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Performances of bio medical waste management in India during COVID-19

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Abstract

Waste management is of the utmost importance in protecting human lives and the environment. With the expansion of the Pharmaceutical Industry over the years, India has recognised the necessity for strong bio-medical waste management legislation; nevertheless, its execution is still far from ideal. According to the ASSOCHAM- Velocity MR Report, India will generate 77.5 tonnes of medical waste per day by 2022, based on the current estimated waste level of 550.9 tonnes per day growing at a compound annual growth rate, and the waste management market in India will likely reach US\$ 13.62 billion by 2025. 4 On January 31, 2020, India recorded its first case of coronavirus, and in less than three months we had surpassed 10,000 instances. The present study is based on secondary data, secondary data collected from annual report Annual Report on Biomedical Waste Management as per Biomedical Waste Management Rules, 2016 for the year 2020, central and state pollution control board, ASSOCHAM, and CBWTFs. The study uses the table and graphs to analyse the collected data. The study found the COVID-19 has contributed the bio waste management in India, there is a gap between the BMW waste generation and treatment. There are issues and challenges in the implementation of Biomedical Waste Management Rules, 2016.

Keywords: Bio medical waste, environment, health, COVID-19, pollution, policy

Introduction

Waste management is of the utmost importance in protecting human lives and the environment. Any failure to effectively address this issue has severe, permanent repercussions. The Indian pharmaceutical sector is one of the largest in the world and produces approximately twenty percent of the exported generic pharmaceuticals. It has shipped medications to two hundred countries throughout the years and is regarded as a pharmaceutical giant. As a result, the biomedical and health care industry in India serves as the country's backbone. With such exponential expansion, however, come attendant risks, necessitating the need for legislation to regulate it.

With the expansion of the Pharmaceutical Industry over the years, India has recognised the necessity for strong bio-medical waste management legislation; nevertheless, its execution is still far from ideal. According to the ASSOCHAM- Velocity MR Report, India will generate 77.5 tonnes of medical waste per day by 2022, based on the current estimated waste level of 550.9 tonnes per day growing at a compound annual growth rate, and the waste management market in India will likely reach US\$ 13.62 billion by 2025. 4 On January 31, 2020, India recorded its first case of coronavirus, and in less than three months we had surpassed 10,000 instances. Considering the COVID-19 epidemic, the management of biomedical waste created in our country becomes a topic of concern. If this condition is not halted in its earliest stages, the effects may have unanticipated consequences.

Legal Aspect of the Bio-Medical Waste Management

With more hospitals, waste must be controlled and regulated. Sections 6, 8, and 25 of the Environment (Protection) Act, 1986, are governed by the Ministry of Environment, Forest, and Climate Change (MoEF& CC). Act authorises Central Government to publish rules in Official Gazette. Bio-Medical Waste (Management and Handling) Rules, 2016 (BMW Rules, 2016) are the Central Government's directive to manage bio-medical waste efficiently. BMW Rule, 2016 and Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities (CBWTF) are MoEF& CC bio-medical waste rules.

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In 2000, 2003, and 2016, the 1998 Bio-Medical Waste Management Rules were updated. Rule 3(f) of the 2016 BMW Rule specifies "bio-medical waste"

Waste generated during human or animal diagnosis, treatment, immunisation, related research, biological manufacture or testing, or health camp. The 2016 BMW Rules apply to "everyone who generates, collects, receives, stores, transports, treats, disposes, or manages bio medical waste in any form" (2). Rules describe Occupier, Operator, and Prescribed Authority waste disposal duties. A biological waste facility's occupant must complete particular tasks. He must ensure the storage facility is safe and the garbage does not damage human health. He must pre-treat biomedical waste according to WHO and NACO guidelines so it can be securely conveyed. The owner controls CBWTF. 2016 rules changed operator responsibility. The operator must collect and transport the occupier's waste securely. The occupier's waste should be segregated and disposed of according to hospital and biohazard standards.

