

Annual Report
on
Biomedical Waste Management
as per
Biomedical Waste Management Rules, 2016
For the year 2020



Central Pollution Control Board
(Ministry of Environment Forest & Climate Change)
Parivesh Bhawan, East Arjun Nagar
Delhi – 110032

1. Introduction:

The Biomedical Waste has been regulated under Biomedical Waste Management Rules, 2016 as notified under Environment (Protection) Act, 1986 by the Ministry of Environment Forest & Climate Change. These Rules were first notified in the year 1998 and then revamped in the year 2016 to implement these rules more effectively and to improve the collection, segregation, processing, treatment and disposal of bio-medical wastes in an environmentally sound management thereby, reducing the bio- medical waste generation and its impact on the environment.

These Rules has mandate of preparation of Annual Inventory of biomedical waste generation, its collection, treatment and disposal. Under Rule 13, every Occupier and Common Biomedical Waste Treatment Facility Operator is required to prepare annual inventory for biomedical waste management. Further, State Pollution Control Boards and Pollution Control Committees shall compile and submit the Annual Report to Central Pollution Control Board for the preceding year before 31st July of every year. Central Pollution Control Board shall compile, review and analyse the annual data submitted by SPCBs / PCCs and submit the same to Ministry of Environment Forests & Climate Change.

2. Status of Submission of Annual Report:

Biomedical Waste Management Rules, 2016 stipulate format for preparation of Annual Report by the Occupier and Operator of CBWTF in Form IV and format for preparation of Annual Report by State Pollution Control Boards in Form IV(a). Due to COVID-19 pandemic, there has been a delay in submission of Annual Reports by State Boards to CPCB.

All SPCBs/PCCs have submitted the annual reports on biomedical waste management for the year 2020 except Nagaland. SPCBs namely Andhra Pradesh, Bihar , Chandigarh, Daman & Diu and Dadra & Nagar Haveli, Delhi, Goa, Gujarat , Himachal Pradesh , Kerala, Lakshadweep, Madhya Pradesh, Maharashtra, Mizoram, Odisha, Puducherry, Rajasthan, Sikkim, Tamil Nadu, Telangana and Uttarakhand submitted the information before July, 2021 and SPCBs namely Andaman Nicobar, Arunachal Pradesh, Assam, Chhattisgarh, Haryana, J & K, Jharkhand, Karnataka, Ladakh, Manipur, Meghalaya, Punjab, Tripura, Uttar Pradesh, West Bengal submitted the annual report after July, 2021.

3. Evaluation of Annual Report Information:

After scrutiny of annual report data for biomedical waste management as submitted by State Pollution Control Boards, following gaps / discrepancies were communicated to respective State Pollution Control Board for clarification and rectification:

1. HCFs are operational without authorization.
2. no. of HCFs (Bedded/non-bedded) to install liquid waste pre-treatment facilities.
3. Information w.r.to deep burial pits installed by HCFs/CBWTFs
4. district wise numbers of HCFs and district wise treatment and disposal of BMW in Kg/day

SPCBs namely Andhra Pradesh, Andaman & Nicobar, Bihar, Delhi, Chandigarh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Odisha, Puducherry, Sikkim, Telangana, Tamilnadu Tripura, Uttarakhand, West Bengal submitted the clarification on above observations of CPCB. However, SPCBs namely; Arunachal Pradesh, Chhattisgarh, Daman &

Diu and Dadra & Nagar Haveli, Goa, Gujarat, Haryana, Jammu & Kashmir, Ladakh, Lakshadweep, Punjab, Rajasthan, and Uttar Pradesh yet to respond.

4. Bio-medical Waste Management Scenario – a brief:

The total quantum of biomedical waste generation was reported as 774 tons/day of biomedical waste out of which 656 tons/day was non-COVID biomedical waste and 118 tons/day was COVID biomedical waste. There are 3,52,014 no. of Health Care Facilities (HCFs) out of which 1,13,186 no. of HCFs are bedded and 2,37,938 no. of HCFs are non-bedded. 2,44,282 no. of HCF utilises facilities of CBWTFs for collection, treatment & disposal of biomedical waste and 17,206 No. of HCFs are having their own captive bio-medical waste treatment and disposal facilities.

During COVID-19 Pandemic the biomedical waste was also collected from the quarantine centres/camps, home care/home isolation, sample collection centres, laboratories involved in COVID testing etc.

There are 208 no. of CBWTFs in operation and 33 no. of CBWTFs are under construction. The total generation of bio-medical waste is about 774 tonnes per day out of which about 708 tonnes per day of bio-medical waste (both COVID and non-COVID) were treated and disposed off by CBWTFs and captive treatment facilities. During COVID-19 Pandemic, almost every CBWTF was involved in collection, treatment & disposal of COVID-19 biomedical waste.

State-wise detail of annual data on biomedical waste management is given at **Annexure I**. The brief bio-medical waste management scenario in the Country is given below:

➤ No. of HCFs	: 35,20,14
➤ No. of bedded HCFs	: 1,13,186
➤ No. of non-bedded HCFs	: 2,37,938
➤ No. of beds	: 2,5,44,116
➤ No. of CBWTFs	: 208* + 33**
➤ No. of HCFs granted authorization	: 1,60,736
➤ No. of HCFs having Captive Treatment Facilities	: 17,206
➤ No. of Captive Incinerators Operated by HCFs	: 125
➤ Quantity of bio-medical waste generated in Tonnes/day	: 774
➤ Quantity of bio-medical waste treated in Tonnes/day	: 708
➤ No. of HCFs violated BMW Rules	: 22,261
➤ No. of Show-cause notices/Directions issued to defaulter HCFs	: 13, 389

Note: (i) * - CBWTFs in operation (ii) ** - CBWTFs under installation

5. Annual Report Information – a comparison with previous year

The number of healthcare facilities have been increased over the period of time. During the year 2019, total number of Healthcare Facilities were reported as 3,22,425 however, the same has increased to 3,52,014 with increase in number of beds. Total number of authorized healthcare facilities have also increased and there are 1,60,736 HCFs are authorised out of 3,52,014 HCFs. However, there is still in number of authorized HCFs which needs to be rectified by State Boards. The total generation of bio-medical waste was about 619 tonnes per day out of which about 544 tonnes per day of bio-medical waste was treated and disposed off in 2019, however the amount of generation is reported as 656 tonnes per day and amount of treatment and disposal is 590

tonnes per day for the year of 2020. For the treatment & disposal of generated biomedical waste, the number of common biomedical waste treatment facilities have also increased from 202 to 208 and number of captive treatment facilities have decreased from 18,015 to 17,206. Detailed comparison on biomedical waste management scenario is given below:

