sulphur	0.3 - 0.6	
chlorine (in total)	0.3 - 0.5	

Analysis of Stack Gases
(combustion with excess air at 900°C)

Substance	Proportion in %
SO ₂	0.08
expressed as S	0.04
total chlorine	< 0.1
NO _x	3.31
expressed as N	1.008
expressed as C	32.0

Comparison with Coal, Natural Gas and Heating Oil

	Coal	Natural Gas	Light Fuel Oil (EL)	Heavy Fuel Oil (S)	WP Pellets
sulphur	0.8% - 1.5%	as H ₂ S depending on provenance	0.5	2.8	0.04
nitrogen	1.0% - 1.5%	7% - 1.5%	0.2 %	0.5 %	1 %
chlorine	0.1 %	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %

Schwermetalle

Schwermetalle	in MK-Pellets, ppm	im Rauchgas
Blei	0,03	nicht nachweisbar
Cadmium	0,003	nicht nachweisbar
Chrom	0,045	nicht nachweisbar
Quecksilber	nicht nachweisbar	nicht nachweisbar
Zink	0,110	0,02 ppm
Nickel	0,01	nicht nachweisbar
Arsen	nicht nachweisbar	nicht nachweisbar

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Buchholz, den 14. Mai 2018

Harre, Notar



Urkunden-Nummer 150/2018



150
UR-Nr. /2018 des amtierenden Notars Friedrich Harro mit dem Amtssitz in 21244
Buchholz/Norheide

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Abschnitt 2:

Im zweiten Abschnitt befinden sich die Abbildungen von Dipl. Ing. Andreas Schmidt der Firma Thyssen Sonnenberg GmbH, über das MK Pellet Verfahren zur Brennstoffherstellung aus unsortierten Haus- und Gewerbeabfällen, hier "Brikozi" genannt.

3.

In vorgenanntem Abschnitt 1 auf Seiten 29 und 30 findet sich folgender Text:

... in contrast to the clearly hyperstoichiometric air supply in waste incineration plants, the combustion of WP pellets gets by on low excess of air.
... no chlorine corrosion takes place ... extensive inspections have shown that the chlorine compounds are thermally stable up to almost 1,800 °C. Besides, in the firebed no reactive water is available for dissolution ... without free chlorine radicals, no chlorinated hydrocarbons - especially no dioxins -, and also no metal chlorides can form ...
... according to a research report of the University of Bremen, the softening point of WP Puzolanas is 1,010 °C up to 1,030 °C. At the same time, the leachability of WP Puzolanas has

been examined. Their eluat data stay well (partly considerably) below the figures proposed in North Rhine-Westfalia for dump category 2 ...

... by reason of the physical compound of all components in the pellets, a considerably lower dust loading in firing and boiler rooms can be anticipated. Therefore, no problems regarding adhesion are to be expected under elimination of reaction and condensation water ...

... during pellet production, via the mixture adjusted, ... a chemical and physical compound of the pollutants is achieved. The chemical reactions match with those typically going on during the scrubbing process in flue gas purification plants after combustion ...

... via admixture of coal the diffusion resistance, especially of the plastics contained in the waste, are resolved by the volatile components of the coal.

Therefore, the macromolecule e.g. of polymers, can be split up with the aid of catalysts at relatively low temperatures. The chlorine radicals thus released can be compound via calcium carbonate, e.g. CaCl_2 ...

... the emissions during the pre-treatment of waste are negligible due to the low temperatures ...

Zu dieser Textpassage stellt mir, dem amtierenden Notar, die Firma ALENGO folgende Übersetzung in die deutsche Sprache zur Verfügung:

... im Gegensatz zur deutlich überstöchiometrischen Luftzufuhr bei Müllverbrennungsanlagen kommt man bei der Verbrennung von MK-Pellets mit geringem Luftüberschuss aus.

... Chlorkorrosionen kommen nicht vor ... eingehende Untersuchungen haben gezeigt, dass die Chlorverbindungen bis nahezu 1.800°C thermisch stabil sind. Außerdem ist im Glutbett kein reaktionsfähiges Wasser zur Auflösung vorhanden ... ohne freie Chlorradikale können sich keine chlorierten Kohlenwasserstoffe - insbesondere keine Dioxine - und auch keine Metallchloride bilden ...

... gemäß einem diesbezüglichen Forschungsbericht der Universität Bremen liegt der Erweichungspunkt von MK-Puzolanas bei 1.010°C bis 1.030°C . Gleichzeitig wurde die Auslaugbarkeit der MK-Puzolanas untersucht. Ihre Eluatwerte unterschreiten (z. T. deutlich) die in Nordrhein-Westfalen für die Deponie-Klasse 2 vorgeschlagenen Werte ...

... aufgrund der physikalischen Bindung aller Bestandteile in den Pellets ist mit erheblich geringerer Staubbelastung in den Feuerungs- und Kesselsräume zu rechnen. Aus diesem Grund sind unter Ausschluss von Reaktions- und Kondenswasser keine Probleme mit Verklebungen zu erwarten ...

... während der Pelletierung wird mit Hilfe der eingestellten Mischung ... eine chemische und physikalische Bindung der Schadstoffe erreicht. Die chemischen Reaktionen entsprechen denen, die üblicherweise in Waschstufen von Rauchgasreinigungsanlagen nach der Verbrennung ablaufen ... mittels Beimischung von Kohle wird der Diffusionswiderstand,

insbesondere der im Müll enthaltenen Kunststoffe, durch die flüchtigen Bestandteile der Kohle überwunden.

Femzufolge können die Makromoleküle, z. B. von Polymeren, mit Hilfe von Katalysatoren schon bei relativ geringen Temperaturen aufgespalten werden. Die somit frei werdenden Chlorradikale können durch den Kalk, z. B. CaCl_2 , gebunden werden ...

... die Emissionen bei der Vorbehandlung der Abfälle sind aufgrund der geringen Temperaturen vernachlässigbar ...

