

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI  
ORIGINAL APPLICATION NO. 529 OF 2024**

In the matter of: -

News Item titled "MCD's First Engineered Landfill Opens" appearing in  
The Times of India dated 13.03.2024

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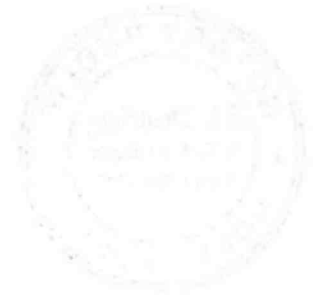
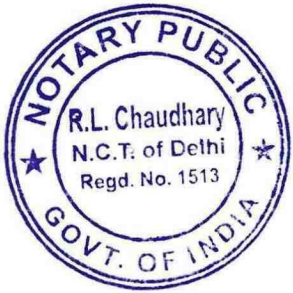
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<b>1.</b>	<b>Response of CPCB</b> in compliance to Hon'ble NGT order dated 14.05.2024, in O.A. No. 529/2024; News Item titled "MCD's First Engineered Landfill Opens" appearing in The Times of India dated 13.03.2024"	
<b>2.</b>	<b>Annexure I:</b> A copy of Hon'ble NGT order dated 15.05.2024, in O.A. No. 529 of 2024.	
<b>3.</b>	<b>Annexure II:</b> A copy of authorisation under the solid waste management rules, 2016 granted by DPCC to The Executive Engineer Municipal Corporation Department, Delhi dated 18.01.2024	
<b>4.</b>	<b>Annexure III:</b> A copy of compliance report filed by CPCB before Hon'ble NGT, PB dated 22.03.2021 in O.A. No. 640/2018 in (Earlier O.A. No. 22/2013 <sub>(THC)</sub> )	



**Filed by Advocate: -  
Atif Suhrawardy  
(On behalf of Central Pollution Control Board)**

Dated: 27.08.2024  
Place: Delhi

**(RESPONSE OF CPCB IN COMPLIANCE TO HON'BLE NGT  
ORDER DATED 14.05.2024 NEWS ITEM TITLED "MCD'S  
FIRST ENGINEERED LANDFILL OPENS" APPEARING IN  
THE TIMES OF INDIA DATED 13.03.2024)**

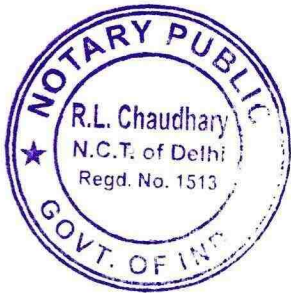


**CENTRAL POLLUTION CONTROL BOARD**  
*(Ministry of Environment, Forest & Climate Change)*  
"Parivesh Bhawan", East Arjun Nagar,  
Delhi-110032

**27, August, 2024**

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**Response of CPCB in compliance to Hon'ble NGT order dated 15.5.24 in OA No. 529/ 2024 dated 14.05.2024**

**1.0 BACKGROUND**

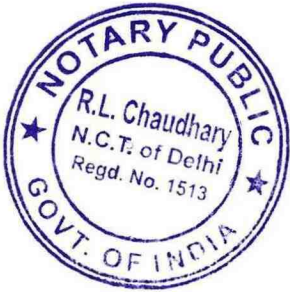
Original Application 529/2024 has been registered suo motu by Hon'ble NGT on the basis of news item titled "MCD's First Engineered Landfill Opens" appearing in 'The Times of India' dated 13.03.2024. CPCB has been enlisted as Respondent on the matter. Following are the Directions issued by Hon'ble NGT in its Order dated May 15, 2024 (**Annexure I**):

- **Para 7:** Hence, we implead the following as respondents in this matter:
  - (i). Municipal Corporation of Delhi, through its Commissioner, Dr. S.P.M. Civic Centre, Minto Rd, SKD Basti, Press Enclave, Ajmeri Gate, Delhi - 110002.
  - (ii). Delhi Pollution Control Committee, through its Member Secretary, 4th and 5th Floor, ISBT Building, Kashmere Gate, Delhi-110006.
  - (iii). **Central Pollution Control Board, Through its Member Secretary Parivesh Bhawan, East Arjun Nagar, Delhi- 110032**
  - (iv). District Magistrate, South East Delhi, Old Gargi College Building, Lajpat Nagar, New Delhi -110003.
- **Para 8:** Let notice be issued to the above respondents for filing their response at least one week before the next date of hearing
- **Para 9:** The Respondents are required to explain as to why this ash is being dumped at the site in question when ash can be used as landfill in low lying area, brick kilns as construction material for hollow bricks and interlocking tiles etc.

**2.0 MAJOR ISSUE RAISED IN THE NEWS ITEM**

The following major issues have been raised in the said News Article as per the Hon'ble NGT Order

- a. **Ash Disposal in Tehkhand Landfill:** Concerns have been raised about the decision to dispose of ash and other processing waste from the Okhla and Tehkhand waste-to-energy plants in the newly engineered Tehkhand landfill.
- b. **Ash Utilization:** The article raises questions as to why the ash is not being used in more sustainable ways, such as in landfills for low-lying areas, brick kilns, or as construction material for hollow bricks and interlocking tiles.



- c. **Compliance to stipulated norms:** The news item raises substantial issue relating to compliance of the environmental norms and implementation of the provisions of scheduled enactment.

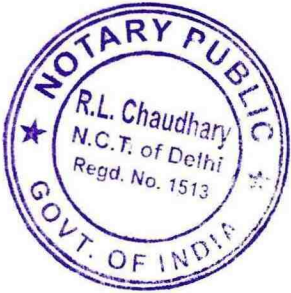
The response of CPCB on above mentioned issues are presented as under:

### 3.0 REGULATORY FRAMEWORK

#### 3.1 Provisions of SWM Rules, 2016

MoEF&CC has notified Solid Waste Management Rules, 2016 vide notification dated April 8, 2016 for practicing safe and scientific management/ handling of municipal solid waste in the Country. Following are the salient provision of Rules related to the matter

- Clause 15 of SWM Rules, 2016 stipulates the duties and responsibilities of local authorities, relevant clauses are represented as under:
  - (w) undertake on their own or through any other agency construction, operation and maintenance of sanitary landfill and associated infrastructure as per Schedule 1 for disposal of residual wastes in a manner prescribed under these rules;
  - (zi) 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.
- Schedule II, Para C (Note) of SWM Rules, 2016 outlines following criteria for management and disposal of ash generated from incineration processes:
  - (d) if the concentration of toxic metals in incineration ash exceeds the limits specified in the Hazardous Waste (Management, Handling and Trans boundary Movement) Rules, 2008, as amended from time to time, the ash shall be sent to the hazardous waste treatment, storage and disposal facility.
  - (h) Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve total Organic Carbon (TOC) content in the slag and bottom ash less than 3%, or the loss on ignition is less than 5% of the dry weight.



#### 3.2 Authorization granted by DPCC to Engineered Sanitary Landfill at Tehkhand

Authorisation has been granted by DPCC vide dated 18.01.2024 (valid till 05.04 2024) (Annexure II) under the Solid Waste Management Rules, 2016, for Disposal of only Ash / Inert

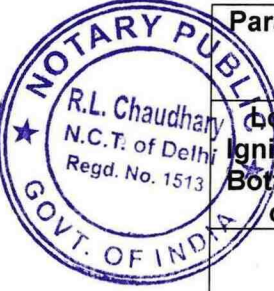
material / Rejects including Ash / Inert / Rejects generated from existing Waste to Energy Plant at Okhla & Waste to Energy Plant at Tehkhand.

#### 4.0 ANALYSIS OF ASH AND OPPORTUNITIES FOR ECO-FRIENDLY UTILIZATION

CPCB has inspected three Waste-to-Energy (WtE) plants in Delhi jointly with DPCC, namely: M/s Timarpur Okhla Waste Management Company Limited at Okhla, M/s Delhi MSW Solutions Ltd. at Bawana, M/s East Delhi Waste Processing Company Ltd. at Ghazipur during September-October 2022 in compliance of Directions issued by Hon'ble NGT in OA No. 640/2018. The report submitted to Hon'ble NGT by CPCB is placed at **Annexure-III**.

Analysis of results of bottom ash & fly ash as per the aforementioned report is given in Table 1.0 below :

**Table 1.0 : Analysis result of bottom ash and fly ash generated from WtE plant at Okhala, Bawana & Ghazipur, Delhi**



Parameters	Standard/Limit	Measured values (WtE plant at Okhala)		Measured values (WtE plant at Bawana)		Measured values (WtE plant at Ghazipur)	
		Bottom Ash	Fly Ash	Bottom Ash	Fly Ash	Bottom Ash	Fly Ash
Loss on Ignition (for Bottom ash only)	<5%*	2.29%		1.67%		1.89%	
<b>Arsenic</b>	5 mg/l#	BDL	BDL	BDL	BDL	BDL	BDL
<b>Cadmium</b>	1 mg/l#	BDL	BDL	BDL	BDL	0.52	0.14
<b>Chromium</b>	5 mg/l#	0.05	0.26	0.08	0.69	BDL	BDL
<b>Manganese</b>	10 mg/l#	BDL	BDL	BDL	BDL	3.01	3.15
<b>Lead</b>	5 mg/l#	0.03	0.05	BDL	BDL	0.08	0.04
<b>Selenium</b>	1 mg/l#	BDL	BDL	BDL	BDL	BDL	BDL
<b>Copper</b>	25 mg/l#	0.29	BDL	0.01	BDL	1.52	0.83
<b>Nickel</b>	20 mg/l#	BDL	BDL	BDL	BDL	0.42	0.2
<b>Zinc</b>	250 mg/l#	0.03	0.15	0.02	0.04	10.79	11.43
<b>Cobalt</b>	80 mg/l#	BDL	BDL	BDL	BDL	0.12	0.11
<b>Vanadium</b>	24 mg/l#	BDL	BDL	BDL	BDL	BDL	BDL
<b>Antimony</b>	15 mg/l#	BDL	BDL	BDL	BDL	0.36	0.05

\*Standards prescribed by DPCC in the Consent to Operate.

#Concentration Limit to categorise as hazardous waste as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, notified under the Environment (Protection) Act, 1986.

From the above table, it is observed that the concentration of toxic metals in incineration ash is within the limits specified in the Hazardous Waste Management Rules, 2016. Therefore,

this ash or inert material may be used more sustainably in several applications, such as fill material for low-lying areas, construction of road embankment, in brick kilns, or as construction material for hollow bricks and interlocking tiles. **Accordingly, the following was recommended in the aforementioned report:**

“Okhla plant should utilize 100% flyash for beneficial purposes like manufacturing bricks etc. and time bound Action plan should be submitted for the same” .....what about Bawana and Ghazipur plant ....???

## 5.0 CONCLUSIONS

- a) WtE plant operators/Local authorities may explore the options for using inert bottom ash and fly ash of WtE plant for construction of road embankment for NH & State roads, brick kilns, or as construction material for hollow bricks and interlocking tiles. Additionally, every effort be made to recycle or reuse rejects to achieve the objective of zero waste going to landfills as per rules 15 (zi) of the SWM Rules, 2016.
- b) Time bound Action Plan be prepared by local authorities & submitted to Delhi Pollution Control committee (DPCC) for utilization of bottom ash and fly ash of WtE plant incineration
- c) Local authorities/DPCC to monitor the implementation of action plan for utilization of bottom ash and fly ash of WtE plant



(Divya Sinha)  
Scientist 'F'  
Central Pollution Control Board

**BEFORE HON'BLE NATIONAL GREEN TRIBUNAL,  
PRINCIPAL BENCH, NEW DELHI  
Original Application No. 529/2024**

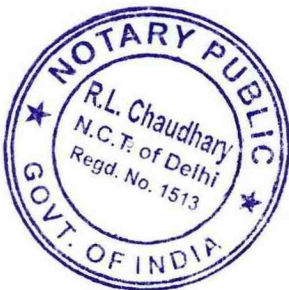
**IN THE MATTER OF:-**

News Item titled "MCD's First Engineered Landfill Opens" appearing in The Times of India dated 13.03.2024.

**AFFIDAVIT**

I, Divya Sinha, working as Scientist 'F' in Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi, the Respondent No. 3 in the above matter, do hereby solemnly affirm, declare on oath and state as under:-

1. That I, the deponent herein is authorized representative to represent the Respondent CPCB in the present case, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent and authorized to verify, sign and swear this affidavit on behalf of the Respondent CPCB.
2. That the accompanying reply may be read part and parcel of the present affidavit as I am competent to swear this affidavit.
3. That the accompanying reply has been drafted and filed under my instructions and authority the contents thereof are true and correct on the basis of the record maintained during ordinary course of business of CPCB and available records and documents and the contents of the same are read over and explained to me and are not repeated herein for the sake of brevity.



*Divya Sinha*

**DEPONENT**

**दिव्या सिन्हा / Divya Sinha**  
**वैज्ञानिक 'एफ' / Scientist 'F'**  
**केंद्रीय प्रदूषण नियंत्रण बोर्ड**  
**Central Pollution Control Board**  
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
(Ministry of Environment, Forest & Climate Change, Govt. of India)  
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032  
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

**VERIFICATION:**

27 AUG 2024

Verified at New Delhi on this day of \_\_\_\_\_ 2024 that the contents of the above reply are correct and true on the basis of the records of the case as mentioned in the day-to-day affairs of the CPCB. Nothing has been concealed therefrom or mis-stated.



**ATTESTED**  
  
**NOTARY PUBLIC**  
**GOVT. OF INDIA**

27 AUG 2024

Divy.

**DEPONENT**

**दिव्या सिन्हा / Divya Sinha**  
**वैज्ञानिक 'एफ' / Scientist 'F'**  
**केंद्रीय प्रदूषण नियंत्रण बोर्ड**  
**Central Pollution Control Board**  
 (पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
 (Mo Environment, Forest & Climate Change, Govt. of India)  
 परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032  
 Parivesh Bhawan, East Arjun Nagar, Delhi-110032

Item No. 06

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 529/2024

News Item titled "MCD's First Engineered Landfill Opens" appearing in The Times of India dated 13.03.2024

Date of hearing: 14.05.2024

**CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON  
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER  
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER**

**ORDER**

1. This Original Application is registered *suo-motu* on the basis of the news item titled "MCD's First Engineered Landfill Opens" appearing in 'The Times of India' dated 13.03.2024
2. The news item relates to the opening of Delhi's first engineered landfill in Tehkhand (South East Delhi). As per the article, this launch will be a significant step towards sustainable waste management and environment conservation. The article states that this modern plant will have an arrangement to process the ash released after disposal of garbage. The article further states that MCD operates three landfill sites in Delhi, of which the one in Okhla is likely to be cleared out by year end. No fresh waste is allegedly disposed here. The Bhalsawa site is likely to be cleared out by 2025 and the Ghazipur site by 2025. NGT in its orders in OA No. 17/2023, OA No. 300/2022, OA No. 288/2022 and OA No. 606/2018 has given directions and imposed compensation related to the above mentioned landfill sites.

3. The news item states that the new plant will be used for disposing ash and other processing waste generated after burning waste at the two waste-to-energy plants in Okhla and Tehkhand. Earlier, this ash was dumped at the landfill causing inconvenience to local people. The article quotes that for dumping this ash, MCD will get Rs 300 per tonne. About 500 tonnes of ash will be dumped here daily. The concerned authorities are required to disclose as to why this ash is being dumped here when ash can be used as a landfill in low lying areas, brick kilns, as construction material for hollow brick and interlocking tiles etc.

4. The above matter relates to compliance of the Solid Waste Management Rules, 2016 and the Environment Protection Act, 1986.