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

Particulars	Year 2019	Year 2020
No. of HCFs	3,22,425	3,52,014
No. of bedded HCFs	1,06,796	1,13,186
No. of non-bedded HCFs	2,15,780	2,37,938
No. of beds	24,86,327	2,5,44,116
No. of CBWTFs	202	208
No. of HCFs utilizing CBWTFs	2,35,571	2,44,282
No. of HCFs granted authorization	1,53,885	1,60,736
No. of HCFs having Captive Treatment Facilities	18,015	17,206
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	29,062	22,261
No. of Show-Cause notices/Directions issued to defaulter HCFs	17,435	13, 389

6. Biomedical Waste Management During COVID-19 Pandemic:

On 11th March, 2020 World Health Organization announced COVID-19 Pandemic worldwide. In order to deal with COVID-19 pandemic, State and Central Governments have initiated various steps, which include setting up of quarantine centres /camps, Isolation wards, sample collection centres and laboratories. Central Pollution Control Board has been reviewing and compiling the COVID-19 biomedical waste data as well. During May, 2020 to March, 2021, the COVID-19 biomedical waste reported to be about 39,725 tons. Month wise average COVID-19 biomedical waste generation in the Country during the period from May, 2020 till March, 2021 is given below:

S.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

Further, State-wise COVID-19 biomedical waste generation during the period from May, 2020 till March, 2021 is given below:

S.No.	Name of States/UTs	COVID 19 BMW (in Tonn)
1	Andaman & Nicobar	3
2	Andhra Pradesh	1693
3	Arunachal Pradesh	79
4	Assam	273
5	Bihar	238
6	Chandigarh	460
7	Chhattisgarh	110
8	DD & DNH	6
9	Delhi	2948
10	Goa	50
11	Gujarat	3513
12	Haryana	2337
13	Himachal Pradesh	196
14	Jharkhand	54
15	Jammu & Kashmir	319
16	Karnataka	2222
17	Kerala	4017
18	Ladak	NIL
19	Lakshadweep	2
20	Madhya Pradesh	1729
21	Maharashtra	6337
22	Manipur	45
23	Meghalaya	58
24	Mizoram	22
25	Nagaland*	25
26	Odisha	1319
27	Puducherry	301
28	Punjab	885
29	Rajasthan	879
30	Sikkim	26
31	Tamil Nadu	3363
32	Telangana	701
33	Tripura	3
34	Uttarakhand	368
35	Uttar Pradesh	2786
36	West Bengal	2331
	Total	39696

To facilitate the waste generators and common disposal facilities for safe collection, transport and disposal of COVID waste, CPCB has prepared guidelines with title “Handling, treatment and disposal of waste generated during treatment, diagnosis and quarantine of COVID-19 Patient”. These guidelines were issued in beginning of COVID Pandemic in March, 2020 and the same has been revised four times till date looking at the situation requirement.

CPCB prepared these guidelines for having clear understanding of management of biomedical waste generated during treatment or quarantine of COVID-19 patients. It is pertinent to mention that these guidelines are not different from BMW Rules, 2016 and the COVID-19 biomedical waste is required to be segregated as defined under Schedule I and treated & disposed off in line with provisions under said Rules.

These guidelines stipulate duties of following stakeholders:

1. Duties for Healthcare Facilities having isolation centers
2. Duties for Sample Collection Centres and Laboratories for COVID-19 suspected patients
3. Responsibilities of persons operating Quarantine Centres/Camps/Home Quarantine or Home Care facilities
4. Duties of Common Biomedical Waste Treatment Facility (CBWTF)
5. Duties of SPCBs/PCCs
6. Duties of Urban Local Bodies

6.2 Tracking Application for COVID-19

In May, 2020 CPCB developed a tracking application namely ‘COVID19BWM’, which is available on mobile as well as on web which helps in tracking of COVID-19 biomedical waste as and when generated by waste generator. This application was developed for the purpose of tracking the COVID-19 biomedical waste from waste generator to common treatment facility. The application was mandatory to be used by every COVID-19 biomedical waste generator like healthcare facility having COVID ICUs, quarantine centres/camps, home isolation/home care etc. and Common Biomedical Waste Treatment Facility. 8,584 no. of waste generators were registered during the period of May, 2020 to March, 2021 on said tracking app. to feed daily data related to COVID-19 biomedical waste generation and its treatment & disposal.

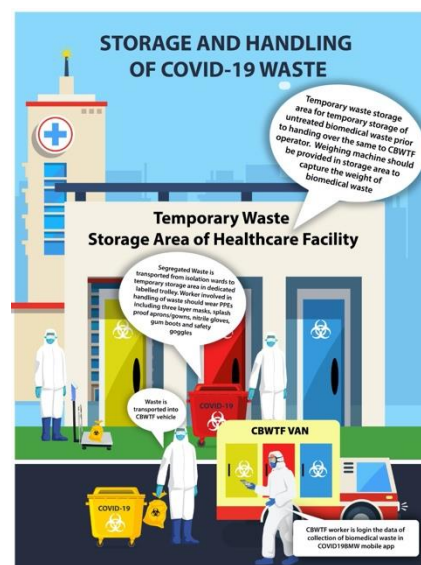
During the period, from May 2020 till March, 2021, about 118 Tons/day of COVID-19 biomedical waste was generated. During first wave of COVID, the highest generation of COVID-19 biomedical waste was reported during October, 2020 which was about 181 Tons/day and during second wave the peak was in the month of May, 2021 which was about 315 Tons/day. This waste has been treated and disposed off through Common Biomedical Waste Treatment Facilities. 202 no. of CBWTFs were engaged in treatment & disposal of COVID-19 biomedical waste.