Schedule I lists biological waste categories. Garbage is categorised by colour. Waste treatment facility is governed by BMW Rules, 2016 and Bio-medical Waste Treatment and Disposal Facilities Guidelines. The 2016 BMW Rules prevent hospitals from disposing of waste on-site if a CBWTF is within 75 kilometres. These guidelines minimise the barrier to developing CBWTFs by assigning state or UT administrations land distribution responsibilities. Specific suggestions clarify CBWTF applicability, location criteria, land requirements, treatment requirements, infrastructure setup and monitoring, and operation systems.

Laws in Relation to Corona Virus

This paper addresses India's biomedical waste management challenges. Lack of speed in data availability, underreporting of waste generated and handling capacity, non-compliance of BMW Rules, and underdevelopment of CBWTFs in certain states/UTs lead to inadequate waste management, causing environmental pollution, multiplication of vectors such as insects and rodents, and transmission of cholera, hepatitis, AIDS through contaminated syringes, needles, etc. With only 198 CBWTFs and 225 captive incinerators, it's unclear if India can manage its rising medical waste as the coronavirus pandemic looms. During the epidemic, medical waste rose 6-10%. The Ministry of Health and Family Welfare listed novel coronavirus as a potential pathogen in its January 2020 guidelines. It covered waste segregation, treatment, disposal, biomedical waste handlers, documentation, and training.

The Central Pollution Control Board issued directions on how to handle coronavirus trash on March 18, 2020. These guidelines were to be followed by all Central and State government stakeholders, including isolation wards, quarantine centres, ULB's laboratories, hospitals, and sample collection centres, in addition to existing practises of administering bio-medical waste and general solid waste under the BMW Rules, 2016 and Solid Waste Management Rules, 2016 respectively. These guidelines were based on current knowledge of HIV, H1N1, etc. hospital waste. WHO interim guidance on Water, Sanitation, Hygiene, and Waste Management advocated treating COVID-19 patient waste off-site or on-site. WHO issued an interim guidance on infection prevention and control in health care when COVID-19 is suspected, recommending standard

precautions for all patients and safe routine waste disposal. WHO didn't give biological waste disposal guidelines. It used 2017 WHO guidelines on healthcare waste management. Concerning coronavirus, only typical precautions and outline procedures were supplied.

Health care institutions across the country manage COVID-19 ward/OPD biological waste. These policies follow BMW, 2016, IPC, CDC, and WHO recommendations. Institutions must sort trash for collection, processing, and disposal. Disinfect liquids, trash, and metallic implants with sodium hypochlorite. Common Bio-medical Waste Treatment and Disposal Facility incinerates anatomical waste and Cytotoxic drug containers (CMBWTF). Biomedical waste devices, articles formed during diagnosis, treatment, and immunisation of COVID-19 patients must follow standards and criteria. Delhi's Safdarjung Hospital announced measures for controlling Corona Virus biological waste. BMW uses color-coded bags for category-specific treatment and disposal. Until Bureau of Indian guidelines are established, bio-medical waste bags comply with Plastic Management Rules, 2016. Chemical disinfection, trash pickup twice a day, and biomedical waste treatment take 48 hours.

Corona Virus: Implementation of Laws and Situation in India

During the coronavirus epidemic, 14-day quarantines were advised. According to the regulations, bio-medical waste from quarantined households must be collected in yellow bags and sent to licenced waste collectors ULB's employed by CBWTF either directly from such residences or an established collection station. Rajasthan and West Bengal lack a medical waste collection mechanism. Seven states lack CBWTFs. Masks and gloves are classed as "domestic hazardous waste" by the CPCB, however much biomedical waste is processed as solid domestic garbage instead of CBWTFs. When the vehicle approached a residential neighbourhood to collect, most neighbours feared it might spread viruses, despite the scientific process. The state pollution board gathers bio-medical waste data, but health and local-self-government must supply coronavirus-related facilities and waste data. Experts challenge the CPCB's rules' execution. Biomedical waste from homes may transmit the same infection. Untrained workforce hinders implementation. CBWTFs should have collected without a separate team.