5. The news item raises substantial issue relating to compliance of the environmental norms and implementation of the provisions of scheduled enactment.

6. Power of the Tribunal to take up the matter *suo-motu* has been recognized by the Hon'ble Supreme Court in the matter of "*Municipal Corporation of Greater Mumbai vs. Ankita Sinha & Ors.*" reported in 2021 *SCC Online SC 897*.

7. Hence, we implead the following as respondents in this matter:

- (i). Municipal Corporation of Delhi, through its Commissioner, Dr. S.P.M. Civic Centre, Minto Rd, SKD Basti, Press Enclave, Ajmeri Gate, Delhi -110002.
- (ii). Delhi Pollution Control Committee, through its Member Secretary, 4<sup>th</sup> and 5<sup>th</sup> Floor, ISBT Building, Kashmere Gate, Delhi-110006.

- (iii). Central Pollution Control Board, Through its Member Secretary Parivesh Bhawan, East Arjun Nagar, Delhi-110032
- (iv). District Magistrate, South East Delhi, Old Gargi College Building, Lajpat Nagar, New Delhi -110003.

8. Let notice be issued to the above respondents for filing their response at least one week before the next date of hearing.

9. The Respondents are required to explain as to why this ash is being dumped at the site in question when ash can be used as landfill in low lying area, brick kilns as construction material for hollow bricks and interlocking tiles etc.

10. List on 29.08.2024.

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. Afroz Ahmad, EM

May 14, 2024  
OA No. 529/2024  
HB



DELHI POLLUTION CONTROL COMMITTEE  
DEPARTMENT OF ENVIRONMENT, GOVT. OF NCT OF DELHI  
5<sup>th</sup> FLOOR, ISBT BUILDING, KASHMERE GATE, DELHI-110006  
visit us at : <https://dpcc.delhigovt.nic.in>



## FORM-II

**AUTHORISATION UNDER THE SOLID WASTE MANAGEMENT RULES, 2016**

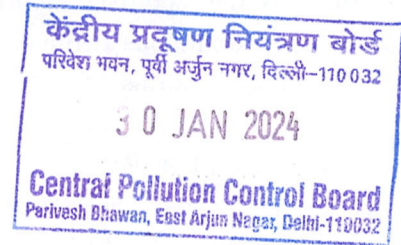
F. No. DPCC/WMC-II/SLF/Tekhhand/Public Hearing/2018/105-109

Dated: 18.01.2024

Authorisation No. : DPCC/WMC II/SWM-Authorisation/2024/01

To,

The Executive Engineer (QC) / WtE,  
Municipal Corporation of Delhi,  
Room No 6, Gate No. 4, Ambedkar Stadium,  
New Delhi -110002



Ref: Your Application No. 10264972 Dated 22.11.2023 regarding request for Authorisation under the Solid Waste Management Rules, 2016

Delhi Pollution Control Committee (DPCC) after examining the proposal hereby authorises **Executive Engineer (QC) / WtE of Municipal Corporation of Delhi**, having administrative Office at Room No. 6, Gate No. 4, Ambedkar Stadium, Delhi-110002 to operate Engineered Sanitary Landfill for Municipal Solid Waste at **Tekhhand Village, Okhla, Delhi – 110020** on the basis of application for Authorisation and documents submitted and referred above.

The Authorisation is hereby granted under the Solid Waste Management Rules, 2016, **for six month** to operate the facility of Engineered Sanitary Landfill for Municipal Solid Waste (for Disposal of only Ash / Inert material / Rejects including Ash / Inert / Rejects generated from existing Waste to Energy Plant at Okhla & Waste to Energy Plant at Tekhhand) with **validity upto 05.04.2024**.

The Authorisation is subject to the terms and conditions stated below and such conditions as may be otherwise specified in these rules and standards laid down in Schedules I & II under these rules.

The Delhi Pollution Control Committee (DPCC) may, at any time, revoke any of the conditions applicable under the Authorisation and shall communicate the same in writing.

Any violation of the provision of the Solid Waste Management Rules, 2016, will attract the penal provision of the Environment (Protection) Act, 1986 (29 of 1986).

Date: 18.01.2024

Place: Delhi

for  
AM-OPC-II

(D.K. Singh)

Additional Director

Delhi Pollution Control Committee

D. K. Singh

Additional Director

Delhi Pollution Control Committee

4th & 5th Floor, I.S.B.T. Building,  
Kashmere Gate, Delhi-110006

Enclosure: Terms and Conditions of Authorization under the Solid Waste Management Rules, 2016.

S. C. (SP)

Dy  
8/2

**Terms and Conditions of Authorisation under the Solid Waste Management Rules, 2016 in respect of Engineered Sanitary Landfill of Municipal Corporation of Delhi for Municipal Solid Waste at Tehkhand, Okhla, Delhi -110020.**

1. The Authorisation under the Solid Waste Management Rules, 2016 is **granted for six month** for the activity of Engineered Sanitary Landfill for Municipal Solid Waste at Tehkhand, Okhla, Delhi – 110020 with the condition that Project Proponent shall follow the specifications for Sanitary Landfills and other provisions of the Solid Waste Management Rules, 2016 and following conditions :
  - (i) Effluent Analysis Report of inlet and outlet of Leachate Treatment Plant shall be submitted from any of the NABL approved laboratory for the prescribed parameters **within 02 months**.
  - (ii) Online Continuous Effluent Monitoring System (OCEMS) for the treated effluent from as per the guidelines / norms of CPCB shall be installed and the real-time data shall be transferred to the servers of CPCB and DPCC. Calibration of OCEMS shall be carried out as per the Guidelines / Protocols of CPCB.
  - (iii) The facility shall ensure that online data of OCEMS shall be cross-checked with manual monitoring to validate the OCEMS results.
  - (iv) Piezometer wells shall be installed in and around the facility to monitor the ground water quality in consultation with DPCC / CPCB. Trend analysis of ground water quality shall be carried out in each season and information shall be submitted to DPCC and the Regional Office of MoEF&CC.
  - (v) Adequate buffer zone / green belt along the periphery of the Facility in 3 Tiers shall be developed & maintained to comply with conditions stipulated in Environmental Clearance given by MoEF&CC. A buffer zone of no development shall be maintained around the facility. Bamboo plantation shall be done at the boundary of the facility to prevent dust from the facility to the surrounding area.
2. Only Ash / Inert material / Rejects including Ash / Inert / Rejects generated from existing Waste to Energy Plant at Okhla & Waste to Energy Plant at Tehkhand in the area of Municipal Corporation of Delhi shall be disposed in the Engineered Sanitary Landfill at Tehkhand.
3. The operator of the facility shall comply with the conditions prescribed by the Ministry of Environment, Forest and Climate Change (MOEF&CC), Govt. of India in the Environmental Clearance issued vide letter F. No. 10 – 8 / 2018 – IA- III Dated 29.10.2018.
4. The operator of the facility shall comply with the observations and the recommendations given by Central Empowered Committee vide Report dated 13.12.2017 in Application No. 1414 of 2017 and also mentioned in the Order dated 16.07.2018 of Hon'ble Supreme Court in Writ Petition(s) (Civil) No(s). 202/1995 in the matter of T. N. Godavarman Thirumulpad Versus Union of India and Ors.
5. The Authorization is Activity specific and based on the information provided in the Authorization Application along with the documents/subsequent documents/ information submitted to Delhi Pollution Control Committee (DPCC). The operator of the facility shall apply for fresh Auhtorization in case of any change in the activity / process.
6. The operator of the facility shall display the Name of the Facility along with its Address, Name of the Project Incharge / Director etc., Contact Phone No(s) and its Activities on a Display Board to be placed / fixed at the main gate of the Facility.
7. The operator of the facility shall not extract Ground Water without permission from Delhi Jal Board / CGWA. as per the various Orders / Notifications issued in this regard.
8. The operator of the facility shall operate & maintain the Engineered Sanitary Landfill as per the provisions of Solid Waste Management Rules, 2016, Guidelines of Ministry of Urban Development, Govt. of India and Central Pollution Control Board in this regard from time to time. Temporary storage facility for solid waste shall be established at the landfill site to accommodate the waste in case of non-operation of facility during emergency or natural calamities.

*Anupam Issrani*

*JL*

9. The operator of the facility shall comply with the provisions of the Environment (Protection) Act, 1986, as amended to date and Rules made thereunder including following Rules :
- (i) Solid Waste Management Rules, 2016, as amended to date.
  - (ii) Construction and Demolition Waste Management Rules, 2016, as amended to date.
  - (iii) The Plastic Waste Management Rules, 2016, as amended to date.
  - (iv) The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended to date.
  - (v) E-Waste (Management) Rules, 2022 , as amended to date.
  - (vi) The Battery Waste Management Rules, 2022, as amended to date.
  - (vii) The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, as amended to date,

All such wastes if generated from the facility will be managed and handled as per the provisions of the said Rules and will be disposed only through the Recycler / Reprocessor Authorised by MOEF&CC / Central Pollution Control Board / State Pollution Control Board / Committee / DPCC.

10. The operator of the facility shall provide and properly maintain the following facilities :
- (i) Fencing / Hedging of the site.
  - (ii) Proper gate to monitor incoming vehicles to prevent entry of unauthorised persons and stray animals.
  - (iii) Concreted / Paved Approach & Internal Roads to avoid generation of dust particles due to vehicular movement and to ensure free movement of vehicles and other machinery.
  - (iv) Waste inspection facility to monitor waste brought in for landfilling.
  - (v) Office facility for record keeping & shelter for keeping equipment and machinery including pollution monitoring equipment. Records / Log Books of Municipal Solid Waste Received for disposal / landfilling. Materials Recovered / Recycled etc. on daily basis.
  - (vi) Weigh Bridge to measure quantity of waste brought at the facility, Fire Protection Equipment and other facilities as may be required.
  - (vii) Utilities such as drinking water and sanitary facilities (preferably washing / bathing facilities for workers) and lighting arrangements for easy landfill & other operations during night hours.
  - (viii) Safety provisions including health inspections of workers.
  - (ix) Parking, cleaning, washing of transport vehicles carrying solid waste. The wastewater so generated to be treated in the Leachate Treatment Plant (LTP/ETP) to meet the prescribed standards.

11. The operator of the facility shall manage the Odour from the facility as per the guidelines of CPCB issued from time to time.

12. The operator of the facility shall not use fresh water except for potable use. Potable water requirement of one KLD will be sourced from Delhi Jal Board and for other usage Treated Water from Okhla STP shall be used.

13. The operator of the facility shall not discharge any Trade Effluent (including Leachate) or Sewage Effluent from the premises of the facility.

**Quantum of Effluent Discharge from the facility (i) Trade Effluent – Nil**  
**(ii) Sewage / Domestic Effluent – Nil.**

14. The operator of the facility shall properly collect all the leachate, wheel wash water (from washing of wheels of incoming and outgoing vehicles using Mechanical Wheel Washer) & other waste water including rain water runoff generated from the facility from various sources, treat the same in Leachate Treatment Plant (LTP) / Effluent Treatment Plant (ETP) of 100 KLD Capacity followed by MEE (Multiple Effect Evaporator). Toxicity Characteristic Leaching Procedure (TCLP) tests shall be performed on leachate. The facility for handling, storage and disposal of LTP/ETP sludge shall be

*Sanjay Singh*

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provided. The operator of the facility shall use / recycle treated effluent from LTP/ETP within the premises of the facility e.g. in Horticulture, Green Belt / Plantation etc. to achieve zero liquid discharge. Leachate Treatment Plant (LTP) / Effluent Treatment Plant (ETP) installed shall meet the prescribed standards as given at Annexure - I.

Electromagnetic Flow Meters shall be provided and maintained at the Inlet & Outlet of the Leachate Treatment Plant (LTP)/ Effluent Treatment Plant (ETP) to measure the quantity of Leachate & waste water generated from other sources and its treatment. No Bypass (Pipe / Drain) shall be provided. Records /Logbooks shall be maintained on daily basis for the operation & maintenance of the Leachate Treatment Plant (LTP) / Effluent Treatment Plant (ETP) including Leachate & waste water generated from other sources received, treated & used/recycled, use of various chemicals, Quality of Waste Water at Inlet and outlet of LTP, functioning of various units of LTP/ETP including mechanical Equipment / Parts etc. and shall be produced during the inspection of DPCC official(s).

In no case, leachate shall be released into open environment and arrangements shall be made to prevent leachate runoff from landfill area entering any drain, stream, river, lake or pond. In case of mixing of runoff water with leachate or solid waste, the entire mixed water shall be treated by the concerned authority.

15. The operator of the facility shall treat the waste water generated from toilets & bathrooms in septic tank and dispose the septic tank effluent / septage only through the Authorised Vendor by Delhi Jal Board for treatment of the same in the Sewage Treatment Plant of Delhi Jal Board.
16. The operator of the facility shall monitor Ground Water Quality for physico-chemical parameters through any of the NABL Laboratory registered with MoEF&CC/CPCB and maintain record by providing piezometric wells along the flow channel (up and down).
17. The operator of the facility shall follow the criteria for specifications for land filling operations and closure on completion of land filling as mentioned in Schedule I of Solid Waste Management Rules, 2016 including following :
  - (i) Waste for land filling shall be compacted in thin layers using heavy compactors to achieve high density of the waste.
  - (ii) The landfill cell shall be covered at the end of each working day with minimum 10 cm of soil, inert debris or construction material.
  - (iii) Prior to the commencement of monsoon season, an intermediate cover of 40-65 cm thickness of soil shall be placed on the landfill with proper compaction and grading to prevent infiltration during monsoon. Proper drainage shall be constructed to divert run-off away from the active cell of the landfill.
  - (iv) After completion of landfill, a final cover shall be designed to minimise infiltration and erosion. The final cover shall meet the following specifications, namely :--
    - a) The final cover shall have a barrier soil layer comprising of 60 cm of clay or amended soil with permeability coefficient less than  $1 \times 10^{-7}$  cm/sec.
    - b) On top of the barrier soil layer, there shall be a drainage layer of 15 cm.
    - c) On top of the drainage layer, there shall be a vegetative layer of 45 cm to support natural plant growth and to minimize erosion.
18. The operator of the facility shall follow the criteria for pollution prevention as mentioned in Schedule I of Solid Waste Management Rules, 2016 and arrangement shall be made to prevent leachate runoff from landfill area entering any drain, stream, river, lake or pond. Rain water runoff from the landfill area shall be collected and treated in the LTP/ETP.
19. The operator of the facility shall adopt and implement adequate safeguards to avoid any contamination of surface as well as ground water as specified in the Acts / Rules.

