

ENVIRONMENT POLLUTION (PREVENTION & CONTROL) AUTHORITY
For the National Capital Region

Dr. Bhure Lal
Chairman

EPCA-R/2020/L-15
July 02, 2020

To

The Registrar General
Hon'ble Supreme Court of India
NEW DELHI.

Sub: Hospital Waste Management: Report filed in compliance with directions of Hon'ble Supreme Court dated 06.03.2020.

Dear Sir,

The Hon'ble Supreme Court vide its orders dated March 06, 2020 in W.P. (C) 13029 of 1985 M.C. Mehta Vs Union of India & others, directed EPCA to submit a Report on Hospital Waste Management.

I am hereby enclosing the **Report No-110** of the Environment Pollution (Prevention & Control) Authority for the National Capital Region (EPCA) on above mentioned subject.

Kindly arrange to place the report before the Hon'ble Court.

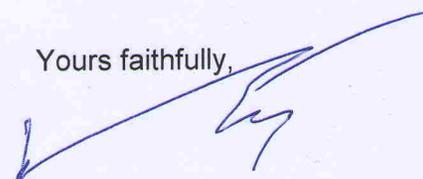
The Hon'ble Court may also issue necessary directions urgently in respect of the following Reports of EPCA. A request in this regard was also made vide letter No.EPCA-R/2020/L-11 dated 03.03.2020:-

1. **EPCA Report No 109, January 2020:** RFID extension to all entry points into Delhi: Report to inform the Hon'ble Court of the successfully implementation of RFID on 13 entry points for payment of Environment Compensation Charge (ECC) by commercial vehicles entering Delhi and its extension to more locations for ensuring compliance and control on pollution from heavy duty vehicles
2. **EPCA Report No 108 of January 2020:** Parking Policy: Report on status of implementation of pilot projects on parking management as directed by the Hon'ble Supreme Court on September 2, 2019
3. **EPCA Report No 105, October 2019:** 3-wheeler registration: Report filed in compliance with direction of Hon'ble Court dated 26.8.2019 and IA No 11028/2019 on behalf of DMRC of October 18, 2019: In this report, a decision is required on the proposal from DMRC to introduce e-rickshaws

We would be grateful if these Reports can be listed as soon as possible so that directions can be given and actions taken before the onset of the next winter-pollution season.

With regards,

Yours faithfully,


(Dr. Bhure Lal),
Chairman, EPCA

EPCA Report 110**Hospital waste management: Report filed in compliance with directions of Hon'ble Supreme Court on 6.3.2020****June 30, 2020**

On 6.3.2020, the Hon'ble Supreme Court directed:

“...With respect to bio medical waste, issue notice to M/s. Biotic Waste Solutions Pvt. Ltd., 46, SSI Industrial Area, G.T. Karnal Road, Delhi – 110 033 forthwith. Fortis Hospital, Vasant Kunj and Indian Spinal Injuries Centre, Vasant Kunj and the contractor/M/s. Biotic Waste Solutions Pvt. Ltd. are directed to ensure that entire bio medical waste is cleaned from the area before the next date of hearing. Let the Chairman, EPCA file a report with respect to compliance of the order dated 28.02.2020 and regarding such waste around other hospitals in Delhi. List on 27.03.2020...”

In compliance EPCA has convened meetings with all stakeholders to understand the current situation of bio-medical waste management and on 12.3.2020 and 13.3.2020, Chairman EPCA carried out site visits to hospitals in Delhi, UP, Haryana and Rajasthan. The inspections were paused because of the COVID-19 lock-down imposed by the government but the findings from the hospitals and central facilities provide insight into the ground realities of bio-medical waste management and the agenda for further work/improvements.

The recommendations of EPCA and the directions sought from the Hon'ble Court are presented in the report.

1. Site/inspections: Hospital management of bio-medical waste

EPCA chairman visited the following facilities (see Annexure 1 for detailed reports of visit). The key issues that require redressal are detailed here as they provide insights into what needs to be done to improve the situation, not just in these health care facilities but across NCR.

1. Chhatrapati Shivaji Subharti Hosiptal, Subhartipuram, NH-58, Meerut: 966 bedded Health Care Facility. It was found that 65 mt of biomedical waste generated is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited which is located within the premises of the health care facility.

Key issues noted for redressal were:

- a. The bins provided in the HCF were not ergonomically viable as covers of the bins had to be removed manually. HCF should get pedal/foot operated colour coded bins for each department to minimize contact of nursing staff and transportation staff with the bins. Also, hand held trolleys available for transportation of bins from different wards/departments was not adequate.
- b. Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. This was not being done.
- c. General solid waste management is handled by Meerut Nagar Nigam and dumped in the village Ganwadi. This needs improvement urgently.

2.Max Super Speciality Hospital, W-3, Sector – 1, Vaishali, Ghaziabad: 436 bedded Health Care Facility operational. The biomedical waste of 71mtis handed over to M/s Synergy Waste PvtLimited.

Key issues noted for redressal were

- a. Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. Bar coding and QR-Code mechanism being followed by M/s Max Super Speciality Hospital was found to be adequate.
- b. The facility has a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. Although requisite infrastructure is being maintained and segregation and storage of waste is being done in a satisfactory manner, adequate bunding of the central storage facility should also be done to ensure that floor washing effluent does not go outside the area.

3.Paras Hospital, Plot No. 130, Sector 4, Vaishali, Ghaziabad is a 50 bedded Health Care Facility operational since 2005. The biomedical waste is handed over to M/s Synergy Waste Pvt. Limited.

Key issues noted for redressal were

1. Bar coding was not being followed by M/s Paras Hospital and should be started at earliest.

2. The common storage area had proper colour coding as per Rules and waste was found stored in segregated bins but adequate bunding of the central storage facility should be ensured so that floor washing effluent does not go outside the storage area.

3. The municipal solid waste generated from the HCF is being collected separately and is being disposed through Nagar Nigam, Ghaziabad. This needs improvement

4 Lyf Hospital, NH- 04, Gyan Khand -I, Indrapuram, Ghaziabad is a 50 bedded Health Care Facility operational since 2017. The biomedical waste of around 1 MT of bio-medical waste is handed over to a commercial CBWTF, namely M/s Medicare Environmental Management Pvt Limited.

Key issues noted for redressal were

1. Bar coding was not being followed by M/s Lyf Hospital and should be started at earliest.

2. The common storage area was a part of common pathway and did not have proper colour coding. The area should be cordoned off and adequate bunding of the central storage facility should be ensured so that floor washing effluent does not go outside the storage area.

5. Kailash Hospital and Heart Institute, H- 33, Sector 27, NOIDA is a 325 bedded Health Care Facility operational since 1995. The biomedical waste of around 400 kilogram per day is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited.