During the pandemic, biomedical waste production dropped in certain cities. Nagpur's average biomedical waste production pre-coronavirus outbreak was 3,136kg. Most private doctors with clinics or bedded hospitals have stopped down due to lack of safety equipment. In an interview, the State President of Indian Medical Association (IMA) said 75% of COVID-19 bio medical waste is medical kits and that "IMA won't last long owing to lack of money." CPCB's medical waste guidelines require CBWTF operators to sanitise workers who collect and handle bio-medical waste and supply them with proper PPE, including three-layered masks, splash-proof gowns, gum boots, nitrile gloves, and safety goggles. Coronavirus lasts 24 hours on cardboard, 72 on plastic and steel. This concerns informal workers' sanitation. 1.5-4 million Americans recycle, sort waste. If safety measures aren't done, their health is at risk. CBWTFs and worker and vehicle PPE kits get extended hours. CBWTFs monitor, review, and verify high-risk

situations. Biomedical waste disposal is difficult in West Bengal. According to a news source, towns didn't contract biological waste organisations to collect rubbish from quarantine residences until April 1. State civil body blamed 'workload' for delay. Uncollected and improperly burned rubbish could spread disease. Gurgaon has developed hospital waste incinerators.

The Objective of the Study

The following are the objective of the study

- To analyse the trends in the bio medical waste during COVID-19
- To examine the performance of bio medical waste during COVID-19

Methodology of the Study

The present study is based on secondary data, secondary data collected from annual report Annual Report on Biomedical Waste Management as per Biomedical Waste Management Rules, 2016 for the year 2020, central and state pollution control board, ASSOCHAM, and CBWTFs. The study uses the table and graphs to analyse the collected data.

Table 1: Following gap identified by the CPCB w.r.to AR-2019 and 2020;

Particulars	2019	2020
No. of HCFs	322425	352014
No. of bedded HCFs	106796	113186
No. of non-bedded HCFs	215780	237938
No. of beds	248632 7	2544116
No. of CBWTFs	202	208
No. of HCFs utilizing CBWTFs	235571	244282
No. of HCFs granted authorization	153885	160736
No. of HCFs having Captive Treatment Facilities	18015	17206
No. of Captive Incinerators Operated by HCFs	136	125
Quantity of bio-medical waste generated in Tonnes/day	619	774
Quantity of bio-medical waste treated in Tonnes/day	544	708
No. of HCFs violated BMW Rules	29062	22261
No. of Show-Cause notices/Directions issued to defaulter HCFs	17435	13, 389

The table presents the status of bio medical waste generation and management in India during COVID-19. The total number of HCFs is 322425 in 2019, it increases to 352014 in 2020. The number of bedded in HCFs is 106796 in 2019, it increases to 113186 in 2020. The Number of non-bedded HCFs in 2019 is 215780, it was increased to 237938 in 2020. Number of beds, CBWTFs, HCFs utilizing CBWTFs, HCFs granted authorization, Quantity of bio-medical waste generated and treated in Tonnes/day and Show-Cause notices/Directions issued to defaulter HCFs has been increased form 2019 and 2020. It shows the impact of COVID-19 on bio medical waste generation in India.

The table depicts the Month wise average COVID-19 biomedical waste generation in the Country during the period from May 2020 till March 2021. The World Health Organization declared COVID-19 to be a global pandemic on March 11, 2020. The federal and state governments have taken a number of actions to combat the COVID-19 epidemic, including establishing quarantine centres and camps, isolation wards, sample collection facilities, and laboratories. The COVID-19 biological waste data has also been examined and compiled by the Central Pollution Control Board. The COVID-19 biological waste was estimated to be roughly 39,725 tonnes between May 2020 and March 2021.

Table 2: Month wise average COVID-19 biomedical waste generation in the Country during the period from May 2020 till March 2021

Sl. No.	Months	COVID 19 BMW (Tonnes/ Day)
1	May 2020	20
2	June 2020	62
3	July 2020	116
4	August 2020	147
5	September 2020	166
6	October 2020	158
7	November 2020	122
8	December 2020	102
9	January 2021	70
10	February 2021	50
11	March 2021	47

Source: Annual Report on Biomedical Waste Management

Table 3: State-Wise COVID-19 Biomedical Waste Generation during the Period from May 2020 till March 2021