*Suban Singh*

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20. The operator of the facility shall ensure that adequate measures are taken to minimize the overland surface water flow (especially during monsoon season) in and around the landfill site.
21. The operator of the facility shall follow criteria for water quality monitoring as mentioned in Schedule I of Solid Waste Management Rules, 2016 including following :
- (i) Baseline data of ground water quality in the area shall be collected and kept in record for future reference. The ground water quality within 50 meter of the periphery of landfill site shall be periodically monitored covering different seasons in a year that is, summer, monsoon and post monsoon period to ensure that the ground water is not contaminated.
  - (ii) Usage of groundwater in and around landfill sites for any purpose (including drinking and irrigation) shall be considered only after ensuring its quality.
  - (iii) The specifications for drinking water quality shall be applicable for monitoring purpose and the same is given at **Annexure - II.**
22. The operator of the facility shall provide and maintain landfill gas control system including gas collection system at landfill site to minimize odour, prevent off-site migration of gases and to protect vegetation planted on the rehabilitated landfill surface. For enhancing landfill gas recovery, use of geo-membranes in cover systems along with gas collection wells should be considered. The concentration of methane gas at the landfill site shall not exceed 25% of the Lower Explosive Limit (LEL). The landfill gas collected from the facility shall be utilized for either direct thermal applications or power generation, as per viability. Otherwise, landfill gas shall be burnt (flared) and shall not be allowed to escape directly to the atmosphere or for illegal tapping. Passive venting shall be allowed in case if its utilisation or flaring is not possible.
23. The operator of the facility shall provide and maintain a vegetative cover over the completed site in accordance with the following specifications : (i) Locally adopted non-edible perennial plants that are resistant to drought and extreme temperatures shall be planted (ii) The selection of plants should be of such variety that their roots do not penetrate more than 30 cms. This condition shall apply till the landfill is stabilized. (iii) Selected plants shall have ability to thrive on low nutrient soil with minimum nutrient addition (iv) Plantation to be made in sufficient density to minimize soil erosion (v) Green belts shall be developed all around the boundary of the landfill in consultation with Delhi Pollution Control Committee.
24. The operator of the facility shall follow the criteria for post – care of landfill site as mentioned in Schedule I of the Solid Waste Management Rules, 2016 and given below :
- (1) The post-closure care of landfill site shall be conducted for at least fifteen years and long term monitoring or care plan shall consist of the following, namely :
    - (a) Maintaining the integrity and effectiveness of final cover, making repairs and preventing run-on and run-off from eroding or otherwise damaging the final cover;
    - (b) Monitoring leachate collection system in accordance with the requirement;
    - (c) Monitoring of ground water in and around landfill;
    - (d) Maintaining and operating the landfill gas collection system to meet the standards.
  - (2) Use of closed landfill sites after fifteen years of post-closure monitoring can be considered for human settlement or otherwise only after ensuring that gaseous emission and leachate quality analysis complies with the specified standards and the soil stability is ensured.
25. The operator of the facility shall maintain necessary precautions for prevention of bird menace in the said area.
26. The operator of the facility shall ensure & maintain proper drainage to divert run-off away from the active cell of the landfill.
27. The operator of the facility shall comply with the Noise standards laid down vide Gazette Notification of Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India Dated

*Arpan Singh*

*[Signature]*

17.05.2002 & 12.07.2004, as amended to date, in case of providing Diesel Generator Set at the facility. The operator of the facility shall provide and maintain the Acoustic Enclosure/ Acoustic Treated room for DG Set(s) in good condition and provide the adequate stack height for DG Set(s) to meet the prescribed standards/ norms. The operator of the facility shall not operate the DG Set(s) till compliance of the prescribed norms/standards for DG Sets.

Adequate stack height shall be provided with the DG Set(s) and the same shall be maintained.

Stack height of the D.G. Set (in meter) = Height of the Building (in meter) + 0.2  $\sqrt{\text{KVA}}$ .

28. The operator of the facility shall comply the other prescribed standards of Effluent / Emissions as prescribed and as applicable under the provisions of the Environment (Protection) Act, 1986, as amended to date and the various Rules made there under including the Noise Pollution (Regulation and Control) Rules, 2000, as amended to date.
29. The operator of the facility shall take adequate measures for control of noise level, from its own sources within the premises in respect of noise, to less than 75 dB (A) Leq during day time and 70 dB (A) Leq during night time to meet the prescribed ambient noise standards. Day time is reckoned between to 6 AM and 10 PM and night time reckoned between 10 PM to 6 AM.
30. The operator of the facility shall use only Approved Fuel as per the Notification of Delhi Pollution Control Committee Dated 29.06.2018 as amended to date.
31. The operator of the facility shall ensure proper channelization / control system for fugitive emissions generated from the various activities and maintain good housekeeping practices so as to maintain clean and safe environment in and around the premises of the facility.
32. The operator of the facility shall install Continuous Ambient Air Quality Monitoring Station (CAAQMS) for the prescribed parameters as mentioned in the Notification of MoEF&CC Dated 16.01.2009 within the premises. Calibration of CAAQMS shall be carried out as per the Guidelines/ Protocols of CPCB.
33. The operator of the facility shall regularly monitor the Ambient Air Quality in and around landfill site at upwind and downwind locations as mentioned in the Environmental Clearance issued by MoEF&CC on 29.10.2018. Ambient air quality shall meet the standards prescribed by the Central Pollution Control Board for Industrial area.
34. The operator of the facility shall provide facilities for medical check-up including pre-medical check-up, annual medical examination, appropriate health education and free medical treatment. The workers should be provided with safety appliances and certified handling equipment.
35. It will be the responsibility of the project proponent to obtain prior clearances /approval and ensure compliances under all other relevant Acts/ Rules/ Regulations/ guidelines/ instructions/ Court Orders/Tribunal Orders as applicable to this project.
36. This Authorization is valid subject to the fulfillment of all the other statutory requirements of other Laws/ Acts/Rules as applicable.
37. The operator of the facility shall submit the **Annual Report in Form III** as prescribed under the Solid Waste Management, Rules, 2016 to Delhi Pollution Control Committee and concerned Local Body (South Delhi Municipal Corporation) on or before the 30<sup>th</sup> day of April every year.
38. The operator of the facility shall not carry out any activity falling under the Prohibited/ Negative list of Industries (as mentioned in MPD-2021) which are prohibited in National Capital Territory of Delhi, as per Master Plan of Delhi.
39. The operator of the facility shall submit **Environment Statement** for each Financial Year ending 31<sup>st</sup> March in Form-V to DPCC.
40. The operator of the facility shall submit application for extension of Authorization one month in advance of the expiry date of this Authorization.

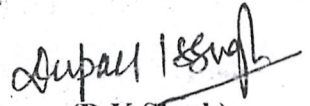
*Subpal Singh*

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In the event of any information furnished by the operator of the facility found to be false OR in case of failure to comply with any of the above mentioned conditions, Authorization granted through this Authorization shall be deemed to be revoked without any notice and necessary action as per law shall be taken.

Notwithstanding anything contained in this Authorization order, Delhi Pollution Control Committee hereby reserves to it the right & powers to review any / or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of enforcement of the Solid Waste Management Rules, 2016 and Environment (Protection) Act, 1986 as amended to date.

This issues in view of the Office Order F.No. DPCC/IT/EODB/2015/627-641 Dated 12.04.2016 & subsequent orders issued in this regard and as per the decisions taken by the Committee for II (a) Category Cases headed by Chairman, Delhi Pollution Control Committee.

  
(D.K.Singh)

Additional Director (WMC-II)

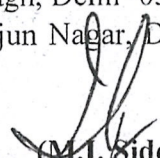
**D. K. Singh**

Additional Director

Delhi Pollution Control Committee  
4th & 5th Floor, I.S.B.T. Building  
Kashmere Gate, Delhi-110006

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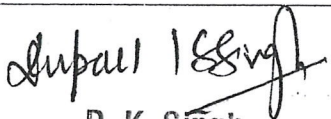
1. The Addl. Chief Secretary, Urban Development Department , Govt. of NCT of Delhi, Secretariat, I.P. Estate, New Delhi -110002.
2. The Commissioner, Municipal Corporation of Delhi (MCD), 9th Floor, Dr. S.P.M Civic Center, JLN Marg, New Delhi- 110002
3. The Chief Executive Officer, Delhi Jal Board, Varunalaya Ph-II, Jhandewalan, Karol Bagh, Delhi -05.
4. The Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi - 110032.

  
(M.I. Siddiqui)

Asst. Env. Engineer (WMC - II)  
Asstt. Environmental Engineer  
Delhi Pollution Control Committee  
5th Floor ISBT Building  
Kashmere Gate Delhi-110006

Standards for Treated Leachates & Other Waste Water

S.No.	Parameter		Standards
1.	Suspended Solids, mg/l, max	Not to Exceed	100
2.	Oil and Grease, mg/l, max	Not to Exceed	10
3.	Dissolved Solids (inorganic) mg/l, max.	Not to Exceed	2100
4.	pH value		5.5 to 9.0
5.	Ammonical Nitrogen (as N), mg/l, max.	Not to Exceed	50
6.	Total Kjeldahl Nitrogen (as N), mg/l, max.	Not to Exceed	100
7.	Biochemical Oxygen Demand (3 days at 27° C), mg/l, max	Not to Exceed	30
8.	Chemical Oxygen Demand, mg/l, max.	Not to Exceed	250
9.	Arsenic (as As), mg/l, max	Not to Exceed	0.2
10.	Mercury (as Hg), mg/l, max	Not to Exceed	0.01
11.	Lead (as Pb), mg/l, max	Not to Exceed	0.1
12.	Cadmium (as Cd), mg/l, max	Not to Exceed	2.0
13.	Total Chromium (as Cr), mg/l, max.	Not to Exceed	2.0
14.	Copper (as Cu), mg/l, max.	Not to Exceed	3.0
15.	Zinc (as Zn), mg/l, max.	Not to Exceed	5.0
16.	Nickel (as Ni), mg/l, max	Not to Exceed	3.0
17.	Cyanide (as CN), mg/l, max.	Not to Exceed	0.2
18.	Chloride (as Cl), mg/l, max.	Not to Exceed	1000
19.	Fluoride (as F), mg/l, max	Not to Exceed	2.0
20.	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH) mg/l, max.	Not to Exceed	1.0

  
D. K. Singh

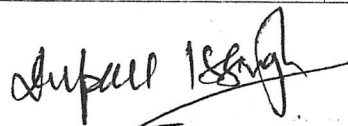
Additional Director  
Delhi Pollution Control Committee  
4th & 5th Floor, I.S.B.T. Building  
Kashmere Gate, Delhi-110006



M.I. Siddiqui  
Asstt. Environmental Engineer  
Delhi Pollution Control Committee  
5th Floor ISBT Building  
Kashmere Gate Delhi-110006

Specifications for Drinking Water Quality for Monitoring Purpose

S. No.	Parameters	Desirable Limit (mg/l except for pH) [ IS 10500 : 2012, Edition 2.2 ( 2003- 09) ]
1.	Arsenic	0.01
2.	Cadmium	0.01
3.	Chromium(as Cr <sup>6+</sup> )	0.05
4.	Copper	0.05
5.	Cyanide	0.05
6.	Lead	0.05
7.	Mercury	0.001
8.	Nickel	-
9.	Nitrate as NO <sub>3</sub>	45.0
10.	pH	6.5-8.5
11.	Iron	0.3
12.	Total Hardness (as CaCO <sub>3</sub> )	300.0
13.	Chlorides	250
14.	Dissolved Solids	500
15.	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	0.001
16.	Zinc	5.0
17.	Sulphate (as SO <sub>4</sub> <sup>2-</sup> )	200


**D. K. Singh**

Additional Director  
Delhi Pollution Control Committee  
4th & 5th Floor, I.S.B.T. Building  
Kashmere Gate, Delhi-110006


**M.I. Siddiqui**

Asstt. Environmental Engineer  
Delhi Pollution Control Committee  
5th Floor ISBT Building  
Kashmere Gate Delhi-110006

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

Principal Bench, New Delhi

Original Application No. 640/2018

In

(Earlier O. A. No. 22/2013(THC))

**In the matter of: -**Sukhdev Vihar Residents  
Welfare Association

Applicant(s)

Versus

State Of NCT of Delhi

Respondent(s)

**Index**

Sr. No.	Particulars	Page No.
1.	<b>Compliance Report</b> of Waste to Energy Plants in Delhi in Original Application No. 640/2018 (Earlier O. A. No. 22/2013(THC)) in the matter of Sukhdev Vihar Residents Welfare Association Vs State Of NCT of Delhi in compliance to the Hon'ble NGT orders dated 09.10.2017 & 27.09.2018 respectively.	
2.	<b>Annexure-I:</b> A copy of Hon'ble NGT orders dated 09.10.2017 & 27.09.2018.	

  
 (Divya Sinha)  
 Scientist-E

 Central Pollution Control Board,  
 Parivesh Bhawan, East Arjun Nagar,  
 Delhi- 110032.

Date: 22.03.2021

Place: Delhi

## Compliance Report of Waste to Energy Plants in Delhi

(Period: September-October, 2020)

As per Hon'ble NGT Vide its Order dated 09/10/2017, in OA No. 22 of 2013 THC & dated September, 27, 2018 in OA No. 640/2018 (Earlier OA No. 22/2013)



### CENTRAL POLLUTION CONTROL BOARD

(Ministry of Environment, Forest & Climate Change, Govt. of India)

'Parivesh Bhawan' C.B.D. Cum-Office Complex,

East Arjun Nagar, Shahdara, Delhi-110032

E-mail:divsinha@yahoo.com, Website- www.cpcb.nic.in

March, 2021




operational, joint inspection team from CPCB, DPCC and expert from IIT, Delhi monitored the plant on October 13-14, 2020. The inspection reports of the three WtE plants is given in the following sections.

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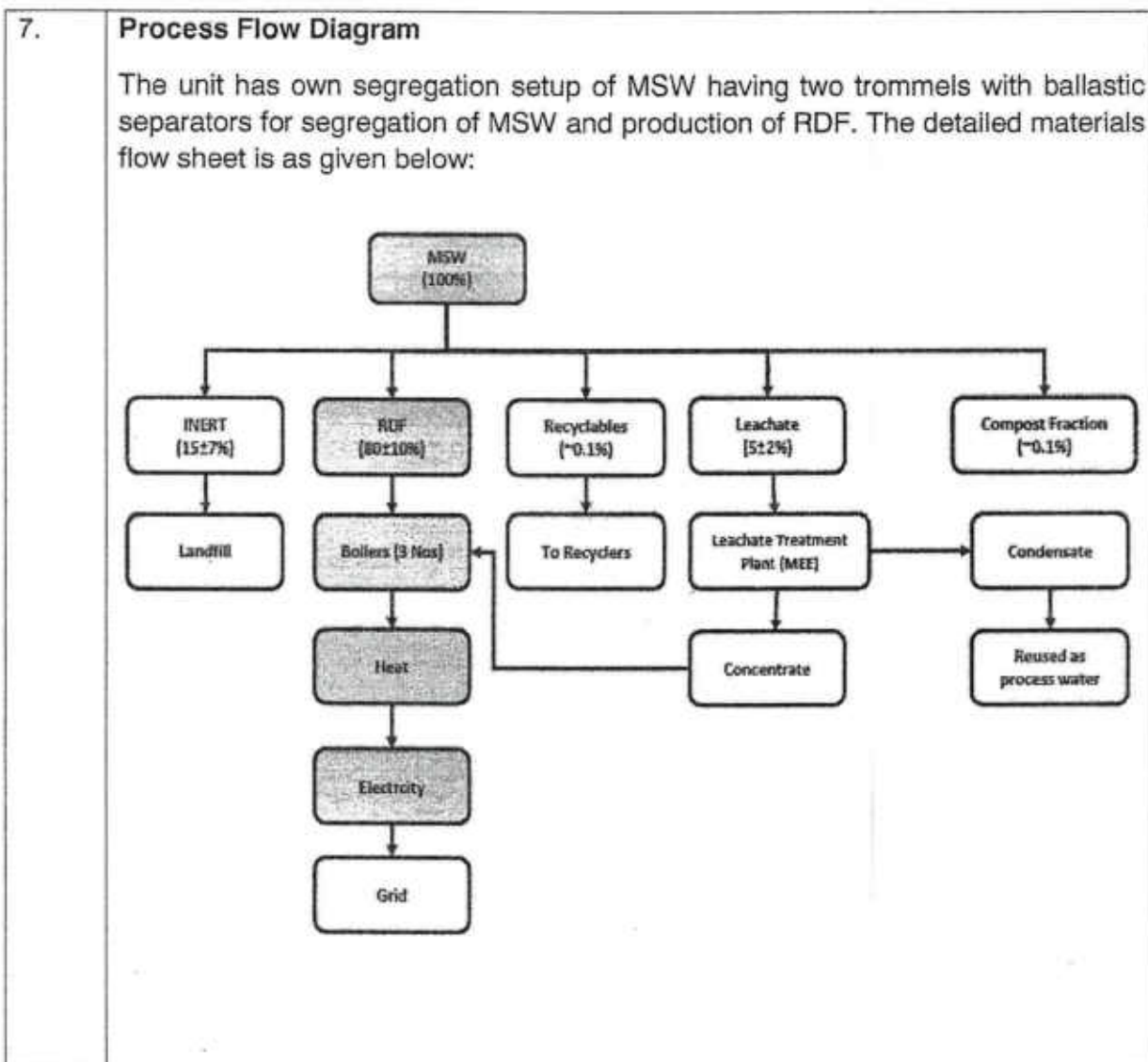
A. Jay

