

Annual Report
on
Biomedical Waste Management
as per
Biomedical Waste Management Rules, 2016
For the year 2018



Central Pollution Control Board
(Ministry of Environment Forest & Climate Change)
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1. Introduction:

Biomedical Waste Management Rules were notified by Ministry of Environment Forests & Climate Change in March, 2016 in suppression of earlier Biomedical Waste (Management & Handling) Rules, 1998. Said Rules were re-notified with an aim to improve the collection, segregation, processing, treatment and disposal of these bio-medical wastes in an environmentally sound management thereby, reducing the bio- medical waste generation and its impact on the environment. BMW Rules, 2016 applies to the non-bedded Healthcare Facilities also and mandates them to dispose the biomedical waste through Common Biomedical Waste Treatment Facilities and to obtain the one-time authorization from concerned State Pollution Control Board/Pollution Control Committee.

BMW Rules, 2016 prescribed specific duties for Occupier and Operator of Common Biomedical Waste Treatment Facilities and also duties for authorities like Ministry of Environment Forest & Climate Change, Ministry of Health & Family Welfare, Ministry of Defence, Central Pollution Control Board, State Government of Health, State Pollution Control Boards/Pollution Control Committees and Municipalities or Corporations or Urban Local Bodies.

Further, the prescribed authorities for implementation of the provisions of BMW Rules, 2016 are State Pollution Control Boards in respect of States and Pollution Control Committees in respect of Union territories. And in respect of all health care establishments including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories and blood banks of the Armed Forces under the Ministry of Defence, the prescribed authority is the Director General, Armed Forces Medical Services, who shall function under the supervision and control of the Ministry of Defence.

Biomedical Waste Management Rules, 2016 mandates preparation of inventory on biomedical waste management by stakeholders like Healthcare Facilities, Common Biomedical Waste Treatment Facilities, State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) and Central Pollution Control Board. This inventory includes number of Occupiers, quantity of biomedical waste generation, its collection, treatment and disposal. Rules stipulates that SPCBs and PCCs as well as Director General Armed Forces Medical Services (DGAFMS) shall submit this inventory in Annual Report Information on Bio-medical Waste Management of their respective State / Union Territory / Armed Forces Healthcare Establishments (AFHCEs) for the previous calendar year in a compiled form to the Central Pollution Control Board (CPCB), on or before 31st July of every year. Further, CPCB shall submit the compiled, review and analyse the information and send the same to Ministry of Environment Forest & Climate Change.

Inventory will be useful to know current trend of generation, collection, treatment and disposal of biomedical waste, infrastructure for treatment and disposal of bio-medical waste (Captive as well as Common bio-medical waste treatment facility (CBWTF)) and gaps in its management. All this information will help in analysis of the current capacity of treatment and disposal and improvement required for proper management of biomedical waste.

2. Bio-medical Waste Management Scenario

Annual Report Information has been submitted by every SPCB/PCC for the year 2018 and as per the compiled annual report information for the year 2018, there are 2,70,416 no. of Health Care Facilities (HCFs) out of which 97,382 no. of HCFs are bedded and 1,73,831 no. of HCFs are non-bedded. 1,10,356 no. of HCFs are granted authorization under the BMW Rules. 2,01,137 no. of HCF utilises CBWTF and 12,326 No. of HCFs are having captive bio-medical waste treatment and disposal facilities. There are 200 no. of CBWTFs in operation (28 under construction). The total generation of bio-medical waste is about 614 tonnes per day out of which about 534 tonnes per day are treated in CBWTFs and captive treatment facilities. About 57 tonnes per day are treated by captive treatment facilities and about 472 tonnes per day are treated by CBWTF. As reported, 27,301 no. of HCFs/CBWTFs observed to be violating the provisions of the BMW Rules. The detailed bio-medical waste management scenario in the Country (**Annexure-I**) is given below:

➤ No. of HCFs	: 2,70,416
➤ No. of bedded HCFs	: 97,382
➤ No. of non-bedded HCFs	: 1,73,831
➤ No. of beds	: 22,06,362
➤ No. of CBWTFs	: 200* + 28**
➤ No. of HCFs granted authorization	: 1,10,356
➤ No. of HCFs having Captive Treatment Facilities	: 12,326
➤ No. of Captive Incinerators Operated by HCFs	: 120
➤ Quantity of bio-medical waste generated in Tonnes/day	: 614
➤ Quantity of bio-medical waste treated in Tonnes/day	: 534
➤ No. of HCFs violated BMW Rules	: 27,301
➤ No. of Show-cause notices/Directions issued to defaulter HCFs	: 16,956

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

3. Status of Health Care Facilities in the Country

As per Biomedical Waste Management Rules, 2016, inventorization of Healthcare Facilities has been indicated and as a result steady increase in no. of HCFs can be seen since 2007-2018 as shown in **Figure 1**, Inventorization of Healthcare Facilities has also been done with respect to bedded and non-bedded HCFs as categorised under BMW Rules, 2016. **Figure 2** shows increase in number of non-bedded HCFs identified during 2016 -2018. And **Figure 3** depicts bedded and non-bedded HCFs of all States/UTs in year 2018. Based on Annual Report information, in 2017 bedded HCFs were 87,938 and non-bedded HCFs were 92,596 whereas in 2018, bedded HCFs are 97,382 and non-bedded HCFs are 1,73,831. Further, since 2016 percentage of total no. of HCFs has been steadily increased. Also, Number of beds available in the States/UTs per thousand population is shown in **Figure 4**.

