	INSPECTION REPORT ON M/S EVB TECHNOLOGIES PVT. LTD., CBWTF, KANAVARAM, PALLAKADIUM VILLAGE, RAJANAGARAM MANDAL, EAST GODAVARI DISTRICT, ANDHRA PRADESH	**ZONAL OFFICE (SOUTH), BENGALURU**

Sl. No.	Details	Particulars
1.0	Name of CBWTF with contact details	M/s EVB Technologies Pvt. Ltd., Common Bio-medical Waste Treatment Facility (CBWTF), RS No. 560, Kanavaram, Pallakadium Village, Rajanagaram Mandal, East Godavari District, Andhra Pradesh Mr. D.Venkat Raju, Mob: 9177055999
2.0	Date of visit	02.09.2015
3.0	Location of CBWTF from the residential and sensitive area. Please give details	Located in isolated place away from Pallakadium village
4.0	Month / year of establishment	20.06.2002
5.0	CBWTF set up by	EVB Technologies
6.0	CBWTF operated by	EVB Technologies
7.0	Total number of healthcare facilities and beds covered (as on 02.09.2014)	No. of healthcare facilities - 576 No. of beds covered - 9993
8.0	Waste treatment capacity of CBWTF (kg / day)	250 Kg / hr.
9.0	Authorization details	Combined order of Consents & Authorization is valid till 31st January, 2016
10.0	Investment in setting up the CBWTF	Rs. 70,00,000/- (Rupees seventy lakh only)
11.0	Area of plot size for CBWTF	2 Acre
12.0	Coverage area of CBWTF (radius in km covered)	90 km

13.0	Name of cities / places being covered	Rajhamundry, Kakinada, Amalapuram, Razolu, Ravulapalem & Tuni.
14.0	Daily operation schedule (timings)	Collection: 6 A.M. TO 2 P.M. Incineration: 2 P.M. TO 6 P.M.
15.0	Cost charged to the healthcare facilities	Rs. 2.50 to 3.50/bed/day
16.0	**Total quantity of bio-medical waste treated (kg per day)**	kg/day (avg.)
16.1	Incinerable	620 kg/day
16.2	Autoclaving	15 kg/day
16.3	Others (please specify) Sharps	 ---
17.0	**Staff involvement in CBWTF operation (number of persons)**	
17.1	Managerial / Administration	2 Nos.
17.2	Equipment operations	1 No.
17.3	Transportation of BMW	8 Nos.
17.4	Sanitation and others	3 Nos.
17.5	Security	2 Nos.
18.0	**Treatment equipment installed at CBWTF**	
18.1	Incinerator (capacity, make, air pollution control devices etc.)	Incinerator Capacity: 250 kg /hr. Make: Hema Heavy Engineering Incinerator exhaust is connected to stack through APCDs such as Venturi & Wet Scrubbers.
18.2	List the shortcomings and any other observations on incineration system with reference to guidelines	1. Provision has not been made in the primary chamber to measure the water column pressure. 2. Scrubbing medium was not used with Venturi & Wet Scrubbers due to damage occurred in these APCDs.
18.3	Details of heat recovery system installed with incinerator	Nil
18.4	Capacity of autoclave and make	Fully Automatic type of 100 L capacity. Make: Ketan