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Waste to Energy Plant Okhla

CENTRAL POLLUTION CONTROL BOARD, DELHI			
			
1	Name and address of the industry  Coordinates (Longitude & Latitude)	M/s Timarpur Okhla Waste Management Company Limited,  Old NDMC Compost Plant, Behind CRRI, Mathura Road, New Delhi-110025  Lat. 28.553672 & Long. 77.280838	
2.	Name of the occupier/contact person with  Telephone  Fax  E-mail	Mr. Sandeep Dutt  Mob. 09958360016  <a href="mailto:Sandip.dutt@jindalcopolis.com">Sandip.dutt@jindalcopolis.com</a>	
3.	Date of inspection / monitoring	September 21-22, 2020	
4.	Installed processing Capacity (as per consent)	As per DPCC Authorization letter dated 21.05.2020 the unit has capacity to process 1950 TPD MSW for subsequent generation of 23 MW power.	
5.	Production status (on date of inspection)	Operational	
6	Actual Power Generation	Details of power generation ranges during the said inspection	
	<b>Date</b>	<b>Power Generation (MW)</b>	
		<b>Time</b>	<b>Minimum</b> <b>Maximum</b>
	21.09.2020	6 AM to 6 PM	18.94      21.61
	22.09.2020	6 AM to 6 PM	18.68      21.11

Q. No.A. No.R. No.



**8. Air Pollution – Emission Sources & Control**

Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
Stack of the Waste to Energy plant (Three boilers connected to one stack)	60 mtrs	Scrubber followed by bag filters	Stack Monitoring Conducted by CPCB team & results are tabulated at <b>Table - 1</b>
9.	OCEMS Status	Installed with stack & was found operational during the inspection.	
10	Ambient Air Quality (Conducted at two locations namely Sukhdev Vihar & STP Okhla)	Ambient Air Quality Status are tabulated at <b>Table-2</b>	

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11.	Continuous Ambient Air Quality Station	CAAQMS not yet installed
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash are tabulated at <b>Table-3</b>

**Table 1: Analysis results of the stack emission monitoring of the WtE plant Okhla**

S. No.	Parameters	Monitor by	Standards as per Consent to Operate issued by DPCC	Standards as per Solid Waste Management Rules, 2016,	Date of Sampling	Measured values	
					21-22 September, 2020	Stack	
1.	PM	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		10.7	4.4
2.	Hydrogen Chloride		50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		198	
3.	SO <sub>2</sub>		100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL	BD L
4.	NO <sub>x</sub> (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )		350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		90.3	85.6
5.	CO		100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		1.8	
6.	HF		0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL	
7.	Sb + As + Pb +Cr+ Co+ Cu+ Mn + Ni+ V+ their compounds		0.5 mg/Nm <sup>3</sup>	0.5 mg/Nm <sup>3</sup>		0.012	
8.	Cd + Th +their compounds		0.05 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		-	
9.	Pb		0.1 mg/Nm <sup>3</sup>	Not prescribed		0.004	
10.	Hg		0.02 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		BDL	
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>	22-10.2020	0.99	
12.	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>		7.2	

Table-2. 24 hourly average values of ambient air quality monitoring

Date of sampling	Monitored by	Parameters	Prescribed Standard* (in $\mu\text{g}/\text{m}^3$ )	Measured values	
				Sukhdev Vihar Location-I	STP Okhla Location-II
21-23 September 2020	CPCB	PM <sub>10</sub>	100	85.66	72.33
		PM <sub>2.5</sub>	60	78	39
		NO <sub>2</sub>	80	41.66	28.33
		SO <sub>2</sub>	80	8.166	39

\*National ambient air quality standards as notified on dated 16.11.2009 under the Environment Protection Act, 1986.

Table 3: Analysis results of Bottom ash and Fly ash

Date of sampling	Parameters	Standard/Limit	Measured values	
21.09.2020	Loss on Ignition (for Bottom ash only)	<5%*	2.29%	
			<b>Bottom Ash</b>	<b>Fly Ash</b>
	Arsenic	5 mg/l <sup>#</sup>	BDL	BDL
	Cadmium	1 mg/l <sup>#</sup>	BDL	BDL
	Chromium	5 mg/l <sup>#</sup>	0.05	0.26
	Manganese	10 mg/l <sup>#</sup>	BDL	BDL
	Lead	5 mg/l <sup>#</sup>	0.03	0.05
	Selenium	1 mg/l <sup>#</sup>	BDL	BDL
	Copper	25 mg/l <sup>#</sup>	0.29	BDL
	Nickel	20 mg/l <sup>#</sup>	BDL	BDL
	Zinc	250 mg/l <sup>#</sup>	0.03	0.15
	Cobalt	80 mg/l <sup>#</sup>	BDL	BDL
	Vanadium	24 mg/l <sup>#</sup>	BDL	BDL
	Antimony	15 mg/l <sup>#</sup>	BDL	BDL

\*Standards prescribed by DPCC in the Consent to Operate.

<sup>#</sup>Concentration Limit to categorise as hazardous waste as per the Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016, notified under the Environment (Protection) Act, 1986.

## 13. Status of validity &amp; compliance of consent and authorization

	Consent/Authorization	Validity
I	Under Water Act	Valid till 24.09.2024
II	Under Air Act	Valid till 24.09.2024

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A.J.G.

R.V.

**14. Observations:**

- a. The processing capacity of the plant is 1950 TPD. However as informed, the plant received only 1652.51 TPD of mixed Municipal Solid Waste (MSW) on 21.09.2020.
- b. As informed, total RDF generation in the plant is approximately 1350 TPD. As per the logbook RDF used as fuel in boilers on 21.09.2020 & 22.09.2020 is tabulated at **Table 4:**

**Table 4: RDF Feed Record**

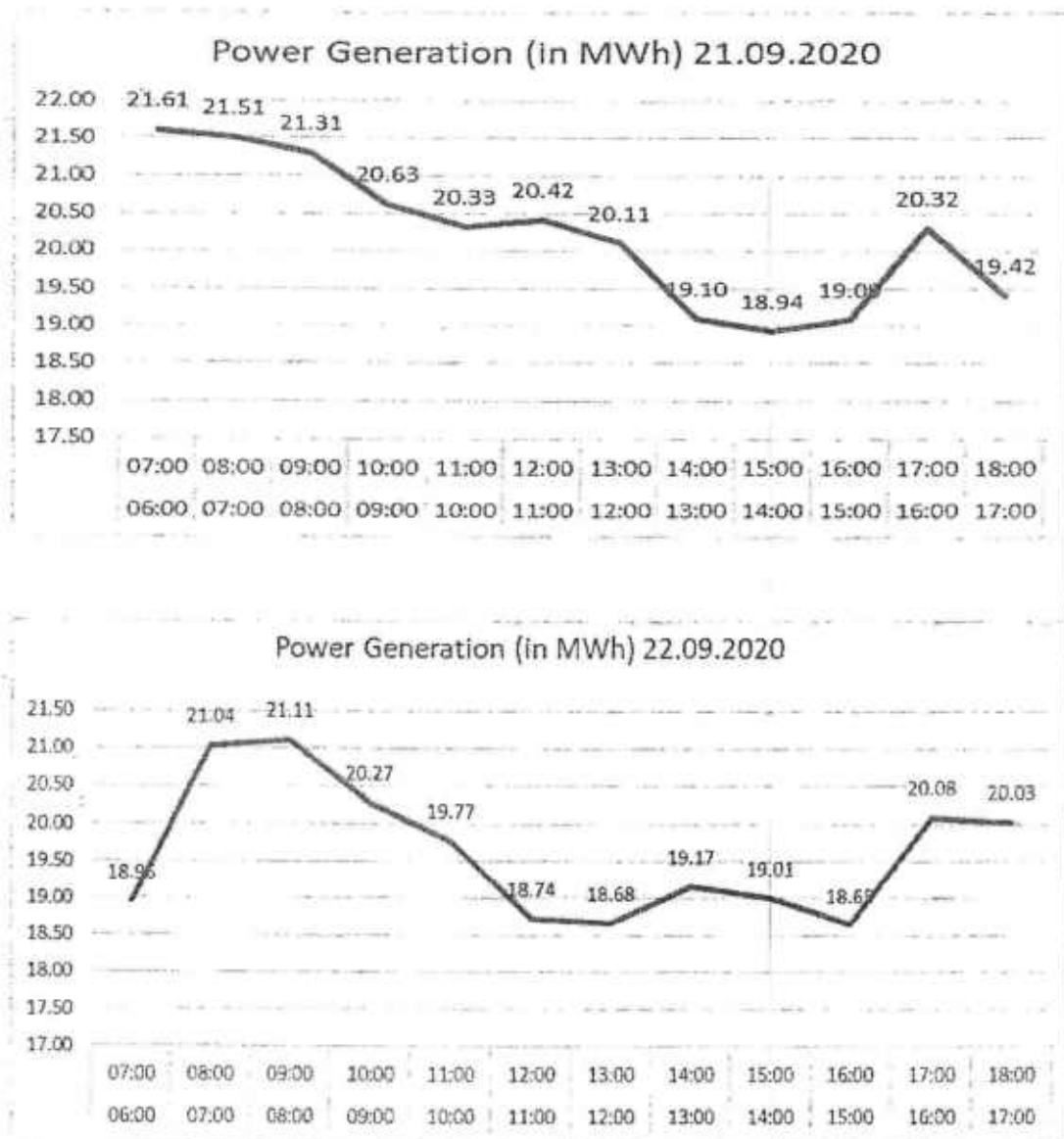
RDF Feed (21-09-2020)					
S. No	Feeding Duration		Boiler 1	Boiler 2	Boiler 3
1	06:00	07:00	17.8	17.3	17.6
2	07:00	08:00	17.1	17.8	17.2
3	08:00	09:00	16.9	16.8	16.7
4	09:00	10:00	17.4	16.7	17.7
5	10:00	11:00	17.0	18.2	19.1
6	11:00	12:00	18.0	17.0	16.9
7	12:00	13:00	17.4	18.0	17.5
8	13:00	14:00	18.0	17.2	17.8
9	14:00	15:00	18.0	16.8	16.1
10	15:00	16:00	17.6	17.2	17.9
11	16:00	17:00	23.4	16.4	17.7
12	17:00	18:00	17.2	16.6	17.7
<b>Total Feed</b>			<b>215.8</b>	<b>206.0</b>	<b>209.9</b>

RDF Feed (22-09-2020)					
S. No	Feeding Duration		Boiler 1	Boiler 2	Boiler 3
1	06:00	07:00	24.8	18.2	18.5
2	07:00	08:00	17.2	18.6	18.8
3	08:00	09:00	21.6	18.0	17.7
4	09:00	10:00	17.3	18.2	22.7
5	10:00	11:00	16.6	18.6	15.5
6	11:00	12:00	18.4	20.8	18.1
7	12:00	13:00	18.7	18.6	17.8
8	13:00	14:00	19.0	18.6	22.4
9	14:00	15:00	25.2	18.2	18.2
10	15:00	16:00	18.6	23.8	18.5
11	16:00	17:00	18.1	18.3	18.6
12	17:00	18:00	18.3	18.6	18.3
<b>Total Feed</b>			<b>233.8</b>	<b>228.5</b>	<b>225.1</b>

7

Q. No.A. No.R. No.

- c. All the three boilers along with pollution control devices were found operational.
- d. The temperature of furnace was maintained between 950-1050°C.
- e. Details of power generation during the said inspection is plotted at **Figure 1**.



**Figure 1: Time vs. power generation plot dated 21 & 22<sup>nd</sup> September, 2020**

- f. It is observed that power generation during the monitoring (18.5-21.5 MW) less than the rated power generation capacity (23 MW) of the plant.

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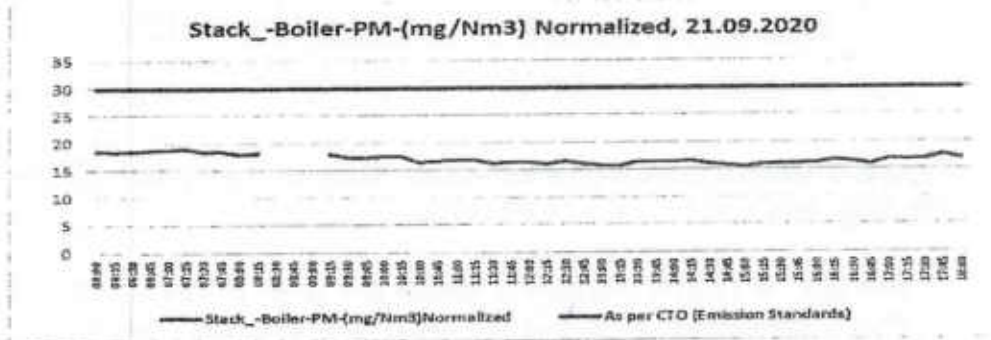
g. Stack emission monitoring results are given in **Table 1**. Following are the observations:

- i. The Dioxin and Furans values (**0.99 ngTEq/Nm<sup>3</sup>**) of stack monitoring exceeded the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by Shriram Institute of Industrial Research (SRI), Delhi.
- ii. **HCL parameter (198 mg/Nm<sup>3</sup>) of stack emission monitored by CPCB exceeded the prescribed limit (50 mg/Nm<sup>3</sup>)**
- iii. Remaining parameters were within the stipulated norms.

h. Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCl in the stack emission had been installed and it was found working at the time of inspection. Result obtained from OCEMS on 21.09.2020 is plotted at **Figure-2**. Comparison of OCEMS data with joint monitoring results is also tabulated in **Table 5**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCl level as per actual monitoring is higher than that reported by OCEMS. Also levels of PM, SO<sub>2</sub> and NO<sub>x</sub> as per actual monitoring is higher than that reported by OCEMS.

