243

കേരള സർക്കാർ

സംഗ്രഹം

തദ്ദേശസ്വയംഭരണ വകുപ്പ് - ബ്രഹ്മപുരത്തെ ഖരമാലിന്യ സംസ്കരണ പ്ലാന്റിൽ നിന്നും ഊറി വരുന്ന മലിനജലം (Leachet) സൃഷ്ടിക്കുന്ന മലിനീകരണം ഒഴിവാക്കുന്നതുമായി ബന്ധപ്പെട്ട് സ്വീകരിക്കേണ്ട പ്രായോഗിക നടപടികൾ തീരുമാനിക്കുന്നതിന് തദ്ദേശസ്വയംഭരണ വകുപ്പ് അഡീഷണൽ സെക്രട്ടറി ഡോ. മിത്ര റ്റി. IAS-ന്റെ നേതൃത്വത്തിൽ ഒരു ടീമിനെ ചുമതലപ്പെടുത്തി ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

തദ്ദേശ സ്വയം ഭരണ (ഡി.സി) വകുപ്പ്

സ.ഉ.(സാധാ)നം.3105/2018/തസ്വഭവ തിരുവനന്തപുരം, തീയതി: 06.12.2018

പരാമർശം:- OA No.533/2018, 534/2018 ,535/2018 കേസുകളിൽ നാഷണൽ ഗ്രീൻ ട്രിബ്യൂണൽ 22.10.2018 - ൽ പുറപ്പെടുവിച്ചിട്ടുള്ള ഉത്തരവ്

ഉത്തരവ്

ബ്രഹ്മപുരം മാലിന്യ സംസ്കരണ പ്ലാന്റിന്റെ പ്രവർത്തനം കാര്യക്ഷമാക്കി കൊച്ചിയിലെ മാലിന്യ സംസ്കരണം ഫലപ്രദമായി നടപ്പിലാക്കുന്നതിൽ വന്ന കാലതാമസത്തെ തുടർന്ന് ആയതുമായി ബന്ധപ്പെട്ട് കൊച്ചി കോർപറേഷന് ഒരുകോടി രൂപ പിഴ ചുമത്തികൊണ്ട് മേൽ പരാമർശം പ്രകാരം ദേശീയ ഹരിത ട്രിബ്യൂണൽ ഉത്തരവിട്ടിരുന്നു. പ്രസ്തുത ഉത്തരവിന് ഹൈക്കോടതി സ്റ്റേ നൽകിയിരുന്നെങ്കിലും ഒരുകോടി രൂപയുടെ ബാങ്ക് ഗ്യാരന്റി കോർപ്പറേഷൻ നൽകേണ്ടതുണ്ട് എന്നും ആറ് മാസത്തിനുള്ളിൽ പൂർണ്ണമായ മാലിന്യ സംസ്കരണ സംവിധാനം ഏർപ്പെടുത്തിയില്ലെങ്കിൽ വീണ്ടും പിഴ ഒടുക്കേണ്ടിവരുമെന്നും നിഷ്കർഷിക്കുകയും ചെയ്തിരുന്നു. ദേശീയ ഹരിത ട്രിബ്യൂണൽ, സോളിഡ് വേസ്റ്റ് മാനേജ്മന്റ് മോണിറ്റർ ചെയ്യുന്നതിനായി നിയമിച്ചിട്ടുള്ള റീജിയണൽ മോണിറ്ററിങ് കമ്മിറ്റി (സൗത്ത്) 19/12/2018 ന് ബ്രഹ്മപുരം പ്ലാന്റ് സന്ദർശിക്കുന്നതാണ് എന്ന് അറിയിച്ചിട്ടുണ്ട്.