18.5	Capacity of shredder and make	Capacity: 50 kg/hr. Make: Hema Heavy Engineering
18.6	List the shortcomings and any other observations on autoclave / microwave / hydroclave and shredder system with reference to CPCB guidelines	1. It is recorded only date, time and temperature in the Autoclave. Load identification No. and pressure details are not recorded. 2. In the autoclave, the pressure gauges placed at jacket as well as chamber was found not working. 3. As the pressure gauge was found not working, the pressure maintained was not known.
18.7	Give details of sharp pit / encapsulation facility	This facility is not available.
18.8	Give observation on vehicle / container washing facility	Satisfactory.
18.9	**Water balance**	
18.9.1	Source and quantity of water intake per day (cu.m / day)	Bore well (1 No.) 2.00 KLD
18.9.2	Break up of water usage (such as washing, scrubbing etc.)	Industrial (Scrubbing & Washing) – 1.30 KLD Domestic – 0.70 KLD
18.9.3	Total water effluent generated per day	Industrial - 0.75 KLD Domestic - 0.25 KLD
18.10	Effluent treatment plant details	Collection Tank having Zig Zag System → Eq. tank → Primary Settling Tank → Aeration Tank → Sec. Clarifier → Sand filter → Carbon filter → Treated water collection tank → This treated water is used for gardening. As scrubbing liquid was not used in ventury and scrubber due to damage occurred in these equipments, there was no liquid effluent from this section to ETP. Now, only the effluent generated during washing is treated in ETP as informed by the industry. There was no influent to ETP during inspection.
18.10.1	Flow chart of ETP	ETP flow chart is enclosed here with as **Annexure - 1.**

18.10.2	Intake and discharge of ETP	The intake is very less quantity of effluent generated out of washing and the treated water is discharged on land for plantation.
18.10.3	If treated water reused, give details. If not, mode of disposal and compliance to the regulatory requirements	Treated water is not reused and used for on land for plantation as stipulated in the consent order.
19.0	**Status of infrastructure (Yes / No)**	
19.1	Treatment equipment room	Separate room not provided for each equipment. All are kept in common shed.
19.2	Main waste storage room	A small room is available.
19.3	Treated waste storage room	A small room is available.
19.4	Administrative room	A small room is available.
19.5	Generator set (size and regulatory compliance details)	55 KVA. **Acoustic barrier not provided and stack provided is not as per norms.**
19.6	Site security (high walls, fencing, guarded gates etc.)	Compound wall with gate is provided. Round the clock security provided.
19.7	Parking facility	Yes
19.8	Sign board	**Sign board not available**.
19.9	Green belt	Yes
19.10	Washing room	Yes
19.11	First aid box	Yes
19.12	Lighting arrangements	Yes
19.13	Odour problem remedial	No remedial measures carried out.
19.14	Fire fighting and emergency facilities	Yes
19.15	Measures for control of pests / insects etc.	Pesticide is sprayed to control pests/insect, if required.
19.16	Protective gear for waste handlers	No
19.17	Telephone facility	Yes
20.0	**Record keeping details**	
	Does the CBWTF operator have record keeping system as per the CPCB guidelines (waste movement	Yes

	records, log book for equipment, site records etc.)? Specify shortcomings observed, if any	
21.0	**Collection and transportation status (Yes / No)***	
21.1	Whether waste collected in a container of similar colour with label as per the Rules?	Yes
21.2	Whether the person who collects BMW maintains a register with him / her?	Yes
21.3	Has due attention have been given in vehicles to prevent spillage / pilferage/ loading / unloading etc.?	Yes
21.4	Is the vehicle labeled with the symbol and display the name, address, telephone number etc.?	Yes
21.5	Does the CBWTF operator use satellite station to store the waste? If yes, give details	No
21.6	The CBWTF operator collects waste daily or alternate day? Whether criterion of 48 hours is complied?	Most of the places collected daily and only in few places collected alternate days due to long distance. Yes
22.0	**Disposal of treated waste**	
22.1	Plastic waste after treatment	Sent to recycler authorized by State Board
22.2	Treated sharps	Sent to TSDF, Parawada, Visakhapatnam
22.3	Incineration ash	Sent to TSDF, Parawada, Visakhapatnam
22.4	Other treated solid wastes	NA
22.5	Oil & grease	Used lubricating oil from D.G.Set is sold out to oil reprocessing units.
22.6	Treated wastewater	Completely recycled
23.0	**Monitoring details**	
23.1	Frequency of incinerator / autoclave / microwave / hydroclave / ETP	As the facility is not carrying out any monitoring, results are not submitted to SPCB.