4. Tatsachenbestätigung:

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Buchholz, den 14. Mai 2018

Harre, Notar



Ministry of Environment, Forest and Climate Change (MoEFCC)

Duties of Ministry of Environment, Forest and Climate Change (MoEFCC):

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

- 1) Ministry of Housing & Urban Affairs
- 2) Ministry of Rural Development
- 3) Ministry of Chemicals and Fertilizers
- 4) Ministry of Agriculture
- 5) Central Pollution Control Board
- 6) Three State Pollution Control Boards or Pollution Control Committees by rotation
- 7) Urban Development Departments of three State Governments by rotation
- 8) Rural Development Departments from two State Governments by rotation
- 9) Three Urban Local bodies by rotation
- 10) Two census towns by rotation
- 11) FICCI, CII
- 12) Two subject experts

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

Actions Recommended for MoEF&CC for implementation of the Rule:

Ministry of Environment, Forest and Climate Change (MoEF&CC) being overall responsible for monitoring of the implementation of the Rules, MOEF&CC may take up this work immediately by inviting all stakeholders to appraise them of their roles and request them to plan & strategise implementation of the functions entrusted to them. Unless all stakeholders come on board and simultaneously plan for the activities to be undertaken by them, it would not be possible to implement the Rules effectively in the given time frame.

Soon after the first meeting, in initial six months, the monitoring committee may be convened on a bi-monthly basis to take a stock of the situations and ascertain whether all the stakeholders listed in Rules '5' to '18' have initiated the measures entrusted to them followed by half yearly review meeting in first two years to review the implementation of the Rules. Annual review may be taken only thereafter. The MoEF&CC may also consider rolling out the rules in all the states by organizing state level sensitization workshops simultaneously as time is running out.

Ministry of Housing & Urban Affairs (MoHUA)

Duties of Ministry of Housing & Urban Affairs (MoHUA):

(1) The Ministry of Housing & Urban Affairs (MoHUA) shall coordinate with State Governments and Union territory Administrations to:

- (a) take periodic review of the measures taken by the states and local bodies for improving solid waste management practices and execution of solid waste management projects funded by the Ministry and external agencies at least once in a year and give advice on taking corrective measures;
- (b) formulate national policy and strategy on solid waste management including policy on waste to energy in consultation with stakeholders within six months from the date of notification of these rules;
- (c) facilitate States and Union Territories in formulation of state policy and strategy on solid management based on national solid waste management policy and national urban sanitation policy;
- (d) promote research and development in solid waste management sector and disseminate information to States and local bodies;
- (e) undertake training and capacity building of local bodies and other stakeholders; and
- (f) provide technical guidelines and project finance to states, Union territories and local bodies on solid waste management to facilitate meeting timelines and standards.

Actions recommended on priority for implementation of the Rule:

1. MoHUA may immediately appoint a team of consultants/experts to prepare draft national policy and strategy on Solid Waste Management including policy on waste to energy within three months and organise stakeholder consultations inclusive of a few state representatives and experts to critically look at the practicability of policy & strategy prepared by the ministry before notifying the policy and strategy.
2. Issue suitable guidelines to the States/UTs to prepare similar policy and strategy for their respective states. This need to be done in a time bound manner as the timeline given for this activity is already over.
3. MoHUA may organise state level or regional level training and capacity building programs for sensitising local authorities and stakeholders on various provisions of SWM Rules, 2016 and steps that need to be taken by various stakeholders for the implementations of the Rules by drawing experts from central agencies, institutions and various states. This may be planned on a war footing in consultation with state governments. While organising such programs, all logistics may be provided by state agencies in their respective states using SBM funds, the MoHUA may take the responsibility to provide faculty for imparting training.
4. MoHUA may immediately identify at least three to four institutions in the country and entrust them the task of research and development in the following areas of SWM.
 - a. Identification of appropriate technologies for treatment of various components of waste within the parameters of SWM Rules, 2016.
 - b. Identification of suitable tools, equipment, and vehicles for storage at source, primary collection, secondary storage and transportation of waste in various levels of cities and towns.

c. Manpower and machinery requirements for various activities in SWM sector.

5. MoHUA may create a mechanism for funding the SWM projects in various states and review the performance of local authorities and agencies through identified experts/institutions on a quarterly basis in the first year followed by half yearly review in subsequent years.

Ministry of Chemicals and Fertilizers (MoC&F)

Duties of Department of Fertilisers, Ministry of Chemicals and Fertilisers:

(1) The Department of Fertilisers through appropriate mechanisms shall:
(a) provide market development assistance on city compost; and
(b) ensure promotion of co-marketing of compost with chemical fertilisers in the ratio of 3 to 4 bags: 6 to 7 bags by the fertiliser companies to the extent compost is made available for marketing to the companies.

Actions Recommended for implementation of the Rule:

The success of composting industry will depend heavily on this support from this ministry to the local bodies and to waste processing industry in the country.

The department may therefore take the following measures expeditiously:

1. The Department of Fertilizers in the Ministry of Chemicals and Fertilizers may create a database of compost plants set up in all urban centres in India in consultation with Central Pollution Control Board and respective state governments.
2. Create a state wise mechanism to ascertain whether the compost meets the quality standards laid down and the quantity of compost produced each day/month.
3. Create a mechanism for its marketing within the state to the extent possible through their fertilizer outlets along with chemical fertilizers in the proportion mentioned in the Rules.
4. Optimally utilise the market development assistance fund in propagating the use of compost with chemical fertilizer to protect soil health and transport of compost from the producers to the consumer end.

Ministry of Agriculture & Farmers Welfare (MoAFW)

Duties of Ministry of Agriculture & Farmers Welfare, Government of India:

The Ministry of Agriculture & Farmers Welfare, through appropriate mechanisms, shall:

- (a) provide flexibility in Fertiliser Control Order for manufacturing and sale of compost;
- (b) propagate utilisation of compost on farm land;
- (c) set up laboratories to test quality of compost produced by local authorities or their authorised agencies; and
- (d) issue suitable guidelines for maintaining the quality of compost and ratio of use of compost visa-a-vis chemical fertilizers while applying compost to farmland.

waste to energy projects over a period of next 20-25 years from the quality & quantity of non biodegradable combustible waste that are allowed to be utilised for power generation.