**Table-5: Comparison of OCEMS and joint monitoring data of Stack emission**

Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm <sup>3</sup>	15-20	4.4-10.7
2.	HCL mg/Nm <sup>3</sup>	10-30	198
3.	NO <sub>x</sub> mg/Nm <sup>3</sup>	150-200	85-90
4.	SO <sub>2</sub> mg/Nm <sup>3</sup>	40	BDL



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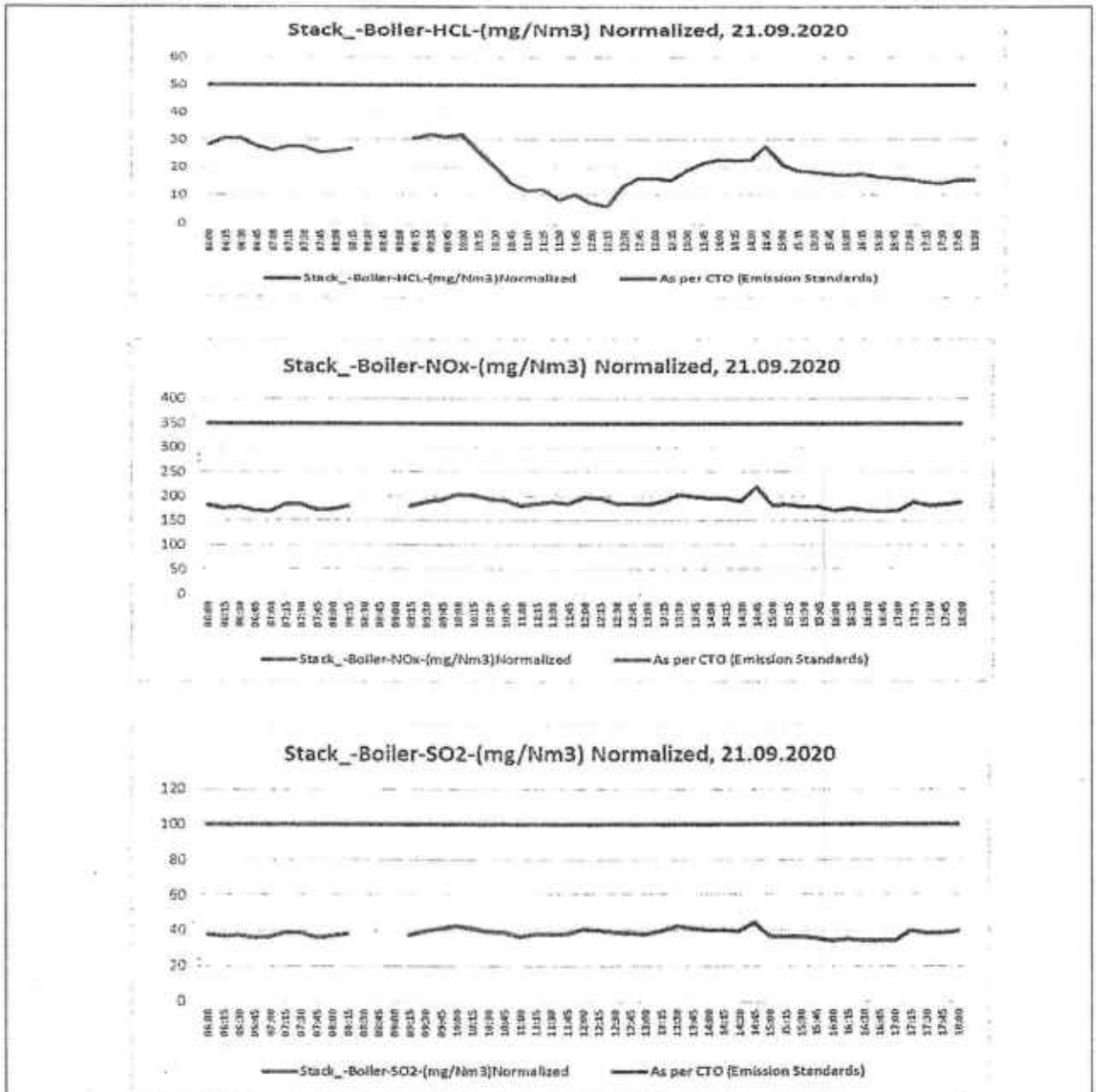


Figure-2: Online Continuous Emission Monitoring System (OCEMS) data for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCL on 21.09.2020.

- i. Ambient Air Quality monitoring results are given in **Table 2**. It is observed that PM<sub>2.5</sub> (**78 µg/m<sup>3</sup>**) exceeded the prescribed limit (60 µg/m<sup>3</sup>) at Sukhdev Vihar monitoring station. Remaining parameters were found within the limit of both monitoring stations (STP Okhla & Shukdev Vihar).
- j. M/s. Timarpur Okhla Waste to Energy plant has placed order to M/s JITF ECOPOLIS for purchase of Continuous Ambient Air Quality Monitoring Station (Copy enclosed).

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*R. V. G.*

- k. Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash are in **Table-3**. It is observed that monitored levels of all the parameters are within the specified limit.
- l. Fly ash bricks manufacturing unit is installed but was not operational during the inspection.
- m. Plant has installed water sprinkling system for dust settlement.
- n. To control the emission of flue gas, the unit is using  $\text{Ca(OH)}_2$  and Hydrophobic Organic Carbon (HOC) as dosing and approximately 172 Kg/h and 54.2 Kg/h of  $\text{Ca(OH)}_2$  and HoC used for dosing during inspection on 21.09.20.
- o. During inspection, Multi effect evaporator (MEE) was found operational for treatment of leachate and the treated water was reused as process water.
- p. As informed average 250 MT of inerts are produced every day and disposed of at Jaitpur site.
- q. Radioactive sensors are installed at gate no. 2 of plant.
- r. Plant has maintained considerable greenery inside the premises and along boundary wall.

#### 15. Recommendations


- i. Plant to properly control production process and pollution control equipment to ensure that all parameters including Dioxin & Furans and HCl are within the stipulated norms.
- ii. Plant should implement necessary measures to improve ambient air quality (including  $\text{PM}_{2.5}$  concentration) in and around the plant.
- iii. OCEMS to be calibrated properly to ensure that OCEMS data matches with actual monitoring results.
- iv. Okhla plants should utilize 100 % Fly ash for beneficial purposes like bricks manufacturing etc. and time bound Action Plan to be submitted for the same.
- v. The plant to specify the timeframe within which the online continuous ambient air quality monitoring station shall be installed.

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*A. Jay*

*R. U*

Waste to Energy Plant Bawana

CENTRAL POLLUTION CONTROL BOARD, DELHI																	
1	Name and address of the industry  Coordinates (Longitude & Latitude)	M/s Delhi MSW Solutions Ltd. Pocket N-1, Sector-5, Bawana Industrial area, Behind Pragati Power Plant Delhi-110039 Latitude Extension: 28°47'58.36"N Longitudinal Extension: 77° 04'11.79"E															
2.	Name of the occupier/contact person with  Telephone Fax E-mail	K Vijay Kumar Reddy  Mob. 9821124350 <a href="mailto:laboratorynarela@ramky.com">laboratorynarela@ramky.com</a>															
3.	Date of inspection and monitoring	September, 24-25, 2020															
4.	Installed processing Capacity (as per consent)	2000 TPD Processing and Disposal facility with 24 MW Waste to Energy Plant															
5.	Production status (on date of inspection)	Operational															
6	Actual Power Generation	<p>Details of power generation ranges during the said inspection</p> <table border="1"> <thead> <tr> <th rowspan="2">Date</th> <th colspan="3">Power Generation (MW)</th> </tr> <tr> <th>Time</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>24.09.2020</td> <td>6 AM to 1 PM</td> <td>22.3</td> <td>21.1</td> </tr> <tr> <td>25.09.2020</td> <td>6 AM to 6 PM</td> <td>21.4</td> <td>20.1</td> </tr> </tbody> </table>	Date	Power Generation (MW)			Time	Minimum	Maximum	24.09.2020	6 AM to 1 PM	22.3	21.1	25.09.2020	6 AM to 6 PM	21.4	20.1
Date	Power Generation (MW)																
	Time	Minimum	Maximum														
24.09.2020	6 AM to 1 PM	22.3	21.1														
25.09.2020	6 AM to 6 PM	21.4	20.1														

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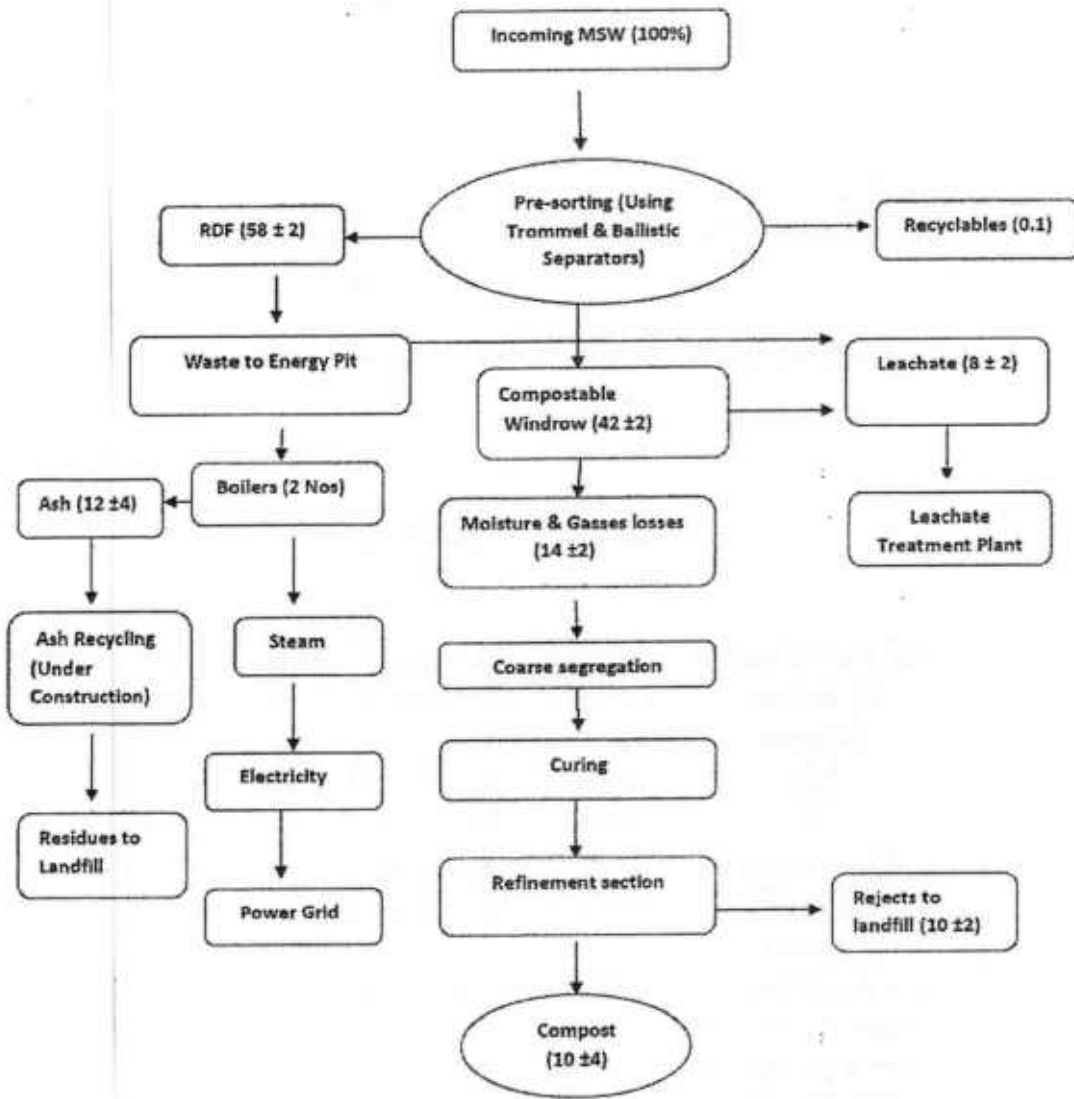
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7.

**Process Flow Diagram:**

The unit has own segregation setup of MSW having 13 trommels with 4 ballastic separators for segregation of MSW and production of RDF. The detailed materials flow sheet is as given below:



**8. Air Pollution – Emission Sources & Control**

Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
Stack of the Waste to Energy plant (Two boilers connected to one stack)	60 mtrs	Reaction Tower (lime Spray reactor), Activated Carbon Injection followed by Bag filters.	Stack Monitoring Conducted by CPCB team & Dioxin & Furans by M/s SIIR, Delhi. Results are given in <b>Table-6</b>

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9.	OCEMS Status	Installed with stack & was found operational during the inspection.
10	Ambient Air Quality monitoring Conducted at two locations at near main gate of the plant and fire station Bawana	Ambient Air Quality Status given in <b>Table – 7</b>
11.	Continuous Ambient Air Quality Station	CAAQMS installed & was working
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash result in <b>Table-8</b>

**Table 6. Analysis results of the stack emission monitoring of the WTE plant Bawana**

S. No.	Parameters	Monitored & Analyzed by	Standards as per Consent to Operate issued by DPCC	Standards as per Solid Waste Management Rules, 2016,	Date of Sampling	Measured values in mg/Nm <sup>3</sup>
1.	Particulate Matter	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>	24-25 September, 2020	16.7, 12.8
2.	Hydrogen Chloride	CPCB	50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		3.35
3.	SO <sub>2</sub>	CPCB	100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL, BDL
4.	NO <sub>x</sub>	CPCB	350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		17.7, 82.0
5.	Carbon Monoxide	CPCB	100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		0
6.	Hydrogen Fluoride	CPCB	0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL
7.	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V+their compounds	CPCB	0.5mg/Nm <sup>3</sup>	0.5mg/Nm <sup>3</sup>		0.058
8.	Cd + Tl + their compounds	CPCB	0.05mg/Nm <sup>3</sup>	0.05mg/Nm <sup>3</sup>		-
9.	Pb	CPCB	0.1mg/Nm <sup>3</sup>	Not prescribed		0.006
10.	Hg	CPCB	0.02mg/Nm <sup>3</sup>	0.05mg/Nm <sup>3</sup>		BDL
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>		28.10.2020
12.	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>	5.1	

\* BDL for SO<sub>2</sub> is <1.0 mg/Nm<sup>3</sup>, BDL for HF is <1.0 mg/Nm<sup>3</sup>, BDL for Hg < 1.0 µg/Nm<sup>3</sup>

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**Table 7: 24 hourly average ambient air quality monitoring conducted by CPCB at WtE Plant Bawana**

Parameters	Date of sampling	Monitored by	Prescribed Standard* (in $\mu\text{g}/\text{m}^3$ )	Measured values	
				Fire Station Bawana Location-I	Near main gate Location-II
PM <sub>10</sub>	23-25	CPCB	100	131.33	89.33
PM <sub>2.5</sub>	September, 2020		60	84.00	40
NO <sub>2</sub>			80	36.33	17.00
SO <sub>2</sub>			80	11.66	10.66

\*National ambient air quality standards as notified on dated 16.11.2009 under the Environment Protection Act, 1986.

**Table 8: Analysis results of LOI and heavy metals in Bottom Ash and Fly Ash**

Date of sampling	Parameters	Limit	Measured Values	
24 September, 2020	Loss on Ignition (for bottom ash only)	<5%*	1.67%	
			Bottom Ash	Fly Ash
	Arsenic	5 mg/l#	BDL	BDL
	Cadmium	1 mg/l#	BDL	BDL
	Chromium	5 mg/l#	0.08	0.69
	Manganese	10 mg/l#	BDL	BDL
	Lead	5 mg/l#	BDL	BDL
	Selenium	1 mg/l#	BDL	BDL
	Copper	25 mg/l#	0.01	BDL
	Nickel	20 mg/l#	BDL	BDL
	Zinc	250 mg/l#	0.02	0.04
	Cobalt	80 mg/l#	BDL	BDL
	Vanadium	24 mg/l#	BDL	BDL
	Antimony	15 mg/l#	BDL	BDL

BDL: for Lead <0.013 ug/l, Selenium < 0.019ug/l, for Copper < 0.003 ug/l, for Nickel < 0.003 ug/l, for Cobalt < 0.002 ug/l and Vanadium < 0.16 ug/l.

#Concentration Limit to categorize as hazardous waste as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, notified under the Environment (Protection) Act, 1986.