ബ്രഹ്മപുരത്തെ ഖരമാലിന്യ സംസ്കരണ പ്ലാന്റിൽ നിലവിലുള്ള മാലിന്യത്തിൽ നിന്നും ഊറി വരുന്ന മലിനജലം (Leachet) വലിയതോതിൽ പരിസര മലിനീകരണം സൃഷ്ടിക്കുന്ന സാഹചര്യത്തിൽ ഈ സ്ഥിതിവിശേഷം പരിഹരിക്കുന്നതിന് അടിയന്തിരമായ ഇടപെടലുകൾ നടത്തുന്നതിനായി ബ്രഹ്മപുരത്തെ നിലവിലുള്ള മാലിന്യ സംസ്കരണ പ്ലാന്റിന്റെ കാര്യത്തിൽ സ്വീകരിക്കേണ്ട പ്രായോഗിക നടപടികൾ അടിയന്തിരമായി തീരുമാനിക്കേണ്ടതുണ്ട്. ബ്രഹ്മപുരത്തെ ഖരമാലിന്യ സംസ്കരണ പ്ലാന്റിൽ നിന്നും ഊറി വരുന്ന മലിനജലം സൃഷ്ടിക്കുന്ന മലിനീകരണം ഒഴിവാക്കുന്നതിന് ഉൾപ്പടെ പ്രസ്തുത പ്ലാന്റുമായി ബന്ധപ്പെട്ട് സ്വീകരിക്കേണ്ട പ്രായോഗിക നടപടികൾ തീരുമാനിക്കുന്നതിന് തദ്ദേശസ്വയംഭരണ വകുപ്പ് (അർബൻ) സെക്രട്ടറിയുടെ ചാർജ് വഹിക്കുന്ന അഡീഷണൽ സെക്രട്ടറി ഡോ.മിത്ര റ്റി. IAS-ന്റെ നേതൃത്വത്തിൽ ശ്രീ രഞ്ജു ആർ പിള്ളൈ, എൻവയൺമെന്റൽ എൻജിനീയർ, ശുചിത്വ മിഷൻ, ശ്രീ. ശ്രീകുമാർ എസ്, എൻവയൺമെന്റൽ എക്സ്പെർട്ട്, അമൃത് മിഷൻ, ശ്രീ കിരൺ സൂര്യ, എൻവയൺമെന്റൽ എൻജിനീയർ, കൊച്ചി കോർപ്പറേഷൻ എന്നിവർ അടങ്ങുന്ന ഒരു ടീമിനെ ചുമതലപ്പെടുത്തി ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

പ്രസ്തുത ടീം 48 മണിക്കൂറിനുള്ളിൽ അടിയന്തിരമായി ബ്രഹ്മപുരം പ്ലാന്റ് സന്ദർശിച്ച് 19/12/2018-ന് മുമ്പായി ചെയ്യുതീർക്കേണ്ട കാര്യങ്ങൾ (എമർജൻസി അടിസ്ഥാനത്തിൽ ചെയ്യേണ്ട കാര്യങ്ങൾ), അടുത്ത രണ്ട്-മൂന്ന് മാസത്തിനുള്ളിൽ ചെയ്ത് തീർക്കേണ്ട കാര്യങ്ങൾ (ഹ്രസ്വ കാല ഇടപെടലുകൾ), രണ്ട് മുതൽ ആറ് മാസത്തിനുള്ളിൽ ചെയ്യേണ്ട കാര്യങ്ങൾ (മധ്യകാല ഇടപെടലുകൾ), ബ്രഹ്മപുരം വേസ്റ്റ് ടു എനർജി പ്ലാന്റ് പ്രവർത്തനക്ഷമമാവുന്നതുവരെ സ്വീകരിക്കേണ്ട നടപടികൾ (ദീർഘകാല ഇടപെടലുകൾ) എന്നീ വിധത്തിൽ അടിയന്തിര റിപ്പോർട്ട് തയ്യാറാക്കി 48 മണിക്കൂറിനുള്ളിൽ സമർപ്പിക്കേണ്ടതുമാണ്.