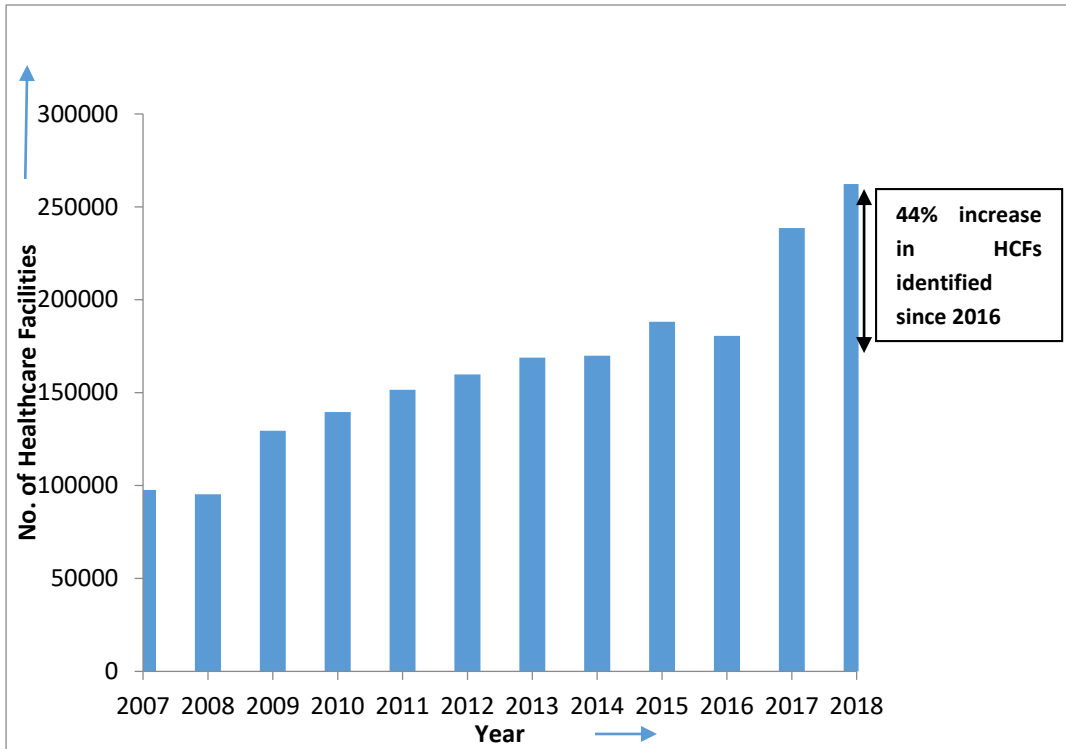


Figure 1: Development of total no. of Healthcare Facilities from 2007 to 2018

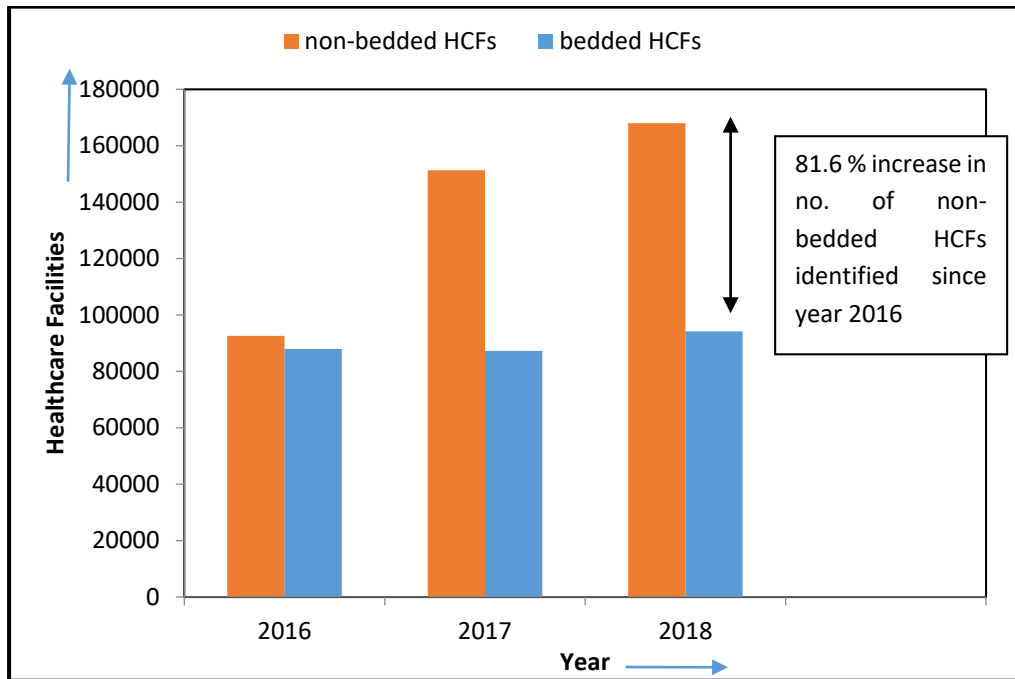


Figure 2: Number of bedded and non-bedded HCFs during 2016 to 2018

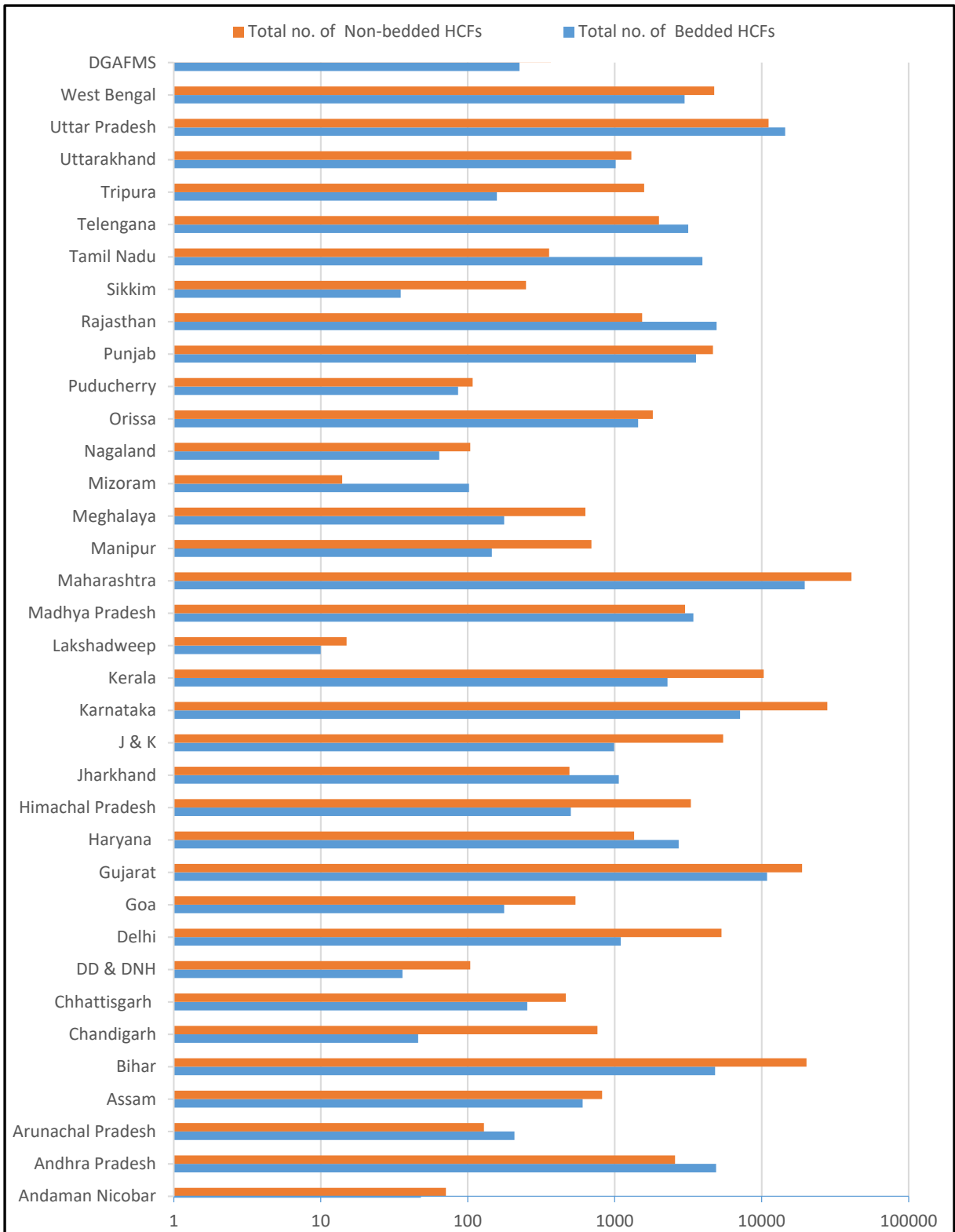


Figure 3: Number of bedded and non-bedded HCFs in States/UTs in Year 2018

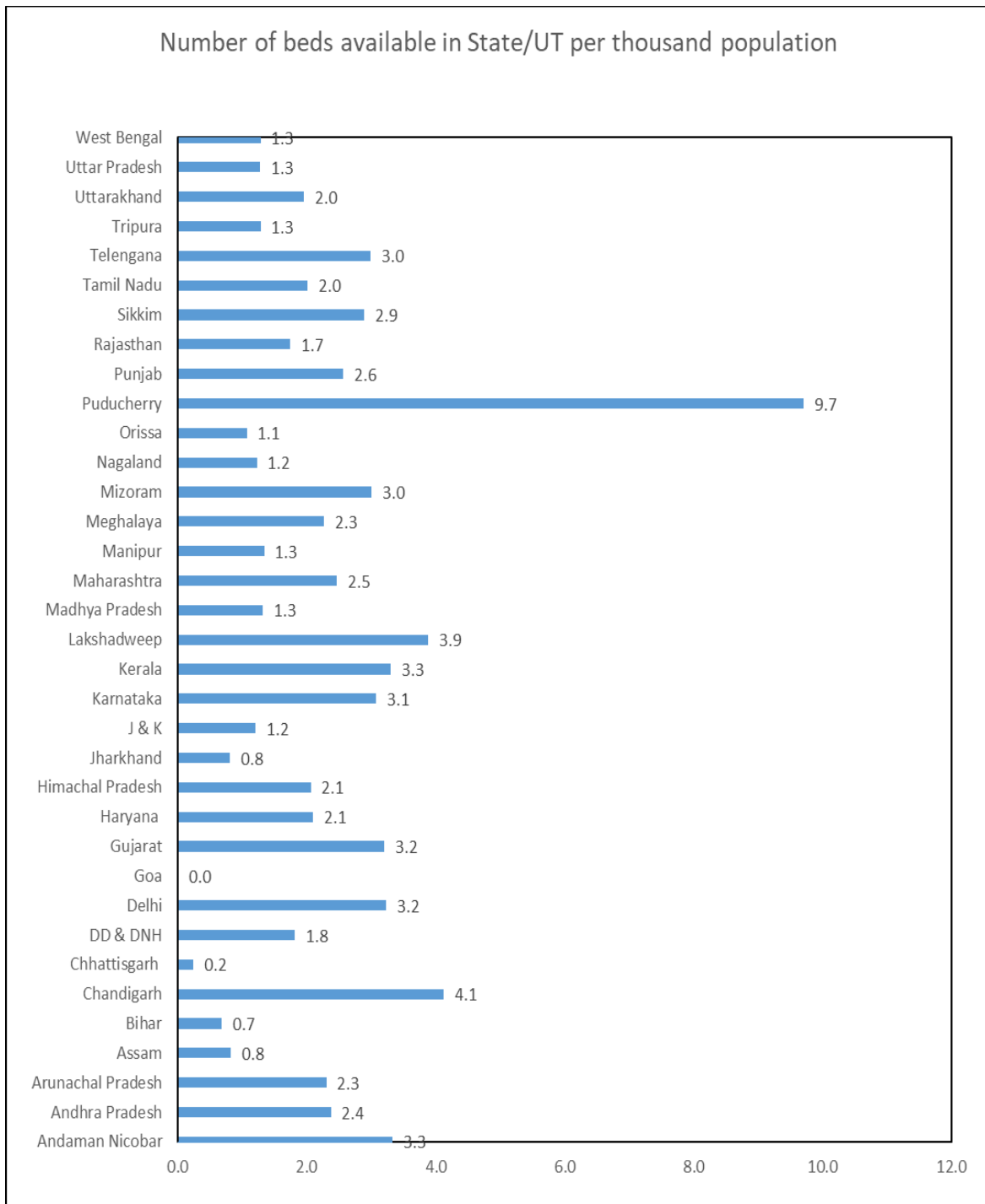


Figure 4: Number of beds available in State/UT per thousand population

As per BMWM Rules, 2016, authorization of Healthcare Facilities is required. Out of 2,70,416 of HCFs, 1,11,122 no. of HCFs have applied for authorization and 1,10,356 HCFs are obtained authorized under BMWM Rules, 2016. Health Care Facilities which are operational without authorization are mostly in states namely Bihar, Andhra Pradesh, Delhi, Gujrat, Himachal Pradesh, Karnataka, Madhya Pradesh, Punjab, Rajasthan, Uttarakhand & Uttar Pradesh.

It can be seen in **Figure 5** below that the gap between HCFs applied for authorization and HCFs obtained authorization decreased sharply after BMWM Rules, 2016 came into effect.

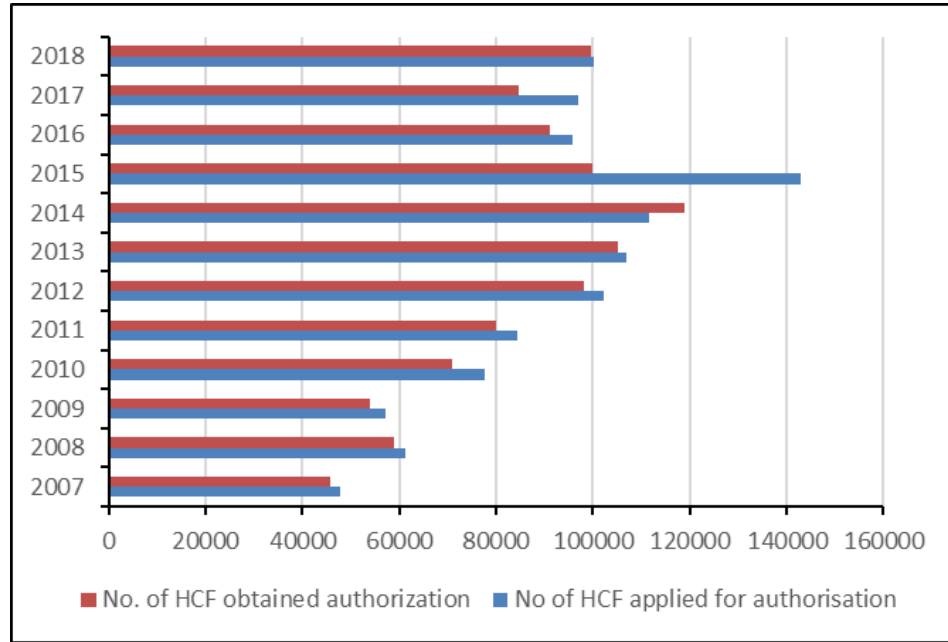


Figure 5. Trend of no. of HCF applied for authorization and obtained authorization during year 2007-2018.

Inventory with respect to Bedded HCFs has been performed by most of the state but inventory with respect to Non-bedded HCFs are still a neglected part. Although non-bedded HCFs generates small amount of Biomedical waste but waste generation is staggered and cannot be neglected. States should act positively to complete authorization of all HCFs which include bedded as well as non-bedded HCFs.

4. Treatment & Disposal Facilities for bio-medical waste:

As per the BMWM Rules, 2016, the generated biomedical waste is required to be treated & disposed off by the treatment & disposal facilities. CPCB is continuously pursuing and requesting all SPCBs/PCCs to take necessary steps to ensure that Bio Medical Waste generated from Hospitals/Nursing Homes and other Health Care Units are disposed off scientifically in line with provisions under BMWM Rules, 2016.

Rules stipulates that the biomedical waste shall be treated & disposed off by Common Biomedical Waste Treatment Facility. However, BMWM Rules, 2016 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 kilometres.

Currently, there are 200 numbers of CBWTFs operated in the Country and 12,326 captive treatment facilities installed by HCFs. **Figure 6** shows the sharp decrease in Healthcare Facilities using captive treatment facility after BMWM Rules, 2016. Recent trend shows that CBWTFs are widely accepted by healthcare facilities and increasing in its number continuously because of various advantages such as reduced capital investment, reduced cost of treatment, no operation & maintenance, checks mushrooming of treatment equipment in cities, easy implementation by the regulatory bodies etc. and decrease in use of captive treatment facility by Healthcare Facility. Also use of captive waste treatment incinerator is decreased from 225 to 120 during year 2007-2018 and on the positive note CBWTF is increased from 155 to 200 during 2007-2018 as shown **Figure 7** below. Since 2016 to 2017 captive treatment facilities was decreased, but in 2018 captive treatment facilities utilized by HCFs again increased.

Based on the annual report information, there are 200 numbers of CBWTFs which are in operational for the treatment of biomedical waste and 28 numbers of CBWTF are under construction. Since, 2016 no. of CBWTFs were steadily increased. Whereas 23 nos. of States/UTs has Captive waste treatment and disposal facility for the treatment of biomedical waste and hospitals are disposing the generated biomedical waste through incinerators or deep burial and autoclaves/microwaves.

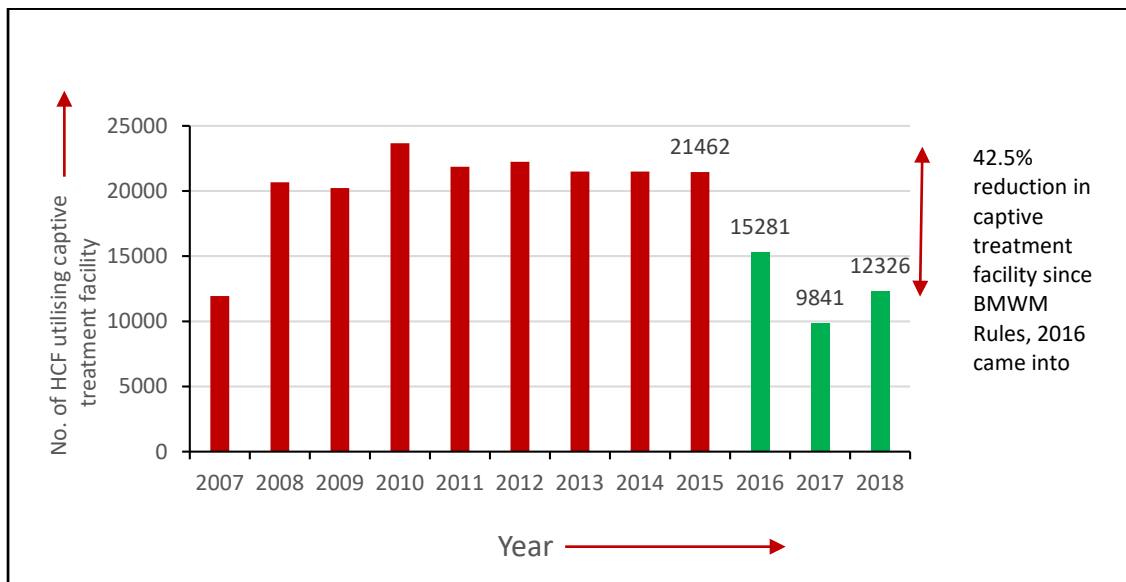


Figure 6. Year-wise Status of No. of HCFs utilizing Captive treatment facilities.