### 13. Status of validity & compliance of consent and authorization

	Consent/Authorization	Validity
I	Under Water Act (Copy enclosed)	Valid till 05-05-2021
II	Under Air Act (Copy enclosed)	Valid till 05-05-2021

### 14. Observations

During the inspection on 24-25, September, 2020 following observations were made.

- The processing capacity of the plant is 2000 TPD. However, the plant receipts 2794 MT and 2600 MT of Municipal Solid Waste on 24.09.2020 & 25.09.2020 respectively, which is more than the consented capacity of the plant.
- The unit has own segregation setup of MSW having 6 trommels with blastic separators for segregation of MSW and production of RDF. Ferrous waste is segregated manually as well as through magnetic separator installed at conveyor belt of ballistic separators. Plant Machinery Details DMSWSL Bawana is tabulated in **table 9**:

**Table 9: Detailed machinery used during segregation of MSW**

Section Wise	Equipment Name	Number of Machinery
Pre Sorting	Trommels- 50 mm	6 No's
	Ballastic Separator	4 No's
Preparatory Section	Trommels- 20 mm	4 No's
Refinement Section	Trommels- 4 mm	3 No's
Bio Mining	Puzolana	1 No's

- As informed, total RDF generation in the plant is approximately 1500 TPD. As per the logbook RDF used as fuel in boilers on 24.09.2020 is tabulated at **Table 10**:

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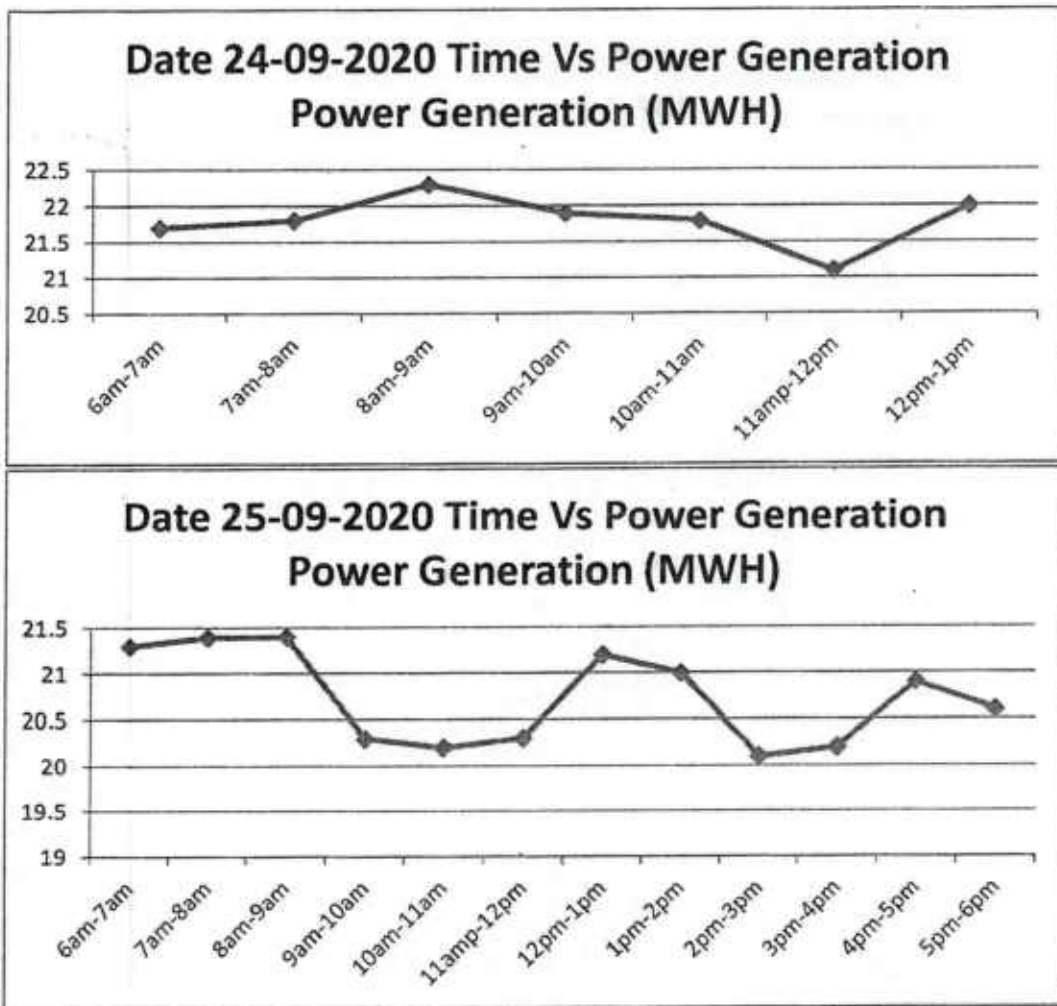
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Table 10: RDF Feed Record on 24.09.2020

Sl. No.	Time	RDF Feeding (TPH)
1.	9-10 AM	54
2.	10-11 AM	52
3.	11-12 PM	56
4.	12-1.0 PM	58
5.	1.0-2.0 PM	56
6.	2.0-3.0 PM	52

d) Details of power generation ranges during the said inspection period is placed at **Figure 3**. It is observed that power during the monitoring was less than the (20-22.5 MW) below the rated power generation capacity (24 MW) of the plant-although the plant was processing waste at full capacity.



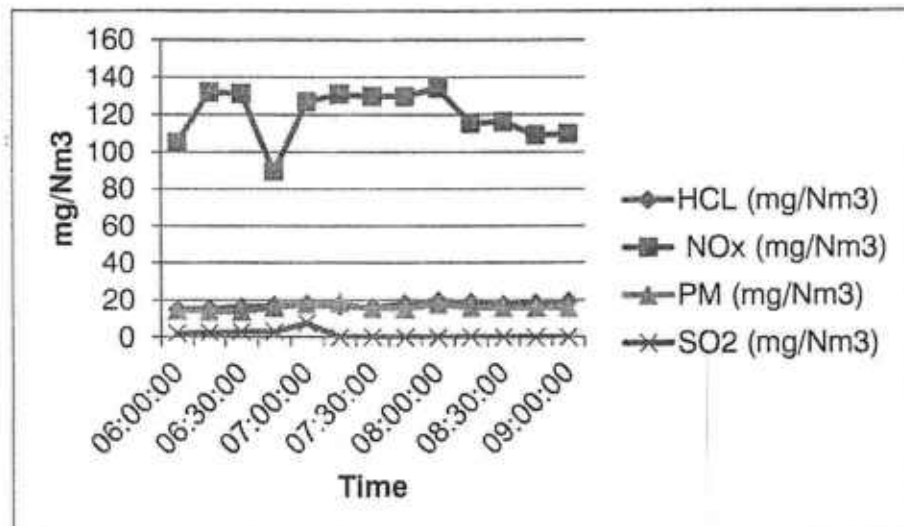
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**Figure 3: Time vs. power generation plot dated 24 & 25<sup>th</sup> September, 2020.**

- e) At the time of inspection on 24.09.2020, plant tripped due to grid fluctuation (High voltage) from 1 PM to 5.30 PM.
- f) The two boilers and attached pollution control devices were found operational during monitoring. The temperature of furnace was maintained between 1142-1162°C.
- g) Stack emission are tabulated in **Table 6**. It was observed that:
- I. Dioxin and Furans values (**0.49 ngTEq/Nm<sup>3</sup>**) are exceeding the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by M/s. SRI, Delhi,
  - II. Remaining parameters were within the stipulated norms.
- h) Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCL in the stack emission had been installed and it was found working at the time of inspection. Result obtained from OCEMS on 25.09.2020 are plotted in **Figure-4**. Comparison of OCEMS data with joint monitoring results is tabulated in **Table 11**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCL level as per actual monitoring is less than that reported by OCEMS. Also levels of PM, SO<sub>2</sub> and NO<sub>x</sub> as per actual monitoring is less than that reported by OCEMS.



**Figure 4: Online Continuous Emission Monitoring System (CEMS) data for PM, SO<sub>2</sub>, NO<sub>x</sub>, and HCL on 24.09.2020.**

**Table 11: Comparison of OCEMS data and Joint monitoring data of Stack emission**

Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm <sup>3</sup>	13.8-18.41	12.8-16.7
2.	HCL mg/Nm <sup>3</sup>	15.02-19.48	3.35
3.	NO <sub>x</sub> mg/Nm <sup>3</sup>	89.4-131.94	17.7-82
4.	SO <sub>2</sub> mg/Nm <sup>3</sup>	0.01-7.6	BDL

- i) Ambient Air quality monitoring results are given in **Table 7**. It is observed that PM<sub>2.5</sub> (**84 µg/m<sup>3</sup>**) & PM<sub>10</sub> (**131.33 µg/m<sup>3</sup>**) exceeded the prescribed limit (60 µg/m<sup>3</sup> & 100 µg/m<sup>3</sup>) at Fire Station Bawana. Concentration levels of the remaining parameters are within the stipulated norms.
- j) Online Continuous Ambient air quality monitoring station (CAAQMS) has been installed at facility & data is tabulated in **Table 12** for 25.09.2020. It observed that values of PM<sub>10</sub> exceeded the standard limit at 12.00 noon (**176 µg/m<sup>3</sup>**), 2.30 PM (**166.5µg/m<sup>3</sup>**), 3.15 PM (**190.1µg/m<sup>3</sup>**) and 4.00 PM (**202.1µg/m<sup>3</sup>**) whereas the limit of PM<sub>2.5</sub> exceeded at 4.00 PM. Other parameters such as SO<sub>2</sub> (6-6.9 µg/m<sup>3</sup>), NO<sub>x</sub> (12.9-19.5µg/m<sup>3</sup>) were found well within the standard limit.

**Table 12: Online Continuous Ambient air quality monitoring (CAAQMS) data on 25-09-2020**

Time	Parameters						
	SO <sub>2</sub> µg/m <sup>3</sup>	NO µg/m <sup>3</sup>	NO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>
12.00 noon	6.9	-1.2	15.9	14.7	<b>176</b>	56.4	-0.46
1.00 PM	6.6	-1.2	17.0	15.7	35.3	-1.0	-0.45
2.30PM	5.6	-1.1	13.9	12.9	<b>166.5</b>	-0.6	-0.42
3.15PM	6.0	-1.2	15.6	14.3	<b>190.1</b>	37.8	-0.38
4.00PM	6.9	-1.4	19.9	19.5	<b>202.1</b>	<b>68.9</b>	-0.36

- k) Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash

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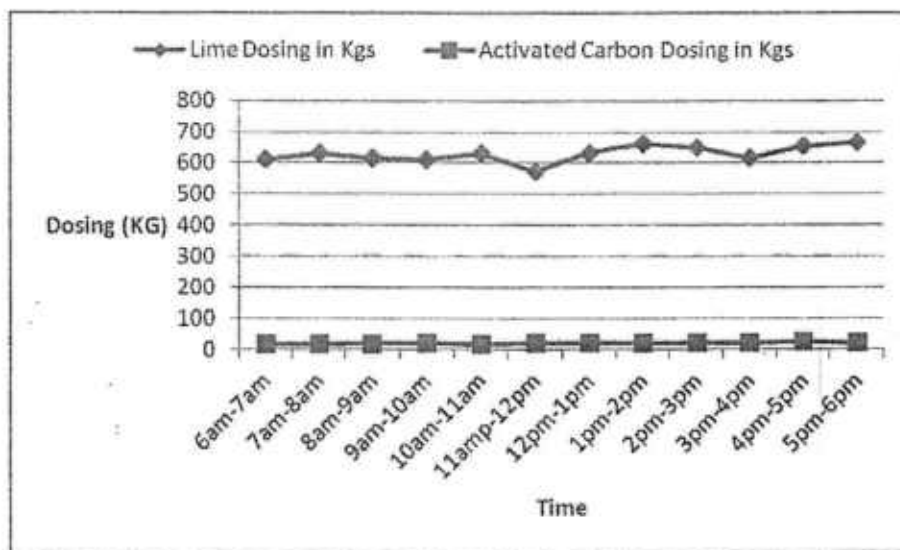
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are in **Table-8**. It is observed that monitored levels of all the parameters are within the specified limit.

- l) Segregated rejects, bottom ash and fly ash are disposed into the sanitary landfill site existing within the facility premise at Bawana.
- m) Lime and activated carbon are used as a dosing agent in flue gas. Amount of dosing used at the said inspection is plotted as **Figure 5**. The quantity of lime and activated carbon dosed is observed to be in the range of 572-667kg/h and 16-23 Kg/hr respectively.



**Figure-5:** Amount of Lime and Activated Carbon used as dosing on 25-09-2020.

- n) Leachate from Waste tipping floor, Windrows floor, sanitary landfill (within its premise) and the open pre-processed storage Area, are treated in the leachate treatment plant and treated water is being used for gardening, road wash etc.
- o) Treated leachate analysis report is tabulated in **Table 13**. It has been observed that the values of TDS & Chloride of treated leachate exceeded the standard limit on Land disposal. It is observed that treated leachate is not complying the stipulated standards with respect to TDS & Chloride

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*R.L.*

Table: 13: Analysis report of treated leachate of Bawana WtE plant

S. No	Parameter	Land disposal (Standards as per SWM Rules, 2016)	Treated Leachate analysis report
1.	Suspended solids, mg/l, max	200	26
2.	Dissolved solids (inorganic) mg/l, max.	2100	6744
3.	pH value	5.5 to 9.0	
4.	Ammonical nitrogen (as N), mg/l, max.	-	1.7
5.	Total Kjeldahl nitrogen (as N), mg/l, max.	-	-
6.	Biochemical oxygen demand (3 days at 270 C) max.(mg/l)	100	25
7.	Chemical oxygen demand, mg/l, max.	-	261
8.	Arsenic (as As), mg/l, max	0.2	BDL
9.	Mercury (as Hg), mg/l, max	-	-
10.	Lead (as Pb), mg/l, max	-	BDL
11.	Cadmium (as Cd), mg/l, max	-	BDL
12.	Total Chromium (as Cr), mg/l, max.	-	0.02
13.	Copper (as Cu), mg/l, max.	-	BDL
14.	Zinc (as Zn), mg/l, max.	-	0.06
15.	Nickel (as Ni), mg/l, max	-	BDL
16.	Cyanide (as CN), mg/l, max.	0.2	-
17.	Chloride (as Cl), mg/l, max.	600	1564
18.	Fluoride (as F), mg/l, max	-	-
19.	Phenolic compounds (as C6H5OH) mg/l, max.	-	BDL

- p) As informed, M/s. Waste to Energy plant Bawana has placed order to M/s. Spray Engineering Devices Limited for purchase of 200 KLD Low Temp Evaporator with Mechanical Vapor Recompression (MVR) System.
- q) As informed, after segregation 80 MT of compost is being generated per day and sold to the market.

- r) Radioactive sensors are installed at entrance gate of the plant & was found working on the date of inspection.
- s) Storage and segregation process of MSW being done within a covered area.
- t) The facility is collecting solid waste since 2009 and legacy waste of about 0.8 Million MT is being stored in an open area of about 9 acres. This waste is also being processed in the plant.
- u) Plant has maintained considerable greenery inside the premises.

#### 15. Recommendations

- a) Plant should process the waste as per the consented capacity. The production process should be optimized so that power generated from the plant is as per the consented capacity of the plant.
- b) Plant to properly control production process and pollution control measures to ensure that all parameters including Dioxin & Furans are within the stipulated norms.
- c) Plant should implement necessary measures to improve ambient air quality (including PM<sub>2.5</sub> & PM<sub>10</sub> concentration) in and around the plant.
- d) OCEMS to be calibrated properly to ensure that OCEMS data matches with actual monitoring results.
- e) Time bound action plan to be submitted for implementation of Fly ash and inert material utilization measures.
- f) Time bound Action Plan to be submitted for installation of Mechanical Vapor Recompression (MVR) system for leachate treatment.