Name of States/UTs	COVID 19 BMW (in Tonne)	Name of States/UTs	COVID 19 BMW (in Tonne)
Andaman & Nicobar	3	Lakshadweep	2
Andhra Pradesh	1693	Madhya Pradesh	1729
Arunachal Pradesh	79	Maharashtra	6337
Assam	273	Manipur	45
Bihar	238	Meghalaya	58
Chandigarh	460	Mizoram	22
Chhattisgarh	110	Nagaland*	25
DD & DNH	6	Odisha	1319
Delhi	2948	Puducherry	301
Goa	50	Punjab	885
Gujarat	3513	Rajasthan	879
Haryana	2337	Sikkim	26
Himachal Pradesh	196	Tamil Nadu	3363
Jharkhand	54	Telangana	701
Jammu & Kashmir	319	Tripura	3
Karnataka	2222	Uttarakhand	368
Kerala	4017	Uttar Pradesh	2786
Ladak	NIL	West Bengal	2331
		Total	39696

Source: Annual Report on Biomedical Waste Management

Table presents the state wise COVID-19 biomedical waste generation during the period from May 2020 till March 2021. The table shows that the highest (6337Tonne) waste generated in Maharashtra, followed by Kerala (4017 tonnes), Gujarat (3513 tonnes), Tamil Nadu (3363 tonnes),

Delhi (2948 tonnes) and Uttar Pradesh (2786 tonnes). During the Covid- 19 pandemic bio medical waste collection was drastically increased compared to previous period.

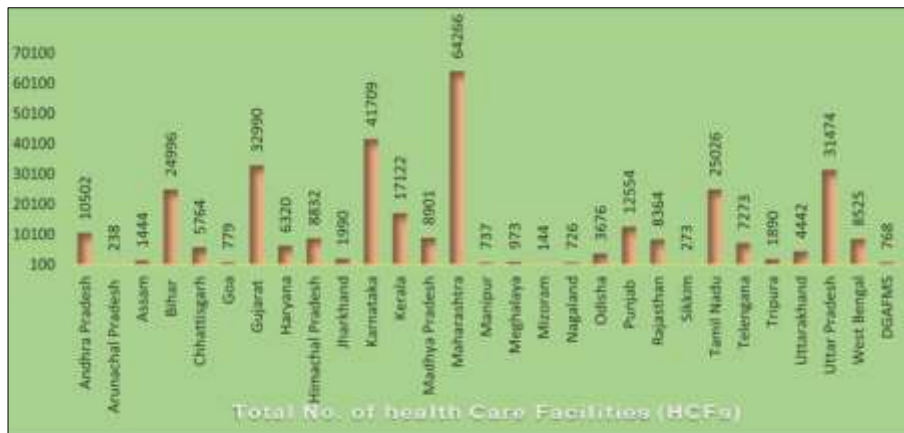


Fig 1: Total Number of Health Care Facilities of SPCBs/ DGAFMs

Table shows the state wise total number of health care facilities of SPCBs/ DGAFMS. The highest number of health care facilities in Maharashtra with 64266, followed by Karnataka (41709), Gujarat (32990), Uttar Pradesh

(31474) and Bihar(24996). The most populous and urbanised states generating more bio medical waste during COVID-19. The higher number of HCFs means more amount of waste generation.

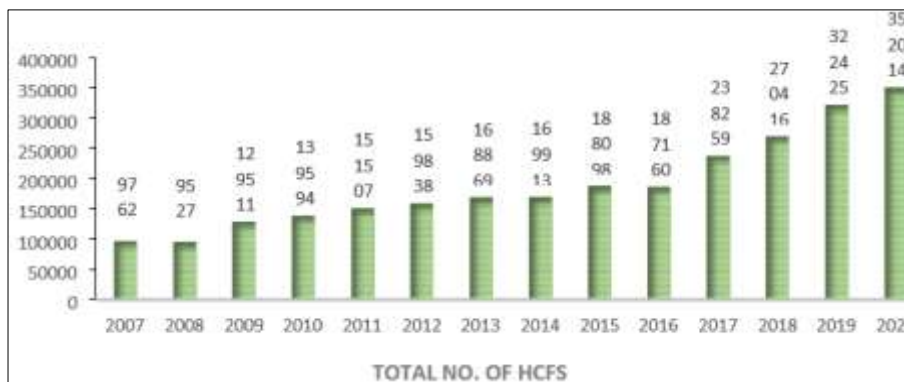


Fig 2: Number of Healthcare Facilities from 2007 to 2020

The graph depicts the number of healthcare facilities from 2007 to 2020. The graph clearly shows that the number of health care facilities increased during the mentioned years. The number of health care facilities in 2007 is 97622, it

increased to 188098 in 2015 and it was 352014 in 2020, it clearly shows that year by year the number of healthcare facilities in India is increased, specifically in the pandemic period the healthcare facilities are increased drastically.