6.3 CPCB Initiatives

Other than issuing separate guidelines for COVID-19 medical waste, CPCB has been regularly reviewing its management with State Boards and State Governments. CPCB constituted High Level Task Team (HLTT) under the Chairmanship of Chairman, CPCB with members from Ministry of Environment Forest & Climate Change, Ministry of Health & Family Welfare, Ministry of Jal Shakti, Ministry of Defence and Ministry of Housing & Urban Affairs. Meetings of HLTT were held

wherein Chairman, CPCB discussed and reviewed the status of COVID waste management and gaps were communicated to States.

For Public awareness, CPCB has created a separate page on website wherein information like technical guidelines, Dos and Don'ts, Posters, videos etc. have been placed.



7. Number of biomedical waste generating facilities:

As per the annual report data, there are 3, 52,014 no. of Health Care Facilities (HCFs), out of which 1,13,186 no. of HCFs are bedded and 2,37,938 no. of HCFs are non-bedded. Details of number of HCFs of SPCBs/PCCs and DGAFMs is given below in Fig. 1 and Fig.2.

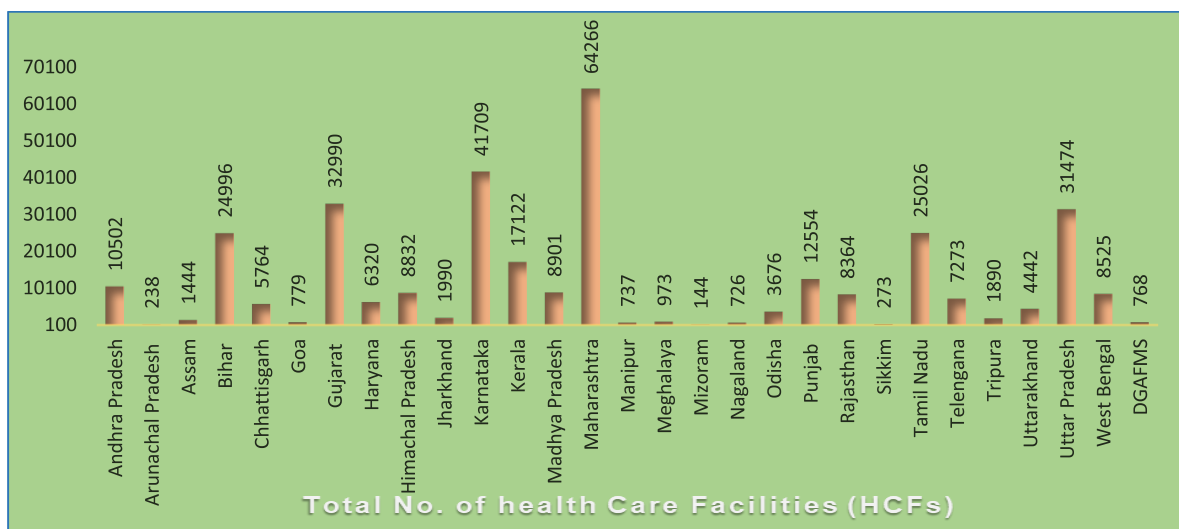


Fig.1: No. of Health Care Facilities of SPCBs/ DGAFMs

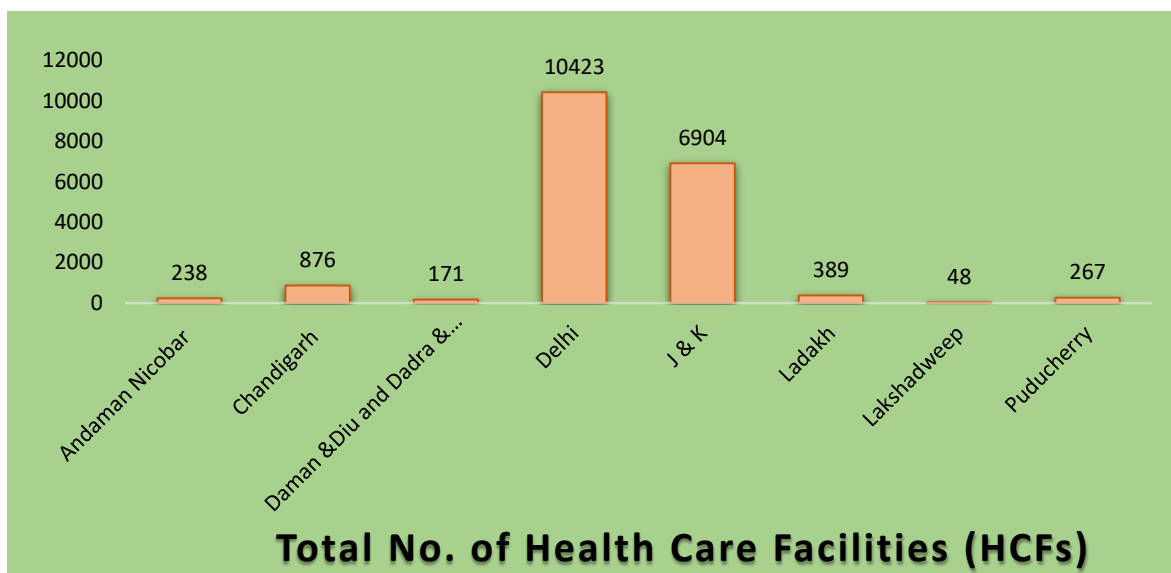


Fig.2: No. of Health Care Facilities of PCCs

There has been a continuous increase in number of Healthcare Facilities since 2007 up to 2015, however number of HCFs reduced in 2016 and increased again in 2017 up to 2020. A graph showing increase in number of HCFs is given below in Fig.3:

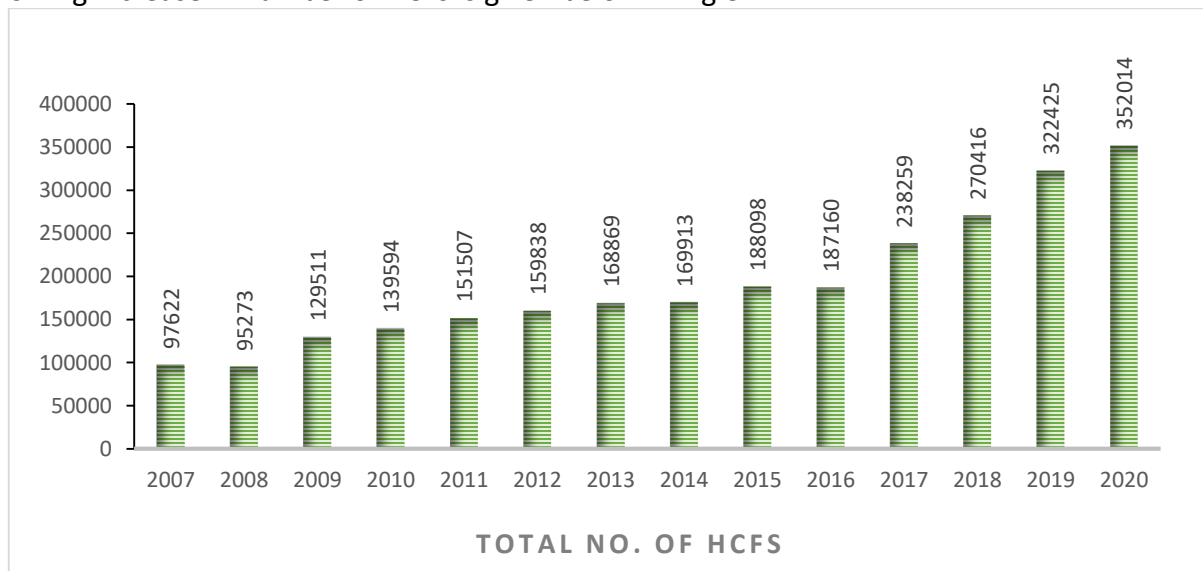


Fig.3: Increased number of Healthcare Facilities from 2007 to 2020

8. Status of authorization of Healthcare Facilities:

BMWM Rules, 2016 stipulate that every healthcare facility (bedded & non-bedded) require to obtain authorization from concerned State Pollution Control Board/Pollution Control Committee and DGAFMs. Authorization is a tool to capture the information regarding biomedical waste management by the healthcare facilities as well as by CBWTF operators. It has been observed that there are many healthcare facilities which are not yet authorized under BMWM Rules, 2016 and the same has been communicated to concerned State Board for ensuring authorization of every healthcare facility.

State wise details of authorization is given below:

S.No.	Name of States/UTs	Total no. Health Care Facilities (HCFs)	Total no. of HCFs in operation without Authorization
1	Andaman & Nicobar	238	Nil

S.No.	Name of States/UTs	Total no. Health Care Facilities (HCFs)	Total no. of HCFs in operation without Authorization
2	Andhra Pradesh	10502	428
3	Arunachal Pradesh	238	Nil
4	Assam	1444	946
5	Bihar	24996	15027
6	Chandigarh	876	Nil
7	Chhattisgarh	5764	Nil
8	DD & DNH	171	Nil
9	Delhi	10423	Nil
10	Goa	779	419
11	Gujarat	32990	3552
12	Haryana	6320	157
13	Himachal Pradesh	8832	1143
14	Jharkhand	1990	39
15	Jammu and Kashmir	6904	5813
16	Karnataka	41709	6021
17	Kerala	17122	2471
18	Ladakh	389	333
19	Lakshadweep	48	Nil
20	Madhya Pradesh	8901	1668
21	Maharashtra	64266	75
22	Manipur	737	Nil
23	Meghalaya	973	142
24	Mizoram	144	18
25	Nagaland	726	Nil
26	Odisha	3676	56
27	Puducherry	267	Nil
28	Punjab	12554	2314
29	Rajasthan	8364	811
30	Sikkim	273	Nil
31	Tamil Nadu	25026	518
32	Telangana	7273	238
33	Tripura	1890	Nil
34	Uttarakhand	4442	521
35	Uttar Pradesh	31474	5444
36	West Bengal	8525	Nil
37	DGAFMS	768	Nil
	Total	352014	48154

9. Biomedical Waste Generation and Treatment:

As reported by State Boards, about 656 tons/day of biomedical waste was generated during the year 2019-2020 by 3,52,014 numbers of Healthcare Facilities. Out of 656 tons/day of biomedical waste, only 590 tons/day of biomedical waste is treated and disposed of by 208 CBWTFs and 17,206 nos. of captive treatment facilities installed by Healthcare Facilities.

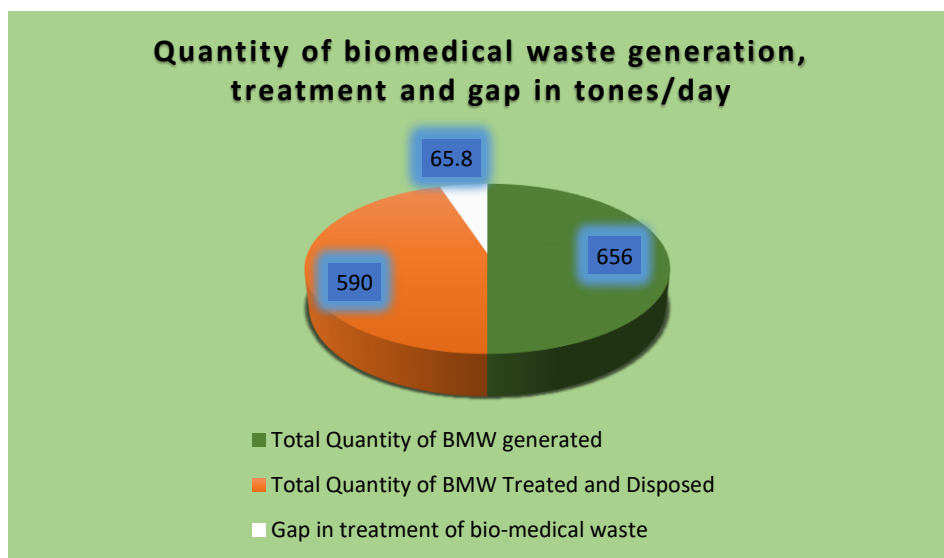


Fig.4: Quantity of BMW generation and treatment

It is observed that there is a gap between biomedical waste generation and its treatment. CPCB has identified this gap and communicated to respective State Board to rectify the issue and ensure disposal of biomedical waste in line BMW Rules, 2016.