3. The ministry may determine the tariff or charges for the purchase of power generated from waste to energy plants by critically looking at the cost of generating power at these plants and the fair rate that need to be paid for the sustainability of such plants in the country.
4. The ministry may mandate the power distribution companies to purchase the power from waste to energy plants at the rates prescribed.

Ministry of New and Renewable Energy (MNRE)

Duties of Ministry of New and Renewable Energy (MNRE):

The Ministry of New and Renewable Energy through appropriate mechanisms shall:

- (a) facilitate infrastructure creation for 'waste to energy' plants; and
- (b) provide appropriate subsidy or incentives for such 'waste to energy' plants.

Actions Recommended for implementation of the Rules:

1. MNRE has a very important role to play in the promotion of waste to energy plants. The ministry needs to carefully look at the SWM Rules, 2016 and evaluate the potential of generating power from the non recyclable combustible fraction of waste and give suitable advice to local authorities and investors about the suitability of urban residual combustible waste for generation of power at a reasonable cost.
2. Ministry may advise the states and local authorities on appropriate technologies that could be adopted for power generation from solid waste.
3. The ministry may assess the capital and O&M cost of 'waste to energy' plants and workout the viability gap and come up with an incentive scheme for promoting 'waste to energy' plants in the country.
4. Ministry may facilitate creation of necessary infrastructure for facilitating construction of 'waste to energy' plants.

Secretary, Urban Development (States & Uts)

Duties of the Secretary-in-charge, Urban Development in the States and Union Territories (UTs):

(1) The Secretary, Urban Development Department in the State or Union Territory through the Commissioner or Director of Municipal Administration or Director of local bodies shall,-

- (a) prepare a state policy and solid waste management strategy for the state or the union territory in consultation with stakeholders including representative of waste pickers, self

Actions Recommended for implementation of the Rules:

1. The Ministry of Agriculture & Farmers Welfare need to take a very proactive measure in educating the farmers on the benefits of use of city compost in their farm land to protect soil health from the adverse impacts of using chemical fertilizer, improve porosity of soil and moisture retaining capacity and provide desired nutrients to the plants.
2. The use of compost may be integrated in the Ministry's ongoing campaigns for increasing agriculture production.
3. The ministry may critically look at the ground reality of the quality of compost that can be produced from urban biodegradable waste and the standard laid down for city compost in the fertilizer control order and considers providing flexibility in acceptance of compost for application on farm land without compromising on the critical aspects.
4. With a view to facilitate local authorities and operators of the composting facilities to test the quality of compost they produce from time to time, the ministry may set up or facilitate private sector setting up laboratories in various parts of the states on a chargeable basis to make them self sustainable and create a mechanism of certifying whether the compost meets the quality as per the fertilizer control order.
5. The ministry may guide the manufactures on adopting processes that may help in maintaining quality of compost and its marketability.
6. The ministry may issue guidelines on the use of compost along with chemical fertilizers in suitable proportions for various types of agricultural products.

Ministry of Power (MoP)

Duties of the Ministry of Power:

The Ministry of Power through appropriate mechanisms shall:

- (a) decide tariff or charges for the power generated from the waste to energy plants based on solid waste.
- (b) compulsory purchase power generated from such waste to energy plants by distribution company.

Actions Recommended for implementation of the Rule:

1. The Ministry of Power, in co-ordination with Central Pollution Control Board, may create a data base of existing waste to energy plants, the new waste to energy plants coming up in the country and their potential of generating power from waste.
2. The ministry may look at the recent report of the task force on waste to energy set up by the planning commission (12th May 2014) and assess the future potential of

waste to energy projects over a period of next 20-25 years from the quality & quantity of non biodegradable combustible waste that are allowed to be utilised for power generation.

3. The ministry may determine the tariff or charges for the purchase of power generated from waste to energy plants by critically looking at the cost of generating power at these plants and the fair rate that need to be paid for the sustainability of such plants in the country.
4. The ministry may mandate the power distribution companies to purchase the power from waste to energy plants at the rates prescribed.

Ministry of New and Renewable Energy (MNRE)

Duties of Ministry of New and Renewable Energy (MNRE):

The Ministry of New and Renewable Energy through appropriate mechanisms shall:

- (a) facilitate infrastructure creation for 'waste to energy' plants; and
- (b) provide appropriate subsidy or incentives for such 'waste to energy' plants.

Actions Recommended for implementation of the Rules:

1. MNRE has a very important role to play in the promotion of waste to energy plants. The ministry needs to carefully look at the SWM Rules, 2016 and evaluate the potential of generating power from the non recyclable combustible fraction of waste and give suitable advice to local authorities and investors about the suitability of urban residual combustible waste for generation of power at a reasonable cost.
2. Ministry may advise the states and local authorities on appropriate technologies that could be adopted for power generation from solid waste.
3. The ministry may assess the capital and O&M cost of 'waste to energy' plants and workout the viability gap and come up with an incentive scheme for promoting 'waste to energy' plants in the country.
4. Ministry may facilitate creation of necessary infrastructure for facilitating construction of 'waste to energy' plants.

Secretary, Urban Development (States & Uts)

Duties of the Secretary-in-charge, Urban Development in the States and Union Territories (UTs):

(1) The Secretary, Urban Development Department in the State or Union Territory through the Commissioner or Director of Municipal Administration or Director of local bodies shall,-

- (a) prepare a state policy and solid waste management strategy for the state or the union territory in consultation with stakeholders including representative of waste pickers, self

help group and similar groups working in the field of waste management consistent with these rules, national policy on solid waste management and national urban sanitation policy of the ministry of urban development, in a period not later than one year from the date of notification of these rules;

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

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

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

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

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

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

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

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

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

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

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

Actions Recommended for Implementation of the Rules:

The Secretary, Urban Development Department (UDD) of states/UTs has a very critical role to play at the state level to facilitate and ensure the implementation of the Rules by the urban local authorities in the state. The most critical activities that secretary, UDD need to take up simultaneously is:

- Prepare State Policy and Strategy on SWM in line national policy and strategy that may be prepared by MoHUA laying emphasis on waste Reduce, Reuse, Recycle & Recovery (RRRR) and integrating informal sector in waste management systems.
- Ensure implementation of SWM Rules by all local authorities
- Identification and allocation of land for processing and disposal of waste
- Facilitate establishment of common landfills for cluster of cities to achieve economy of scale and facilitate professional management of landfills.
- Notify buffer zone/no development zone around processing and disposal facilities
- Arrange training and capacity building programmes

The Secretary, UDD of state governments may initiate the following steps:

1. Secretary UDD may appraise all urban local bodies in the state about the provisions of SWM Rules 2016, the timelines to be achieved and motivate them to take appropriate measures towards implementations of the Rules. He may lay stress on ensuring:
 - a. Community participation and waste Reduce, Reuse, Recycle & Recovery (RRRR)
 - b. Segregation of wet and dry waste and storage of waste at source in two separate bins, involvement of waste pickers and recyclers in reducing waste
 - c. Door to door collection
 - d. Decentralised processing and minimising collection and transport cost and waste going to landfills
 - e. Setting up of regional common landfills for disposal of residual waste
 - f. Pay user charges for the sustainability of the system.
2. Secretary UDD may simultaneously assign the task to prepare state policy and strategy on SWM before December, 2017. This document may be fine tuned on receiving national policy and strategy document from MOUD and then circulated to local bodies in the state within the time limit of one year prescribed in the rules.
3. Secretary UDD may assess the requirement of land for processing and disposal of waste by various sizes of cities & towns in the state adopting the yard sticks given below and ascertain the availability of suitable land with local bodies.

S. No.	Cluster size population	Land requirement for regional landfill per 1 lakh population	Land requirement for processing of waste per 1 lakh population
1	1 to 5 lakh	15 Acres	1 acre
2	5 to 10 lakh	12 Acres	1 acre
3	10 lakh +	8 Acres	1 acre

4. Advise the district collectors to allocate suitable land to the local authorities who do not have suitable land/adequate land for setting up processing and disposal facility in a given time frame.
5. With a view to minimize requirement of land for sanitary landfills, economise in O&M cost of landfills, facilitate professional management of landfills and reduce the scope of public outcry against setting up city wise landfills very close to habitation, Secretary UDD may facilitate establishment of regional sanitary landfills in the state for cluster of cities which are close to each other.
6. He may identify large parcels of waste land away from habitation which can meet 20-25 years' requirements of land for the cluster of the cities falling within a radius of 50 km from the land identified and develop a mechanism of its professional management on a cost sharing basis. Satellite imagery may be used for identifying large parcels of land in the state which could be allocated for setting up regional facilities.
7. The secretary UDD may with the assistance of DMA or CMA or DM determine buffer zone for restricting development around the processing and disposal sites. A minimum distance as advised by CPHEEO, MOHUA may be notified from the boundary of the land required for processing and disposal of waste prohibiting development in that area. As such this buffer zone may be included within the land to be allocated to local authorities to ensure that no development takes place within the buffer zone.
8. With a view to promote recovery of recyclables and recycling of waste, the secretary UDD may direct the developers of special economic zones, industrial estates and industrial park to earmark at least 5% of their total land and construct shades for resource recovery, segregation and recycling of waste and direct all the industries situated within the estate to avail this facility to promote recycling.
9. Secretary UDD may give special emphasis to training and capacity building of local bodies in the areas of segregation and processing at source of waste generation as well as in the collection, transportation, community or city level processing and final disposal of residual waste at the sanitary landfill.
10. With a view to promote recycling and waste minimization, the secretary UDD may facilitate registration of waste picker, recyclers and waste dealers in their respective cities so that they could be involved in door to door collection of recyclables or its collection from material recovery facilities. The waste pickers could be motivated to get involved in door to door collection of waste in a way that they take away the recyclables to earn their living and also derive some income from door to door collection of other waste to improve their financial health and quality of life.
11. With a view to promote decentralized processing in the state, the secretary UDD may direct its town planning department and municipal authorities to ensure that adequate space is earmarked for segregation, storage and decentralized processing of solid waste in all schemes of group housing or commercial, institutional or non residential complexes having more than 200 dwelling units or a plot area exceeding

5000 sq meters. This may be done by adding a condition in the building plan regulations as well as by listing out all existing housing schemes, commercial and institutional complexes that fall in the above category and direct them to set apart a portion of land and create common facilities for storage and processing of waste within the campus.

12. The secretary UDD as head of the department may create a mechanism to review the performance of all urban local bodies under his charge once in quarter and take suitable measures for expeditious implementation of the Rules.

Secretary, Village Panchayats or Rural Development Department

Duties of the Secretary-in-charge of Village Panchayats or Rural Development Department in the States and Union Territories:

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

Actions Recommended for implementation of the Rule:

- The secretary in charge of gram panchayats (with whatever name called) need to play the similar role as envisaged from secretary urban development, in respective of census towns (urbanised panchayats above 5000 population that are declared as census towns in their states.
- The Secretary Panchayats need to list out the panchayats that are declared as census towns in each district, appraise the district and block level development officers to educate the notified census towns on their role and responsibilities under as SWM Rules, 2016.
- For the sake of uniformity, the secretary may get developed simple IEC (Information, Education and Communication) material in vernacular language for creating public awareness in census towns and share it with all the districts under his charge.
- Regional training programs may be organised for census towns. District and block level officers in charge of Swachh Bharat Mission (SBM) may be charged with the responsibility to ensure that the census towns implement the Rules effectively.
- Villages being small entities, very simple systems of waste management may be adopted and decentralized processing at the door step or at a community level may be advocated. Segregation and storage of bio-degradable (food waste) and non biodegradable wastes may be insisted at source.
- Emphasis may be laid on home composting or bio-gas generation. The segregated recyclables can be passed on to waste pickers or recyclers from the door step or it may be collected by the panchayats, stored at a common shade and sold out periodically to recyclers.
- The panchayats may have to be additionally educated on managing animal dung and animal feed waste. Such wastes are generally deposited by each rural household on the streets. Such sites of waste deposition could be converted into

vermi-pits and animal dung can be converted into a useful bio organic fertiliser by the households.