(ഗവർണ്ണറുടെ ഉത്തരവിൻപ്രകാരം)

ടി കെ ജോസ്
അഡീഷണൽ ചീഫ് സെക്രട്ടറി

മേയർ ,കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷൻ
ചെയർമാൻ, കേരള സംസ്ഥാന പൊലൂഷൻ കൺട്രോൾ ബോർഡ്,
ഡോ. മിത്ര റ്റി. IAS, അഡീഷണൽ സെക്രട്ടറി, തദ്ദേശസ്വയംഭരണ വകുപ്പ്
ശ്രീ രഞ്ജു ആർ പിള്ളൈ , എൻവയൺമെന്റൽ എൻജിനീയർ, ശുചിത്വ മിഷൻ
ശ്രീ. ശ്രീകുമാർ എസ്, എൻവയൺമെന്റൽ എക്സ്പെർട്ട് അമൃത് മിഷൻ
ശ്രീ കിരൺ സൂര്യ, എൻവയൺമെന്റൽ എൻജിനീയർ കൊച്ചി കോർപ്പറേഷൻ
നഗരകാര്യ ഡയറക്ടർ, തിരുവനന്തപുരം
എക്സിക്യൂട്ടീവ് ഡയറക്ടർ, ശുചിത്വ മിഷൻ, തിരുവനന്തപുരം
മിഷൻ ഡയറക്ടർ, അമൃത് മിഷൻ, തിരുവനന്തപുരം
സെക്രട്ടറി, കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷൻ
പ്രിൻസിപ്പൽ അക്കൗണ്ടന്റ് ജനറൽ (ആഡിറ്റ്/എ&ഇ) കേരള, തിരുവനന്തപുരം
എക്സിക്യൂട്ടീവ് ഡയറക്ടർ, ഇൻഫർമേഷൻ കേരള മിഷൻ, തിരുവനന്തപുരം
ഡയറക്ടർ, ഐ&പി.ആർ.ഡി/ വെബ് & ന്യൂ മീഡിയ
കരുതൽ ഫയൽ/ ഓഫീസ് കോപ്പി

ഉത്തരവിൻ പ്രകാരം

സെക്ഷൻ ഓഫീസർ

പകർപ്പ്- ബഹു. തദ്ദേശ സ്വയം ഭരണ വകുപ്പ് മന്ത്രിയുടെ പ്രൈവറ്റ് സെക്രട്ടറിയ്ക്ക്
തദ്ദേശ സ്വയം ഭരണ വകുപ്പ് അഡീഷണൽ ചീഫ് സെക്രട്ടറിയുടെ പി.എ.യ്ക്ക്
പരിസ്ഥിതി വകുപ്പ് അഡീഷണൽ ചീഫ് സെക്രട്ടറിയുടെ പി.എ.യ്ക്ക്
തദ്ദേശ സ്വയം ഭരണ വകുപ്പ് സ്പെഷ്യൽ സെക്രട്ടറിയുടെ സി.എ . യ്ക്ക്
തദ്ദേശ സ്വയംഭരണ വകുപ്പ് അഡീഷണൽ സെക്രട്ടറിയുടെ സിഎ യ്ക്ക്

47

REPORT

Solid Waste Management (SWM)

at Brahmapuram of Kochi Corporation

submitted vide

G.O (Rt) No.3105/2018/LSGD dated 06/12/2018

11-12-2018

REPORT

Measures to be adopted for the treatment of leachate being generated and for the proper functioning of the Solid Waste Management (SWM) facility at Brahmapuram of Kochi Corporation.

As per the G.O(Rt) No.3105/2018/LSGD dated 06/12/2018, a team was formed to visit and report on the immediate, short term, medium term and longterm measures to be taken to mitigate the adverse impact of leachate on the environment and for the proper and decent functioning of the SWM facility at Brahmapuram of Kochi Municipal Corporation.

The team visited the Brahmapuram Plant on 7/12/2018. This report is being submitted after taking cognizance of the plant's current condition and the issues to be addressed for its decent and proper functioning. It is prepared based on the site visit and the data from the Corporation.

1. Solid waste generated in Kochi Coporation

Table 1

1.	*Estimated quantity of solid waste generated in the local body area in Tonnes per day (TPD)*	305
2.	*Average quantity of biodegradable waste processed in TPD*	196
3.	*Average quantity of plastic/non-bio-degradable waste disposed at dumpsite/landfill in TPD*	100

Source:Kochi Corporation

2. Collection system for Solid Waste in KochiCorporaton

The Corporation workers and Kudumbashree are engaged in the primary collection of wastes. Hand carts, tipper auto rickshaws are used for the collection of wastes. The collected wastes are loaded to larger tipper trucks and compactor trucks to transport the waste to the treatment facility at Brahmapuram where the organic fraction is composted and the plastic/non-biodegradable wastes are tipped at dumping yard.