Table 4: Status of Authorization of Healthcare Facilities

Name of States/UTs	Total no. Health Care Facilities (HCFs)	Total no. of HCFs in operation without Authorization	Name of States/UTs	Total no. Health Care Facilities (HCFs)	Total no. of HCFs in operation without Authorization
Andaman & Nicobar	238	Nil	Madhya Pradesh	8901	1668
Andhra Pradesh	10502	428	Maharashtra	64266	75
Arunachal Pradesh	238	Nil	Manipur	737	Nil
Assam	1444	946	Meghalaya	973	142
Bihar	24996	15027	Mizoram	144	18
Chandigarh	876	Nil	Nagaland	726	Nil
Chhattisgarh	5764	Nil	Odisha	3676	56
DD & DNH	171	Nil	Puducherry	267	Nil
Delhi	10423	Nil	Punjab	12554	2314
Goa	779	419	Rajasthan	8364	811
Gujarat	32990	3552	Sikkim	273	Nil
Haryana	6320	157	Tamil Nadu	25026	518
Himachal Pradesh	8832	1143	Telangana	7273	238
Jharkhand	1990	39	Tripura	1890	Nil

Jammu and Kashmir	6904	5813	Uttarakhand	4442	521
Karnataka	41709	6021	Uttar Pradesh	31474	5444
Kerala	17122	2471	West Bengal	8525	Nil
Ladakh	389	333	DGAFMS	768	Nil
Lakshadweep	48	Nil	Total	352014	48154

Source: Annual Report on Biomedical Waste Management

Table presents the Status of authorization of Healthcare Facilities in India the highest (64266) total number Health Care Facilities (HCFs) in Maharashtra, followed by Karnataka (41709), Gujarat (32990), Uttar Pradesh (31474), Tamil Nadu (25026) and Bihar(24996). The Total no. Health Care Facilities (HCFs) is 352014. the Total no. of HCFs in operation without Authorization is in Bihar with 15027 HCFs, followed by Karnataka (6021), Jammu and Kashmir (5813) and Uttar Pradesh (5444). The Total number of HCFs in operation without Authorization in India is 48154.

Biomedical Waste Generation and Treatment

The table shows the amount of biomedical waste generated, treated, and disposed of in tonnes per day. The total quantity of BMW generated is 656 tonnes per day, the total quantity of BMW treated and disposed is 590 tonnes per day, and the gap between the total quantity of BMW generated, treated, and disposed is 65.8 tonnes per day, which clearly indicates that there is a gap between the biomedical waste generation and treatment in the country.



Fig 3: Quantity of biomedical waste generation, treatment and gap in tonnes/day

Table 5: State-Wise Details of Total Quantity of BMW Generated, Treated and Disposed and Gaps