- The panchayats could be encouraged to continue the current practice of households cleaning the areas in front of the dwelling units and organise sweeping of commercial streets and important public places schools, offices etc.

District Magistrate or District Collector or Deputy Commissioner

Duties of District Magistrate or District Collector or Deputy Commissioner:

The District Magistrate or District Collector or as the case may be, the Deputy Commissioner shall:

- facilitate identification and allocation of suitable land as per clause (f) of Rule '11' for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-charge of State Urban Development Department within one year from the date of notification of these rules;
- review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development.

Actions Recommended for Implementation of the Rules:

The District Magistrate is the most respected officer in the district administration having wide powers and his words are treated as commands. He has two principal roles to play.

1) In close coordination with secretary UDD of the state, prepare a data base of urban local bodies and census towns in his district, their population, waste generation rate, requirement of land for processing and disposal of residual waste (as per yard stick given earlier) and availability of suitable land with each urban area. He may identify the deficiency in the availability of land with the local authorities and allocate suitable lands for processing and disposal of waste to the urban local bodies which do not have suitable land available with them. He may allocate the land either free of cost or on a token lease rent for a period of 25-30 years.

2) Review the performance of urban local bodies and census towns in his district at least once in a quarter to ensure waste segregation, collection, transportation, processing and disposal as per SWM Rules, 2016 and take corrective measures as required in consultation with CMA, DMA and secretary UDD/panchayats.

Central Pollution Control Board (CPCB)

Duties of Central Pollution Control Board.-

The Central Pollution Control Board shall:

- (a) co-ordinate with the State Pollution Control Boards and the Pollution Control Committees for implementation of these rules and adherence to the prescribed standards by local authorities;
- (b) formulate the standards for ground water, ambient air, noise pollution, leachate in respect of all solid waste processing and disposal facilities;
- (c) review environmental standards and norms prescribed for solid waste processing facilities or treatment technologies and update them as and when required;
- (d) review through State Pollution Control Boards or Pollution Control Committees, at least once in a year, the implementation of prescribed environmental standards for solid waste processing facilities or treatment technologies and compile the data monitored by them;
- (e) review the proposals of State Pollution Control Boards or Pollution Control Committees on use of any new technologies for processing, recycling and treatment of solid waste and prescribe performance standards, emission norms for the same within 6 months;
- (f) monitor through State Pollution Control Boards or Pollution Control Committees the implementation of these rules by local bodies;
- (g) prepare an annual report on implementation of these rules on the basis of reports received from State Pollution Control Boards and Committees and submit to the Ministry of Environment, Forest and Climate Change and the report shall also be put in public domain;
- (h) publish guidelines for maintaining buffer zone restricting any residential, commercial or any other construction activity from the outer boundary of the waste processing and disposal facilities for different sizes of facilities handling more than five tons per day of solid waste;
- (i) publish guidelines, from time to time, on environmental aspects of processing and disposal of solid waste to enable local bodies to comply with the provisions of these rules; and
- (j) provide guidance to States or Union territories on inter-state movement of waste.

Actions Recommended for Implementation of the Rules:

- CPCB is an apex body for preventing environmental pollution in the country. The CPCB need to keep a track on the implementation of these Rules through the eyes of State Pollution Control Boards/Committees.
- It may in initial three years, take a quarterly review of the implementation of the Rules by urban local bodies, census towns and other entities covered under the Rules through State Pollution Control Boards and advise them to take follow-up/punitive action. The most important role is however to prescribe the standards of ground water, ambient air, noise pollution, leachate in respect of new technologies in SWM sector and monitor the adherence to environmental standards prescribed from time to time for Solid Waste processing facilities and disposal sites in the country.
- It needs to ensure that these standards are maintained by all local authorities/operators of the facility. CPCB may take a half yearly critical review of the

adherence to the standards by local authorities and operators of the facilities through State Pollution Control Boards/Committees and through its own staff where considered necessary.

- As the apex body it may also issue guidelines from time to time on the environmental aspects of processing and disposal facilities and also publish guidelines for maintaining buffer zones restricting any residential, commercial or any other construction activity from the outer boundary of processing or disposal facility of different capacities.
- The CPCB may issue guidelines on inter-state movement of waste to facilitate setting up of regional processing and disposal facilities

State Pollution Control Board or Pollution Control Committees

Duties of State Pollution Control Board or Pollution Control Committee:

(1) The State Pollution Control Board or Pollution Control Committee shall,-

- (a) enforce these rules in their State through local bodies in their respective jurisdiction and review implementation of these rules at least twice a year in close coordination with concerned Directorate of Municipal Administration or Secretary-in-charge of State Urban Development Department;
- (b) monitor environmental standards and adherence to conditions as specified under the Schedule I and Schedule II for waste processing and disposal sites;
- (c) examine the proposal for authorisation and make such inquiries as deemed fit, after the receipt of the application for the same in Form I from the local body or any other agency authorised by the local body;
- (d) while examining the proposal for authorisation, the requirement of consents under respective enactments and views of other agencies like the State Urban Development Department, the Town and Country Planning Department, District Planning Committee or Metropolitan Area Planning Committee, as may be applicable, Airport or Airbase Authority, the Ground Water Board, Railways, power distribution companies, highway department and other relevant agencies shall be taken into consideration and they shall be given four weeks time to give their views, if any;
- (e) issue authorisation within a period of sixty days in Form II to the local body or an operator of a facility or any other agency authorised by local body stipulating compliance criteria and environmental standards as specified in Schedules I and II including other conditions, as may be necessary;
- (f) synchronise the validity of said authorisation with the validity of the consents;
- (g) suspend or cancel the authorization issued under clause (a) any time, if the local body or operator of the facility fails to operate the facility as per the conditions stipulated: provided that no such authorization shall be suspended or cancelled without giving notice to the local body or operator, as the case may be; and
- (h) on receipt of application for renewal, renew the authorisation for next five years, after examining every application on merit and subject to the condition that the operator of the facility has fulfilled all the provisions of the rules, standards or conditions specified in the authorisation, consents or environment clearance.