6. Medanta Hospital, Gurugram is a 1200 bed health care facility with 470 waste segregation points. It generates 1,500 to 2,500 kg of bio-medical waste and 600 kg of wet waste daily. The bio-medical waste is sent to the nearest CBWTF, 'M/s Biotic Waste Solutions Private Limited' in Sector-37 for further treatment and disposal while kitchen waste is composted in a plant having 1000kg/day capacity, within the hospital.

2: Site/inspections to Common Bio-Medical Waste Treatment Facility

According to the Bio-Medical Waste (Management and Handling) Rules 2016, centralised bio-medical waste treatment and disposal facility have been set up in different states. As found in the inspections in the different hospitals/health care units, the individual hospitals enter into a contract with the state pollution board

approved centralised facility, which is then responsible for the management and disposal of the waste.

Therefore, it was important for EPCA to understand the workings of these facilities – the bio-medical waste is centralised in these plants and if the volumes of highly infectious waste are not treated/handled and disposed of with extreme care and as per the regulations then it would lead to contamination and pollution (see Annexure 2 for detailed reports of inspection).

2.1 M/s Synergy Waste Pvt Limited, Chhatrapati Shivaji Subharti Hospital Campus, Subhartipuram, NH-58, Meerut

is a Common Bio-Medical Waste Treatment Facility (CBWTF), which provides services to 3861 Health Care Facilities (1560 Bedded; 2301 Non-Bedded)) having around 14535 beds spread across Gautam Buddha Nagar, Ghaziabad, Hapur, Meerut, J.P. Nagar, Chandausi, Sambhal and Moradabad.

Key issues noted for redressal were:

1. During the visit, it was observed that mixed untreated waste was stored in the room adjacent to the incinerator room. Waste in the area was found lying on the floor. Untreated waste from the area is lifted manually and taken to conveyor leading to the incinerator by means of a trolley. Also, the facility for storage of untreated waste has not been demarcated by means of elevation or demarcation walls within the room.
2. Online Continuous emission monitoring system (OCEMS) has been installed by the facility, however this was not connected with CPCB server since 28.02.2020.
3. Out of 3861 member HCFs of M/s Synergy Waste Pvt. Limited only 135-140 members have adopted bar-coding system till date
4. While the facility has upgraded its incinerator and installed air pollution control systems, black smoke was seen emitted from the stack attached to the incinerator due to incineration of waste at improper temperatures.

2.1 Medicare Environmental Management Pvt Ltd, C- 21, Phase I, MG Road Industrial Area, Hapur, which provides services to 2660 Health Care Facilities (HCFs) having around 21980 beds spread across Gautam Buddha Nagar, Ghaziabad, Hapur, Meerut, Amroha, Sambhal and Moradabad.

Key issues noted for redressal were:

1. During the visit, it was observed that untreated waste was stored in the room where incinerator is placed. No separate room has been made for the storage of untreated biomedical waste. Also, the facility for storage of untreated waste has

not been demarcated by means of elevation or demarcation walls within the room.

2. Out of 2,660 member Health care Facilities of M/s Medicare Environment Management Pvt. Ltd. QR-Code has been provided to all members, however status of compliance with regards to implementation of bar-coding in bags is not being maintained by CBWTF.

2.3 M/s Biotic Waste Solutions Pvt. Ltd., Gurugram is providing service for treatment and disposal of biomedical waste to 1,227 no. of healthcare Facilities (HCFs) with 8,630 beds.

2.4 M/s S D Biomedical Waste Management Co., Rohtak provides service for treatment and disposal of biomedical waste to 505 Healthcare Facilities (HCFs) with 5,634 Nos. of beds.

3. EPCA review of the issues arising out of the inspections and discussions

Based on the inspections done by EPCA chairman, pre-COVID-19 and a subsequent review of the issues and the CPCB's report on biomedical waste as well as other documents, the following were the issues/agenda for discussion/improvement on biomedical waste. This was communicated to the state pollution control boards and meeting was held on June 10, 2020 to discuss the issues.

1. Pending authorisations: How many HFCs have been granted authorisations; how many authorisations for HFCs are pending with each board; why is there a pendency in the authorisations given? Can the process be improved?
2. Inventory of biomedical waste: Is the inventory (quantum) of biomedical waste given on the basis of authorisations granted? How can the process of inventory be improved?
3. How does the state pollution control board track the quantum of biomedical waste collected and processed; in the different categories -- blue, yellow, red etc.
4. How many incinerators in the CBWTF have been upgraded as per CPCB directions? What are the timelines/schedules for upgrading the incinerators?

5. What is the status of GPS/bar-coding for biomedical waste?

6. What is the information regarding the recycling of waste; who are the authorised recyclers for biomedical waste? what measures are taken to track and to ensure quantity of waste that has been processed for recycling?

3.1: No of Health Care Facilities

Under the Rules, the Health Care Facility is required to get authorisation from the state pollution control board. This authorisation allows the state board to track the status of compliance of the facility and is therefore, critical. The data from the state boards shows that the bulk of the facilities have been granted authorisations. Boards representatives also told EPCA that they are taking steps to streamline the process of granting authorisation. The authorisation is granted after the health care facility has got a signed contract with the Central Biomedical Waste Treatment Facility (CBWTF).

EPCA has received the following information from the state pollution control boards regarding the number of health care facilities.

Table: No of health care facilities who have been granted authorisations after agreements/contracts with central biomedical waste treatment facility (CBWTF) in NCR

	Bedded	Non-bedded	Total
Delhi	1303	8496	9799
Rajasthan (Alwar/Bharatpur)	487	136	623/9890 beds
UP	1783	3554	5337
Haryana	1787	1987	3774

3.2: Quantum of biomedical waste generated category-wise (tonnes/year) in NCR

	Total waste generated	Yellow (tonnes)	Red (tonnes)	Blue (tonnes)	White (tonnes)
Delhi	8159	3177	3690	176	1116

Rajasthan	452	317	58	57	20
UP	2552				
Haryana	3709	1187	80	2080	361

3.3 Common bio-medical waste treatment and disposal facilities (CBWTFs) in NCR – all health care facilities granted authorisations have been contracted with these central disposal facilities

	State/UT	Name of facility	No of hospitals/health care facilities contracted
1	Delhi	Biotic Waste Solutions Pvt Ltd	4664
		SMS Water Grace Pvt Ltd	5532
2	UP/NCR	Synergy Waste Pvt Limited, Meerut	3861
		Medicare Environmental Management Pvt Ltd, Hapur	
		M/s Environ Waste Connection LLP, Hapur	(Unit has just started)
3	Gurugram	Biotic Waste Solutions Pvt Ltd	1227
4	Rohtak	M/s S D Biomedical Waste Management Co., Rohtak	505
5	Rajasthan	M/s Hoswin incinerator	623

4. Incineration and recycling: Closing the waste disposal cycle of bio-medical waste

The Bio-Medical Waste (Management and Handling) Rules 2016, sets out the following procedure for management of this waste.