3. Solid Waste Management facility at Brahmapuram

To treat the solid waste generated in the city, a treatment plant was established by the Corporation in 2008 having a design capacity of 250 tonnes per day. The solid waste management facility situated in 110 acres of land consists of:

a. Windrow Composting facility to process only 250 TPD of Municipal Solid Waste

b. A non-functional Refuse Derived Fuel (RDF) facility to convert waste into usable fuel for combustion, 100TPD

c. A non-functional Vermicomposting plant, 50TPD

d. Plastic shredding and Baling unit, 1 TPD (Installed as a pilot project in 2016), not functioning at the time of visit

3.2. Details of the MSW Management Facility

Table 2

Brahmapuram MSW management facility

Item	Particulars	Remarks
Village	Puthencruz	
Taluk	Kunnathunadu	
GP/Mun./Mun.Corp	Vadavukode-Puthencruz	GramaPanchayath
Survey Number	32/17	
Area	110 acre	44.5 hectares
Built up area	17456Sq.m	Compost plant alone 10000sq.m
Capacity	250 TPD	
Facilities	Windrow composting	250 TPD
	Vermicomposting	50 TPD, Not operated
	RDF Facility	100 TPD, Not

	Plastic shredding unit	operated 1TPD, Not functioning at the time of visit
Waste collected from	Kochi Corporation Angamaly Municipality Aluva Municipality Kalamassery Municipality Thrikkakkara Municipality ThrippunithuraMunicipality Cheranallur GP Vadavukode-Puthencruz GP	

Source: Kochi Corporation

3.3. Solid Wastes coming into this facility:

3.3.1 The municipal solid waste (MSW) is brought from the 21 Circles of the Corporation of Kochi, food waste from certain hotels are regularly brought to the plant. In addition, MSW from five nearby Municipalities (Aluva, Angamaly, Kalamasseri, Thrikkakkara, Thrippunithura) and one Grama Panchayat (Cheranalloor) is received in the plant on payment of tipping fee of Rs. 1420/- per tonne. Further, MSW from Vadavukode GP in which the plant is located is also received whenever brought without any tipping fee.

3.3.2 The total waste received in the plant on a normal working day (i.e. 30.11.2018), is 383.45 Tonnes which includes 64% of biodegradable waste (BD) and 36% of plastic and such other non-biodegradable (NBD) waste. On a holiday (i.e. 25.11.2018), the MSW received in the plant is 282.05 Tonnes which includes 65% is BD waste and 35% is NBD waste (See Table 3 for details).

Table 3

Sl No	Locations from where MSW is brought	Biodegradable waste		Non-Biodegradable Waste		Total No. of Truck Load	Total MSW brought to the plant (T)
		No. of Truck Load	Qty of MSW (T)	No. of Truck Load	Qty of MSW (T)		
30.11.2018 (Friday)							
1	W-Zone. Circle. 1-10	7	32.65	10	22.97	17	55.62
2	E-Zone. Circle 11-21	28	132.17	39	87.40	67	219.57
3	5 Municipalities & 1 GP	13	60.74	--	--	13	60.74
4	Food waste in Corp. truck	4	21.26	7	26.28	11	47.54
	Total	**52**	**246.82**	**56**	**136.65**	**108**	**383.47**
25.11.2018 (Sunday)							
1	W-Zone. Circle. 1-10	5	19.46	8	20.07	13	39.53
2	E-Zone. Circle. 11-21	14	71.53	27	63.83	41	135.36
3	5 Municipalities & 1 GP	13	61.90	--	--	13	61.90
4	MSW brought in Corp. truck	5	29.70	7	15.56	12	45.26
	Total	**37**	**182.59**	**42**	**99.46**	**79**	**282.05**

Note: 1. Average quantity of biodegradable waste received is 250 TPD and non-biodegradable waste received is 100 TPD (Source:Kochi Corporation)

2. The estimated quantity of manure generated from the composting process is 20 TPD.(The manure generated is sold by the contractor @Rs.5 per kilogram)

Concern1. It can be concluded therefore that the compost plant is currently functioning at its capacity, but frequently there are

cases wherein the loads are beyond the capacity and it is expected that it will only increase in future.