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

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

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

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

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

Actions Recommended for Implementation of the Rules:

State Pollution Control Board (SPCB) has a very critical role to play for enforcing the implementation of the Rules in the respective states. The SPCB may therefore draw out plan to effectively ensure implementation of the Rules which may include:

- Review implementation of rules twice a year and enforce compliance
- Monitor adherence to environmental standards
- Give authorization for setting up treatment and disposal facilities
- Regulate inter-state movement of waste
- Give directions to local bodies for safe handling and disposal of domestic hazardous waste
- Get the standards laid down through CPCB for the technologies which are new and no standards have been prescribed earlier
- Take proactive measure to appraise the local authorities from time to time the deficiency observed in the implementation of the Rules and the corrective measures the local authorities need to take to avoid penal action. This program could be jointly organized by the state agency and state PCB at least once in a year.

Local (Municipal) Authorities, Village Panchayats of Census Towns & Urban Agglomerations

Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations.-

The local authorities and Panchayats shall,-

- (a) prepare a solid waste management plan as per state policy and strategy on solid waste management within six months from the date of notification of state policy and

- strategy and submit a copy to respective departments of State Government or Union territory Administration or agency authorised by the State Government or Union territory Administration;
- (b) arrange for door-to-door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other non residential premises. From multi-storage buildings, large commercial complexes, malls, housing complexes, etc., this may be collected from the entry gate or any other designated location;
 - (c) establish a system to recognise organisations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorized waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste;
 - (d) facilitate formation of Self Help Groups, provide identity cards and thereafter encourage integration in solid waste management including door to door collection of waste;
 - (e) frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules and ensure timely implementation;
 - (f) prescribe from time to time user fee as deemed appropriate and collect the fee from the waste generators on its own or through authorised agency;
 - (g) direct waste generators not to litter i.e. throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink cans, tetra packs, fruit peel, wrappers, etc., or burn or bury waste on streets, open public spaces, drains, waste bodies and to segregate the waste at source as prescribed under these rules and hand over the segregated waste to authorised the waste pickers or waste collectors authorised by the local body;
 - (h) set-up material recovery facilities or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorised waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, textile from the source of generation or from material recovery facilities; Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black;
 - (i) establish waste deposition centres for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at this centre for its safe disposal. Such facility shall be established in a city or town in a manner that one centre is set up for the area of twenty square kilometres or part thereof and notify the timings of receiving domestic hazardous waste at such centres;
 - (j) ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the State Pollution Control Board or the Pollution Control Committee;
 - (k) direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and handover to the waste collectors or agency authorized by local body;
 - (l) provide training on solid waste management to waste-pickers and waste collectors;
 - (m) collect waste from vegetable, fruit, flower, meat, poultry and fish market on day to day basis and promote setting up of decentralised compost plant or biomethanation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions;

- (n) collect separately waste from sweeping of streets, lanes and by-lanes daily, or on alternate days or twice a week depending on the density of population, commercial activity and local situation;
- (o) set-up covered secondary storage facility for temporary storage of street sweepings and silt removed from surface drains in cases where direct collection of such waste into transport vehicles is not convenient. Waste so collected shall be collected and disposed of at regular intervals as decided by the local body;
- (p) collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible;
- (q) transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility. Preference shall be given for onsite processing of such waste;
- (r) transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility;
- (s) transport construction and demolition waste as per the provisions of the Construction and Demolition Waste Management Rules, 2016;
- (t) involve communities in waste management and promotion of home composting, bio-gas generation, decentralised processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facility;
- (u) phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.
- (v) facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilisation of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Housing & Urban Affairs from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralised processing to minimize transportation cost and environmental impacts such as:
 - a) bio-methanation, microbial composting, vermi-composting, anaerobic digestion or any other appropriate processing for bio-stabilisation of biodegradable wastes;
 - b) waste to energy processes including refuse derived fuel for combustible fraction of waste or supply as feedstock to solid waste based power plants or cement kilns;
- (w) undertake on their own or through any other agency construction, operation and maintenance of sanitary landfill and associated infrastructure as per Schedule-I for disposal of residual wastes in a manner prescribed under these rules;
- (x) make adequate provision of funds for capital investments as well as operation and maintenance of solid waste management services in the annual budget ensuring that funds for discretionary functions of the local body have been allocated only after meeting the requirement of necessary funds for solid waste management and other obligatory functions of the local body as per these rules;
- (y) make an application in Form-I for grant of authorisation for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tonnes per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee, as the case may be;

- (z) submit application for renewal of authorisation at least sixty days before the expiry of the validity of authorisation;
- (aa) prepare and submit annual report in Form IV on or before the 30th April of the succeeding year to the Commissioner or Director, Municipal Administration or designated Officer;
- (bb) the annual report shall then be sent to the Secretary -in-Charge of the State Urban Development Department or village panchayat or rural development department and to the respective State Pollution Control Board or Pollution Control Committee by the 31st May of every year;
- (cc) educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility;
- (dd) ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the workforce;
- (ee) ensure that provisions for setting up of centres for collection, segregation and storage of segregated wastes, are incorporated in building plan while granting approval of building plan of a group housing society or market complex; and
- (ff) frame bye-laws and prescribe criteria for levying of spot fine for persons who litters or fails to comply with the provisions of these rules and delegate powers to officers or local bodies to levy spot fines as per the bye laws framed; and
- (gg) create public awareness through Information, Education and Communication (IEC) campaign and educate the waste generators on the following; namely:-
 1. not to litter;
 2. minimise generation of waste;
 3. reuse the waste to the extent possible;
 4. practice segregation of waste into bio-degradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous wastes at source;
 5. practice home composting, vermi-composting, bio-gas generation or community level composting;
 6. wrap securely used sanitary waste as and when generated in the pouches provided by the brand owners or a suitable wrapping as prescribed by the local body and place the same in the bin meant for non-biodegradable waste;
 7. storage of segregated waste at source in different bins;
 8. handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies; and
 9. pay monthly user fee or charges to waste collectors or local bodies or any other person authorised by the local body for sustainability of solid waste management.
- (hh) stop land filling or dumping of mixed waste soon after the timeline as specified in Rule '22' for setting up and operationalisation of sanitary landfill is over;
- (ii) allow only the non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and pre-processing rejects and residues from waste processing facilities to go to sanitary landfill and the sanitary landfill sites shall meet the specifications as given in Schedule-I, however, every effort shall be made to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill;