State-wise details are shown in given below figures:

S.No.	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)
1	Andaman Nicobar	536.36	536.36	0
2	Andhra Pradesh	25029.3	25029.3	0
3	Arunachal Pradesh	353.63	353.63	0
4	Assam	8235.97	5314.22	2921.75
5	Bihar	27846.15	10201.3	17644.85
6	Chandigarh	5729	5729	0
7	Chhattisgarh	7234.31	7234.31	0
8	Daman & Diu and Dadra & Nagar Haveli	450	450	0
9	Delhi	23200.09	23200.09	0
10	Goa	1272.68	1272.68	0
11	Gujarat	49492	49492	0
12	Haryana	19217	19217	0
13	Himachal Pradesh	3545.78	3545.78	0
14	Jharkhand	8406.7317	8406.7317	0
15	J & K	5941.81	5941.81	0
16	Karnataka	82604	38951	43653
17	Kerala	40408	40207	201
18	Ladakh	43.35	43.35	0
19	Lakshadweep	1137	1137	0
20	Madhya Pradesh	20008.91	19003.55	1005.36
21	Maharashtra	82146.35	82111.82	34.53
22	Manipur	921.9	888.5	33.4
23	Meghalaya	1556.95	1556.95	0
24	Mizoram	863.13	863.13	0
25	Nagaland	891.8	652.5	239.3
26	Odisha	15303.76	15303.76	0
27	Puducherry	4360	4360	0
28	Punjab	16998.16	16998.16	0
29	Rajasthan	18911.56	18911.56	0
30	Sikkim	477.56	477.56	0
31	Tamil Nadu	35269.74	35269.74	0
32	Telengana	23810	23810	0
33	Tripura	3852.58	3852.58	0
34	Uttarakhand	7616.57	7616.57	0
35	Uttar Pradesh	64038	64038	0

S.No.	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)
36	West Bengal	43513.39	43513.39	0
37	DGAFMs	5450.99	5450.99	0
	Total	656674.5117	590941.327	65733.19

It has been observed from the data submitted by States that Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur and Nagaland has gap in generation and treatment of Bio medical waste. These states are required to enhance their facilities for treatment and fill-up the gap.

10. Status of Common Bio-medical Waste Treatment and Disposal Facility (CBWTF) and their coverage

A Common Bio-medical Waste Treatment and Disposal Facility (CBWTF) is set up where biomedical waste generated from its member health care facilities is imparted necessary treatment to reduce adverse effect on human health and environment. The treated recyclable waste may finally be sent for disposal in a secured landfill or for recycling. The Bio-medical Waste Management Rules, 2016 (hereafter referred as BMW Rules) restricts occupier for establishment of on-site or captive bio-medical waste treatment and disposal facility, if a service of common bio- medical waste treatment and disposal facility is available within a distance of seventy-five kilometre.

As per Annual Report Information submitted by SPCBs/PCCs for the year 2020, currently there are 208 numbers of CBWTFs operated in the Country and 33 CBWTFs are under construction. States namely Andaman & Nicobar, Arunachal Pradesh, Goa, Ladhak, Mizoram, Nagaland, Sikkim, Tripura, do not have CBWTFs for treatment and disposal of biomedical waste. However, CPCB requested said State Boards for submitting the proposal for setting up of CBWTFs for which they may avail financial assistance from Ministry of Environment Forests & Climate Change. State-wise details of CBWTFs is given below in Fig.:

S.No	Name of the State/UT	CBWTF in Operation
1	Andhra Pradesh	12
2	Assam	1
3	Bihar	4
4	Chandigarh	1
5	Chhattisgarh	4
6	Daman & Diu and Dadra & Nagar Haveli	Waste Handover to Gujarat Facility
7	Delhi	2
8	Gujarat	20
9	Haryana	11
10	Himachal Pradesh	3
11	Jharkhand	4
12	J & K	3
13	Karnataka	25
14	Kerala	1
15	Lakshadweep	Waste handover to Image kerala
16	Madhya Pradesh	12
17	Maharashtra	30
18	Manipur	1
19	Meghalaya	1
20	Odisha	6

S.No	Name of the State/UT	CBWTF in Operation
21	Puducherry	1
22	Punjab	5
23	Rajasthan	11
24	Tamil Nadu	10
25	Telengana	11
26	Uttarakhand	2
27	Uttar Pradesh	21
28	West Bengal	6
	Total	208

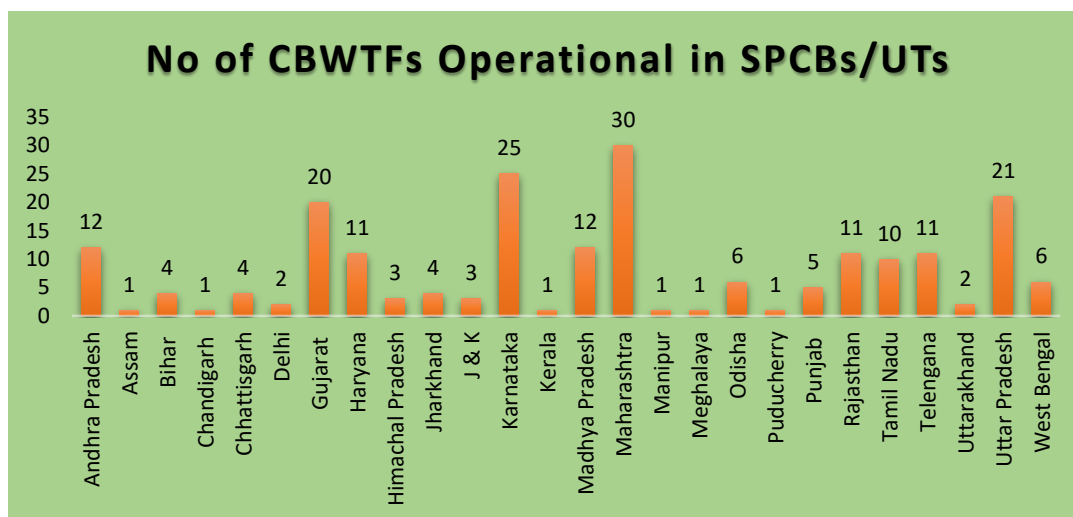


Fig.5: No. of Operational CBWTFs in States and Union Territories

Daman & Diu and Darara & Nagar Haveli biomedical Waste handover to Gujarat facility (M/s En-Cler Biomedical Waste Pvt. Ltd. and Lakshadweep biomedical Waste Handover to CBWTF in Kerala (M/s IMAGE CBWTF in Kerala) for treatment.