Name of the State/UT	Total Quantity of BMW generated (kg/day)	Total Quantity of BMW Treated and Disposed (kg/day)	Gap in treatment and disposal of bio-medical waste (kg/day)	Name of the State/UT	Total Quantity of BMW generated (kg/day)	Total Quantity of BMW Treated and Disposed (kg/day)	Gap in treatment and disposal of bio-medical waste (kg/day)
Andaman Nicobar	536.36	536.36	0	Madhya Pradesh	20008.91	19003.55	1005.36
Andhra Pradesh	25029.3	25029.3	0	Maharashtra	82146.35	82111.82	34.53
Arunachal Pradesh	353.63	353.63	0	Manipur	921.9	888.5	33.4
Assam	8235.97	5314.22	2921.75	Meghalaya	1556.95	1556.95	0
Bihar	27846.15	10201.3	17644.85	Mizoram	863.13	863.13	0
Chandigarh	5729	5729	0	Nagaland	891.8	652.5	239.3
Chhattisgarh	7234.31	7234.31	0	Odisha	15303.76	15303.76	0
Daman & Diu and Dadra & Nagar Haveli	450	450	0	Puducherry	4360	4360	0
Delhi	23200.09	23200.09	0	Punjab	16998.16	16998.16	0
Goa	1272.68	1272.68	0	Rajasthan	18911.56	18911.56	0
Gujarat	49492	49492	0	Sikkim	477.56	477.56	0
Haryana	19217	19217	0	Tamil Nadu	35269.74	35269.74	0
Himachal Pradesh	3545.78	3545.78	0	Telangana	23810	23810	0
Jharkhand	8406.732	8406.732	0	Tripura	3852.58	3852.58	0
J & K	5941.81	5941.81	0	Uttarakhand	7616.57	7616.57	0
Karnataka	82604	38951	43653	Uttar Pradesh	64038	64038	0
Kerala	40408	40207	201	West Bengal	43513.39	43513.39	0
Ladakh	43.35	43.35	0	DGAFMs	5450.99	5450.99	0
Lakshadweep	1137	1137	0	Total	656674.5	590941.3	65733.19

Source: Annual Report on Biomedical Waste Management

The table depicts the State-wise details of total quantity of BMW generated, treated and disposed and gaps. The highest gap in terms of biomedical waste generation and treated in Karnataka with 43653 tonnes, followed by Bihar (17644.85 tonnes), Assam (2921.75) and Madya Pradesh (1005.36 tonnes).

With reference to the status of Common Bio-medical Waste Treatment and Disposal Facility (CBWTF) and their coverage presented in the table. The highest CBWTF in Operation in Maharashtra with 30 CBWTFs, followed by Karnataka (25), Uttar Pradesh (21), Gujarat (20) and Madhya Pradesh and Andhra Pradesh (12)

Table 6: Status of Common Bio-medical Waste Treatment and Disposal Facility (CBWTF) and their coverage

Name of the State/UT	CBWTF in Operation	Name of the State/UT	CBWTF in Operation
Andhra Pradesh	12	Lakshadweep	Waste handover to Image Kerala
Assam	1	Madhya Pradesh	12
Bihar	4	Maharashtra	30
Chandigarh	1	Manipur	1
Chhattisgarh	4	Meghalaya	1
Daman & Diu and Dadra & Nagar Haveli	Waste Handover to Gujarat Facility	Odisha	6
Delhi	2	Puducherry	1
Gujarat	20	Punjab	5
Haryana	11	Rajasthan	11
Himachal Pradesh	3	Tamil Nadu	10
Jharkhand	4	Telangana	11
J & K	3	Uttarakhand	2
Karnataka	25	Uttar Pradesh	21
Kerala	1	West Bengal	6
		Total	208

Source: Annual Report on Biomedical Waste Management

Table 7: State -wise details of number of captive treatment facilities is given below in Figure.

Name of the State/UT and	CBWTFs In operation	No. of CBWTFs that have installed OCEMS (As per AR -2020 submitted by SPCB/PCC)	No. of CBWTFs that have installed OCEMS and connected with CPCB Server
Andaman Nicobar	Nil	Nil	Nil
Andhra Pradesh	12	12	12
Arunachal Pradesh	Nil	nil	Nil
Assam	1	1	1
Bihar	4	4	4
Chandigarh	1	1	1
Chhattisgarh	4	2	2
Daman & Diu and Dadra & Nagar Haveli	Waste Handover to Gujarat Facility	Nil	Nil
Delhi	2	2	2
Goa	Nil	Nil	Nil
Gujarat	20	20	16
Haryana	11	11	11
Himachal Pradesh	3	2	2
Jharkhand	4	2	2
J & K	3	3	2
Karnataka	25	27	26
Kerala	1	1	1
Ladakh	Nil	Nil	Nil
Lakshadweep	Waste handover to Image Kerala	Nil	Nil
Madhya Pradesh	12	12	10
Maharashtra	30	29	19
Manipur	1	Nil	Nil
Meghalaya	1	Nil	Nil
Mizoram	Nil	Nil	Nil
Nagaland	Nil	Nil	Nil
Odisha	6	1	1
Puducherry	1	1	1
Punjab	5	5	5
Rajasthan	11	8	6
Sikkim	Nil	Nil	Nil
Tamil Nadu	10	10	5
Telangana	11	11	11
Tripura	Nil	Nil	Nil
Uttarakhand	2	2	Nil
Uttar Pradesh	21	21	20
West Bengal	6	6	6
Total	208	195	167