4. Location details and current scenario of the plant

4.1 The Composting Plant has six sheds (See Photo 1 for location of sheds near Kadambrayar). A view of the Composting Plant is given as Photo-2. The details of sheds and their status are given in Table 4. The floor area of the main composting shed is found adequate for composting the biodegradable waste received in the plant, if the windrow composting is done as per protocol and the shed is in a condition for proper use.

Photo - 1

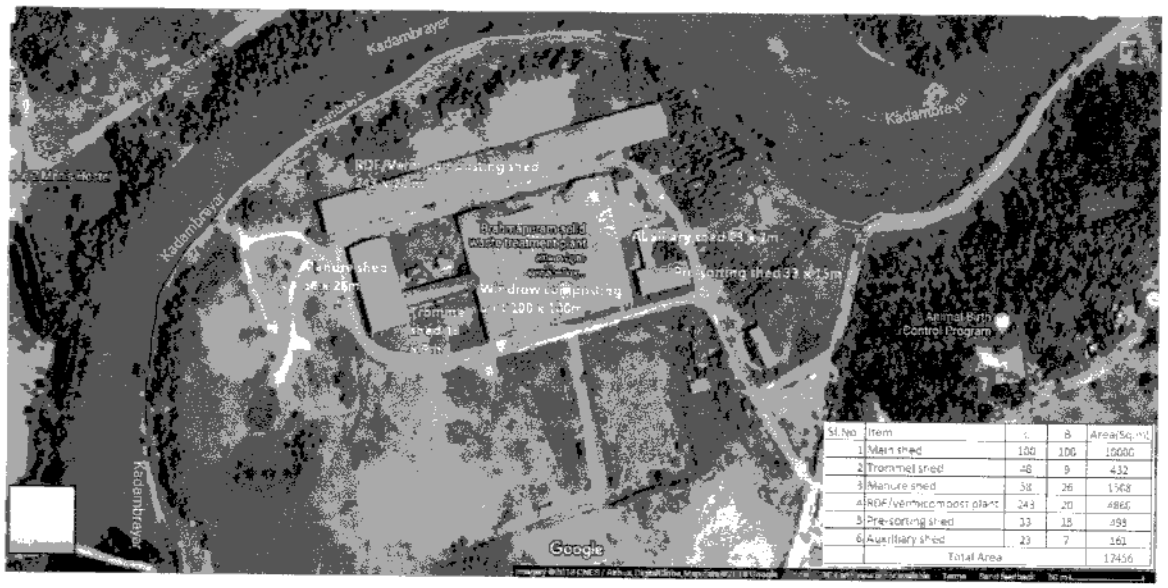


Table 4

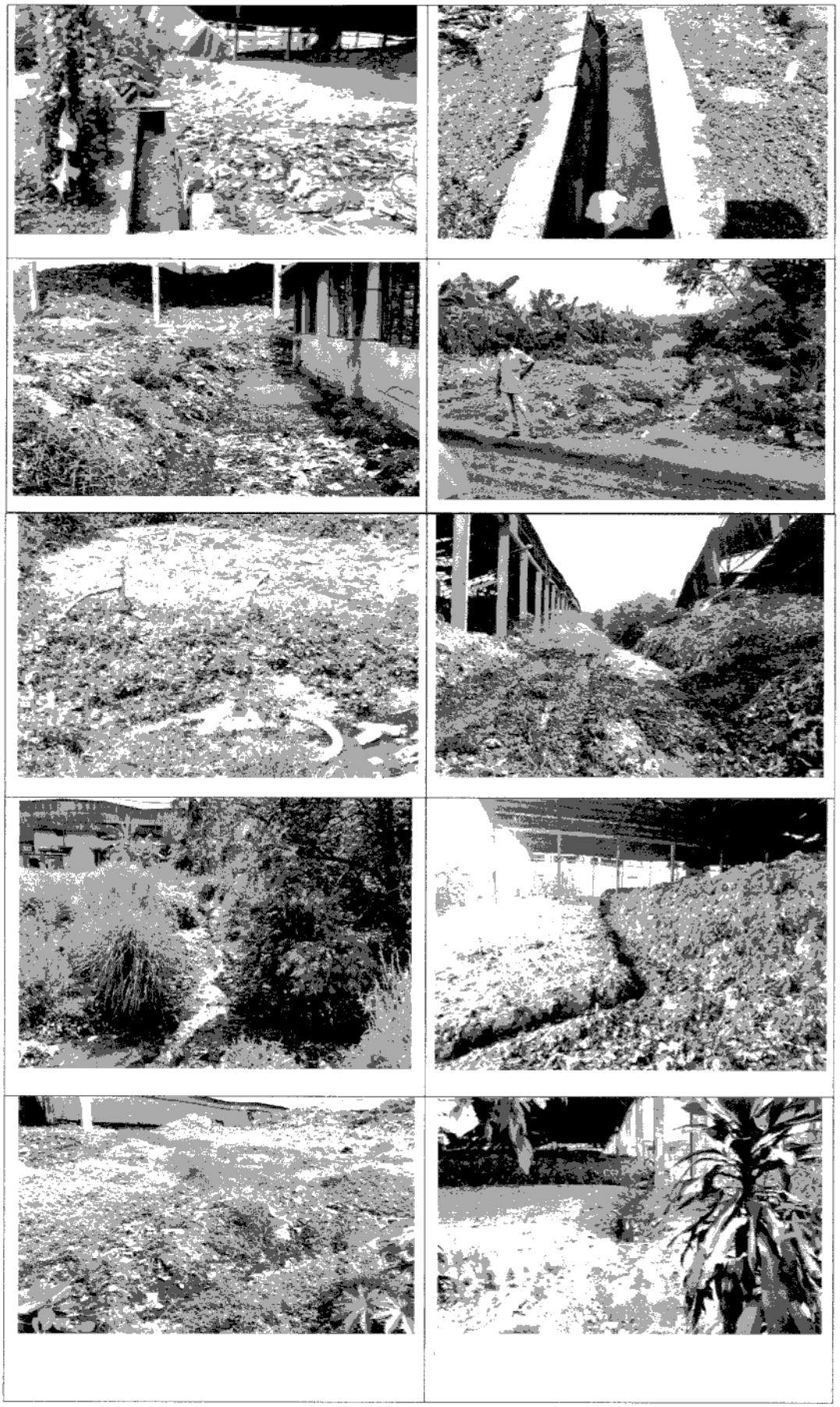
Sl. No	Name of shed	Size (m x m)	Area (m2)	Remarks on status
1	Main composting shed	100X100	10000	Structure dilapidated at places; therefore, prima facie found unsafe.
2	Trommel shed	48X9	432	Not maintained properly
3	Manure shed	58X26	1508	Structure of the shed not intact, floor area not maintained properly

4	Auxiliary shed	23X7	161	Not under proper use
5	Pre-sorting shed	33X15	495	Structure intact, Not under use
6	RDF/Vermi-composting shed	243X20	4860	Structure not intact, old waste dumped inside reportedly for use when the waste to energy plant will be in place
	TOTAL		**17456**	

Photo- 2

4.2In the composting plant, the inner garland drain is unable to be delineated. The outer garland drain is traceable on south, south-east and south-west sides. The drain is fully clogged almost everywhere and is not properly functional. The plastered drain is now dilapidated at many places. There is no proper drainage available in the north, north-east and north-west sides. Only earthen channels are found available which are silted/ clogged and it has no proper slope or continuity.(See Photo 3)

Photo - 3



Concern 2. The plant is in a dilapidated condition. No proper drainage is available to collect and channelise the leachate generated to any particular collection system. This causes the leachate to be seen accumulated at various points and in the drains which are silted/ clogged.

4.3 Leachate generation: Considering that the plant receives an average of 250 ton/day of biodegradable waste and the current situation of the plant, the quantity of leachate generation assessed by Kochi Corporation and agreed by Kerala State Pollution Control Board is 10 KLD.