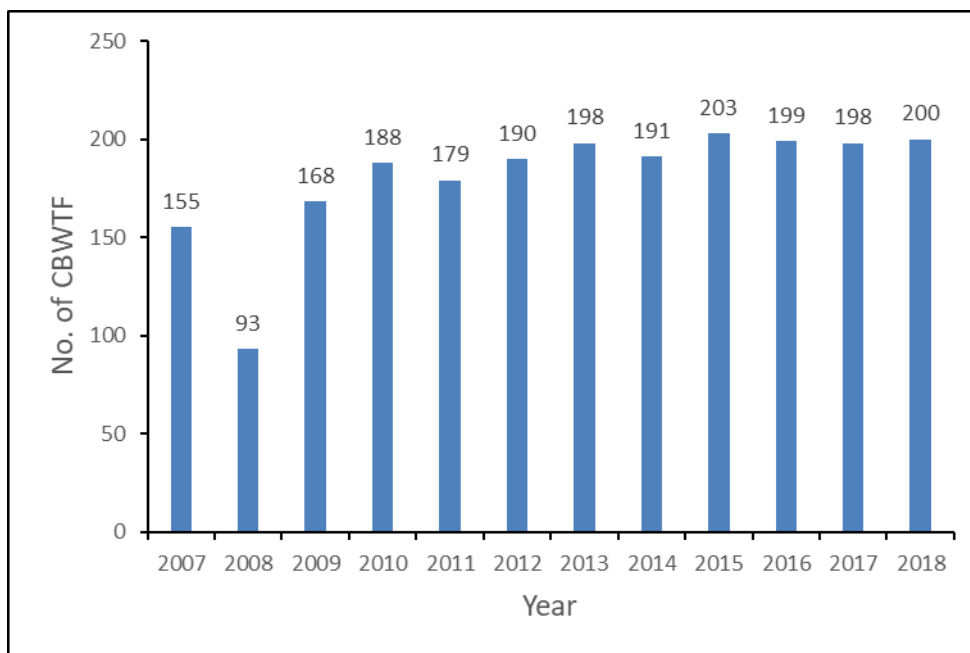


Figure 7. Year-wise Status of Common Bio-medical Waste Treatment Facilities.

5. Bio-medical Waste generation and treatment

Biomedical waste generated should be treated and disposed of in environmental friendly manner. The Bio-medical waste generation as well as treatment & disposal scenario during the years 2007 to 2018 is given in the **Figure 8**. It is found that the gap between the total bio-medical waste generation and the total bio-medical waste treated is reduced significantly after BMWM Rules, 2016. In the year 2018, about 87% of the bio-medical waste in India is reported to be treated as per provisions of BMW Rules.

Total bio-medical waste generation from health care facility is 614 tons/day which is being treated & disposed by 200 no. of CBWTFs and 12,326 captive treatment facility installed by HCFs. About 88 % of treated biomedical waste (534 tons/day) is treated by CBWTF, rest of the waste is treated & disposed by either captive treatment facilities or being disposed of in deep burials. States namely Andaman & Nicobar, Assam, Arunachal Pradesh, Chhattisgarh, Goa, Himachal Pradesh, Jharkhand, Karnataka, Lakshadweep, Manipur, Meghalaya, Sikkim, Mizoram, Nagaland, Odisha, Rajasthan, Kerala, Tamil Nadu, Tripura & Uttarakhand are having deep burials for the disposal of biomedical waste which is not recommended as per CPCB guidelines.

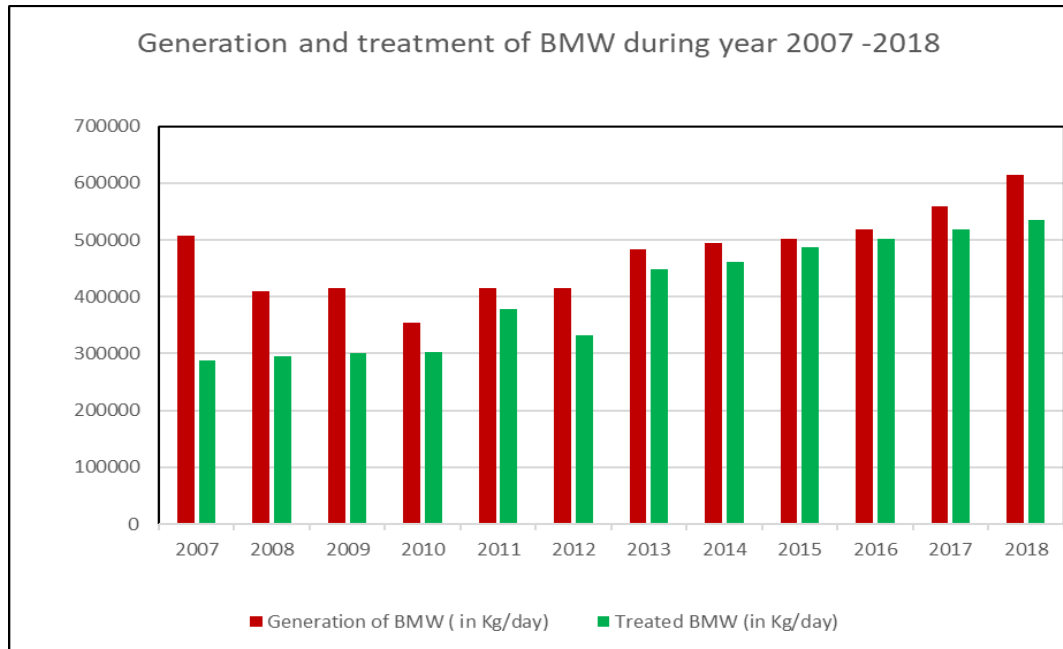
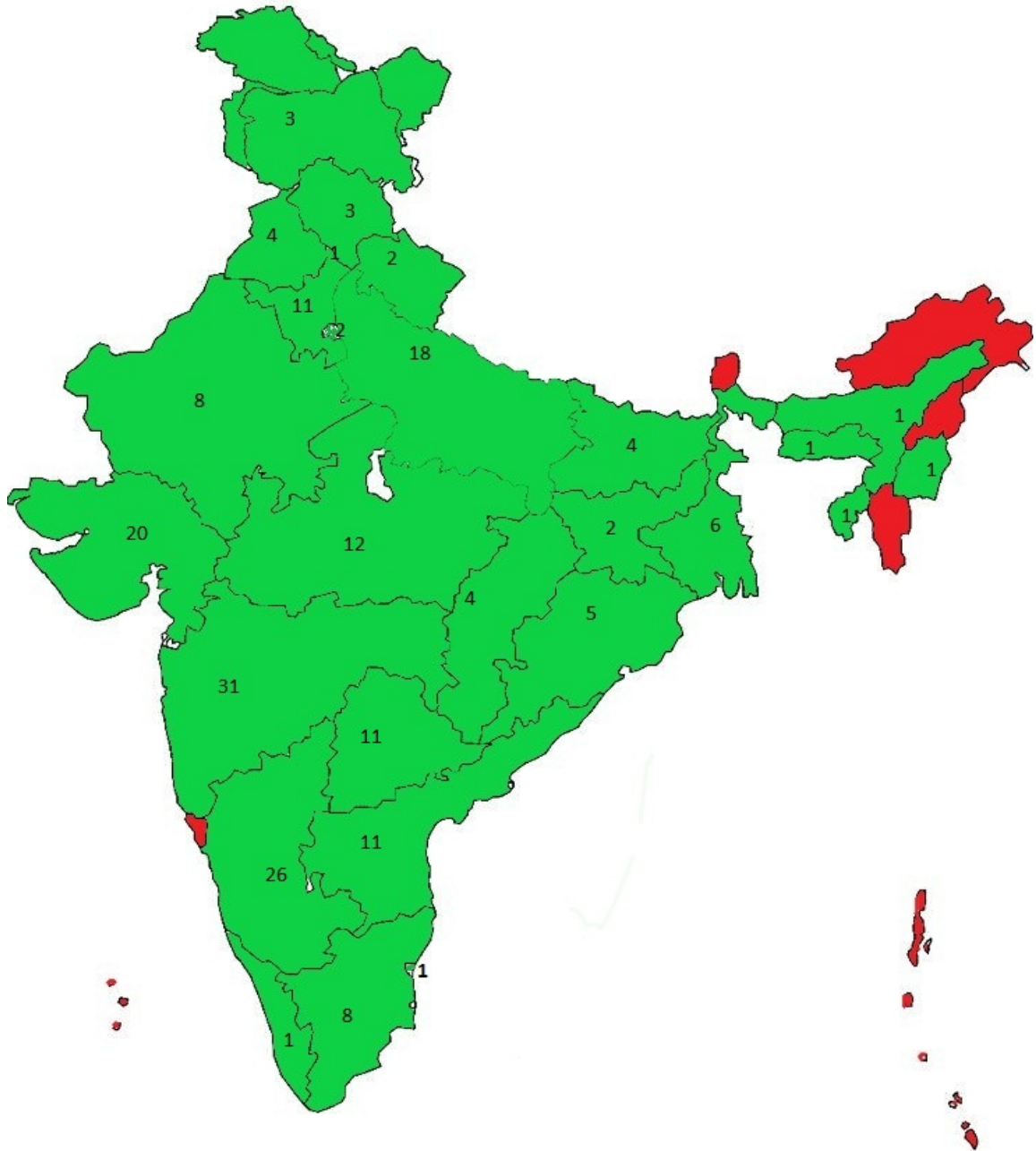


Figure 8. Generation and treatment of BMW during year 2007-2018

For treatment and disposal of biomedical waste setting up of CBWTF in adequate number should be present to cover entire state or all HCFs, States having CBWTF and not having CBWTF is shown in **Figure 9**. States namely Uttar Pradesh, Tamilnadu, Andhra Pradesh, Chandigarh, Madhya Pradesh, Punjab, Haryana has enough number of CBWTF. States namely Mizoram, Nagaland, Tripura, DD & DNH, Chhattisgarh, Goa, Lakshadweep, Himachal Pradesh, Jharkhand, Delhi, Puducherry, West Bengal, Arunachal Pradesh, Rajasthan, Gujarat, Telangana has initiated setting up of adequate number of CBWTFs in their State whereas States namely J&K, Meghalaya, Manipur, Uttarakand needs to facilitate setting up of adequate number of CBWTF to cover all HCFs of state and Sikkim should initiate setting up of CBWTF.

India



* Numbers in States/UTs indicate number of CBWTF operational in the respective State/UT.

Figure 9. Map of India showing CBWTF present in States.

Tracking of biomedical from point of generation to point of treatment is important so as to ensure proper management of biomedical waste. For the same, bar-code system plays an important role. States namely DD & DNH, Punjab, Delhi and Telangana implemented barcode system, States namely Odisha, UP, J& K, Tamilnadu, Andhra Pradesh, Haryana, Chhattisgarh, Chandigarh, Himachal Pradesh, Puducherry, Jharkhand, Arunachal Pradesh, Gujarat, Manipur, Rajasthan, Karnataka, Kerala, Madhya Pradesh, West Bengal, and Bihar has partially implemented bar code system whereas States namely Mizoram, Nagaland, Sikkim, Tripura, Goa, Lakshadweep, Uttarakhand and Meghalaya has not yet implemented bar code system.