1. It defines health care facility widely so that all bio-medical waste is brought into the ambit of the regulation and its safe disposal is ensured. It says that these are places where diagnosis, treatment or immunization of human beings or animals is provided irrespective of type and size of health treatment system and research activity.

“The occupier -- premise generating bio-medical waste, which includes hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank, health care facility and clinical establishment.”

It sets out the duties of the occupier to ensure that there is safe storage of segregated bio-medical waste in coloured bags or containers; to pre-treat the laboratory waste, micro-biological waste, blood samples, blood through disinfection or sterilization and to do everything to make sure that its operations and people who are handling this waste are protected.

It states that no occupier shall establish on-site treatment and disposal facility, if a service of common bio-medical waste treatment facility is available at a distance of 75 km.

2. It then defines the duties of the operator of a common bio-medical waste treatment and disposal facility (CBMWTF) – this operator is a person who owns or controls the facility and is responsible for the collection, reception, storage, transport, treatment, disposal or any or any other form of handling of bio-medical waste. The operator requires authorization for operation from the state pollution control board. The operator of the common facility is paid on the basis of the beds in the establishment, so that it does not create perverse incentives on either side – the health care facility or the operator. The rates are pre-fixed by government.

3. It defines the method of treatment and disposal of bio-medical waste based on the type of waste so that the most infectious waste is incinerated and other waste after pre-treatment is sent for recycling

Method of disposal of bio-medical waste as laid down in 2016 Rules

Category	Type	Method of disposal
Yellow	Highly infectious waste: human, animal	Incinerated or plasma

category	anatomical, soiled waste etc	pyrolysis or deep burial
Red category	Contaminated waste (recyclable) – waste generated from disposable items like tubing, bottles tubes, syringes (without needles) etc	Autoclaving/micro-waving/hydroclaving followed by shredding or mutilation. This treated waste to be sent to registered or authorized recyclers or for energy recovery or plastics to diesel or for road making. It should not be sent to landfill sites
White category	Waste sharps, including metals – needles, syringes with fixed needles etc	Autoclaving or dry heat stabilization, followed by shredding or mutilation and encapsulation in metal container or cement container to be sent for final disposal to iron foundries, or sanitary landfill or designated concrete waste sharp pit
Blue category	Glassware: broken or discarded and contaminated glassware, including medicine vials etc	Disinfection (by soaking and cleaning with detergent and sodium hypochlorite or through autoclaving or microwaving or hydroclaving. Then sent for recycling.

Therefore, management (safe treatment and disposal) of bio-medical waste has two critical components:

1. Safe and well-managed incineration to ensure that the waste is fully burnt and that there are no toxic emissions from the common facility

This means that the incineration of the highly infectious waste is done as per the stated norms. The common facility has to ensure that the high temperature is maintained during incineration; and that there are adequate controls to ensure that there are no emissions of dioxins and other pollutants. The regulation stipulates the standards for incineration, including that the combustion efficiency must be 99%; temperature in the primary chamber must be 800°C and the secondary chamber shall be 1050°C and that the gas residence time shall be at least 2 seconds in the secondary chamber.

The regulation has also set out the emission standards and stack height. The units are also required to install continuous emission monitoring systems (CEMs), which are linked to the state and central pollution control boards websites. It has also directed that the ash from incineration of biomedical waste shall be disposed of at common hazardous waste treatment facility. However, in case the toxic metals in the incinerated ash are within the regulations as defined under the Hazardous Waste Rules 2008, it may be disposed of at a municipal landfill.

In Delhi, Haryana and UP the CBWTFs have upgraded their incinerators to meet the CPCB standard. Rajasthan State Pollution Control Board has informed EPCA that the incinerator of M/S Hoswin in Alwar was to be upgraded in March, but this has been delayed because of the lockdown. The work will be completed by 30.9.2020.

The issue now is to ensure enforcement so that the CBWTFs work the incinerators at the right temperatures and ensure that there are no emissions that are discharged. With the increased waste of COVID-19, this work needs to be strictly monitored. The state boards must ensure that the online continuous emission monitoring system (OCEMS) is in place and it is monitored regularly.

2. The red, white and blue category waste must be properly treated, disinfected and mutilated before being sold to a recycling unit.

Under the regulation, the recyclers have to have valid authorization or registration from the respective prescribed authority (state pollution control board).

Furthermore, the occupier or operator of the common bio-medical waste treatment facility is required to maintain a record of the recyclables and these details must be submitted to the prescribed authority annually.

In the inspections done by EPCA and the information collected, the following are the authorized recyclers where the treated biomedical waste is being sent (see table).

Recyclers where biomedical waste is being sent in NCR

		Red	Blue	White (metal)
Delhi	Biotic Waste Solutions Pvt Ltd	M/s Delhi Scrap Polymer, Delhi, G-260 Sector 5, Bawana Industrial Area	M/s Goel Glassware, UPSIDC Industrial Area, Plot 1 Firozabad, U.P	M/s Duggar Fibre, C-10 SMA Industrial Area, GTK Road, Delhi
	SMS Water Grace Pvt Ltd	M/s Sita Ram Plastics, NJ-232, Sector 3, Bawana Industrial Area, Delhi	M/s Mathur Glass Industries, in front of tubewell colony, Asfabad, Firozabad, UP	M/s Sparsh Impex, Kuber Colony, near Nagarpalika, Bahadurgarh, Haryana
UP/NCR	Synergy Waste Pvt Limited	M/s R.S. Enterprises, Plot No. F-549, MG Road Industrial Area, Hapur,	,	
	Medicare Environmental Management Pvt Ltd	M/s Sita Ram Plastics, Kh. No. 50/4/1, Mundka, Delhi.	M/s JS Glass Traders, Delhi	
Gurugram	Biotic Waste Solutions Pvt Ltd	M/s Delhi Scrap Polymer, 187 Sector 5, Bawana, Delhi	M/s Goel Glassware, UPSIDC Industrial Area, Plot 1 Firozabad, U.P	
		M/s Nature Plastic, Plot No 773, Phase-1, HSIIDC, Rai, Sonapat		
Rohtak	M/s S D Biomedical Waste Management Co., Rohtak	M/s Nature Plastic, Plot No 773, Phase-1, HSIIDC, Rai, Sonapat		
Alwar	M/s Hoswin incinerator, Alwar	NA		

EPCA remains concerned that this link – from the common facility to the recyclers – needs to be better tracked so that the waste has been safely handled and disposed of. The recyclers have authorization from the state pollution boards and as they pay for the treated waste, it is clear that they would have an incentive to ensure that this can be recycled. However, given the nature of the bio-medical waste, it is critical that the system is further improved through the use of bar-coding.