11. Captive Treatment Facilities

Biomedical Waste Management Rules, 2016 stipulates that in case there is CBWTF available in any area, then the Healthcare Facilities are not allowed to have their own captive treatment Facilities. However, in case the CBWTF is not available, then the Healthcare Facilities may install their own treatment facility for the treatment and disposal of biomedical waste in compliance to the standards prescribed under said Rules.

There are 17,206 Numbers of captive facilities installed by the Healthcare Facilities. State Boards were directed to monitor the compliance to the BMW Rules, 2016 and in-case of any violation the healthcare facility should be directed to close its captive treatment facility and become member of CBWTF.

These captive treatment facilities also include deep burial facility. State Boards are required to monitor the status of Deep Burial Facility. State namely Andaman Nicobar, Arunachal Pradesh, Himachal Pradesh, Ladakh, Lakshadweep, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim and Uttarakhand have submitted the information on deep burial facilities.

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

S.No.	Name of the State/UT and	Total no. of Bedded Health Care Facilities (HCFs)	Total no. of Non-bedded Health Care Facilities (HCFs)	Total no. Health Care Facilities (HCFs)	No. of captive treatment facilities
1	Andaman Nicobar	52	186	238	7
2	Andhra Pradesh	5930	4572	10502	Nil
3	Arunachal Pradesh	136	98	235	308
4	Assam	777	667	1444	422
5	Bihar	4821	20175	24996	3
6	Chandigarh	50	826	876	Nil
7	Chhattisgarh	2529	3235	5764	1483
8	Daman & Diu and Dadra & Nagar Haveli	45	126	171	Nil
9	Delhi	1184	9239	10423	1
10	Goa	148	631	779	165
11	Gujarat	11654	21336	32990	Nil
12	Haryana	3168	3152	6320	Nil
13	Himachal Pradesh	585	8247	8832	5006
14	Jharkhand	1175	815	1990	202
15	J & K	1548	5373	6904	Nil
16	Karnataka	8404	32402	41709	1713
17	Kerala	2027	15095	17122	51
18	Ladakh	333	56	389	2
19	Lakshadweep	10	38	48	Nil
20	Madhya Pradesh	4064	4837	8901	2
21	Maharashtra	19932	44334	64266	240
22	Manipur	96	641	737	545
23	Meghalaya	182	791	973	81
24	Mizoram	64	77	144	144
25	Nagaland	205	521	726	5
26	Odisha	1445	2232	3676	2885
27	Puducherry	96	171	267	1
28	Punjab	4009	8545	12554	Nil
29	Rajasthan	5703	2661	8364	1219
30	Sikkim	34	241	273	185
31	Tamil Nadu	7300	17726	25026	Nil
32	Telangana	3792	3481	7273	Nil
33	Tripura	137	1753	1890	3
34	Uttarakhand	1368	3074	4442	2377
35	Uttar Pradesh	17188	14286	31474	10
36	West Bengal	2769	5756	8525	Nil
37	DGAFMS	226	542	768	146
	Total	113186	237938	352014	17206

12. Online Continuous Emission Monitoring System:

Biomedical Waste Management Rules, 2016 stipulates that every occupier or operator of the common bio-medical waste treatment facility shall install Online Continuous Emission Monitoring System (OCEMS) for the parameters as stipulated by State Pollution Control Board or Pollution Control Committees in authorization and transmit the real time data to the servers at State Pollution Control Board or Pollution Control Committees and Central Pollution Control Board. As per the submitted information, 195 out of 208 nos. of CBWTFs have installed OCEMS with their incinerator stack. However, CPCB is receiving data from only 167 nos. of CBWTFs. State-wise details is given below:

S.No.	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
1	Andaman Nicobar	Nil	Nil	Nil
2	Andhra Pradesh	12	12	12
3	Arunachal Pradesh	Nil	nil	Nil
4	Assam	1	1	1
5	Bihar	4	4	4
6	Chandigarh	1	1	1
7	Chhattisgarh	4	2	2
8	Daman &Diu and Dadra & Nagar Haveli	Waste Handover to Gujarat Facility	Nil	Nil
9	Delhi	2	2	2
10	Goa	Nil	Nil	Nil
11	Gujarat	20	20	16
12	Haryana	11	11	11
13	Himachal Pradesh	3	2	2
14	Jharkhand	4	2	2
15	J & K	3	3	2
16	Karnataka	25	27	26
17	Kerala	1	1	1
18	Ladakh	Nil	Nil	Nil
19	Lakshadweep	Waste handover to Image kerala	Nil	Nil
20	Madhya Pradesh	12	12	10
21	Maharashtra	30	29	19
22	Manipur	1	Nil	Nil
23	Meghalaya	1	Nil	Nil
24	Mizoram	Nil	Nil	Nil
25	Nagaland	Nil	Nil	Nil
26	Odisha	6	1	1
27	Puducherry	1	1	1
28	Punjab	5	5	5
29	Rajasthan	11	8	6
30	Sikkim	Nil	Nil	Nil
31	Tamil Nadu	10	10	5
32	Telangana	11	11	11
33	Tripura	Nil	Nil	Nil
34	Uttarakhand	2	2	Nil
35	Uttar Pradesh	21	21	20
36	West Bengal	6	6	6
	Total	208	195	167

13. Non-burn Technologies for treatment & disposal of Biomedical Waste:

It has been observed that the non-burn technologies are available for the treatment & disposal of biomedical waste. However, existing Rules restrict the adoption of such technologies for the treatment of biomedical waste especially highly infectious yellow category of biomedical waste. The technologies based on combination of sterilization and shredding proposed by project proponent for the treatment & disposal of all categories of biomedical waste which can be directly adopted by the Healthcare Facilities.

Following provisions of BMWM Rules, 2016 restrict the adoption of such non-burn technologies:

1. Healthcare Facilities are not allowed to install captive treatment facilities in case the service of CBWTF is available within distance of 75 km.

2. Yellow category of biomedical waste is allowed to be treat and dispose off through incineration/plasma pyrolysis/deep burial.
3. Combination of sterilization and shredding is only allowed for the red and white category of biomedical waste.