Concern 3. The segregation of the waste cannot be carried out properly since the trommels and the conveyor systems are not fully functional. Hence there is a situation of biodegradable wastes going into rejects which accumulate and generate leachate.

5. Waste Recovery

At source level, plastic carry bags and similar kind of plastics are recovered, shredded and supplied through Clean Kerala Company Ltd for use in road tarring. Of the estimated 100 tonnes of plastic/non-biodegradable waste tipped in the plant, about 1 ton of waste is recovered and sent for recycling. A huge dump of legacy non-biodegradable waste of an estimated quantity of 65000 tonnes is spread over an area of about 16 acres within the solid waste management facility. Apart from this, around 2200 Tonnes of flood waste is found accumulated in about 4 acres of land.

Concern 4. Inefficient waste recovery leads to accumulation of dry wastes.

6. Remedial Measures

Kochi Corporation is in the process of establishing a Waste to Energy (W2E) Plant nearby, expected to be functional in around two years. Once the

W2E plant is in place and functional, the concerns regarding managing the solid wastes are expected to be addressed.

Therefore remedial measures to be taken are grouped as follows:

6.1. Immediate Measures to be taken up on an emergency basis before 19.12.2018: To address the uncontrolled flow of leachate in the premises of the plant, polluting the surroundings.

6.2. Short Term Measures to be carried out in 2-3 months

6.3. Mid Term Measures to be taken up in 2-6 months

6.4. Long Term Measures to be addressed until the W2E plant will be in place and functional.

6.1. Immediate Measures to be taken up on an emergency basis before 19.12.2018

a) The outer drains that are clogged and silted need to be cleaned and continuity of flow ensured. This will help in identifying the current slope and as well as the flow direction.

b) Currently leachates are flowing from the waste processing plant as kucha drains at various spots. This can be corrected by PVC closed conduits or semicircular PVC gutters. These pipes shall be properly channeled to the outer drains. This will prevent any infiltration of leachate into the soil there.

c) In the open space between the main plant and the RDF/Vermi composting unit on northern side where currently only an earthen drain is found, the same shall be cleared, the slope checked to properly drain all the leachate flowing from that side.

Since construction of concrete drains at this end on an emergency basis is impossible, these drains may be lined with LDPE/HDPE sheets properly anchored to check infiltration of

leachate into the soil. The leachate drains emanating from that side could be channelised in the same way as mentioned in b) above.

d) Based on the activities a, b and c above the collection points for the entire leachate emanating from the treatment plant can be located. If proper gradient is ensured, the leachate can be got accumulated at one point, i.e. the South West end. Otherwise, more than one collection point may be required.

e) The space is lost for forming windrows because of the indiscriminate dumping and heaping of waste in the windrow composting yard. The existing dumps should be arranged to form windrows in a sequential manner.

f) Two or three Ferro-cement collection tanks/sumps as found necessary, of 5000 litre capacity each may be used in series to collect the leachate. This can address the immediate leachate conveyance and collection issue.

g) Treatment of Leachate: The characteristics of leachate are such that it contains high BOD (~8000 ppm) & COD (~20000 ppm) and such leachates are expected to have higher heavy metal concentrations. Biological or Non-biological Treatment processes may be adopted for treating this leachate. Given the emergency situation, processes like Chemical & Physico-Chemical processes may be considered. The processes like electrolytic flotation-coagulation techniques can be considered in the present scenario.

Service providers/ agencies capable of installing portable/mobile Electrolytic Treatment Systems can be considered to address the issue of leachate treatment on an emergency basis.

The treated effluent shall be tested and it shall be ensured that it meets the discharge standards as per Kerala State Pollution Control Board norms.