5. Bar-coding: tracking the collection, treatment, disposal and recycling of biomedical waste

The 2016 Rules provide for the following:

a. The occupier (Hospital or health care facility) is required to establish a bar-code system for bags or containers containing bio-medical waste to be sent out of the premise or place (this was to be done within one year of the notification of the rules).

b. The operator of a common facility has establish bar coding and global positioning system (GPS) for handling of bio-medical waste within one year EPCA has found during its discussions and visits that this work remains incomplete. The following issues have come up:

1. Many hospitals/health care units do not have bar-coding systems in place. This is partly because there is concern that the common facility operator, who is establishing this system is over-charging for this service.
2. It is also not clear who is required to set up this system – the individual health care unit; the operator or the state pollution control board.
3. There is no link with the recyclers – how much of the waste is being sent to the recycling unit from the common waste facility should also be bar-coded so that control is possible.

EPCA has also found that the common facility operator has not yet set up GPS for its transportation vehicles. This needs to be expedited.

5. General waste management: how this is done

Hospitals do not only generate bio-medical waste, but also general waste – from their canteens to all other operations in the facility.

According to the 2016 Bio-Medical Rules the health care facilities are required to dispose of solid waste other than bio-medical waste separately and in accordance with the required rules for this.

The Solid Waste Management Rules 2016 include all facilities which generate on an average 100 kgs of solid waste/day as bulk waste generators. The bulk waste generators are required to segregate and ensure processing of the waste; internally or through authorized waste recyclers/agency. Currently, the municipal corporations of NCR states have appointed agencies for collection and processing of waste from bulk waste generators. However, this system is inadequate and could lead to the solid waste being dumped in the vicinity of the hospital or in green areas like the Aravalli.

6. Recommendations for seeking directions from the Hon'ble Court

Based on discussions and visits, EPCA has reviewed the implementation of the Bio-Medical Waste Rules in NCR.

EPCA's overall assessment of the management of the biomedical waste in NCR is as follows:

1. There is a process to identify health care facilities and to grant them authorization. This system is working reasonably well and the state boards are also working to improve the systems and to streamline clearances.
2. There is a laid-down system for collection of the biomedical waste, which is segregated by the health care facilities and then taken to a common facility run by private agencies. EPCA's inspection of the facilities in NCR has found that there is a reasonable amount of compliance with the rules. However, EPCA has pointed out certain lacunas, which it is taking forward with the state pollution boards to ensure improvement and compliance.

3. However, enforcement needs to be stepped up to ensure that the incinerators are working at the right temperatures so that there are no toxic emissions from the common biomedical waste treatment facilities. The CBWTF facility in Alwar must adhere to its deadline to upgrade its incinerator.

4. The online continuous emission monitoring system (OCEMS) has been installed in most of the central biomedical waste treatment facilities, but this is not working to satisfaction – it is either not connected to the website of the pollution board or the data is insufficient.

EPCA is of the view that this system is critical as it will ensure compliance of the working of the incinerators by monitoring emissions regularly.

The Hon'ble Supreme Court may consider directing the state pollution control boards of Delhi, Haryana, Rajasthan and UP to ensure that this system is upgraded and functional and that regular reports on the compliance is submitted to EPCA/CPCB.

5. The tracking of biomedical waste generated; collected; processed and recycled needs to be improved urgently. The bar-code system, as specified in the 2016 Rules has not yet been implemented completely.

EPCA is recommending that the bar-coding system, which is critical for tracking the biomedical waste – quantity and collection – needs to be implemented through CPCB. This will provide a national system for tracking this waste and ensuring compliance.

The Hon'ble Supreme Court may consider directing CPCB to set up the national/NCR system for bar-coding biomedical waste in collaboration with the state pollution boards.

6. The biomedical waste after treatment, which is sent for recycling to authorised recyclers needs to be tracked. At present, there is no tracking system for recyclable waste. This is also the case for ash after incineration. While EPCA understands that as the recyclable waste has a market value the possibility of it being discarded/dumped is small. However, it is important to ensure that the recyclable waste – as this is biomedical waste – is handled by authorised dealers.

Currently, there is some information about companies where this waste is sent; but it is not compiled or used for tracking.

EPCA is therefore, recommending that the bar-coding system be extended to the waste-recyclers as well. This will be relatively easy to do and it will allow Central/state pollution boards to keep track of the quantity of waste being sent for recycling from all the central biomedical waste treatment facilities.

The Hon'ble Supreme Court may consider directing CPCB to work in collaboration with the state boards to extend the bar-code to recycling of waste.

7. The general waste – all the non-biomedical waste generated -- is required to be managed by the health care facility. Under the 2016 Bio-Medical Waste Management Rules and the Solid Waste Management Rules, if the waste quantum is above 100 kgs/day, then the health care facility is a bulk generator and is required to take steps to manage its own waste. EPCA is concerned that this needs drastic improvement and it will work further on this and report back to the Hon'ble Supreme Court with its recommendations for further directions.

Annexure 1

Detailed reports on inspections done by Chairman EPCA in health care facilities in NCR

1.1 Chhatrapati Shivaji Subharti Hosiptal, Subhartipuram, NH-58, Meerut

M/s Chhatrapati Shivaji Subharti Hosiptal, Subhartipuram is a 966 bedded Health Care Facility operational. The Bio-Medical Waste from the said HCF is generated primarily from Operation Theatre, Labour room, General Wards, ICU, Dialysis and Out-Patient Departments within the premises. The HCF only has sample collection facility for pathological and microbiological tests and samples collected are tested outside through a contracted facility.

The hospital does not have a captive incinerator/facility for treatment and disposal of around 65,700 kilogram of bio-medical waste generated annually from the HCF, instead it is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited which is located within the premises of the said HCF but caters to HCFs located in other districts as well.

Status of Regulatory Compliances

S.No.	Act/Rule	Status
1	Air (Prevention and Control of Pollution) Act, 1981	Valid up to 31.12.2023
2	Water (Prevention and Control of Pollution) Act, 1974	Valid up to 31.12.2023
3	Authorization under provisions of Bio-Medical Waste Management Rules, 2016	Valid up to 12.04.2024
4	Solid Waste Management Rules, 2016	Through Nagar Nigam, Meerut
5	Annual Report Submission (Rule 13)	Submitted

Bio-Medical Waste Source Segregation Infrastructure and Compliance

During inspection, the hospital was operating at around 30% occupancy and not enough bio-medical waste was available on-site to assess the competency of staff with regards to segregation of waste. Although separate colour coded bins were provided in different wards, surgery section, operation theatre and labour room, most of them had no waste in them.