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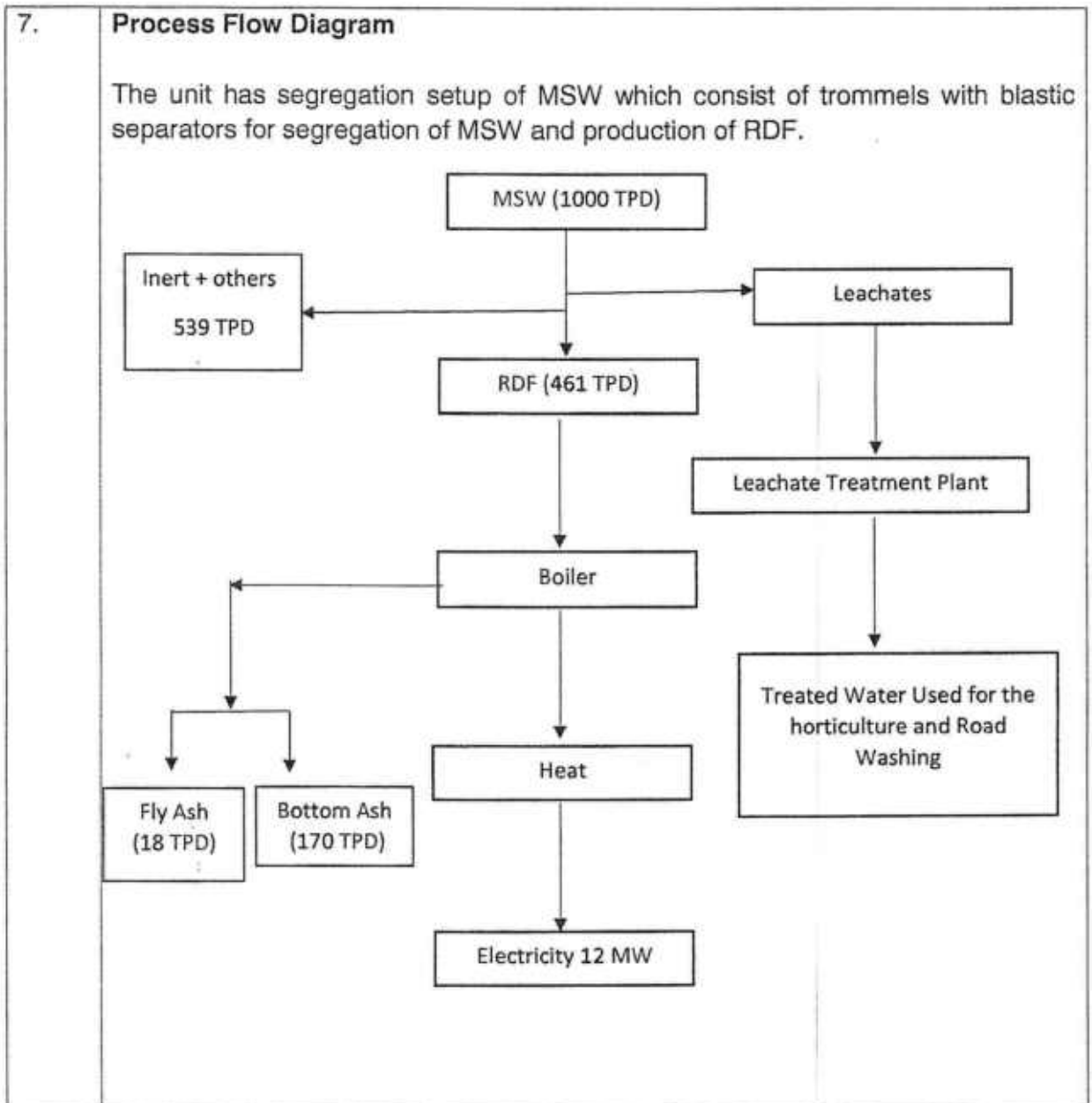
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Waste to Energy Plant Ghazipur

CENTRAL POLLUTION CONTROL BOARD, DELHI		 cpcb				
1	Name and address of the industry  Coordinates (Longitude & Latitude)	M/s East Delhi Waste Processing Company Ltd. Adjacent to Veterinary Hospital Behind Ghazipur DDA Flats Ghazipur, Delhi- 110096  Lat. 28.622653, Long. 77.323398				
2.	Name of the occupier/contact person with  Telephone Fax E-mail	Mr. Iype George  8448692608  <a href="mailto:Iype.George@ilfsindia.com">Iype.George@ilfsindia.com</a>				
3.	Date of inspection and monitoring	October, 13-14, 2020				
4.	Installed processing Capacity	1300MT of Municipal Solid Waste (MSW) per day for the generation of 12MW electricity.				
5.	Production status (on date of inspection)	Operational				
6a.	Power Generation Authorized	12MW				
6b	Actual Power Generation	<p><b>Details of power generation ranges during the said inspection</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Date</th> <th style="text-align: center;">Power Generation range (MW) 6 AM-6 PM</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">13.10.2020</td> <td style="text-align: center;">3.45 – 8.75</td> </tr> </tbody> </table>	Date	Power Generation range (MW) 6 AM-6 PM	13.10.2020	3.45 – 8.75
Date	Power Generation range (MW) 6 AM-6 PM					
13.10.2020	3.45 – 8.75					

DMYA. JayR. V



**8. Air Pollution – Emission Sources & Control**

Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
One boiler connected with one stack of the waste to energy plant	60 meters	Scrubbing system	Given in <b>Table -14</b>
9.	OCEMS Status	Installed with stack & was found operational during the inspection.	
10	Ambient Air Quality Conducted at two locations (Ghazipur Police station location-1 & Delhi Transco Limited Ghazipur Location-2)	Ambient Air Quality results are given in <b>Table – 15</b>	

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*A. Jey*

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11.	Continuous Ambient Air Quality Station	CAAQMS installed but was not working
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash are given in <b>Table - 16</b>

**Table 14. Analysis results of the stack emission monitoring of the WTE plant, Ghazipur monitored and analyzed by CPCB.**

S. No	Parameters	Monitored by	Standards as per consent to operate issued by DPCC	Standard as per Solid waste Management Rules, 2016	Date of Sampling	Measured Values Stack-1 (Average)
1	Particulate Matter	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>	13-14 October, 2020	62.7, 85.1
2	HCL	CPCB	50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		407
3	SO <sub>2</sub>	CPCB	100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL, 3.4
4	NO <sub>x</sub> (NO and NO <sub>2</sub> expressed No <sub>2</sub> )	CPCB	350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		869, 104.3
5	Carbon Monoxide	CPCB	100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		0
6	Hydrogen Fluoride	CPCB	0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL
7	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V+their compounds	CPCB	0.5 mg/Nm <sup>3</sup>	0.5 mg/Nm <sup>3</sup>		0.164
8	Cd+Th+their compounds	CPCB	0.05 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		0.002
9	Pb	CPCB	0.1 mg/Nm <sup>3</sup>	Not prescribed		0.019
10	Hg	CPCB	0.02 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		0.21
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>	13.10.2020	0.27
12	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>		9.4

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\* BDL for SO<sub>2</sub> is <1.0 mg/Nm<sup>3</sup>, BDL for HF is <1.0 mg/Nm<sup>3</sup>, BDL for Hg < 1.0 µg/Nm<sup>3</sup>

Table 15. 24 hourly ambient air quality monitoring conducted by CPCB

Parameters	Date of Sampling	Monitored by	Prescribed Standard*	Measured values	
				Ghazipur Police station location-1	Delhi Transco Limited Ghazipur Location-2
PM <sub>2.5</sub>	October 13-15	CPCB	60	127	215
PM <sub>10</sub>			100	273.66	404
NO <sub>2</sub>			80	42.833	31
SO <sub>2</sub>			80	BDL	15.66

BDL for SO<sub>2</sub> is < 4µg/m<sup>3</sup>

\*National ambient air quality standards as notified under the air (prevention and control of pollution) Act 1981.

Table 16: Analysis results of LOI and heavy metals in Bottom ash and Fly ash

Date of sampling	Parameters	Limit	Measured values in %	
13.10.2020	Loss on ignition (For bottom Ash only)	<5%*	1.89	
			<b>Bottom ash</b>	<b>Fly Ash</b>
	Arsenic	5 mg/l #	BDL	BDL
	Cadmium	1 mg/l #	0.52	0.14
	Chromium	5 mg/l #	BDL	BDL
	Manganese	10 mg/l #	3.01	3.15
	Lead	5 mg/l #	0.08	0.04
	Selenium	1 mg/l #	BDL	BDL
	Copper	25 mg/l #	1.52	0.83
	Nickel	20 mg/l #	0.42	0.20
	Zinc	250 mg/l #	10.79	11.43
	Cobalt	80mg/l #	0.12	0.11
	Vanadium	24mg/l #	BDL	BDL
	Antimony	15mg/l #	0.36	0.05

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Note: BDL for arsenic <0.022 mg/l BDL for Chromium<0.002 mg/l BDL for Manganese for Lead<0.013 BDL for Nickel BDL, 0.003 mg/l for Cobalt BDL< mg/l for Vanadium BDL<0.16 mg/l

#Concentration Limit of categorise as hazardous waste as per Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016, notified under Environment (Protection) Act, 1986. Facility for fly ash and inert material utilization are yet to installed.

13. Status of validity & compliance of consent and authorization		
	Consent/Authorization	Validity
I	Under Water Act (Copy enclosed)	Expired on 08-12-2018, applied for renewal of the same
II	Under Air Act (Copy enclosed)	Expired on 08.12.2018, applied for renewal of the same

**14.0 Observations**

- The plant is operating without valid consent. The plant was given Consent-to Operate which was valid upto 08.12.2018. The unit has applied for renewal of Consent.
- The unit has segregation setup of MSW which consist of trommels with blastic separators for segregation of MSW and production of RDF. However, the same was not operational at the time of inspection. Operator informed that the same is under maintenance.
- Segregation of waste was being done in partially covered area.
- The plant was receiving RDF from bio-remediation of waste from Ghazipur dumpsite. No MSW was received from EDMC on that day. Hence, the plant was operating at level much below as per its last consent.
- The plant does not have composting facility for wet waste and disposing wet waste when generated in the dumpsite.
- Average feed rate of the RDF to one boiler was observed at 33 MT/hr. As per the logbook total RDF used as fuel in boilers from 6 AM to 6 PM on 13.10.2020 is given in **Table 17**.

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Table 17: RDF Feed Record

Time	Fuel Feed to Boiler MT
6:00 AM	35.28
7:00 AM	35.1
8:00 AM	33.25
9:00 AM	35.89
10:00 AM	36.25
11:00 AM	28.95
12:00 PM	31.25
1:00 PM	32.25
2:00 PM	32.65
3:00 PM	33.25
4:00 PM	31.58
5:00 PM	32.58
6:00 PM	31.58
<b>Total Feed</b>	<b>429.86</b>

g. Details of power generation ranges during the said inspection period is given in **Figure 6**. The power generation on 13.10.2020 was in the range of 3.45-8.75 MW which is much less than the rated power generation capacity of 12 MW. Captive power utilization of the plant is about 2 to 2.5 MW.

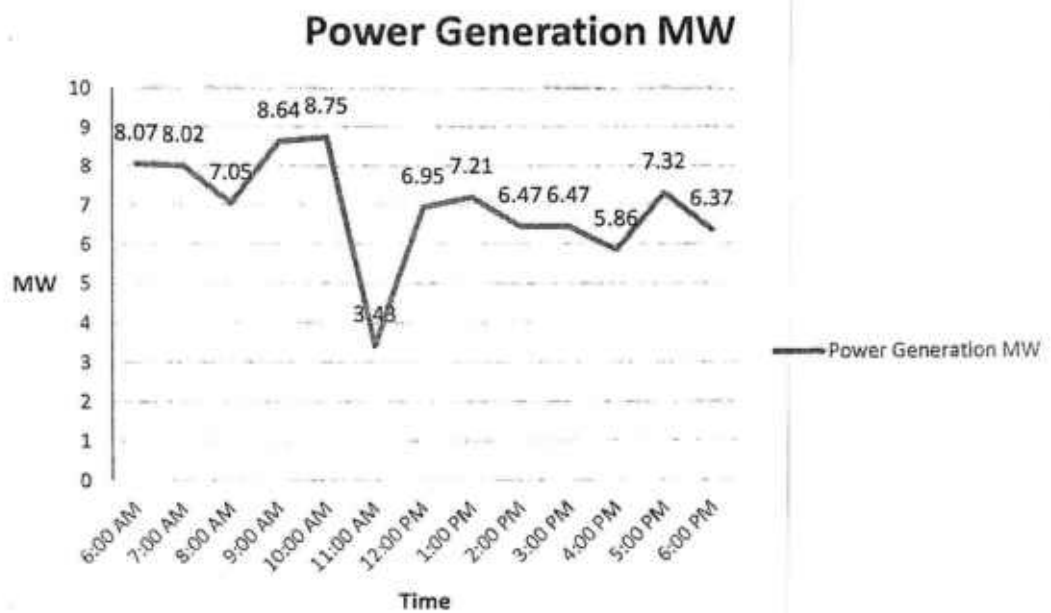
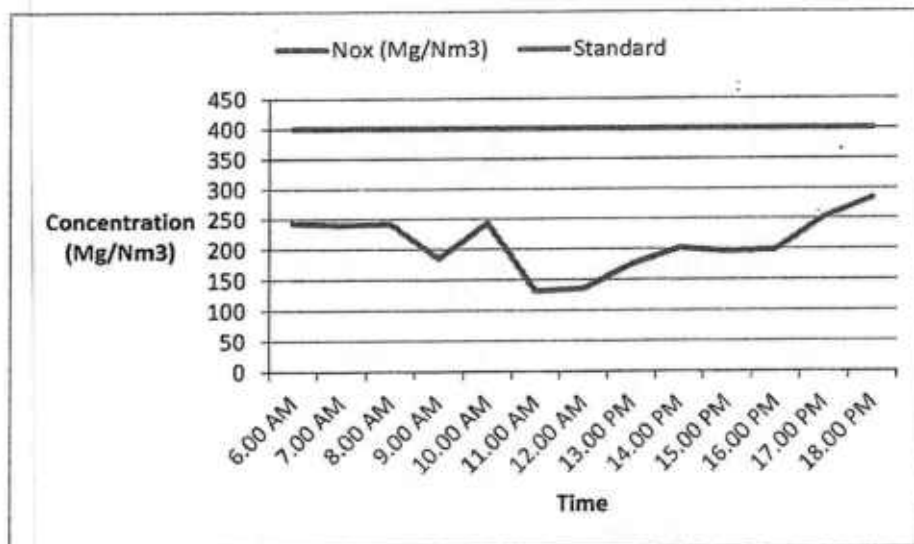


Figure 6: Time vs. power generation plot dated 13<sup>th</sup> October, 2020.