<table>
<tr><td></td><td>discharge effluent testing and name of the laboratory (specify approved or not). Give details of compliance / non-compliance)</td><td></td></tr>
<tr><td>23.2</td><td>Frequency of site inspection by SPCBs/PCCs/CPCB/any other agencies</td><td>As and when required.</td></tr>
<tr><td>24.0</td><td>CPCB's monitoring details</td><td></td></tr>
<tr><td>24.1</td><td>Incinerators stack emission (parameters stipulated in the Rules, temperature attainment in the chambers, residence time in the secondary chamber etc.)</td><td>
<table>
<tr><td>Parameter</td><td>PM</td><td>SO_2</td><td>HCl</td><td>NOx</td><td>C.E.</td></tr>
<tr><td>Concentration</td><td>69</td><td>---</td><td>BDL</td><td>08</td><td>97.35</td></tr>
<tr><td>Limit</td><td>150</td><td>---</td><td>50</td><td>450</td><td>99.00</td></tr>
</table>
All values are in mg/Nm^3, except CE which is in %.
PM value given above is after 12% CO_2 correction.
</td></tr>
<tr><td>24.2</td><td>Incineration ash characteristics in order to conclude whether it falls under the category of hazardous waste as per the HWM Rules</td><td>Ash characteristics not carried out.</td></tr>
<tr><td>24.3</td><td>Validation / efficacy test of autoclave / microwave / hydroclave</td><td>The facility did not demonstrate validation / efficacy test using chemical indicator strip by operating the autoclave.</td></tr>
<tr><td>24.4</td><td>ETP inlet characteristics</td><td>There was no influent to ETP at the time of inspection and hence no sample was collected.</td></tr>
<tr><td>24.5</td><td>ETP outlet parameters (parameters as per the required regulatory requirement)</td><td>
<table>
<tr><td>Parameter</td><td>pH</td><td>TSS</td><td>COD</td><td>BOD</td><td>O&G</td></tr>
<tr><td>Concentration</td><td>2.5</td><td>91.2</td><td>108</td><td>22.5</td><td>BDL</td></tr>
<tr><td>Limit</td><td>6.5 - 9.0</td><td>100</td><td>250</td><td>30</td><td>10</td></tr>
</table>
All values are in mg/l except pH
</td></tr>
<tr><td>25.0</td><td colspan="2">OBSERVATIONS:
• The unit was found in operation during inspection. The combined order of consents issued under Water & Air Acts and Authorization is valid till 31.01.2016.
• Sign board was found not displayed anywhere near the entrance of the factory.
• The facility is having PLC based control system for automatic recording of operational parameters of the incinerator and found working.
• No device has been installed to measure negative draft in primary chamber, air flow rate in the incinerator chamber and pressure drop across venturi scrubber</td></tr>
</table>

attached with the incinerator.

- Flue gas analyzer is not available with the facility to measure CO, CO_2 and O_2 level in stack gases daily, at least for ½ hour at one minute interval.
- The facility has not installed online Continuous Stack Emission Monitoring System (CSEM) in the stack attached to the incinerator.
- The results of source emission monitoring carried out in the incinerator stack during inspection of the facility is presented below:

Parameter	PM in mg/Nm^3 (after CO_2 correction)	NO_X in mg/Nm^3	HCl in mg/Nm^3	O_2 in %	CO in PPM	CO_2 in %	CE in %
Concentration	69	08	BDL	16.2	1500	5.5	**97.35**
Limit	**150**	**450**	**50**	**minimum 3**	**---**	**---**	**99.00**

The above stack emission monitoring results reveal that the Combustion Efficiency is 97.35% which is less than the limit prescribed of minimum 99% under Schedule V of the BMW Rules. The test report is enclosed here with as **Annexure – 2.**

- The operator of the facility is not carrying out the stack emission monitoring of the incinerator stack for PM, HCl, NO_x, CO, CO_2, O_2 & CE, also, the volatile organic matter in the incinerator ash, validation test of autoclave and applicable parameters of liquid effluent being discharged from ETP through approved laboratory and submitting quarterly report to SPCB.
- The results of liquid effluent sample collected at the ETP outlet during inspection of the facility is provided below:

Parameter	pH	TSS	COD	BOD	O&G
Concentration	**2.5**	91.2	108	22.5	BDL
Limit	**6.5 - 9.0**	**100**	**250**	**30**	**10**

All values are in mg/l except pH

The above results show that the pH of the discharged effluent is highly acidic and not as per the prescribed limit. The test report is enclosed here with as **Annexure – 3.**

- The facility is having 55 KVA D.G. Set. Acoustic barrier not provided and stack provided is not as per norms of Emission Regulation Part - IV.
- Provision has not been made in the primary chamber to measure the water column

	pressure. • Scrubbing medium was not used with Venturi & Wet Scrubbers due to damage occurred in scrubber tank. To replace the scrubber and cyclone dust collector, the facility has already placed the work order and a copy of which was shown during inspection. • No provision for mechanical feeding exists with the autoclave. Autoclave record shows that it records only date, time and temperature. There is no facility to record load identification number and pressure details. Pressure Gauge found not working
26.0	**RECOMMENDATIONS:** The facility should be directed:- – To take control measures to maintain the pH of discharged effluent from ETP within the limit as prescribed in the consent order immediately. – To install the devices to measure negative draft in primary chamber, air flow rate in the incinerator chamber and pressure drop across venturi scrubber attached with the incinerator. – To have flue gas analyzer to measure CO, CO_2 and O_2 levels in stack gases daily. – To make provision with the autoclave for mechanical feeding. – To upgrade the existing facility of the autoclave in order to record pressure details and load identification number along with date, time and temperature. – To subject the waste in the autoclave to **i)** a temperature of not less than 121 °C and pressure of 15 psi per an autoclave residence time of not less than 45 minutes **or ii)** a temperature of not less than 135 °C and pressure of 31 psi per an autoclave residence time of not less than 30 minutes in the case of vacuum autoclave possessed by the unit. – To carry out the stack emission monitoring of the incinerator stack for PM, HCl, NO_x, CO, CO_2, O_2 & CE, also, the volatile organic matter in the incinerator ash, validation test of autoclave and applicable parameters for liquid effluent, if discharged, through approved laboratory and submit the quarterly report to SPCB. – To provide acoustic barrier with the D.G. Set and installation of stack as per norms of Emission Regulation Part – IV. – To make provision in the primary chamber to measure the water column pressure as minimum negative draft of 1.27 to 2.54 mm of water column to be maintained to avoid leakage of gaseous emissions from the chamber and also for safety reasons. – To replace the scrubber and cyclone dust collector at the earliest and not to allow to

	operate the system without scrubbing medium. – To display an identification board of durable material covering the name of the facility, the name, address and telephone number of the operator and the prescribed authority, the hours of operation and the telephone numbers of personnel to be contacted in the event of an emergency along with hazardous waste generation & its disposal details, standards prescribed in the combined consent order etc. at the entrance of the facility.	
27.0	Date of Inspection	September 02, 2015
	Name and Designation of Inspecting officers	1. Mr. S Jeyapaul, Scientist 'C', Zonal Office, Bengaluru 2. Mr. K.Karunagaran, STS, Zonal Office, Bengaluru 3. Mr. Mr.S.Nadarajan, JLA, Zonal Office, Bengaluru
28.0	Signature of the officer	(S.Jeyapaul) Scientist `C`
29.0	**Action Recommended:** This CBMWTF should be directed to comply with all recommendations made by inspection team by submitting time bound action plan. (S.Suresh) Zonal Officer	

ANNEXURE - 4

PHOTOGRAPHS TAKEN DURING INSPECTION

Fig 1: View of the facility

Fig 2: View of BM waste transporting vehicle

Fig 3: View of incinerator

Fig 4: View of Programmable Logic Control

Fig 5:View of APCDs attached with incinerator

Fig 6: View of ETP

Fig 7: View of stack connected to incinerator

Fig 8: View of D.G.Set room where stack of D.G.Set projected side ways