The bins provided in the HCF were not ergonomically viable as covers of the bins had to be removed manually. HCF should get pedal/foot operated colour coded bins for each department to minimize contact of nursing staff and transportation staff with the bins. Also, hand held trolleys available for transportation of bins from different wards/departments was not adequate.

Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose, same was not being practiced by M/s Chhatrapati Shivaji Subharti Hosiptal.

M/s Chhatrapati Shivaji Subharti Hospital had a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. Although the common storage area had proper colour coding as per Rules, the size of the storage area is not sufficient to cater to the waste that might be generated when the HCF operates at full capacity and needs to be expanded. Besides this the effluent generated from floor washing of the common area should be connected to proposed Effluent Treatment Plant. Besides this, adequate bunding of the central storage facility should also be done to ensure that floor washing effluent does not go outside the area.

Status of General/Municipal Solid Waste Disposal

The Municipal Solid Waste generated from the HCF is presently being disposed at Nagar Nigam Meerut's dumping ground in Village Ganwadi. The HCF has no solid waste treatment facility on-site.

Status of Liquid Waste Treatment/Disposal

Domestic waste generated from various sources is being treated in a Sewage Treatment Plant (STP) installed within the premises. Effluent treatment plant for

treating trade effluent from operation theatre, laundry and other service areas is proposed.

1.2 Max Super Speciality Hospital, W-3, Sector – 1, Vaishali, Ghaziabad

M/s Max Super Speciality Hospital, W-3, Sector – 1, Vaishali, Ghaziabad is a 436 bedded Health Care Facility operational. The Bio-Medical Waste from the said HCF is generated primarily from Operation Theatre, Labour room, General Wards, Out-Patient Departments, ICU, Dialysis, Pathology and Microbiology Labs within the premises. The hospital does not have a captive incinerator/facility for treatment and disposal of around 71,892 kilogram of bio-medical waste generated annually from the HCF, instead it is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited.

Status of Regulatory Compliances

S.No.	Act/Rule	Status
1	Air (Prevention and Control of Pollution) Act, 1981	Valid up to 31.12.2020
2	Water (Prevention and Control of Pollution) Act, 1974	Valid up to 31.12.2020
3	Authorization under provisions of Bio-Medical Waste Management Rules, 2016	Valid up to 12.04.2020
4	Solid Waste Management Rules, 2016	In-house waste convertor for kitchen waste and inorganic waste through Nagar Nigam, Ghaziabad
5	Annual Report Submission (Rule 13)	Submitted

Bio-Medical Waste Source Segregation Infrastructure & Compliance

During inspection, the HCF was operating at around 75% occupancy. General Ward, Labs and OPD stations were inspected to assess the compliance status and competency of staff with regards to source segregation of waste. No mixing of waste was observed at any of the points, appropriate pre-treatment of vials was observed in the laboratory and separate colour coded bins were provided in each of the stations inspected. The labelling and bins provided in the HCF were found to be intact and foot pedal mechanism was working in the bins.

Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. Bar coding and QR-Code mechanism being followed by M/s Max Super Speciality Hospital was found to be adequate.

Central Storage Facility for Bio-Medical Waste

M/s Max Super Speciality Hospital had a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. The common storage area had proper colour coding as per Rules and was found stored in segregated compartments as required. Besides this the effluent generated from floor washing of the common area was connected to the Effluent Treatment Plant installed within the premises. Although requisite infrastructure is being maintained and segregation and storage of waste is being done in a satisfactory manner, adequate bunding of the central storage facility should also be done to ensure that floor washing effluent does not go outside the area.

Status of General/Municipal Solid Waste Disposal

The kitchen waste generated by the HCF is being processed in-house by means of an Organic Waste Convertor. Besides this, other municipal solid waste generated from the HCF is being collected separately and is being disposed through Nagar Nigam, Ghaziabad

Status of Liquid Waste Treatment/Disposal

Domestic waste generated from various sources is being treated in a Sewage Treatment Plant (STP) installed within the premises. The treated water is being recycled and reused for flushing in wash-rooms, horticulture and cooling towers and rest is being drained out. An effluent treatment plant for treating trade

effluent generated from operation theatres, floor washing and labs is installed and was operational at the time of inspection.

1.3 Paras Hospital, Plot No. 130, Sector 4, Vaishali, Ghaziabad

M/s Paras Hospital, Plot No. 130, Sector 4, Vaishali, Ghaziabad is a 50 bedded Health Care Facility operational since 2005. The Bio-Medical Waste from the said HCF is generated primarily from Out-Patient Departments, In-Patient Department and Pathological laboratory within the premises. The said HCF does not have a captive incinerator/facility for treatment and disposal of around 700 kilogram of bio-medical waste generated annually from the HCF, instead it is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited.

Status of Regulatory Compliances

S.No.	Act/Rule	Status
1	Air (Prevention and Control of Pollution) Act, 1981	Valid till 31.12.2020.
2	Water (Prevention and Control of Pollution) Act, 1974	Valid till 31.12.2020.
3	Authorization under provisions of Bio-Medical Waste Management Rules, 2016	
4	Solid Waste Management Rules, 2016	Through Nagar Nigam, Ghaziabad
5	Annual Report Submission (Rule 13)	Not Submitted

Bio-Medical Waste Source Segregation Infrastructure & Compliance

During inspection, the HCF was operating at around 90% occupancy. General Ward and Labs were inspected to assess the compliance status and competency of staff with regards to source segregation of waste. Although the amount of waste was less, no mixing of waste was observed at any of the points and separate colour coded bins were provided in each of the stations inspected. The HCF was not doing required pre-treatment of vials and disposing it directly in Red bins which needs to be addressed. The labelling and bins provided in the HCF were found to be intact and foot pedal mechanism was working in the bins. Rule

4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. Bar coding was not being followed by M/s Paras Hospital and should be started at earliest.

Central Storage Facility for Bio-Medical Waste

M/s Paras Hospital had a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. Although the common storage area had proper colour coding as per Rules and waste was found stored in segregated bins as the waste at central storage site is being stored in large bins. it should be ensured that there is no spillage of waste during transfer and the said area is leak proof. Also, adequate bunding of the central storage facility should be ensured so that floor washing effluent does not go outside the storage area.

Status of General/Municipal Solid Waste Disposal

The municipal solid waste generated from the HCF is being collected separately and is being disposed through Nagar Nigam, Ghaziabad.

Status of Liquid Waste Treatment/Disposal

Domestic waste generated from various sources is being discharged into domestic sewer and is treated at a terminal Sewage Treatment Plant (STP). An effluent treatment plant for treating trade effluent generated from various is installed. Same is installed on batch processing mechanism and was not operational at the time of inspection.