For adopting above technology Biomedical Waste Management Rules, 2016 may required to be amended by MOEF&CC. However, CPCB is assessing the technology and based on the recommendation of CPCB “Standing Committee on Technology for Waste Management” CPCB has given permission to pilot scale operation of equipment based on combination of sterilization and shredding to check its efficacy.

14. 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 of biomedical waste management is not available in every State/UT which is required as per the BMWM Rules, 2016 as well as CPCB guidelines.
- Authorisation by every Healthcare Facility including non-bedded, is not achieved even after six years of notification of BMWM Rules, 2016.
- Segregation is still not followed effectively in healthcare facilities, as observed by CPCB during random inspections. State Boards in coordination with CBWTFs may arrange frequent trainings for the workers/staff of HCFs.
- Barcode system for tracking of biomedical waste is not yet adopted by every healthcare facility as required under BMWM Rules, 2016.
- Domestic biomedical waste is not collected separately from the households by the Urban Local Bodies as required under BMWM Rules, 2016.
- The deep burial pits being used by healthcare facilities are not approved by the State Pollution Control Boards.
- Gap analysis to assess the requirement of additional treatment facility to treat and dispose off the biomedical waste, is not conducted as required under CPCB guidelines.
- Online Continuous Emission Monitoring System is not effectively implemented by every CBWTF and captive incinerators.

15. Way forward:

- i. SPCBs/PCCs shall ensure timely submission of annual reports by all occupiers and CBWTF operators as per the deadline given under BMWM Rules, 2016.
- ii. SPCBs/PCCs shall ensure timely submission of annual report pertaining to their respective State or Union Territory within stipulated time period that is on or before 31st July.
- iii. SPCBs/PCCs ensure to compile the information at District level as required under prescribed format.
- iv. SPCBs/PCCs shall coordinate with Urban Local Bodies and Municipalities for management of domestic biomedical waste as per Solid Waste Management Rules, 2016 for further channelization of domestic biomedical waste to Common Biomedical Waste Treatment Facilities.
- v. SPCBs/PCCs should assess the adequacy of the deep burial pits used by the healthcare facilities and ensure their restrictions up-to rural or remote areas and their compliance to deep burial standards as prescribed under BMWM Rules, 2016.

- vi. SPCBs/PCCs should compile the treatment capacity of CBWTFs as well as for captive treatment facilities so that actual capacity available for the Country for treatment of biomedical waste could be assessed. Adequate facility be developed in the states which have gaps in generation of waste and its treatment capacities.
- vii. SPCBs shall ensure that Recyclable waste collected by CBMWTFs should be treated properly and provided to registered recyclers only in order to conserve the resources
- viii. Adequacy of treatment capacity of existing CBWTFs and their compliance status be regularly assessed by the SPCBs/PCCs to review the requirement of additional treatment facility for the State / Union Territory.
- ix. OCEMS installed in CBMWTFs be operated and maintained properly with regular calibration and quality check. Data be used for self-regulatory purpose and policy framing for future.

Annexure I

Annual Report Information on Bio-medical Waste Management Scenario in the Country for the Year 2020 (As submitted by SPCBs/PCCs and DGAFMS) As on 12-11-2021

S.No.	Name of the State/UT and	Total no. of Bedded Health Care Facilities (HCFs)	Total no. of Non-bedded Health Care Facilities (HCFs)	Total no. Health Care Facilities (HCFs)	Total no. of Beds	Authorization Status			No. of HCFs utilization CBWTFs	Total Quantity of BMW generated (kg/day)	Total Quantity of BMW Treated and Disposed (kg/day)	Captive BMW Treatment Facilities Operated by the (HCFs)		Common Bio-medical Waste Treatment Facilities (CBWTFs)		Deep burial installed by HCF & CBWTFs		Total BMW treated by captive treatment facilities by HCF in Kg/day	Total BMW treated by CBWTFs kg/day)	Total no. of violation by HCFs & CBWTFs	Total No. of show cause notices/Directions issued to defaulter HCFs/CBWTFs	No. of CBWTFs that have installed COEMS
						Total no. of HCFs applied for authorization	Total no. of HCFs granted authorization	Total no. of HCFs in operation without Authorization				No. of HCFs having Captive Treatment Facilities	No of Captive Incinerators Operated by HCFs	CBWTFs Operational	CBWTFs under Construction	HCF	CBWTFs					
I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XIII.	XVI.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.	XXII.	XXIII.	XXIV.
1	Andaman Nicobar	52	186	238	1466	238	106	Nil	Nil	536.36	536.36	7	7	Nil	Nil	68	nil	536.36	Nil	5	5	Nil
2	Andhra Pradesh	5930	4572	10502	144689	4613	4600	428	10523	25029.3	25029.3	Nil	Nil	12	2	Nil	nil	Nil	25029.3	572	572	12
3	Arunachal Pradesh	136	98	238	1825	15	308	Nil	Nil	353.63	353.63	308	Nil	Nil	Nil	138	nil	353.63	Nil	46	7	nil
4	Assam	777	667	1444	26194	440	271	946	192	8235.97	5314.22	422	30	1	Nil	INP	nil	3459.25	1854.97	377	180	1
5	Bihar	4821	20175	24996	70563	3001	9969	15027	6032	27846.15	10201.3	3	2	4	Nil	Nil	Nil	231.84	9969.46	766	767	4
6	Chandigarh	50	826	876	4761	65	65	Nil	876	5729	5729	Nil	Nil	1	Nil	Nil	Nil	1295	4434	Nil	Nil	1
7	Chhattisgarh	2529	3235	5764	40327	3331	3075	Nil	2546	7234.31	7234.31	1483	4	4	4	INP	6	1014.04	6220.28	39	39	2
8	Daman & Diu and Dadra & Nagar Haveli	45	126	171	910	171	171	Nil	240	450	450	Nil	Nil	Waste Handover to Gujarat Facility	Nil	Nil	Nil	Nil	450	INP	92	INP
9	Delhi	1184	9239	10423	57832	1247	1179	Nil	10423	23200.09	23200.09	1	0	2	0	0	0	272.09	22928	161	161	2
10	Goa	148	631	779	5051	401	139	419	Nil	1272.68	1272.68	165	1	Nil	Nil	INP	0	1272.68	0	419	419	0
11	Gujarat	11654	21336	32990	210777	3167	3139	3552	32990	49492	49492	Nil	Nil	20	2	Nil	Nil	Nil	49492	2544	2544	20
12	Haryana	3168	3152	6320	59005	6320	5703	157	6320	19217	19217	Nil	2	11	Nil	Nil	Nil	Nil	19217	53	4	11
13	Himachal Pradesh	585	8247	8832	16082	7689	6805	1143	3639	3545.78	3545.78	5006	1	3	1	5005	Nil	177.92	3367.86	672	672	2
14	Jharkhand	1175	815	1990	32170	757	235	39	998	8406.7317	8406.7317	202	6	4	1	INP	0	2408.711	6472.19	376	346	2
15	J & K	1548	5373	6904	17200	1091	916	5813	1434	5941.81	5941.81	Nil	Nil	3	Nil	INP	Nil	5941.84	5816	205	3	
16	Karnataka	8404	32402	41709	220996	18956	18312	6021	25104	82604	38951	1713	8	25	2	INP	Nil	1146	37805	3938	1599	27
17	Kerala	2027	15095	17122	119762	13736	13348	2471	16602	40408	40207	51	19	1	1	INP	Nil	3390	36817	1337	1179	1
18	Ladakh	333	56		1122	2	Nil	333	Nil	43.35	43.35	2	2	Nil	Nil	17	Nil	43.35	Nil	333	INP	Nil
19	Lakshadweep	10	38	48	140	48	47	Nil	0	1137	1137	Nil	Nil	Waste handover to Image kerala	Nil	3	0	712	425	nil	nil	nil
20	Madhya Pradesh	4064	4837	8901	115505	7233	7037	1668	6977	20008.91	19003.55	2	2	12	2	INP	Nil	242.1	18761.45	775	775	13
21	Maharashtra	19932	44334	64266	297565	8184	8143	75	62367	82146.35	82111.82	240	2	30	1	INP	1	494	81617.82	300	254	29
22	Manipur	96	641	737	4854	737	737	Nil	192	888.5	888.5	545	INP	1	1	INP	Nil	325.86	562.19	1	Nil	Nil
23	Meghalaya	182	791	973	7210	831	831	142	48	1556.95	1556.95	81	Nil	1	Nil	140	Nil	367.8	1189.15	Nil	Nil	0
24	Mizoram	64	77	144	2593	59	41	18	Nil	863.13	863.13	144	5	Nil	Nil	101	Nil	863.13	Nil	Nil	Nil	Nil
25	Nagaland	205	521	726	3486	480	480	Nil	Nil	891.8	652.5	5	5	Nil	0	245	0	652.5	Nil	246	246	0
26	Odisha	1445	2232	3676	47748	493	512	56	792	15303.76	15303.76	2885	Nil	6	Nil	Nil	17	10391.54	4912.21	135	135	1
27	Puducherry	96	171	267	11300	267	247	Nil	267	4360	4360	1	1	1	Nil	Nil	Nil	19	4341	23	23	1
28	Punjab	4009	8545	12554	74220	5632	4763	2314	11144	16998.16	16998.16	Nil	Nil	5	1	Nil	Nil	Nil	16998.16	2005	2005	5