OCEMS is a tool to monitor the emissions during incineration of the waste. As per BMW Rules, 2016, it is required to install OCEMS in incinerators of CBWTF. Out of 200 CBWTFs, only 172 has OCEMS. States namely Manipur, Meghalaya, Tripura and Chandigarh have not installed Online Continuous Monitoring System (OCEMS). All the CBWTF of States namely Andhra Pradesh, Puducherry, Madhya Pradesh, Delhi, Telangana, Kerala and Jharkhand installed OCEMS whereas not all CBWTFs of the States namely Odisha, J& K, Tamilnadu, Haryana, Chhattisgarh, Lakshadweep, West Bengal, Himachal Pradesh, Bihar, Punjab, Uttarakhand, Karnataka, Rajasthan, Gujarat, Uttar Pradesh has installed OCEMS.

6. Biomedical Waste Management by Veterinary Hospitals:

BMW Rules, 2016 is also applicable to veterinary institutions, animal houses and veterinary hospitals. Segregation of bio-medical waste generated from veterinary hospitals should be in four categories as mentioned in Schedule I of BMW Rules, 2016 and veterinary hospitals should take membership of CBWTF for collection, treatment and disposal of bio-medical waste generated. Also, as per Rules 9(3) of the BMW Rules, 2016, following are the duties outlined for state department of Animal Husbandry and Veterinary:

- (i) Grant of license to Veterinary Establishments with condition to authorization from prescribed authority i.e. state pollution control boards for biomedical waste management.
- (ii) Monitoring, refusal or cancellation of license for veterinary establishments for violation of conditions of authorization or provisions under these BMW Rules, 2016.
- (iii) Publication of list of registered veterinary establishments with regard to biomedical waste generation, treatment and disposal.

To get implementation status of BMW rules, 2016 in veterinary hospitals/animal houses, CPCB inspected 85 veterinary hospitals and the following observations were made:

- Majority of veterinary Hospitals have not obtained authorization obtained from prescribed authority;
- The Hospitals have not registered with the CBWTFs for treatment and disposal of BMW generated in their veterinary hospitals;

- No segregation of waste at source is practiced through separate color-coded collection bins.;
- No proper records are being maintained about waste generation, collection, transportation, treatment and disposal;
- Awareness has not been created for the waste handling staffs through display of Posters & charts;
- No record is available regarding immunization of workers involved in handling of bio-medical waste as per rule 4(h) and conduction of regular health checkups to these workers as per rule 4(m);
- No committee has been formed to review and monitor the activities related to bio-medical waste management;
- No waste water treatment facility is available and the waste water generated is disposed into public sewer;
- Annual report in Form -- IV is not submitted to the prescribed authority;

Therefore, in view of non-compliance, letter has been issued to Principal secretary, Department of Animal Husbandry of all states, requesting to take immediate action to ensure effective compliance to BMWM Rules, 2016 by the veterinary hospitals located in their states.

7. Director General, Armed Forces Medical Services (DGAFMS) scenario

According to BMWM Rules, 2016, every occupier or operator handling bio-medical waste, irrespective of the quantity is required to obtain authorization from the prescribed authority. In case on healthcare Facilities for Armed Forces prescribed authority is Director General, Armed Forces Medical Services (DGAFMS).

As reported, 593 HCFs are established under DGAFMS that generates about 6350 kg/day bio-medical waste out of which 5736 kg/day of biomedical waste is being treated by captive treatment facilities of HCFs which is not recommended under BMWM Rules, 2016. It is also reported that only 4 no. of incinerators of captive treatment facility is complying with norms. Further, 14 Healthcare Facilities operating under DGAFMS were inspected by CPCB in 2018. The status shows that the biomedical waste disposal infrastructure in armed forces medical establishments does not meet the new rules issued by the government and immediate steps are required to upgrade the facilities to ensure compliance of emission norms.

8. Financial scheme of MoEF &CC for setting up of CBWTF

North-east states of country needs attention with respect to treatment and disposal of bio-medical waste because collection and setting up of CBWTF in hilly areas. As reported, States namely Arunachal Pradesh, Mizoram, Sikkim and Nagaland still lacks in infrastructure for treatment and disposal facilities. In order to develop additional capacities of the CBWTFs in the Country, Ministry of Environment, Forests and Climate Change (MoEF & CC) initiated Scheme namely "Creation of Management Structure for Hazardous Substance" which facilitates the biomedical waste stakeholder for setting up of CBWTF by providing financial assistance to them.

For establishment of CBWTFs, up to 25% of the total project cost would be provided as central subsidy. In case of North-Eastern (NE) States, up to 50 % of the total project cost would be provided as central subsidy, subject to 25% of the project cost is contributed by the State/UT Government concerned and the balance 25% of the project cost is contributed by the Promoter/Investor. The central subsidy would have a ceiling of maximum of Rs.1 crore. In case of NE States, the central subsidy would be limited to a maximum of Rs.2 Crores. The modified ratio proposed in respect of Central: State: Private Sector is 25:25:50. In case of NE States, the proposed modified ratio is 50:25:25.

9. Enforcement of BMWM Rules, 2016.

Repeated and frequent inspection of the Common Bio-medical Facilities and Healthcare Facilities has been done by SPCB/PCCs as well as CPCBs. After identifying defaulting Units (CBWTF/HCF), CPCB under section 5 of Environmental (Protection) Act, 1986 is issuing Show Cause Notices or Technical/Closure Directions or imposing Environmental Compensation against the Unit.

As per order dated 12.03.2019 passed by Hon'ble National Green Tribunal (NGT), Principal Bench in the matter of O.A. No. 710 of 2017 filed by Shailesh Singh of Hon'ble NGT, CPCB prepared Guidelines for Imposition of Environmental Compensation Charges against Healthcare Facilities and Common Biomedical Waste Treatment Facilities which is applicable for violators of BMWM Rules, 2016. Hon'ble National Green Tribunal in its order dated 15.07.2019 in the matter of O.A. No. 710 of 2017, accepted Guidelines for "Imposition of Environmental Compensation Charges (ECC) against Healthcare Facilities (HCFs) and Common Biomedical Waste Treatment Facilities (CBWTFs)";

According to which following cases will be considered for taking cognizance of non-compliance and fit for levying **Environmental Compensation to HCFs**:

- No Authorization under BMWM Rules, 2016;
- No arrangement with CBWTF for disposal of biomedical waste;
- Improper Segregation of generated biomedical waste as per color coded system prescribed under BMWM Rules, 2016;
- No facility for pre-treatment of yellow (h) category waste (microbiology, biotechnology and other clinical laboratory waste);
- Storage facility not provided for segregated biomedical waste (applicable for bedded hospitals);
- Not provided Effluent Treatment Plant for treatment of wastewater, in case when city sewerage network is not connected to terminal STP; and
- Non-compliance to other responsibilities as stipulated for Healthcare Facilities under BMWM Rules, 2016.

In any case minimum Environmental Compensation in respect to Healthcare Facility shall not be less than Rs.1200/- per day.

And following cases will be considered for taking cognizance of non-compliance and fit for levying **Environmental Compensation to CBWTFs**:

- Incinerator emissions not complying with standards notified under BMWM Rules, 2016;
- Treated wastewater not complying with standards prescribed under BMWM Rules, 2016;
- Not complying with standards of autoclave/microwave prescribed under BMWM Rules, 2016;
- Not collecting the biomedical waste from all the member HCFs timely; and
- Other violations to the conditions stipulated under BMWM Rules, 2016 / CPCB guidelines.

In any case minimum Environmental Compensation in respect to Common Biomedical Waste Treatment Facility shall not be less than Rs. 3,000/- per day.

Since 2018, CPCB issued 26 directions to defaulting CBWTF/HCFs and show cause direction to 5 CBWTF/HCFs. CPCB imposed environmental composition to 21 no. of CBWTF/HCFs whereas only 8 CBWTF/HCFs has deposited Environmental compensation.

10. Status of implementation of BMWM Rules, 2016 in States/UTs based on key indicators:

CPCB has identified the following Key Performance Indicators for assessing treatment and disposal of biomedical waste, and effectiveness in implementation of BMWM Rules, 2016;

1. Inventory of all Healthcare Facilities and biomedical waste generation;
2. Authorization to all Healthcare Facilities including non-bedded HCFs;
3. Facilitate setting-up adequate number of Common Biomedical Waste Treatment Facilities (CBWTFs) to cover entire State or all HCFs;
4. Implementation status of Barcode system;
5. Installation of OCEMS by CBMWTs as a self-monitoring tool and transmission of data with servers of SPCBs/ CPCB;
6. Monitoring of Healthcare Facilities and Common Biomedical Waste Treatment Facilities.

States/UTs have submitted progress report on Key performance indicators in compliance to order passed by Hon'ble National Green Tribunal in the matter of O.A. No. 710 – 713 of 2017, filed by Shailesh Singh Vs Sheela Hospitals & Trauma Centre, Shahjanpur & Ors; Kailash Hospital and Heart Institute & Ors.; Ganga Charan Hospital Pvt. Ltd., Bareilly & Ors. and Katiyar Nursing Home, Hardoi & Ors. CPCB has assessed the progress report and observed areas where improvement needs to be done by States/UTs. Following are the observations for States/UTs:

10.1. **Andaman and Nicobar**

Inventory of HCFs has been completed by UT. Authorization of non-bedded HCFs have been initiated by PCC and authorization is under process. It is required that PCC should identify and complete authorization of all non-bedded HCFs. UT has no CBWTF as of now, whereas 5 sites are identified for installation of incinerators for treatment of biomedical waste. Total 199.3 Kg/day of biomedical waste generated has been treated by captive treatment facility. Some of the Captive treatment facility practices deep burial. However, PCC should facilitate CBWTF and restrict deep burial practice in the UT. Bar code system is not

yet implemented in UT. PCC shall ensure implementation of barcode system once CBWTF becomes operational in the State.

10.2. Assam

Inventory and authorization of HCFs in Assam state is under process. SPCB shall complete inventory for Chhattisgarh State on number of biomedical waste Healthcare Facilities and quantum of biomedical waste generation its collection, treatment and disposal and Authorization of all non-bedded HCFs. Total 7820.67 Kg/day of biomedical waste is generated in the State out of which 5869.26 Kg/day of biomedical waste is treated and disposed of through various modes such as CBWTFs or captive treatment facility or deep burial. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. One CBWTF is operational in the state, treating 63.27 %of waste treated whereas 36.72% of biomedical waste is treated in captive treatment facility. However, deep burial is still in practice by HCFs. SPCB should immediately restrict the practice for deep burial by HCFs and if it is necessary than SPCB should ensure that design of the deep burial should be according to BMW Rules, 2016. As reported, bar coding is not yet implemented by CBWTFs and HCFs, State should ensure implementation of bar code system by all HCFs and CBWTFs and ensure OCEMS data of CBWTF connected to CPCB as well as SPCB server. To ensure compliance by HCFs such as Clinics, veterinary hospitals etc.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Assam	33	17

Note : Only 17 districts out of 33 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF.

10.3. Andhra Pradesh

Inventory of HCFs has been completed by State. Authorization of non-bedded HCFs have been initiated by SPCB and authorization is under process. It is required that SPCB should identify and complete authorization of all non-bedded HCFs. Total 15144 Kg/day has been generated in the State. State has 12 CBWTFs in the State and one is under construction. At present, 66 % of waste treated through CBWTF and 33.95 % waste is treated through captive treatment facility (as shown in **Figure 10**). PCC should ensure that every area should be covered by CBWTF. Bar code system is partially implemented by CBWTF and HCFs. SPCB should follow up with all HCFs and CBWTFs for effective implementation of bar code system. As reported, all CBWTFs have installed OCEMS.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Andhra Pradesh	13	13

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

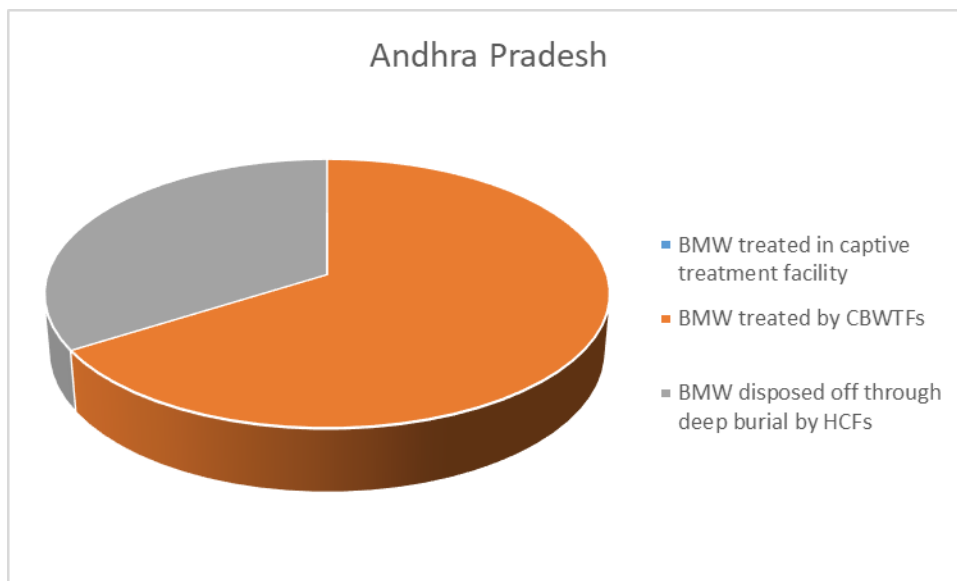


Figure 10: Representation of BMW treated and disposed off through various modes.