- (jj) investigate and analyse all old open dumpsites and existing operational dumpsites for their potential of bio-mining and bio-remediation and wherever feasible, take necessary actions to bio-mine or bio-remediate the sites;
- (kk) in absence of the potential of bio-mining and bio-remediation of dumpsite, it shall be scientifically capped as per landfill capping norms to prevent further damage to the environment.

Actions Recommended for implementation of the Rule:

Municipal authorities and village panchayats of census towns are the authorities which are primary responsible for the management of Solid waste in their jurisdiction. These authorities need to take series of measures to ensure that the Solid Waste is minimized, safely stored, collected, transported, processed and disposed of in an environmentally acceptable manner.

The following steps may be taken on priority by all local authorities covered under the Rules:

- Prepare solid waste management plan as per state policy
- Create public awareness on role of the community in the management of Solid Waste
- Prohibit littering, direct segregation of waste at source, arrange door to door collection of segregated waste from households and other commercial and institutional premises
- Promote home composting, bio-gas plant, community level processing
- Recognize organizations of waste pickers/informal recyclers and integrate them into the systems of SWM
- Set-up/facilitate the setting-up of, through private operator, a common facility for bio - methanation or composting of segregated wet waste. (Though high in capital cost, Biomethanation is a preferred option as it may produce less odour and also produce energy or bio-fuel/gas)
- Setup/facilitate setting up of, by private sector, Material Recovery Facilities (MRF) as defined in the Rules, for sorting of recyclables by authorised waste pickers/recyclers etc and provide easy access to them at the facility. Such MRF should have established channels for utilization or recycling of segregated material, such as plastic/metal/glass waste, to recyclers integrated with RDF Plant with linkage to cement plants or to waste feed based industrial boilers or integrated with 'Waste to Energy' plants to produce electricity.
- Setup domestic hazardous waste deposition centres at suitable locations in the urban area. Each small city or town may have at least one such centre where as large cities may have multiple centres with density of 1 centre per 25 sq.km city area.
- Facilitate constructions and O&M of waste processing facilities.
- Transport segregated waste to waste processing facility/material recovery facility
- Setup sanitary landfill for disposal of residual waste
- Frame bye-laws within one year, prescribe spot fines & ensure timely implementation.
- Prescribe user fees

Description of duties and responsibilities of urban local bodies, urbanised panchayats and urban agglomerations:

The local authorities mentioned above need to take several actions simultaneously as under to ensure expeditious implementation of the Rules as spelt out in Rule '15':

i) The local authorities should carefully look at the state policy and strategy that may be circulated to them and prepare Solid Waste Management plan for the local body and take measures for time bound implementation of the Rules. This may be done by setting up a task force within the organisation for preparing the plan. External assistance of experts may be taken if and when required to make a comprehensive sustainable plan in keeping with state policy.

ii) While the policy document is under preparation; the local body may in accordance with SWM Rules, 2016; take up a massive public awareness campaign to educate the masses on the following:

- a) Not to litter on the streets, open spaces, water bodies, drains etc.
- b) Keep at least two bins of 12-15 litre capacity at home one for biodegradable (wet) waste and another for non biodegradable (dry) waste.
- c) Segregate wet and dry waste at source and store in separate bins.
- d) Make an effort to do home composting or bio-gas generation from bio-degradable waste and handover recyclables to waste pickers or recyclers and minimize the waste at source and handover the remaining waste to the waste collectors designated by the local authority.
- e) Municipal authority may involve, educate and promote the community in home composting, bio-gas generation and decentralised processing ensuring that it does not cause any unhygienic conditions, odour etc.
- f) As and when any domestic hazardous waste is generated, it may not be mixed with the waste kept in bins meant for wet and dry waste and instead it may be kept separate for being handled separately and safely.
- g) As and when Construction and Demolition (C&D) or horticulture waste is generated in the premises, such waste shall also be kept separate and disposed off as per C&D Waste Rules 2016 and SWM Rules 2016 respectively.

iii) The awareness campaign may be followed by organising door to door collection of the segregated waste. The local authority may identify areas accessible by motorized vehicles and non accessible areas in the city and plan for door to door collection on a daily basis. Keeping in view high density of Indian waste, a light commercial vehicle of 3-5 cum capacity may be procured per 2000 households and a containerised tricycle or hand cart may be procured per 200 households for door to door collection from in accessible areas. The collection vehicles may have central partition to facilitate collection of wet and dry waste in separate compartments or collection system/timings may be specified to collect wet and dry waste separately. The door to door collection may be adopted as per Annexure – A.

iv) Collection from large commercial complexes or gated housing societies may be organised from the entry gate or designated locations instead of collecting waste from individual units. Such complexes could be directed to store their waste in a segregated manner at designated location to facilitate easy collection

v) With a view to promote recycling, identify or promote waste pickers/recyclers/associations / organisations/self-help-groups and make an effort to integrate them into the system of primary collection of waste that may enable them to pick up recyclables from the door step to earn their living without being part of the municipal establishment. They could be given identity cards by the local authority as persons associated in Solid Waste Management of the city. The association could participate in the tender process for taking contracts for door to door collection by suitably relaxing the condition of the contract in favour of informal sector without compromising on the quality of service.

vi) Creation of Material Recovery Facilities (MRF)