1.4 Lyf Hospital, NH- 04, Gyan Khand -I, Indrapuram, Ghaziabad

M/s Lyf Hospital, NH- 04, Gyan Khand -I, Indrapuram, Ghaziabad is a 50 bedded Health Care Facility operational since 2017. The Bio-Medical Waste from the said HCF is generated primarily from Out-Patient Departments, In-Patient Department and Pathological laboratory within the premises. The said HCF does not have a captive incinerator/facility for treatment and disposal of around 1.00 MT of bio-medical waste generated annually from the HCF, instead it is handed over to a commercial CBWTF, namely M/s Medicare Environmental Management Pvt. Limited.

Status of Regulatory Compliances

S.No.	Act/Rule	Status
1	Air (Prevention and Control of Pollution) Act, 1981	Valid till 31.07.2023.
2	Water (Prevention and Control of Pollution) Act, 1974	Valid till 31.07.2023.
3	Authorization under provisions of Bio-Medical Waste Management Rules, 2016	Valid till 31.12.2021
4	Solid Waste Management Rules, 2016	Through Nagar Nigam, Ghaziabad
5	Annual Report Submission (Rule 13)	-

Bio-Medical Waste Source Segregation Infrastructure & Compliance

During inspection, the HCF was operating at around 40% occupancy. General Ward and Labs were inspected to assess the compliance status and competency of staff with regards to source segregation of waste. Although the amount of waste was less, no mixing of waste was observed at any of the points and separate colour coded bins were provided in each of the stations inspected. The requisite pre-treatment of vials before disposing them in Red bins was being done by the HCF.

The labelling and bins provided in the HCF were found to be intact and foot pedal mechanism was working in the bins. Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. Bar coding was not being followed by M/s Lyf Hospital and should be started at earliest.

Central Storage Facility for Bio-Medical Waste

M/s Lyf Hospital had a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. The common storage area was a part of common pathway and did not have proper colour coding. The area should be cordoned off and adequate bunding of the central storage facility should be ensured so that floor washing effluent does not go outside the storage area.

Status of General/Municipal Solid Waste Disposal

The municipal solid waste generated from the HCF is being collected separately and is being disposed through Nagar Nigam, Ghaziabad.

Status of Liquid Waste Treatment/Disposal

Domestic waste generated from various sources is being discharged into domestic sewer and is treated at a terminal Sewage Treatment Plant (STP). An effluent treatment plant for treating trade effluent generated from various is installed and operational at the time of inspection.

1.5 Kailash Hospital and Heart Institute, H- 33, Sector 27, NOIDA

M/s Kailash Hospital and Heart Institute, H- 33, Sector 27, NOIDA is a 325 bedded Health Care Facility operational since 1995. The Bio-Medical Waste from the said HCF is generated primarily from Operation Theatre, Labour room, General Wards, Out-Patient Departments, ICU, Dialysis, Pathology and Microbiology Labs within the premises.

The said HCF does not have a captive incinerator/facility for treatment and disposal of around 400 kilogram of bio-medical waste generated per day from the HCF, instead it is handed over to a commercial CBWTF, namely M/s Synergy Waste Pvt. Limited.

Status of Regulatory Compliances

S.No.	Act/Rule	Status
1	Air (Prevention and Control of Pollution) Act, 1981	Valid till 31.12.2019. Applied for renewal
2	Water (Prevention and Control of Pollution) Act, 1974	Valid till 31.12.2019. Applied for renewal
3	Authorization under provisions of Bio-Medical Waste Management Rules, 2016	Applied for renewal
4	Solid Waste Management Rules, 2016	kitchen waste and

		inorganic waste through AG Enviro Infra Projects Pvt. Ltd. (NOIDA Authority's vendor)
5	Annual Report Submission (Rule 13)	Submitted

Bio-Medical Waste Source Segregation Infrastructure & Compliance

During inspection, the HCF was operating at around 90% occupancy. General Ward, Labs, ICU and OPD stations were inspected to assess the compliance status and competency of staff with regards to source segregation of waste. No mixing of waste was observed at any of the points, appropriate pre-treatment of vials was observed in the laboratory and separate colour coded bins were provided in each of the stations inspected.

The labelling and bins provided in the HCF were found to be intact and foot pedal mechanism was working in the bins.

Rule 4(i) of the Bio-Medical Waste Management Rules, 2016 requires occupier of HCF to establish a Bar-code system for bags or containers containing bio-medical waste to be sent out of the premises or place for any purpose. Bar coding and QR-Code mechanism being followed by M/s Kailash Hospital and Heart Institute was found to be adequate.

Central Storage Facility for Bio-Medical Waste

M/s Kailash Hospital and Heart Institute had a dedicated area for temporary storage of bio-medical waste storage of waste from different departments of the HCF. The common storage area had proper colour coding as per Rules and was found stored in segregated compartments as required. Besides this the effluent generated from floor washing of the common area was connected to the Effluent Treatment Plant installed within the premises. Also, adequate bunding of the central storage facility was observed to ensure that floor washing effluent does not go outside the storage area.

Status of General/Municipal Solid Waste Disposal

The kitchen waste and other municipal solid waste generated from the HCF is being collected separately and is being disposed through AG Enviro Infra Projects Pvt. Ltd. (NOIDA Authority's vendor)

Status of Liquid Waste Treatment/Disposal

Domestic waste generated from various sources is being discharged into domestic sewer and is treated at a terminal Sewage Treatment Plant (STP) based on Sequential Batch Reactor (SBR) technology being operated by NOIDA Authority. An effluent treatment plant of 30 KLD for treating trade effluent generated from operation theatres, floor washing and labs is installed and was operational at the time of inspection. Provision for storage of treated effluent for purpose of recycling/reusing was found in place.

1.6 Medanta Hospital, Gurugram

The facility has 1200 beds and 470 waste segregation points. It generates 1,500 to 2,500 kg of bio-medical waste and 600 kg of wet waste daily. The bio-medical waste is sent to the nearest CBWTF, 'M/s Biotic Waste Solutions Private Limited' in Sector-37 for further treatment and disposal while kitchen waste is composted in a plant having 1000kg/day capacity, within the hospital. At present, they are paying nearly 8-10 lakhs per month i.e. Rs.4.99/bed/day (with extra charges of Rs.19) to the CBWTF for collecting and processing their healthcare waste.

Committee for Biomedical Waste Management (BMWM): They have Infection Control Committee (ICC), which looks after the biomedical waste management (BMWM) in the hospital.

Infrastructure for Managing BMW: Color coded bins (pedal operated); bags and puncture proof containers and symbol of bio hazard labeling were there in the facility. They also follow the barcode system for BMW assessment and transportation. Green initiatives namely, composting of wet waste and Sewage Treatment Plant (STP) were operational in the facility.