10.4. Arunachal Pradesh

Inventory of HCFs has been completed and authorization of non-bedded HCFs is under process. Total 888.67 Kg/day of biomedical waste is generated and treated in captive treatment facility practicing deep burial. State has no CBWTFs in the State as of now. State Administration/Arunachal Pradesh SPCB should expedite the process for setting up of CBWTF in Arunachal Pradesh and Deep burial practice should be restricted in the State since it is allowed only in rural or remote areas as per BMWM Rules, 2016. SPCB shall also ensure implementation of barcode system once CBWTF becomes operational in the State. SPCB monitors HCFs to verify compliance to BMWM rules, 2016 in periodic manner.

10.5. Bihar

Inventory of HCFs has been completed by State. Authorization of non-bedded HCFs is under process. It is required that SPCB should identify and complete authorization of all non-bedded HCFs. Total 34812.9 Kg/day of biomedical waste is generated in the State out of which 10038.156 Kg/day of biomedical waste is treated and disposed off. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical

generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. At present, 4 CBWTFs are operational and 2 are under construction, treating 97.12 % biomedical waste treated and 2.87 % of biomedical waste is being treated by captive treatment facility practicing deep burial. However, deep Burial should be restricted upto rural or remote areas and as per the standards given under BMWM Rules, 2016. As reported, implementation of Bar code system is under process, BSPCB shall ensure implementation of Barcode system by every HCF & CBWTF. State has not provided monitoring mechanism adopted for monitoring of HCFs and CBWTF. To ensure compliance by CBWTFs and HCFs, SPCB shall develop monitoring mechanism.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Bihar	38	38

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

10.6. Chandigarh

Chandigarh has completed inventory as well as authorization of HCFs. Total 3188 Kg/day of biomedical waste is generated in the State. At present, 1 CBWTF treating 19.35 % of waste generated and 3 captive treatment facility treating 80.65 % of waste (as shown in **Figure 11**). As reported, CBWTF has enough capacity to cater the present need to treatment and disposal of BMW.

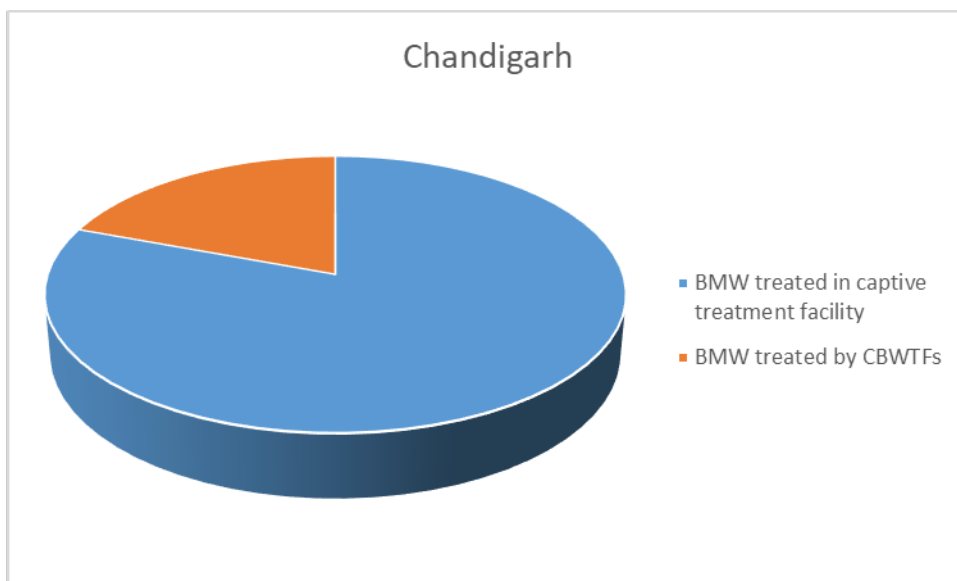


Figure 11: Representation of BMW treated and disposed off through various modes.

10.7. Chhattisgarh

Inventory and authorization of non-bedded HCFs is under process. SPCB shall complete inventory for Chhattisgarh State on number of biomedical waste Healthcare Facilities and quantum of biomedical waste generation its collection, treatment and disposal and Authorization of all non-bedded HCFs. As reported, 16,096 Kg/day of generated in the State whereas only 4596.99 Kg/day of waste is treated and disposed of through CBWTF or captive treatment facility or deep burial. The generation and treatment gap indicates that only 28.56 % of the waste is treated and disposed of whereas State has not submitted any detail regarding the treatment of remaining biomedical waste. At present, 4 CBWTFs are in operation treating 94.51% of biomedical waste treated whereas 5.48 % of biomedical waste treated with captive treatment facility. It is reported that some of the CBWTF and HCFs are practicing deep burial for disposal of biomedical waste State should be restricted such deep burial practices. As reported, State has initiated the process for setting up of additional CBWTF however, State should expedite the process of setting up of CBWTF in State so that biomedical waste shall treat and dispose as per provisions under BMWM Rules, 2016. Bar code system is partially implemented by HCFs and CBWTFs, SPCB should ensure implementation of barcode system in time bound manner by all CBWTFs and every HCF. As reported, only one CBWTF has installed OCEMS. State should ensure installation of OCEMS by all CBWTFs and monitoring mechanism to verify compliance to BMWM Rules, 2016 by HCFs and CBWTFs. To ensure compliance by CBWTFs and HCFs, SPCB shall develop monitoring mechanism.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Chhattisgarh	27	26

Note: As reported in annual report, 26 out of 27 districts has been covered by CBWTF which shows that one of the district is still uncovered. Also, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

10.8. Daman, Diu and Dadra Nagar Haveli (DD &DNH)

Inventory of HCFs and authorization of all non-bedded HCFs has been completed by State. DD & DNH takes the services of CBWTF located at Surat Gujarat for treatment and disposal of BMW generated. CBWTF may not be necessary as long as the State of Gujarat permits the facility located at Surat to receive the waste. Bar code system is effectively implemented by HCFs. PCC monitors HCFs for verification of compliance by HCFs.

10.9. Delhi

DPCC has completed inventory of HCFs. Authorization of non-bedded HCFs is under process, DPCC should ensure complete authorization of non-bedded HCFs. Total 26757.5 Kg/day of biomedical waste is generated in the State. Currently 2 CBWTFs are in operation treating 98.37 % of waste generated in all districts whereas 1.63 % of waste is treated in captive treatment facility. As reported CBWTF are adequate to treat and dispose biomedical waste and covers all 11 districts. Bar code system is partially implemented

by HCFs and OCEMS is installed by both the facilities. DPCC shall ensure implementation of bar code system by all HCFs. DPCC monitors CBWTFs as well as HCFs at regular interval.

10.10. Goa

Inventorization is under process by Goa waste management corporation. However, Goa SPCB should ensure inventorization of all HCFs in a time bound manner. Authorization of non-bedded HCFs is under process, State should expedite the process of authorization based on identified HCF under inventory. Total 1837.1 Kg/day of biomedical waste is generated and treated in captive treatment facility. However, State of Goa has proposed a CBWTF at Kundaim Industrial Estate through Goa Waste Management Corporation, tender has been floated for the same and deep burial is in practice. Goa SPCB and State Health Department should expedite the process of setting up of CBWTF in Goa State so that biomedical waste shall treat and dispose as per provisions under BMWM Rules, 2016. Practice of deep burial by HCFs for disposal of biomedical waste should be restricted. Once CBWTF shall be in operation, bar code system should be implemented as per CPCB guidelines. Goa SPCB shall develop monitoring mechanism for verification of compliance by CBWTFs and HCFs.

10.11. Gujarat

Inventory and authorization of non-bedded HCFs is under process. Inventory on number of biomedical waste generating HCF, quantum of biomedical waste generation, its collection, treatment & disposal may be completed by SPCB in a time bound manner. Further, based on inventory SPCB shall ensure authorisation to identified HCFs also. Total 33706 Kg/day of biomedical waste is generated in the State and the same has been treated and disposed off through CBWTF. Currently 20 CBWTF is operational in State and treating all waste generated in the State. As reported, bar code system implementation is under process, GSPCB shall ensure implementation of Barcode system by every HCF and CBWTF in a time bound manner. GSPCB regularly monitors CBWTFs and HCFs for verification of compliance.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Gujarat	33	32

Note: 32 districts out of 33 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF. However, in the annual report it is submitted that 100 % of biomedical waste generated is treated through CBWTF, the data indicates that inventory is incomplete. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner.

10.12. Haryana

Complete inventory detail has not been submitted by Haryana State, however, it was informed that inventory has been completed. State has provided authorization detail of all Government HCFs whereas no data is provided regarding private HCFs. SPCB should ensure authorization to every HCFs including non-bedded HCFs. Total 14217.88 Kg/day of biomedical waste is generated in the State and the same is treated

and disposed of through various modes. At present, 11 CBWTFs is operation in the State and treating all biomedical waste generated in State. As reported, bar code system implementation is under process, HSPCB shall ensure implementation of barcode system by CBWTFs and every HCFs in time bound manner. Monitoring mechanism has been provided by Haryana SPCB. SPCB should ensure compliance by CBWTFs and HCFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Haryana	22	21

Note : 21 districts out of 22 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF. However, in the annual report it is submitted that 100 % of biomedical waste generated is treated through CBWTF, the data indicates that inventory is incomplete. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner.

10.13. Himachal Pradesh

Inventory of HCFs has been completed and authorization is under process. State should expedite the process of authorization based on identified HCF under inventory. Total biomedical waste generation and treatment is 2570.12 Kg/day. Currently 3 CBWTFs are in operation treating 91.96 % of waste and 8.04 % was is treated in HCFs practicing deep burial (as shown in Figure 12). SPCB should conduct the gap analysis on biomedical waste management w.r.t. quantum of biomedical waste generation and treatment facilities in the Himachal Pradesh State. As reported by SPCB, deep burial is being practicing by HCFs for disposal of biomedical waste, it is recommended that the same should be restricted upto rural or remote areas with prior authorisation under BMWWM Rules, 2016. As reported, bar code system implementation is under process, SPCB shall ensure implementation of barcode system by every CBWTF and HCF in the State.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Himachal Pradesh	12	12

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

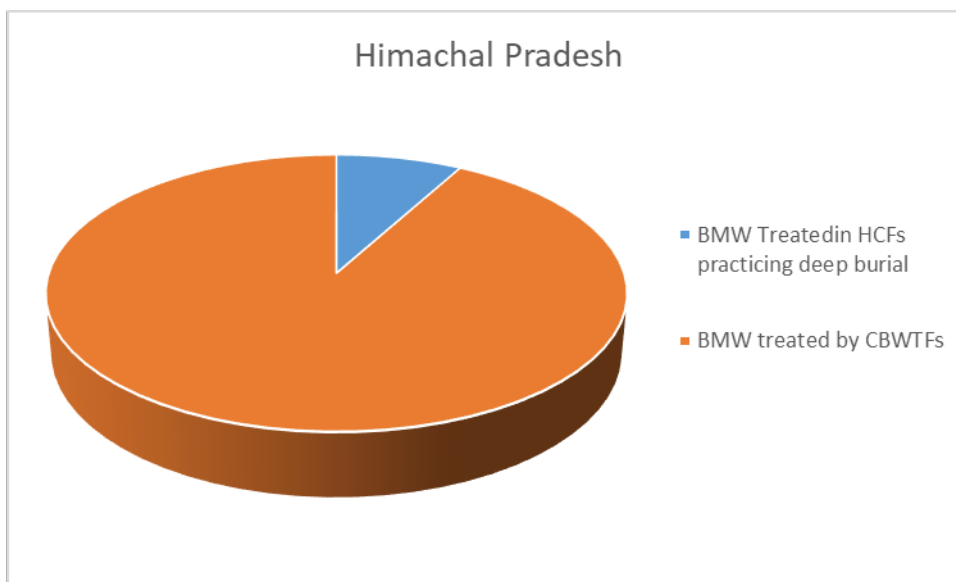


Figure 12: Representation of BMW treated and disposed off through various modes.