6.2. Short Term Remedial Measures to be initiated in two to three months:

Although the immediate measures can deal with the containment of leachate and since it is assumed that the proposed W2E plant will take at least two years to be fully operational, measures have to be initiated to find solution for:

a) Proper segregation, collection and treatment of bio degradable waste

   i. Kochi Corporation needs to take active measures towards educating the waste collection units for a properly segregated waste collection system so that only the biodegradable part of the wastes comes for treatment.

   ii. The proper segregation of wastes in the other local bodies is extremely important to reduce the environmental stress on the plant.

b) Repair of the malfunctioning trommels: Steps to be initiated and taken by the Corporation in repairing the trommels, the sieves and the conveyor systems to meet the design requirements. This will lead to a proper segregation of the non-degradable content, thereby reducing rejects and also minimizing the leachate generated from the dumps.

c) Proper collection and drainage arrangements:

   i. Measures to construct drains for capture, conveyance and collection of leachate can be initiated. These

drains are to be regularly maintained to ensure proper flow.

ii. Separate drains for storm water and leachate can be considered as it will reduce the quantity of leachate to be managed. Appropriate measures shall be taken like providing temporary cover to the existing drain conveying leachate to prevent rain water intrusion.

d) Solution for Treatment of Leachate:

i. Measures may be taken to establish a proper treatment system considering the viability and feasibility.

ii. Tenders may be invited from experienced suppliers of suitable technology to establish a semi permanent leachate treatment system. The technology adopted has to be one that can be commissioned within a definite timeframe, cost effective, easy to install, operate and maintain.

e) Steps to be taken so that the currently dysfunctional plastic shredding and baling unit have to be functional.

f) The capacity of the plastic shredding unit has to be increased in consultation with Clean Kerala Company.

g) Recovery of Non-biodegradable Legacy Wastes and Land Reclamation:

Considering the huge quantity of non biodegradable wastes in dump, competitive bids can be invited from those who can manage, mine, recover and remove the accumulated legacy wastes, so that only inert rejects are landfilled to save the available land. Such reclaimed land can be used for

constructing engineered sanitary landfill for disposing of the rejects generated after recovery and generation of compost.

In the case of flood waste, it is understood that the district administration is in the process of its disposal in the nearby engineered landfill of Kerala Enviro Infrastructure Ltd (KEIL) in consultation with LSGD & Kerala State Disaster Management Dept.

6.3 Mid-Term Remedial Measures to be initiated in two to six months:

The short-term measures initiated can be implemented within this period.

a) Proper segregation to be in place. Only segregated bio degradable waste shall be processed in the composting plant. There will be reduction in the quantity of waste entering the plant.

b) The suggested repairs of the trommels as in 6.2.b to be completed for qualitative functioning of the Plant. This will reduce the amount of rejects and further increase recovery of biodegradable waste for composting.

c) Given the fact that segregated bio degradable waste of manageable quantity will only come into the plant in two to three months and proper windrow composting will be in place, separate leachate collection system within the windrow system can be considered. The leachate thus generated will be bio degradable and can be reused for spraying in the windrow composting improving the quality of compost.

d) A fully functional suitable leachate treatment facility to be in place.

6.4 Long-Term Remedial Measures until the Waste to Energy Plant will be in place:

With the functioning of the W2E plant, it is expected that all MSW from of Kochi Corporation will be treated there. No waste of any form will come into the current treatment plant for processing and the plant will be decommissioned.

However, until the W2E plant starts functioning, segregated waste has to be treated using the current treatment processes.

a) The actions with regard to non-biodegradable waste mentioned in Para 6.2 e, f and g when implemented will ensure that the non-biodegradable waste is recycled and inert rejects only are landfilled.

b) Only fully segregated biodegradable waste need to be accepted for Windrow Composting. This has to be ensured by awareness generation measures and training of all waste collectors/segregators of Kudumbasree/Haritha Karma Sena. This is of paramount importance.

c) Regular de-silting and de-clogging of the garland drains for conveying leachate has be carried out.

d) Ensuring that measures are taken to implement the short and midterm targets, only inert rejects need to be land filled. This has to be done scientifically. Therefore there arises a requirement for a scientifically engineered sanitary landfill having adequate capacity to dispose of the rejects generated after recovery of legacy waste and from the compost plant over a period of two years.

A strict monitoring mechanism has to be in place which will also ensure sound environmental management measures for the plant and its surroundings.

Renju R Pillai
Senior Consultant (Design)
Suchitwa Mission

Sreekumar S
Environmental Expert
AMRUT Mission

Kiran Surya K.T
Environmental Engineer
Kochi Corporation

Dr. Mithra.T. IAS
Additional Secretary
LSGD

11-12-2018.