Segregation Practices: At the storage facility site, it was observed that the segregation of waste as per the BMW Rules, 2016 was followed. For municipal waste, they mentioned that they have *two* bins (blue and green) in the kitchen areas wherein biodegradable waste is composted at the site and dry waste is sent to 'Eco-green' for recycling purposes on a monthly basis.

Waste Collection and Transportation (Intramural / In-situ): The biomedical waste collection from wards, labs OPD etc. was carried out via non-colour coded trolleys by the housekeeping staff 3 times in a day as well as whenever required.

Onsite Treatment of BMW: The chemical liquid waste is discarded by treating it with 1 per cent of sodium hypochlorite (NaOCl) solution and autoclave is also used for sterilization purposes.

Waste Storage (in-house): There was the central storage area at the basement of the hospital in proper condition. The BMW was stored in non-colour coded trolleys and had other important infrastructures viz., locks; bio-hazard labelling; exhaust fans; slope & draining system; glazed material flooring; lights etc., were present as per the BMW Rules of 2016.

Collection and Transportation of BMW (Extramural / Ex-situ): The hospital gives its biomedical waste to M/s Biotic Waste Solutions Private Limited for its treatment. The delegated personnel from the hired agency daily collect the waste from the central storage site.

Record Maintenance: Daily waste generation records; annual report; autoclave cycle and immunization records were in place.

Occupational Safety: The waste handling staffs were immunized for hepatitis B and tetanus by the hospital. The healthcare employees were observed using *three* PPE(s) namely, face mask; apron and head cap only while handling the waste. Other important protective gears namely, gum boots and hand gloves were missing.

Training regarding Biomedical Waste Management: They conduct 3-4 training in a month for nurses; housekeeping staff and grade IV employees. Also, they mentioned that when a new person is inducted they organize regular 4 days training for him/her.

Annexure 2

Detailed inspection reports of Common Biomedical Waste Treatment Facilities (CBWTF)

2.1 M/s Synergy Waste Pvt. Limited, Chhatrapati Shivaji Subharti Hosiptal Campus, Subhartipuram, NH-58, Meerut is a Common Bio-Medical Waste Treatment Facility (CBWTF) and has a valid consent to operate up to 31.12.2022 under provisions of Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974 and a valid Authorization under provisions of Bio-Medical Waste Management Rules, 2016 up to 31.12.2024.

CBWTF is located in in Meerut district of Uttar Pradesh within the campus of Chhatrapati Shivaji Subharti Hospital, Subhartipuram, NH-58, Meerut and provides services to 3861 Health Care Facilities (1560 Bedded; 2301 Non-Bedded)) having around 14535 beds spread across Gautam Buddha Nagar, Ghaziabad, Hapur, Meerut, J.P. Nagar, Chandausi, Sambhal and Moradabad.

CBWTF has 46 registered vehicles for collection and transportation of waste from HCFs.

Infrastructural Facilities

Treatment Equipment Room: Facility has provided a separate treatment/incinerator room with adequate ventilation.

Main waste storage space: During the visit, it was observed that mixed untreated waste was stored in the room adjacent to the incinerator room. Waste in the area was found lying on the floor. Untreated waste from the area is lifted manually and taken to conveyor leading to the incinerator by means of a trolley. Also, the facility for storage of untreated waste has not been demarcated by means of elevation or demarcation walls within the room.

Treated waste storage room:

Separate storage area is provided for the storage of treated biomedical waste.

Waste such as incineration ash and ETP sludge along with liquid and expired medicines are disposed through TSDF operator i.e. Uttar Pradesh Waste Management Ltd., Kanpur and following the manifest as per Hazardous and Other Waste (Management and Trans boundary Movement) Rules, 2016.

Recyclables like plastics and glass is being disposed through M/s R.S. Enterprises, Plot No. F-549, MG Road Industrial Area, Hapur, which has valid Consent to Operate under Air (Prevention and Control of Pollution) Act, 1981, Water(Prevention and Control of Pollution) Act, 1974 and Registration under Plastic Waste Management Rules, 2016.

Online Continuous emission monitoring system (OCEMS): OCEMS is installed by the facility, however same was not found to be connected with CPCB server since 28.02.2020.

Bar code system: Out of 3861 member HCFs of M/s Synergy Waste Pvt. Limited, practice of bar coding has been adopted by around 135-140 members only.

Record keeping:

Record keeping was found to be adequate.

Treatment incineration capacity of the facility is 300 kg/hour and autoclave capacity is 300 kg/batch.

CBWTF has facility for carrying out daily strip test, however, record with regards to spore test were not found to be in place at the time of inspection.

Treatment equipment:

Incineration:

Facility has one incinerator of capacity 300 kg/hour and is operated for around 12-14 hours per day. Incinerator has been upgraded and has more than 2 second residence time in secondary combustion chamber. Temperature readings in primary, secondary chamber-1 and secondary chamber-2 were observed to be 1142.7° C, 1190.5° C and 603.4° C respectively.

Although Air Pollution Control System like Venturi scrubber, droplet separator, activated carbon have been installed, black smoke was being emitted from the stack attached to the incinerator due to incineration of waste at improper temperatures.

Autoclaving: Facility has one autoclave of capacity 300 kg/batch and has display and recording devices for recording parameters such as time, temperature,

pressure and date as required under the BMWM Rules, 2016. Autoclave is operated for 03 cycles on most days.

Sharp pit/ Encapsulation: During inspection, it was reported by the operator that sharps are being utilized for making bricks.

Effluent Treatment Plant:

Facility has installed an effluent treatment plant for treatment of waste water generated from floor washing, vehicle washing, autoclave and air pollution control systems. It was found operational at the time of inspection.

**2.1 Medicare Environmental Management Pvt. Ltd, C- 21,
Phase I, MG Road Industrial Area, Hapur**

M/s Medicare Environmental Management Pvt. Ltd. at C-21, Phase – I, UPSIDC, Masoori Gulawati Road is a Common Bio-Medical Waste Treatment Facility (CBWTF) and has a valid consent to operate up to 31.12.2023 under provisions of Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974 and a valid Authorization under provisions of Bio-Medical Waste Management Rules, 2016 up to 31.12.20123.

CBWTF is located in an area of around 3280 square meter in Hapur district of Uttar Pradesh and is providing services to 2660 Health Care Facilities (HCFs) having around 21980 beds spread across Gautam Buddha Nagar, Ghaziabad, Hapur, Meerut, Amroha, Sambhal and Moradabad.

CBWTF has 20 registered vehicles for collection and transportation of waste from HCFs.

Infrastructural Facilities

Treatment Equipment Room: Facility has provided separate treatment equipment room. Adequate ventilation should be provided in the said.

Main waste storage space: During the visit, it was observed that untreated waste was stored in the room where incinerator is placed. No separate room has been made for the storage of untreated biomedical waste. Also, the facility for storage of untreated waste has not been demarcated by means of elevation or demarcation walls within the room.