10.14. Jammu & Kashmir

Inventory of HCFs has been completed whereas no details has been provided regarding authorization of HCFs. J&K SPCB shall ensure that every HCF is authorized under BMW Rules, 2016. Total 4482.901 Kg/day of biomedical waste is generated in the State out of which 4279.96 Kg/day is treated and disposed of through CBWTFs and captive treatment facilities. At present, 3 CBWTF is in operation, treating 76.68 % of biomedical waste generated in the State whereas, 18.79 % of waste is treated in captive treatment facility and 4.53 % of waste is disposed off through deep burial (**as shown in Figure 13**). It is recommended that deep burial should be restricted upto rural or remote areas with prior authorisation under BMW Rules, 2016 and requirement of additional CBWTF needs to be reviewed by J&K SPCB by conducting gap analysis of biomedical waste management in the State. As reported, bar code system is not yet implemented, J&K SPCB should ensure implementation of bar code system by every HCFs and CBWTFs. J&K SPCB shall develop monitoring mechanism for Healthcare Facilities as well as for CBWTFs to verify the compliance status of BMW Rules, 2016.

Name of the State/UT and	Total no of District	Number of Districts covered by CBWTFs
J & K	20	20

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

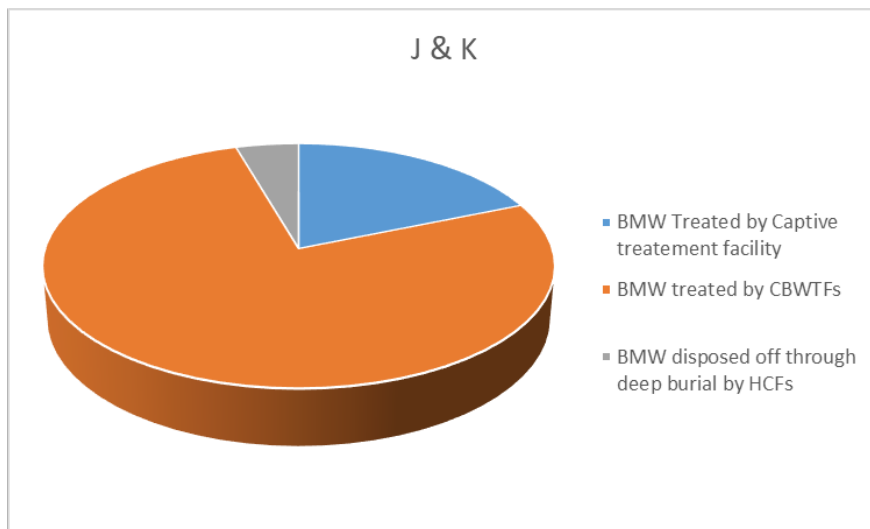


Figure13: Representation of BMW treated and disposed off through various modes.

10.15. Jharkhand

Inventorization is under process. State should complete inventorization in time bound manner. Inventory of district wise biomedical waste generation has not been submitted by the State. It is recommended that State should carry out complete inventory regarding district wise biomedical waste generation. Further, based on inventory SPCB shall ensure authorisation to identified HCFs. Total 12788.2 Kg/day of biomedical waste is generated in the State out of which 6720.62 Kg/day of biomedical waste is treated and disposed of through various modes. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. One CBWTF is in operation treating 35.51 % of waste treated and 64.48 % of waste is treated in captive treatment facility. As reported, deep burial is still in practice. As reported, setting up of new CBWTF is under process. JSPCB shall expedite the process for setting up CBWTF and practice for deep burial of biomedical waste should be restricted only upto rural or remote areas in compliance with standard given under BMWM Rules, 2016. Bar code system is not yet implemented by HCFs and CBWTFs, Jharkhand SPCB shall ensure Barcode system be implemented by every CBWTF and HCF.

10.16. Karnataka

Inventory has been completed and authorization of non-bedded HCFs is under process. Based on inventory SPCB shall ensure authorisation to identified HCFs also. Inventory of district wise biomedical waste generation has not been submitted by the State. It is recommended that State should carry out complete inventory regarding district wise biomedical waste generation. Total 65621.2 Kg/day of biomedical waste is generated in the State. Currently 15 CBWTFs are in operation, treating 93.29 % of waste and 6.71% of waste is treated through captive treatment facility (as shown in Figure 14). As reported, Deep burial being practiced by Veterinary Hospitals should be restricted immediately as the

same is allowed only in remote or rural areas and SPCB should direct Veterinary hospitals also to become member of CBWTF for treatment & disposal of biomedical waste in line with BMWM Rules, 2016. Implementation of bar code system is under process, KSPCB shall ensure implementation of Barcode system by every HCF and CBWTF in a time bound manner. No information regarding monitoring mechanism for verification of compliance has been provided, SPCB shall develop monitoring mechanism for verification of compliance by CBWTFs and HCFs.

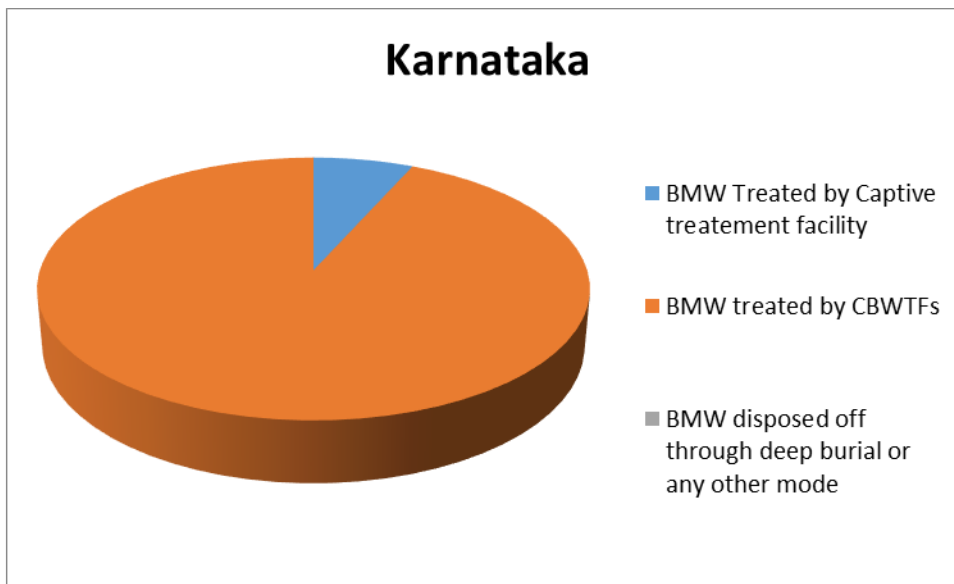


Figure 14: Representation of BMW treated and disposed off through various modes.

10.17. Kerala

Inventory of HCFs and authorization of non-bedded HCFs is under process. SPCB shall complete the inventory on number of biomedical waste generating HCF (bedded & non-bedded), biomedical waste generation, its collection, treatment & disposal. Also, as required under BMWM Rules, 2016 and non-bedded HCF are required to be authorized. Total 71976.14 Kg/day of biomedical waste is generated in the State out of which 42225.8 Kg/day is treated and disposed off through CBWTF or deep burial or captive treatment facility. As there is only one CBWTF operational in the State, treating 87.92 % waste, 12.07 % of biomedical waste is treated in captive treatment facility. However as reported HCFs as well as CBWTF is practicing deep burial. State should carry out gap analysis on biomedical waste management and based on gap analysis on biomedical waste management KSPCB shall expedite the process for setting up of new CBWTFs. As deep burial is still in practice, SPCB should restrict deep burial practice for disposal of biomedical waste. Monitoring of CBWTF as well as HCFs has been carried out by Kerala SPCB.

10.18. Lakshadweep

Inventory of HCFs has been completed whereas authorization of non-bedded HCFs is under process. Lakshadweep PCC shall ensure authorisation is obtained by every HCF as required under BMWM Rules, 2016. Total 527 Kg/day of biomedical waste is generated out of which 110 Kg/day of biomedical waste is treated and disposed of through various modes. However, no detail of treatment and disposal for the

remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. There is no CBWTF in the State. 80.31 % of waste is disposed off through deep burial and 20.87 % of waste is treated through captive treatment facility. UT is under process of installing incinerators for each island. Till CBWTF shall be installed, PCC shall ensure biomedical waste should be disposed through CBWTF at Kerala and State should expedite the process of setting up of incinerators in Lakshadweep for treatment & disposal of biomedical waste in line with said Rules. As deep burial is still me practice, it shall be stopped once incinerators become operational. SPCB shall also ensure implementation of barcode system once CBWTF becomes operational in the State.

10.19. Madhya Pradesh

Inventory of HCFs and authorization has been completed. Total 15846.74 Kg/day biomedical waste is generated in the State out of which 14547.37 Kg/day has been treated in captive treatment facility. Currently, 13 CBWTFs are in operation, treating 98.36% of waste, 1.64 % of waste is treated through captive treatment facility practicing deep burial. MPSPCB shall restrict the practice for deep burial in Madhya Pradesh. As reported, bar code system is partially implemented, SPCB should ensure implementation of bar code system by all HCFs and CBWTFs. At Present, 12 CBWTF has installed OCEMS, SPCB should ensure OCEMS installation by all CBWTFs. State should ensure compliance of BMWM Rules, 2016 by all HCFs and CBWTFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Madhya Pradesh	52	51

Note: 51 districts out of 52 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF.

10.20. Maharashtra

As reported, E-tender has been floated for inventorization of HCFs. SPCB shall complete the inventory in time bound manner on number of Healthcare Facility generating biomedical waste, quantum of biomedical waste, its collection, treatment & disposal. SPCB shall ensure that every HCF is authorized under BMWM Rules, 2016. Total 62418 Kg/day of biomedical waste is generated in the State out of which 62314 Kg/day of waste is treated and disposed off through CBWTFs or deep burial. There are 31 CBWTFs in the State treating 95.93 % of 62418 Kg/day biomedical waste and 3.63 % is treated in captive treatment facility (**as shown in Figure 15**), 2 CBWTFs are having deep burial whereas deep burial should not be allowed by CBWTF and MPCB should take action against such facilities. Out of 31 CBWTFs, 17 have implemented bar code system, SPCB shall ensure that barcode system should be implemented by every CBWTF and HCF in a time bound manner. State should ensure OCEMS installation by all CBWTFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Madhya Pradesh	52	51

Note: 11 out of 36 districts in Maharashtra has been covered by CBWTFs. Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF. As reported, CBWTFs treats 95.93 % of biomedical waste

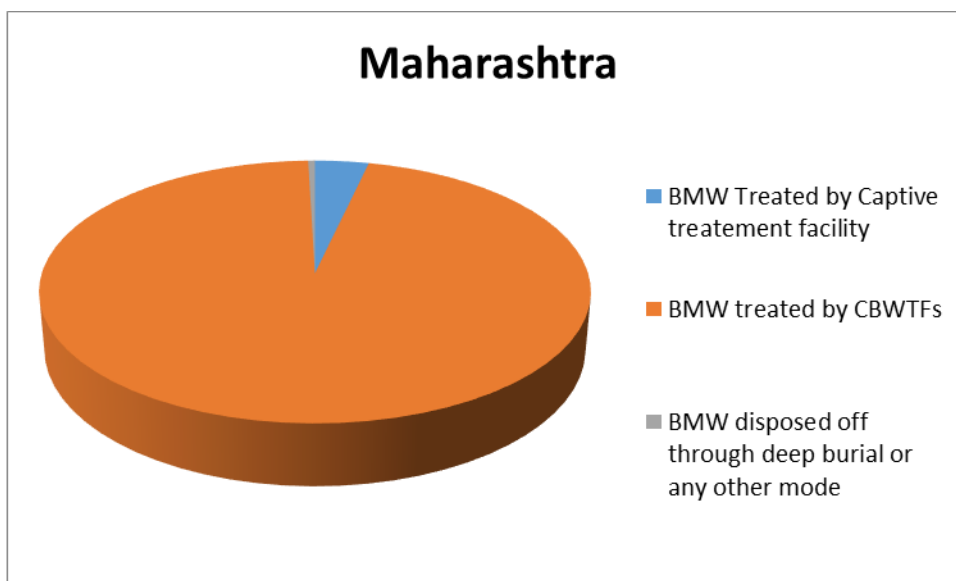


Figure 15: Representation of BMW treated and disposed off through various modes.