Source: Annual Report on Biomedical Waste Management

Biomedical Waste Management Rules, 2016 require every occupier or operator of a common bio-medical waste treatment facility to instal an Online Continuous Emission Monitoring System (OCEMS) and transmit real-time data to

the State Pollution Control Board or Pollution Control Committees and Central Pollution Control Board. 195 out of 208 CBWTFs have OCEMS with their incineration stack,

according to provided data. Only 167 CBWTFs send CPCB data.

Issues in Implementation of Biomedical Waste Management Rules, 2016

Following issues have been observed by CPCB related to implementation of BMWM Rules, 2016:

- District-level information on biomedical waste management, as mandated by the BMWM Rules, 2016 and CPCB guidelines, is not available in every State/UT.
- Even after eight years of notification of the BMWM Rules, 2016, not all Healthcare Facilities, especially those without beds, are authorised.
- During random inspections, the CPCB has noted that segregation is still not followed properly in healthcare facilities. State Boards, in collaboration with CBWTFs, may organise periodic trainings for HCF employees.
- As required by the 2016 BMWM Rules, not all healthcare facilities have yet implemented a barcode system for tracking biological waste.
- Urban Local Bodies do not collect domestic biomedical waste separately from households, as required by BMWM Rules, 2016.
- State Pollution Control Boards have not approved the deep burial pits utilised by healthcare establishments.
- As required by CPCB guidelines, no examination of the need for additional treatment facilities to treat and dispose of biological waste has been done.
- Every CBWTF and captive incinerator does not execute an online continuous emission monitoring system properly.

Measures to handle the crisis of biomedical waste

A potential short-term option to reduce waste generation is to reduce the use of PPE kits in non- COVID-19 locations and to use reusable masks and gloves.

- Use washable utensils to reduce waste in quarantine camps and residences.
- Waste separation in the home deserves great praise.
- Strengthening citizen participation and enforcing source separation.
- Ensure that all waste generators and processors are registered with the COVID-19 application.
- Ensure that the vaccination camp outside the hospital is sorting rubbish appropriately.
- BMW handlers should have proper training in segregation, disposal, and self-safety procedures.
- In accordance with the Environment (Protection) Act of 1986 and other pollution control statutes, hospitals and nursing homes that violate the law must be punished severely.
- Only BMWs that adhere to the color-coded bag/container guideline should be collected from various collection points. It helps the garbage collection vehicle.

Consequences of negligence in biomedical waste management

BMW, if not handled with care, may be responsible for the fast spread of vector-borne diseases through the birth of enormous and diverse vectors. It also causes pollution of

land and water and, via contaminated needles and syringes, the spread of incurable diseases such as AIDS and pandemics. COVID-19. Air, water, and soil are polluted when BMW is mixed with other rubbish or managed improperly. Thus, it produces harmful disorders and poor health. Currently, per day BMW generation and its treatment are inversely proportional. This means that our nation will soon be submerged in its own rubbish.

Conclusion

Despite India's stringent rules and regulations regarding the safe disposal of BMWs, immediate action is required to improve the current system's capacity, raise financing, and strengthen commitment to the safe disposal of BMWs. A sudden increase in BMW due to a pandemic ailment should be accompanied by treatment options for biological waste. The innovative actions taken by the state pollution control board and the initiative taken by the local municipal system make it feasible to exert a greater degree of control over BMW management. The Bio-Medical Waste Management Rules, 2016 and (Amendment) Rules, 2018 of the Ministry of Environment, Forest, and Climate Change optimise separation, transit, and final treatment processes to reduce environmental contamination.

Finally, the availability of cash is discussed. For the application of written rules, adequate manpower and resources are necessary. It takes a long time for sanctioned monies to reach the needy, as they must travel through several government channels. Therefore, by making the above-mentioned tasks easier, India will defeat BMW management and serve as an example to others.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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