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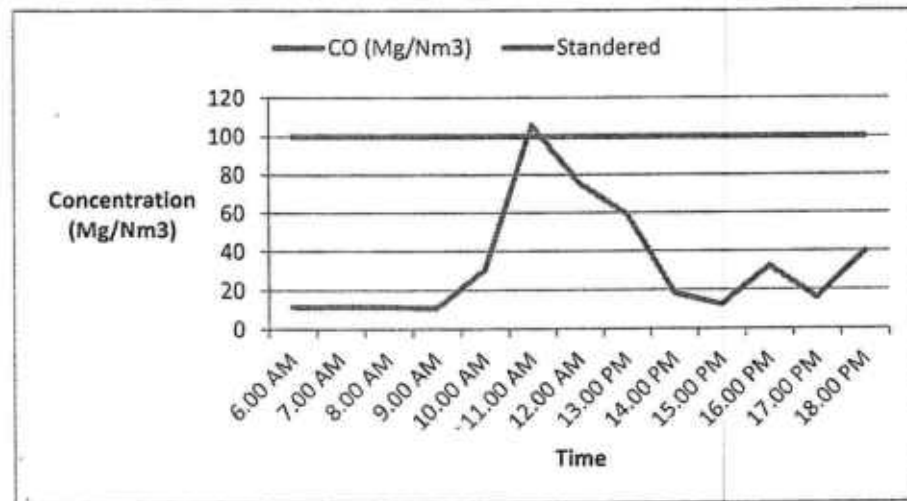
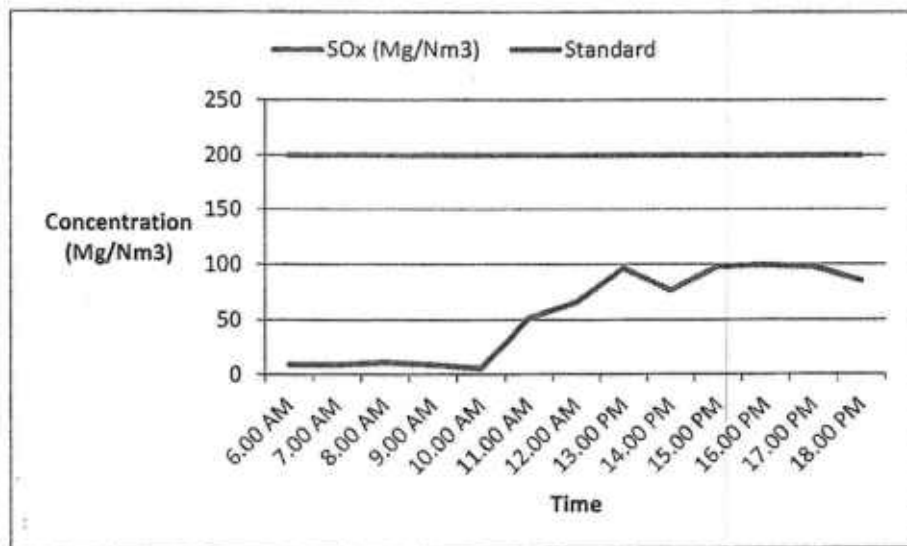
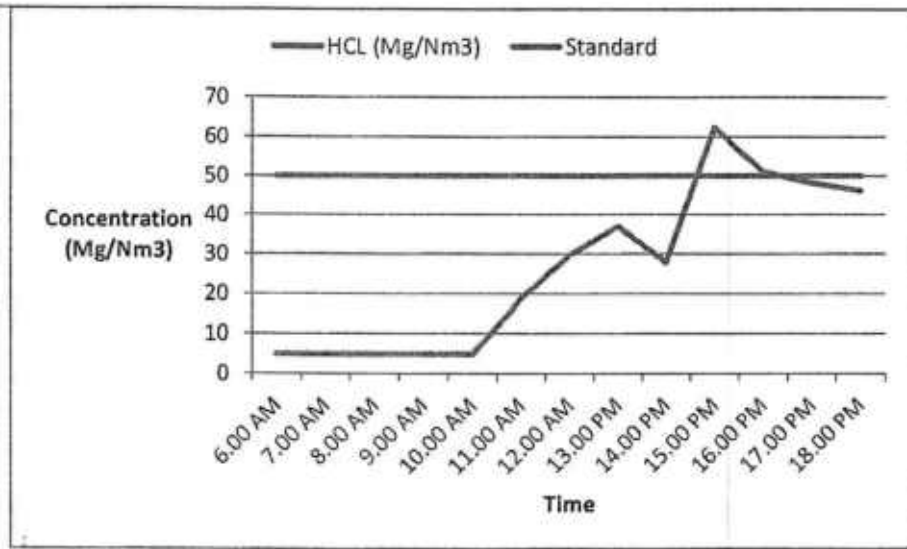
- h. One boiler along with pollution control devices was found operational. The average temperature of furnace was maintained most of the time was 950° C.
- i. Stack emission results are given in **Table 14**. The following are the observations.
- Dioxin and Furans** values (**0.27ngTEq/Nm<sup>3</sup>**) of stack monitoring exceeded the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by M/s. SRI, Delhi.
  - PM (62.7 & 85.1 mg/Nm<sup>3</sup>)**, **NO<sub>x</sub> (869 mg/Nm<sup>3</sup>)** and **HCl (407 mg/Nm<sup>3</sup>)** concentrations were exceeding the permissible limits (30, 350 & 50 mg/Nm<sup>3</sup> respectively)
  - Remaining parameters were well within the limit.
- j. Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCl in the stack emission had been installed and it was found working at the time of inspection except for monitoring PM. Results obtained from OCEMS on 13.10.2020 are plotted in **Figure-7**. Comparison of OCEMS data with joint monitoring results is tabulated in **Table-18**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCl & NO<sub>x</sub> level as per actual monitoring was more than that reported by OCEMS. Whereas, SO<sub>x</sub> as per joint monitoring is lower than the OCEMS result.



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Figure 7: Online Continuous Emission Monitoring System (OCEMS) data for NOx HCL, SOx, and CO on 13.10.2020.

Table 18: Comparison of OCEMS & Joint Monitoring data of the stack emission

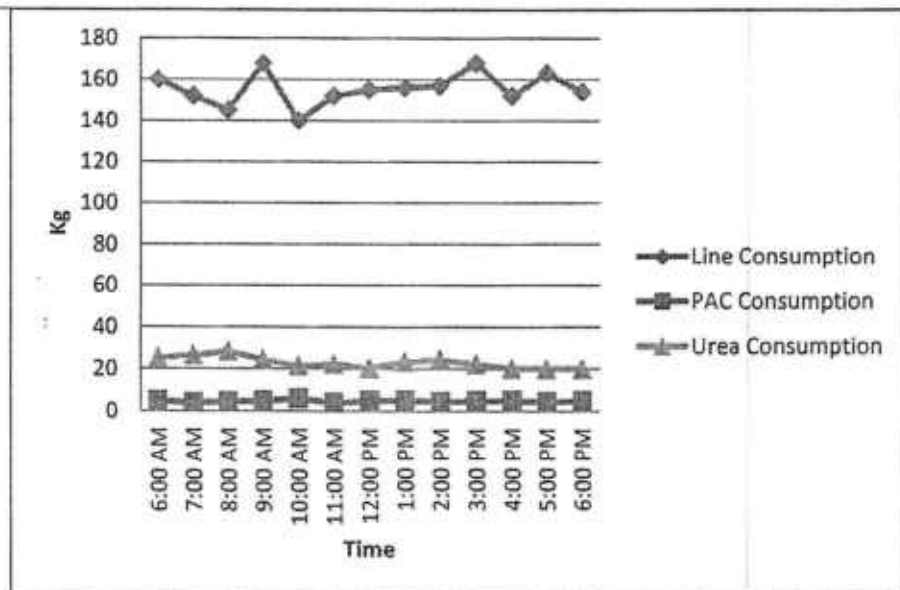
Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm <sup>3</sup>	Not working	62.7-85.1
2.	HCL mg/Nm <sup>3</sup>	4.86-51.13	407
3.	NOx mg/Nm <sup>3</sup>	132.4-251.71	869-104.3
4.	SO <sub>2</sub> mg/Nm <sup>3</sup>	5.79-98.25	BDL
5.	CO	11.35-105.61	Not monitored

- j. Ambient Air quality monitoring results are given in **Table-15**. It is observed that PM<sub>2.5</sub> & PM<sub>10</sub> at Ghazipur Police station & Delhi Transco Ltd. (**127 µg/m<sup>3</sup> & 215 ug/m<sup>3</sup> and 273 ug/m<sup>3</sup> & 404 ug/m<sup>3</sup> respectively**) exceeded the standard of prescribed limit (PM<sub>2.5</sub> : 60 µg/m<sup>3</sup> & PM<sub>10</sub> 100 µg/m<sup>3</sup>). Concentration levels of the remaining parameters are within the stipulated norms.
- k. Continuous Ambient Air Quality Monitoring Station (CAAQMS) was not operational during the inspection.
- l. Lime, Powered Activated Carbon (PAC) and Urea are used as dosing agents in Flue gas. A graph has been plotted for Lime, Powered Activated Carbon (PAC) and Urea used on 13.10.2020 during 6.00AM to 6PM as shown in **Figure 8**. The quantity of Lime, activated carbon and urea dosed is observed to be in the range of 140-168kg/h, 4-6 kg/h and 20-28.32 Kg/hr respectively.

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**Figure-8: Amount of Lime, Activated Carbon and urea used as dosing on 13.10.2020.**

- m. Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash are given in **Table-16**. It is observed that monitored levels of all the parameters are within the specified limit.
- n. The plant is dumping Bottom Ash, Fly Ash & inerts at Ghazipur Dumpsite. WtE plant Ghazipur is not utilizing Fly ash for beneficial purposes like bricks manufacturing etc.
- o. Leachate Treatment plant has been installed and treated leachate is being used for gardening, road waste etc.
- p. During inspection, Treated Leachate Treatment plant was found operational. Treated leachate analysis report is tabulated in **Table-19**. It has been observed that the value of TDS of treated leachate exceeded the standard limit on Land disposal.

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Table 19: Analysis report of treated leachate

S. No	Parameter	Land disposal (Standards)	Treated Leachate analysis report
	Suspended solids, mg/l, max	200	47
	Dissolved solids (inorganic) mg/l, max.	2100	2532
	pH value	5.5 to 9.0	-
	Ammonical nitrogen (as N), mg/l, max.	-	3.0
	Total Kjeldahl nitrogen (as N), mg/l, max.	-	-
	Biochemical oxygen demand (3 days at 270 C) max.(mg/l)	100	18.2
	Chemical oxygen demand, mg/l, max.	-	92
	Arsenic (as As), mg/l, max	0.2	BDL
	Mercury (as Hg), mg/l, max	-	-
	Lead (as Pb), mg/l, max	-	BDL
	Cadmium (as Cd), mg/l, max	-	BDL
	Total Chromium (as Cr), mg/l, max.	-	BDL
	Copper (as Cu), mg/l, max.	-	0.03
	Zinc (as Zn), mg/l, max.	-	1.25
	Nickel (as Ni), mg/l, max	-	BDL
	Cyanide (as CN), mg/l, max.	0.2	-
	Chloride (as Cl), mg/l, max.	600	-
	Fluoride (as F), mg/l, max	-	-
	Phenolic compounds (as C6H5OH) mg/l, max.	-	BDL

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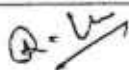

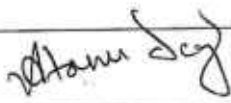
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- q. Unit has not fixed radioactive sensors on the way of MSW loaded truck.
- r. During inspection all drains within the premises were found choked & MSW found scattered on roads inside the plant.
- s. Plant has not maintained considerable greenery inside the premises.

#### 15. Recommendations

- i. The plant has to upgrade its production process and emission control measures to ensure that the emission levels of all parameters including (PM, HCL, NOx, Dioxin & Furans) are within the stipulated limits.
- ii. Plant should implement necessary measures to improve air quality (PM2.5 & PM10) in and around the plant.
- iii. OCEMS installed in the plant to be calibrated to ensure that OCEMS data matches with the actual monitoring results.
- iv. The plant has to ensure that CAAQMS installed in their premises is operational at all times and the display board for the same should be made functional.
- v. The plant should upgrade leachate treatment procedure so as to improve the treated leachate quality before spreading over land.
- vi. The plant has to provide facility for treatment of wet waste.
- vii. The segregation process of MSW of the plant has to be made operational to improve efficiency of the plant.
- viii. The plant has to be obtained valid consent to operate from DPCC.
- ix. The plant has to ensure that it is operational at full capacity when the joint inspection of the unit is carried out so that the monitoring results are conclusive.
- x. Time bound Action Plan to be submitted for utilization of fly ash and inert material.
- xi. Green Belt has to be developed around the plant as per Buffer zone Guidelines for waste processing processing facilities issued by CPCB.
- xii. Unit has to fix radioactive sensors at suitable places to effectively monitor the entering in the plant.
- xiii. House Keeping needs to be improved.

Name & designation of inspecting officer(s)	(Ratnesh Kumar), Sc.'B', CPCB Delhi	(Ramesh Chandra) EE, DPCC Delhi	Atanu Dey, RA-I, CPCB
Signature			



	<p>Item No. 12</p> <p>October 09, 2017</p> <p>SS &amp; SN</p>	<p>.....JM (Dr. Jawad Rahim)</p> <p>.....JM (Raghuvendra S. Rathore)</p> <p>.....EM (Bikram Singh Sajwan)</p>
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BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI

Original Application No. 640/2018  
(Earlier O.A. No. 22/2013)

Sukhdev Vihar Resident's Welfare Association  
Vs.  
State of Delhi & Ors.

**CORAM :** HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

**Present: Respondent:** Mr. Nilava Bandyopadhyay, Adv. for  
Project Proponent, Okhla Project

Date and Remarks	Orders of the Tribunal
<p>Item No. 6</p> <p>September 27, 2018</p> <p>R</p>	<p>1. In pursuance of earlier order of this Tribunal dated 18.04.2018, joint inspection has been conducted by the Central Pollution Control Board and the Delhi Pollution Control Committee. Findings in the report are that the Waste-to-Energy Plants at Okhla, Ghazipur and Bawana are non-compliant with respect to the standards of the particulate matter. Following recommendations have been made:</p> <p style="text-align: center;"><b>“Recommendations:</b></p> <ol style="list-style-type: none"> <li>1. <i>To ensure better efficiency of the Plant and Power generation the unit should feed segregated wastes.</i></li> <li>2. <i>Plant should adopt technologies to reduce Moisture Content in RDF.</i></li> <li>3. <i>Fly ash utilization should be done rather than dumping it on landfill site.</i></li> <li>4. <i>Unit shall install Fly ash bricks manufacturing unit.</i></li> <li>5. <i>Flow meters shall be installed at inlet and outlet of Leachete treatment plant.</i></li> <li>6. <i>Plant should adopt technologies to improve calorific value of RDF.</i></li> <li>7. <i>Plant shall be designed for 30-35 years.”</i></li> </ol> <p>2. The Central Pollution Control Board may send a copy of its report to the project proponents of Okhla, Ghazipur and Bawana Waste-to-Energy Plant for compliance and conduct another inspection within one</p>

	<p><b>Item No. 6</b> <b>September</b> <b>27, 2018</b></p> <p><b>R</b></p>	<p>month in view of the fact that the earlier inspection was in February, 2018 and requirement of carrying out inspection is in every 4 months. We do not find any ground to accept the prayer for relieving Central Pollution Control Board of its requirement in four monthly monitoring. If there is a manpower constraint, it is for the Central Pollution Control Board to make any other appropriate arrangement for discharging its functions. This cannot be a ground to avoid responsibility under the binding directions of this Tribunal.</p> <p>3. It is made clear that if the project proponents fail to maintain the standards, even after carrying out the deficiencies noticed in the joint inspection Report, Central Pollution Control Board may recommend the amount of environmental damage required to be paid by them.</p> <p>The application is disposed of.</p> <p>....., CP (Adarsh Kumar Goel)</p> <p>....., JM (S.P. Wangdi)</p> <p>....., EM (Dr. Nagin Nanda)</p> <p>27.09.2018</p>
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