



**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 | <u>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</u> 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 31 st 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 |

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| 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 |

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| 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 | <ol style="list-style-type: none"> 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. |

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| 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 |

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| | 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. |

| | discharge effluent testing and name of the laboratory (specify approved or not). Give details of compliance / non-compliance) | | | | | | | | | | | | | | | | | | | |
|---------------|--|--|------------|-----------------|-----------------|-----|-----------------|------|---------------|------------|------|-----|------|--------------|-------|------------------|------------|------------|------------|--------------|
| 23.2 | Frequency of site inspection by SPCBs/PCCs/CPCB/any other agencies | As and when required. | | | | | | | | | | | | | | | | | | |
| 24.0 | CPCB's monitoring details | | | | | | | | | | | | | | | | | | | |
| 24.1 | Incinerators stack emission (parameters stipulated in the Rules, temperature attainment in the chambers, residence time in the secondary chamber etc.) | <table border="1"> <thead> <tr> <th>Parameter</th> <th>PM</th> <th>SO₂</th> <th>HCl</th> <th>NO_x</th> <th>C.E.</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>All values are in mg/Nm³, except CE which is in %. PM value given above is after 12% CO₂ correction.</p> | Parameter | PM | SO ₂ | HCl | NO _x | C.E. | Concentration | 69 | --- | BDL | 08 | 97.35 | Limit | 150 | --- | 50 | 450 | 99.00 |
| Parameter | PM | SO ₂ | HCl | NO _x | C.E. | | | | | | | | | | | | | | | |
| Concentration | 69 | --- | BDL | 08 | 97.35 | | | | | | | | | | | | | | | |
| Limit | 150 | --- | 50 | 450 | 99.00 | | | | | | | | | | | | | | | |
| 24.2 | Incineration ash characteristics in order to conclude whether it falls under the category of hazardous waste as per the HWM Rules | Ash characteristics not carried out. | | | | | | | | | | | | | | | | | | |
| 24.3 | Validation / efficacy test of autoclave / microwave / hydroclave | The facility did not demonstrate validation / efficacy test using chemical indicator strip by | | | | | | | | | | | | | | | | | | |
| 24.4 | ETP inlet characteristics | There was no influent to ETP at the time of inspection and hence no sample was collected. | | | | | | | | | | | | | | | | | | |
| 24.5 | ETP outlet parameters (parameters as per the required regulatory requirement) | <table border="1"> <thead> <tr> <th>Parameter</th> <th>pH</th> <th>TSS</th> <th>COD</th> <th>BOD</th> <th>O&G</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>All values are in mg/l except pH</p> | 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 |
| 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 | | | | | | | | | | | | | | | |
| 25.0 | <p>OBSERVATIONS:</p> <ul style="list-style-type: none"> 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 | | | | | | | | | | | | | | | | | | | |

attached with the incinerator.

- Flue gas analyzer is not available with the facility to measure CO, CO₂ and O₂ 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, CO₂, O₂ & 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

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| | <p>pressure.</p> <ul style="list-style-type: none"> • 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 |
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| 26.0 | <p>RECOMMENDATIONS:</p> <p>The facility should be directed:-</p> <ul style="list-style-type: none"> — 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, CO₂ and O₂ 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, CO₂, O₂ & 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 |
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| | <p>operate the system without scrubbing medium.</p> <p>— 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.</p> | |
| 27.0 | Date of Inspection | September 02, 2015 |
| | Name and Designation of Inspecting officers | <ol style="list-style-type: none"> 1. Mr. S Jeyapaul, Scientist 'C', Zonal Office, Bengaluru 2. Mr. K.Karunakaran, 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 | <p>Action Recommended: This CBMWTF should be directed to comply with all recommendations made by inspection team by submitting time bound action plan.</p> <p style="text-align: right;">(S.Suresh) Zonal Officer</p> | |

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