The ideal situation would be to facilitate the collection of recyclables from the door step. In a situation where integration of waste pickers/recyclers has not been made at the waste collection stage, the municipal authority may provide one more opportunity to waste pickers/authorised recyclers to pick up recyclables from the waste stream before the waste is taken up for processing or disposal. MRF may be set up at such location that it may minimise multiple handling and transportation of waste. The MRF may therefore be suitably set up near the transfer station or at a location in close proximity to the waste processing facility. Waste pickers/recyclers may be given free access to MRF to pick up recyclables so that the quantity of waste is minimised and recyclables are optimally processed for deriving new product saving natural resources. The MRF facility should have adequate space to enable rag pickers/recyclers to weed out recyclables from rest of the waste.

vii) With a view to ensure safe disposal of domestic hazardous waste, the municipal authority may set up one or more hazardous waste collection centre with the density of 1 such centre per 25 sq km of the city area and give directions to the citizens to deposit all their domestic hazardous waste at such centre during the time specified. The municipal authority may tie up and make arrangement with hazardous waste disposal facility in consultation with state pollution control board for ensuring safe transportation and disposal of such waste. The centre so established may be well equipped to store separately and safely various types of domestic hazardous wastes.

viii) The municipal authority may promote setting up decentralized compost plants or bio-methanation plants at suitable locations within the vegetable, fruit, flower, meat, fish, poultry markets or in the vicinity of markets and minimise the cost of collection, transportation and centralized processing. The market associations could be motivated to set up such facility and educate its members to segregate all bio-degradable wastes and deposit at the processing facility that may be created within the market or in the vicinity of the market and contribute towards the cost of O&M of such facility.

ix) Municipal authority may set up compost plants within the parks and gardens for processing horticulture and garden waste and utilize the same within the parks and gardens to the extent possible thus minimize the cost of collection and transportation of this organic matter as well as reduce the cost of purchasing fertilizers.

x) The municipal authority may create a mechanism of collection and transportation of different streams of waste as under:

a) Bio-degradable waste from the door step to the processing facility

- b) Dry non bio-degradable wastes including recyclables wastes that are not handed over to waste pickers or recyclers at the door step, to the material recovery facilities set up at secondary storage, transfer station or at waste processing facility
- c) Street sweepings to the disposal site through MRF
- d) Construction and demodulation waste from the city in terms of C&D Waste Rules, 2016
- e) Horticulture and garden waste that could not be composted within the premises.

xi) Municipal authority may identify locations where secondary storage facilities need to be created to enable street sweepers to deposit the waste collected by them in their handcars/tricycles etc to facilitate onward transportation in bulk to the M R F/disposal facilities. Such facilities may be created at the rate of at least 4 storage depots per sq km of the city area and to ensure that a bin is available at an interval of 500 meters and sanitation worker does not have to walk for more than 250 meters to deposit his waste in the container. The size of container could depend on quantity of waste expected to be received at the depot. These depots should be kept clean and the waste deposited in the containers must be transported before the bins start overflowing or at least twice a week whichever is earlier. Effort should be made to directly transport the street sweepings through collection vehicles and make the city bin less.

xii) Municipal authority may construct or facilitate the construction, operation, and maintenance of solid waste processing facilities on their own or through private sector participation or through any agency and ensure optimum utilisation of all components of waste adopting most appropriate technology such as bio methenation, microbial composting, vermi composting, anaerobic digestion technology and 'waste to energy' from combustible fraction of non recyclable waste or keep aside combustible material and supply the same as feed stock to solid waste based power plants or cement kilns.

xiii) Municipal authority may undertake on their own or through any other agency the construction, operation and maintenance of sanitary landfill and associated infrastructure such as internal roads, office, shade for parking of vehicles and machineries, washrooms etc for the disposal of residual waste such as streets sweepings, silt from drains, residual waste from processing facilities etc.

Manufacturers or Brand Owners of Disposable Products and Sanitary Napkins & Diapers

Duty of manufacturers or brand owners of disposable products and sanitary napkins and diapers.-

- (1) All manufacturers of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for establishment of waste management system.
- (2) All such brand owners who sell or market their products in such packaging material which are non-biodegradable shall put in place a system to collect back the packaging waste generated due to their production.
- (3) Manufacturers or brand owners or marketing companies of sanitary napkins and diapers shall explore the possibility of using all recyclable materials in their products or they shall

provide a pouch or wrapper for disposal of each napkin or diapers along with the packet of their sanitary products.

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

Actions Recommended for implementation of the Rules:

The manufacturers of disposable products need to be conscious about their corporate social responsibility and take proactive measures to facilitate implementation of the Rules as under:

- Provide financial assistance to local authorities to establish waste management system to collect, transport and dispose off disposable material from the waste streams.
- The manufacturers of branded products using non bio-degradable packaging material shall put in place a system to collect back such packaging material from their outlets or by setting up special waste collection centres. They may incentivise waste pickers/recyclers to join hands with the local authority in collection of such waste.
- The use of sanitary napkins and diapers is increasing rapidly in the country. Therefore before the management of such waste becomes very cumbersome, manufacturers of sanitary napkins and diapers may be persuaded to explore the possibility of using recyclable materials or provide pouch or wrapper for safe disposal of such waste. It may be emphasised that in larger interest and environmental production the first option of replacing non bio-degradable component from their product would be most desirable.

Industrial units Located within 100 km from Refuse Derived Fuel (RDF) and 'Waste to Energy' Plants based on Solid Waste

Duties of the industrial units located within one hundred km from the refuse derived fuel and waste to energy plants based on solid waste-

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

Actions Recommended for Implementation of the Rules:

- The local authorities may prepare a list of industries situated within 100 km from the urban area and ascertain the requirement of power/fuel of such plants.
- The local authorities may explore the option of setting up RDF plant within their own city or for a cluster of cities at a suitable location at their own or through private sector participation.
- The local authority together with the operator of the facility may negotiate with the industry to utilise RDF produced by the local authority in their industry as an optional fuel, taking into consideration the calorific value of RDF vis-à-vis the fuel

the industry currently uses in the plant and the cost benefit the industry may derived by using RDF in leave of conventional fuel.

- In case the matter does not get settled through negotiations, the industry may be mandated to use RDF at least to the extent of 5% of the fuel they use in the industry as per Rule '18' above.