S.No.	Name of the State/UT and	Total no. of Bedded Health Care Facilities (HCFs)	Total no. of Non-bedded Health Care Facilities (HCFs)	Total no. Health Care Facilities (HCFs)	Total no. of Beds	Authorization Status			No. of HCFs utilization CBWTFs	Total Quantity of BMW generated (kg/day)	Total Quantity of BMW Treated and Disposed (kg/day)	Captive BMW Treatment Facilities Operated by the (HCFs)		Common Bio-medical Waste Treatment Facilities (CBWTFs)		Deep burial installed by HCF & CBWTFs		Total BMW treated by captive treatment facilities by HCF in Kg/day	Total BMW treated by CBWTFs kg/day)	Total no. of violation by HCFs & CBWTFs	Total No. of show cause notices/Directions issued to defaulter HCFs/CBWTFs	No. of CBWTFs that have installed COEMS
						Total no. of HCFs applied for authorization	Total no. of HCFs granted authorization	Total no. of HCFs in operation without Authorization				No. of HCFs having Captive Treatment Facilities	No of Captive Incinerators Operated by HCFs	CBWTFs Operational	CBWTFs under Construction	HCF	CBWTFs					
I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XIII.	XVI.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.	XXII.	XXIII.	XXIV.
29	Rajasthan	5703	2661	8364	137842	2166	1980	811	6903	18911.56	18911.56	1219	Nil	11	4	1219	Nil	3429.68	15481.88	623	623	8
30	Sikkim	34	241	273	2425	273	273	Nil	Nil	477.56	477.56	185	8	Nil	Nil	118	Nil	477.56	Nil	Nil	Nil	Nil
31	Tamil Nadu	7300	17726	25026	184598	24508	24364	518	19225	35269.74	35269.74	Nil	Nil	10	3	Nil	572	Nil	35269.74	33	33	10
32	Telengana	3792	3481	7273	119135	4717	4594	238	7273	23810	23810	Nil	Nil	11	0	Nil	Nil	Nil	23810	240	240	11
33	Tripura	137	1753	1890	4694	345	345	Nil	Nil	3852.58	3852.58	3	3	Nil	1		Nil	3852.58	Nil	Nil	Nil	Nil
34	Uttarakhand	1368	3074	4442	24908	3921	3438	521	2650	7616.57	7616.57	2377	2	2	Nil	1792		1036.62	6579.95	99	6	2
35	Uttar Pradesh	17188	14286	31474	307877	INP	26030	5444	INP	64038	64038	10	10	21	0	Nil	Nil	6105	57933	150	81	21
36	West Bengal	2769	5756	8525	128825	8525	8525	Nil	8525	43513.39	43513.39	Nil	Nil	6	7	Nil	Nil	Nil	43513.39	177	177	6
37	DGAFMS	226	542	768	38459	11	8	Nil	Nil	5450.99	5450.99	146	5	Nil	Nil	INP		2332.66	3118.33	Nil	Nil	Nil
38	COVID-19 Biomedical Waste									118	118											
	total	113186	237938	352014	2544116	133670	160736	48154	244282	774	708	17206	125	208	33	8846	596	46902.901	544512.17	22261	13389	195

INP : Information not provided

** Till date, Nagaland SPCB has not submitted AR-2020, so previous year data has incorporated