10.21. Manipur

Inventory has been completed and authorization is under process. SPCB should ensure authorization to every HCF (bedded & non-bedded). Total 1140.16 Kg/day of biomedical waste is generated in the State out of which 905 Kg/day is treated and disposed off through CBWTF or deep burial. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. State has one captive treatment facility treating 41.43 % of waste, one CBWTF treating 58.56 % of waste. As reported, Deep burial is in practice by CBWTFs, SPCB shall restrict deep Burial pits should be restricted for disposal of biomedical

waste. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

Inventory of district wise biomedical waste generation has not been submitted by the State. It is recommended that State should carry out complete inventory regarding district wise biomedical waste generation.

10.22. Meghalaya

Inventory has been carried out and authorization is under process. Meghalaya SPCB shall ensure authorisation to every HCFs. SPCB should conduct the gap analysis on biomedical waste management w.r.t. quantum of biomedical waste generation and treatment facilities in the Meghalaya State. Total 1432.87 Kg/day of biomedical waste is generated in the State. 65.70% of which is treated in captive treatment facilities practicing deep burial and 34.30% of waste is treated in CBWTF (**as shown in Figure 16**). As reported by SPCB, deep burial is being practicing by HCFs for disposal of biomedical waste, it is recommended that the same should be restricted up to rural or remote areas with prior authorisation under BMWM Rules, 2016. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Meghalaya	11	11

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

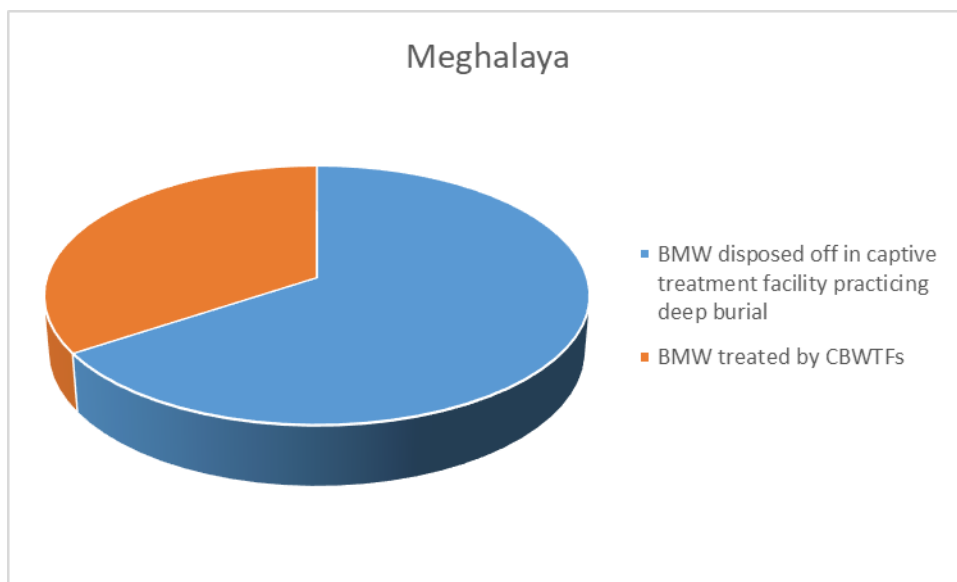


Figure 16: Representation of BMW treated and disposed off through various modes.

10.23. Mizoram

Inventory and authorization is under process. SPCB shall complete the inventory in time bound manner on number of Healthcare Facility generating biomedical waste, quantum of biomedical waste, its collection, treatment & disposal. SPCB shall ensure that every HCF is authorized under BMWM Rules, 2016. Total 830.74 Kg/day of biomedical waste is generated in the State and disposed off through captive treatment facilities which are mostly practicing deep burial. Mizoram State does not have any Common Biomedical Waste Treatment and Disposal Facility (CBWTF). It is recommended that State should expedite the process of setting up of CBWTF so that biomedical waste shall be treated and disposed off as per the provisions under BMWM Rules, 2016. SPCB shall also ensure implementation of barcode system once CBWTF becomes operational in the State.

10.24. Nagaland

Inventory has been completed and authorization in under process. SPCB shall ensure that every HCF is authorized under BMWM Rules, 2016. There is no CBWTF in the State of Nagaland. Deep burial is used by 661 no. of HCFs indicated 100 % of waste disposed off through deep burial whereas use of deep burial is restricted and allowed only in rural and remote areas. Further, Nagaland SPCB may expedite the process of setting up of CBWTF in Nagaland so that biomedical waste is treated and disposed off as per provisions under BMWM Rules, 2016. SPCB shall also ensure implementation of barcode system once CBWTF becomes operational in the State. To ensure compliance by HCFs, SPCB shall develop monitoring mechanism.

10.25. Odisha

Inventory of HCFs has been completed and authorization of HCFs in under process. Having under taken inventory, Odisha SPCB should ensure authorization to all HCFs identified in inventory. Total 14564 Kg/day of biomedical waste is generated in the State. At present, 4 CBWTFs is in operation treating 76.27 % of

biomedical waste generated and 23.28 % of biomedical waste is disposed off through deep burial, SPCB should stop practicing deep burial for disposal of biomedical waste (**as shown in Figure 17**). Only one out of 5 CBWTFs has implemented Barcode system. SPCB should ensure implementation of barcode system by all remaining CBWTFs and SPCBs should ensure that all HCFs join the system, in a time bound manner.

Inventory of district wise biomedical waste generation has not been submitted by the State. It is recommended that State should carry out complete inventory regarding district wise biomedical waste generation.

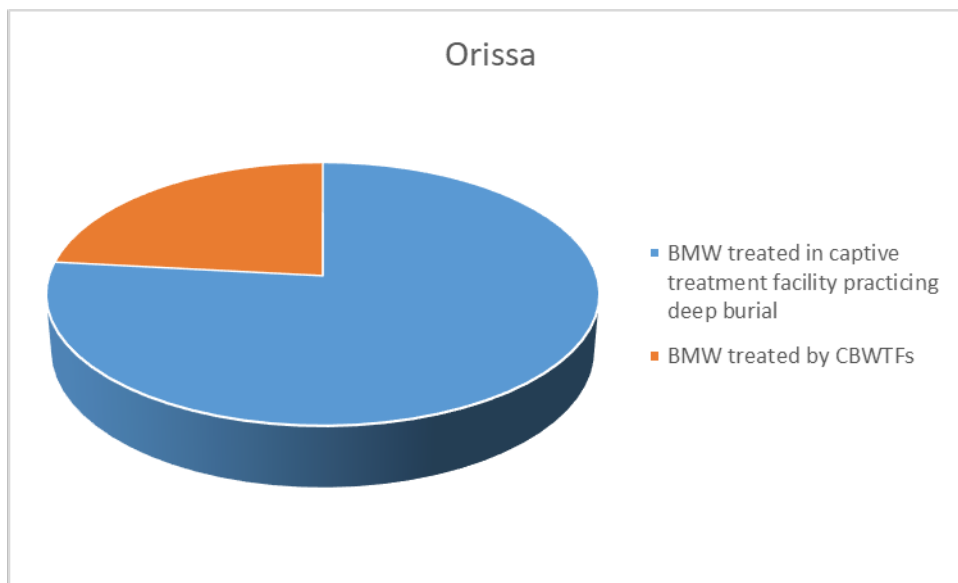


Figure 17: Representation of BMW treated and disposed off through various modes.

10.26. Puducherry

Inventory has been completed and authorization is under process. PCC should ensure authorization to all HCFs identified in inventory. Total 4319.8 Kg/day of biomedical waste is generated in the State whereas data given for treated and disposed of biomedical waste is 5834 Kg/day which is greater than generation of biomedical waste indicates that there is gap in inventory. It is recommended that State should carry out complete inventory regarding biomedical waste generation, treatment and disposal in the State. At present, 01 CBWTF is in operation. PCC may conduct gap analysis on biomedical waste management in Puducherry w.r.t. biomedical waste generation and treatment capacity. Implementation of bar code system is under process, PCC shall ensure Barcode system be implemented by every CBWTF and HCF.

10.27. Punjab

Inventory has been completed and authorization status of non-bedded HCFs is not provided. Punjab SPCB shall ensure authorization to non-bedded HCFs identified in Punjab State. Total 15980.7 Kg/day of biomedical waste is generated and treated in 04 CBWTFs in the State. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Punjab	22	22

Note: as reported in annual report, all districts have been covered by CBWTF.

10.28. Rajasthan

Inventory has been completed and authorization is under process. SPCB shall ensure authorization to non-bedded HCFs identified in State. Total 22261.756 Kg/day of biomedical waste is generated in the State out of which 16913.49 Kg/day of biomedical waste is treated and disposed off through various modes such as CBWTFs or captive treatment facility or deep burial. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. At present, 07 CBWTFs is in operation treating 86 % of waste, captive treatment plant in the State treats 14.02 % of waste. It is also reported that 3 out of 7 CBWTFs are using deep burial. RSPCB should not allow such option for treatment & disposal of biomedical waste and restrict the same immediately. Implementation of bar code system is under process, RSPCB shall ensure implementation of Barcode system by every CBWTF and HCF. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

Name of the State/UT and	Total no of District	Name of the Areas Covered by CBWTFs
Rajasthan	33	32

Note : 32 districts out of 33 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF.

10.29. Sikkim

Inventory has been completed and authorization is under process. SPCB shall ensure authorization to non-bedded HCFs identified in State. Total 425.1 Kg/day of biomedical waste is generated in the State out of which 311.82 Kg/day of biomedical waste is treated and disposed off. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. There is no CBWTF in the State. As reported, all the waste treated is treated in captive treatment facilities some of the them having treatment equipment and also practicing deep burial. SPCB shall initiate the process of setting up of CBWTFs in the State and also avoid practicing deep burial for disposal of biomedical waste. SPCB shall also ensure

implementation of barcode system once CBWTF becomes operational in the State. Sikkim SPCB should ensure monitoring of HCFs to verify the status of compliance of BMW Rules, 2016.

10.30. Tamil Nadu

Inventory and authorization has been completed. SPCB shall ensure authorization to non-bedded HCFs identified in State. Total 47,196.9 Kg/ day biomedical waste is generated and the same is treated and disposed of through 11 CBWTFs in the State. Also, three new CBWTFs are under establishment. Bar code system is implemented by CBWTFs and is under process by HCFs. SPCB shall ensure implementation of Barcode system by every HCF.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Tamil Nadu	37	31

Note : 31 districts out of 37 districts has been covered by CBWTFs, Requirement of additional CBWTF needs to be reviewed by SPCB by conducting gap analysis of biomedical waste management in the State and ensure each district should be covered by CBWTF. However, in the annual report it is submitted that 100 % of biomedical waste generated is treated through CBWTF, the data indicates that inventory is incomplete. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner.