Treated waste storage room:

Separate storage area is provided for the storage of treated biomedical waste. Waste such as incineration ash and ETP sludge along with liquid and expired medicines are disposed through TSD operator i.e. Uttar Pradesh Waste Management Ltd., Kanpur and following the manifest as per Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016. Recyclables like plastics and glass is being disposed through M/s Sita Ram Plastics, Kh. No. 50/4/1, Mundka, Delhi.

Online Continuous emission monitoring system (OCEMS): OCEMS is installed by the facility and is connected to CPCB and UPPCB server.

Bar code system: Out of 2,660 member Health care Facilities of M/s Medicare Environment Management Pvt. Ltd. QR-Code has been provided to all members, however status of compliance with regards to implementation of bar-coding in bags is not being maintained by CBWTF.

Record keeping: Record keeping was found to be adequate, as per records assessed on-site M/s Synergy Waste Pvt. Limited is treating around 1.4 MT of bio-medical waste per day.

Treatment incineration capacity of the facility is 3000 kg/day and autoclave capacity is 440 Litre/batch.

CBWTF has facility for carrying out daily strip test, spore test and validation test, records of same were found to be in place at the time of inspection.

Treatment equipment

Incineration: Facility has one incinerator of capacity 3000 kg/day. Incinerator has been upgraded and has more than 2 second residence time in secondary combustion chamber. Certificate for same has been provided by the facility. Temperature readings in primary and secondary chamber were observed to be 931° C and 1059 ° C.

Autoclaving: Facility has one autoclave of capacity 440 ltrs/batch and has display and recording devices for recording parameters such as time, temperature, pressure, date and batch number etc. as required under the BMW Rules, 2016.

Sharp pit/ Encapsulation: During inspection, it was reported by the operator that No sharp pit is available in the facility and sharps are send to Uttar Pradesh Waste Management, Kanpur.

Effluent Treatment Plant: Facility has effluent treatment plant with unit of primary settling tank followed by activated carbon tank and a sludge drying bed. Also, flow meter is attached to inlet and outlet. Effluent treatment plant for treatment of waste water generated from floor washing, vehicle washing, autoclave and air pollution control systems was found installed and operational at the time of inspection.

2.3 M/s Biotic Waste Solutions Pvt. Ltd., Gurugram

M/s Biotic Waste Solutions Pvt. Ltd. is operated at Gurugram and catering service for treatment and disposal of biomedical waste to 1,227 no. of Healthcare Facilities (HCFs) with 8,630 Nos. of beds. The Authorization under BMWM Rules, 2016 has been granted by HSPCB is valid up to 30.09.2020.

The facility is collecting 5,582 kg/day of biomedical waste for treatment and disposal. The details for treatment capacity are given below:

Installed capacity: 20 tons/day

Rotary Incinerator capacity: 10 tons/day

Autoclave capacity: 10 tons/day

The common facility is treating and disposing 5,582 kg/day of biomedical waste (incinerable waste: 2,453 Kg/day; autoclavable waste: 2,634 Kg/day and glass waste: 494 kg/day). Further, after treatment, the autoclavable waste is being sent to plastic and glass recycler located in Delhi & U.P.

Treated biomedical plastic waste is disposed through authorized plastic waste recycler namely M/s Delhi Scrap Polymer, Delhi and treated biomedical glass waste is disposed through authorized recycler namely M/s Goel Glassware, Firozabad, U.P.

The incinerator installed by the facility is rotary incinerator with SCADA monitoring system. Dry scrubbers, bag filters and packed bed are provided with incinerator as Air Pollution Control Devices to control air emissions and to comply with emission standards as notified under BMWM Rules, 2016.

Barcode system has been adopted by the operator, however the same is yet to be adopted by every member supplying biomedical waste to the common facility.

After autoclaving, the facility segregates the treated biomedical plastic waste for further disposal through plastic recycler.

Glass waste is treated through chemical disinfection with 1% sodium hypochlorite solution and after disinfection the treated glass waste is being mutilated.

Sharp waste is treated in autoclave and after shredding being encapsulated in bricks.

Incinerator ash is handed over to Hazardous Waste Treatment Storage & Disposal Facility namely M/s GEPIL, Faridabad

Effluent Treatment Plant of 15 KLD has been installed by the facility for treatment of wastewater generated from the facility.

Overall observation: The facility has proper storage spacing for treated and untreated biomedical waste. The treatment equipment vis-à-vis incinerator and autoclave are provided with digital recording system. Online Continuous Emission Monitoring System is installed with incinerator and has connectivity with server of CPCB. The incinerator is upgraded with 2 sec Residence Time as required under BMWM Rules, 2016. Further, operator of the facility is required to comply with provisions under BMWM Rules, 2016 including standards for incinerator stack emission and treated effluent.

2.4 M/s S D Biomedical Waste Management Co., Rohtak

M/s S D Biomedical Waste Management Co., Rohtak caters service for treatment and disposal of biomedical waste to 505 Healthcare Facilities (HCFs) with 5,634 Nos. of beds. The Authorization under BMWM Rules, 2016 has been granted by HSPCB is valid up to 30.09.2020.

The facility collects 1800 kg/day of biomedical waste for treatment and disposal. The details for treatment capacity are given below:

Incinerator capacity: 100 Kg/hr

Autoclave capacity: 50 kg/batch/day

The facility is treating and disposing 1800 kg/day of biomedical waste (incinerable waste : 1050 Kg/day, autoclavable waste : 445 Kg/day and other waste : 305 kg/day). Further, after treatment, the autoclavable waste is being sent to plastic and glass recycler located in Delhi.

Treated biomedical plastic waste disposed through authorized plastic waste recycler namely M/s Nature Plastic, Sonipat.

The incinerator installed by the facility is static incinerator with two combustion chambers provided with PLC based recording system provided with wet scrubbing, mist eliminator and droplet separator as Air Pollution Control Devices to control air emissions and to comply with emission standards as notified under BMWM Rules, 2016.

Facility has installed Effluent Treatment Plant of 2.5 KLD for treatment of wastewater generated from facility.

Barcode system has been adopted by the operator, however the same is yet to be adopted by every member of the facility.

Sharp waste is treated in autoclave and after shredding being encapsulated in bricks.

Overall Observation: Facility has separate spacing for temporary storage of untreated biomedical waste however the same need to be improved especially for yellow category of biomedical waste. Facility has upgraded its incinerator to two seconds residence time as required under BMWM Rules, 2016 and provided requisite APCDs to control air emissions. Facility is required to operate ETP regularly and optimally. Operator is suggested to make pucca road inside the premises. Further, operator of the facility is required to comply with provisions under BMWM Rules, 2016 including standards for incinerator stack emission and treated effluent.