10.31. Telangana

Inventory has been completed and authorization is under process. SPCB shall ensure authorization to non-bedded HCFs identified in State. Total biomedical waste generated in the State is reported as 16,243 Kg/day. Currently 11 nos. Of CBWTFs treating 100 % of waste generated in the State. It is reported that CBWTFs are adequate for treatment & disposal of biomedical waste. Implementation of bar code is under progress, TSPCB should ensure that barcode system should be implemented by every CBWTF and HCF in a time bound manner. All CBWTFs have installed OCEMS and connected to CPCB & TSPCB server. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

10.32. Tripura

Inventory has been completed and authorization is under process. SPCB shall ensure authorization to non-bedded HCFs identified in State. Total 1401.5 Kg/day of biomedical waste is generated. Tripura State does not have common facilities. 83.46 % of biomedical waste is treated in captive treatment facility and 16.54 % of biomedical waste is disposed off through common facility practicing deep burial and improvements are required for effective management of BMW in the State. SPCB should ensure authorization to all HCFs and also restrict the practice of deep burial by HCFs. Tripura SPCB shall ensure installation of CBWTFs and shall also ensure implementation of barcode system once CBWTF becomes operational in the State. SPCB shall develop monitoring mechanism for verification of compliance by all HCFs.

10.33. Uttarakhand

Inventory has been completed but authorization status of non-bedded HCFs is not provided. Based on inventory SPCB shall ensure authorisation to identified HCFs. Total 4111.39 Kg/day of biomedical waste is generated in the State out of which 4075.39 Kg/day of biomedical waste is treated and disposed off. However, no detail of treatment and disposal for the remaining waste has been submitted by the State. It is recommended that State should complete the inventory of biomedical generation, its treatment and disposal. And also ensure disposal of biomedical waste through environmentally sound manner. Currently, 2 CBWTFs are in operation in Uttarakhand State treating 71.45 % of waste, deep burial is used by one of the CBWTF. And 28.55 % of waste is treated and disposed off in HCFs practicing deep burial (as shown in Figure 18). SPCB may conduct gap analysis on biomedical waste management in Uttarakhand State w.r.t. biomedical waste generation and treatment capacity. Deep burial should be restricted to be practiced by CBWTF and action may be taken by SPCB against such CBWTFs. No information has been provided regarding monitoring of HCFs and CBWTFs, SPCB shall develop monitoring mechanism for verification of compliance by CBWTF and HCFs.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
Uttarakhand	13	13

Note: as reported in annual report, all districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

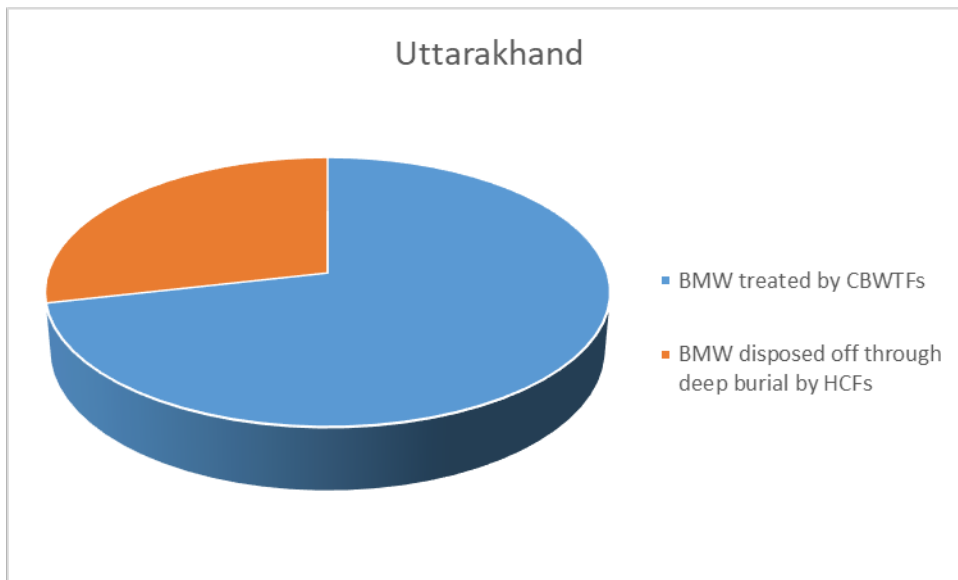


Figure 18: Representation of BMW treated and disposed off through various modes.

10.34. Uttar Pradesh

Inventory has been completed and authorization is under process. SPCB shall ensure authorization to non-bedded HCFs identified in State. Biomedical waste of 52,500 kg/day has been generated in the State. Currently 18 CBWTFs are under operation treating 100 % of biomedical waste generated in the State which are reported to be adequate for treatment and disposal of biomedical waste generated from the State whereas 11.62 % of biomedical waste is treated in captive treatment facility (as shown in Figure 19). Implementation of bar code system is under process. As required under BMWM Rules, 2016, UPPCB shall ensure implementation of Barcode system across the UP State.

Name of the State/UT and	Total no of District	Number of Districts Covered by CBWTFs
Uttar Pradesh	75	75

Note: as reported in annual report, all 75 districts have been covered by CBWTF however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

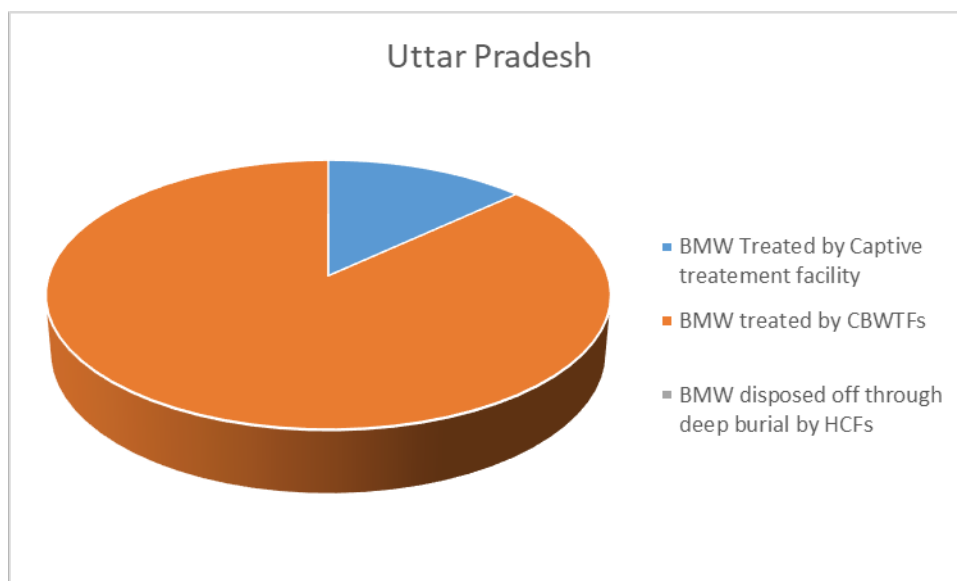


Figure 19: Representation of BMW treated and disposed off through various modes.

10.35. West Bengal

Inventory of HCFs and authorization of non-bedded HCFs is under progress. WBPCB shall complete the inventory in time bound manner, on number of biomedical waste generating HCF, quantum of biomedical waste generation, its collection, treatment and disposal. Based on inventory SPCB shall ensure authorisation to identified non-bedded HCFs. Total 34123.62 Kg/day of biomedical waste is generated in the State. Currently, there are 06 CBWTFs in State treating 99.63 % of biomedical waste generated in the State and 0.37 % of waste is treated through captive treatment facility. As reported, implementation of

bar code system is under process. As required under BMW Rules, 2016, WPCB shall ensure implementation of Barcode system by all HCFs and CBWTFs in the State.

Name of the State/UT and	Total no of District	Number of districts covered by CBWTFs
West Bengal	23	23

Note: as reported in annual report, all districts have been covered by CBWTF. however, the generation and treatment data given in the report indicates that CBWTF does not cover all the area of district which includes PHCs, CHCs, Clinics etc.

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Annexure-I

Annual Report Information on Bio-medical Waste Management Scenario in the Country for the Year 2018 (As submitted by SPCBs/PCCs and DGAFMS)																						
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/Directio ns 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				No. of HCFs having Captive Treatment Facilities	No of Captive Incinerators Operated by HCFs	CBWTFs Operational	CBWTFs under Construction	HCFs	CBWTFs					
I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.	XXII	XXIII
1	Andaman Nicobar	48	71	119	1269	59	51	60	Nil	199.3	199.3	1	1	Nil	Nil	33	0	199.3	Nil	Nil	Nil	Nil
2	Andhra Pradesh	4892	2571	7463	117184	3040	3002	1940	7463	15144	15144	Nil	Nil	11	2	0	0	Nil	10003	2042	1556	11
3	Arunachal Pradesh	208	129	337	3185	261	90	76	Nil	888.67	888.67	337	3	Nil	Nil	164	Nil	888.67	Nil	Nil	Nil	Nil
4	Assam	605	820	1408	25667	352	352	1046	300	7820.67	5869.26	118	10	1	Nil	Nil	Nil	2155.26	3714	1046	780	1
5	Bihar	4821	20175	24996	70653	1336	4135	20484	3364	34812.9	10038.156	3	1	4	Nil	10		288.29	9749.89	1320	1320	4
6	Chandigarh	46	763	809	4347	193	194	471	752	3188	3188	3	2	1	Nil	Nil	Nil	2571	617	Nil	Nil	1
7	Chhattisgarh	254	465	719	6132	455	341	Nil	1428	16096	4596.99	319	2	4	Nil	Nil	9	252.32	4344.67	72	1	1
8	DD & DNH	36	104	140	1061	105	81	INP	181	331	331	Nil	Nil	1	Nil	Nil	Nil	Nil	331	Nil	92	1
9	Delhi	1100	5329	6429	54185	1002	818	2110	6429	26757.5	26757.5	3	Nil	2	Nil	Nil	Nil	436.5	26321	413	413	2
10	Goa	177	541	INP	INP	141	76	582	Nil	1837.1	1837.1	207	Nil	Nil	Nil	128	0	1837.1	Nil	974	974	Nil
11	Gujarat	10882	18840	28960	193599	9460	8973	3365	28496	33706	33706	Nil	Nil	20	2	Nil	Nil	0	33706	2562	2562	20

12	Haryana	2723	1356	4079	53249	3946	3874	133	5376	14217.88	14217.88	Nil	Nil	11	Nil	Nil	1	Nil	14217.9	137	153	11
13	Himachal Pradesh	503	3299	3802	14150	1832	1569	1970	1500	2570.12	2570.12	2302	1	3	1	2301	Nil	206.75	2363.37	228	228	3
14	Jharkhand	1066	492	1558	26550	509	143	106	INP	12788.2	6720.62	INP	17	2	2	576	Nil	4333.62	2387	270	187	INP
15	J & K	992	5463	6445	15135	836	545	5609	718	4482.9	4279.96	2	1	3	NIL	Nil	Nil	842.37	3437.59	5618	311	3
16	Karnataka	7132	27995	35869	187772	15631	15369	9055	22980	65621.2	65621.2	2985	3	26	4	12	13	4406	61215	2837	684	24
17	Kerala	2287	10308	12595	110114	6861	6673	498	13386	71976.14	42225.8	23	24	1	Nil	11	1	5097.8	37128	90	134	1
18	Lakshadweep	10	15	25	250	INP	INP	25	Nil	527	110	25	3	Nil	Nil	5	Nil	110	Nil	Nil	Nil	Nil
19	Madhya Pradesh	3427	3009	6436	95421	3723	3710	2713	4623	15846.74	14547.37	2	2	13	1	144	Nil	238.46	14308.91	1440	1441	11
20	Maharashtra	19647	40763	60410	276985	15939	17037	4704	62960	62418	62134	218	4	31	1		5	2257	59877	48	52	25
21	Manipur	146	694	760	3639	102	102	INP	97	1140.16	905	3	3	1	Nil	Nil	Nil	375	530	1	1	Nil
22	Meghalaya	177	632	809	6716	438	385	371	22	1432.87	1432.87	89	Nil	1	Nil	85	Nil	941.4	491.47	Nil	40	Nil
23	Mizoram	102	14	116	3295	23	23	1	Nil	830.74	830.74	106	4	Nil	Nil	106	Nil	830.74	Nil	1	1	Nil
24	Nagaland	64	104	168	2423	168	168	Nil	Nil	631.75	631.75	168	4	Nil	Nil	168	Nil	631.75	Nil	Nil	Nil	Nil
25	Orissa	1443	1816	3259	44865	860	697	Nil	609	14564	14564	2453	5	5	1	Nil	13	11173	3391	88	198	1
26	Puducherry	86	108	242	12112	208	178	34	437	4319.8	5834	1	1	1	Nil	Nil	Nil	34	5800	36	38	1
27	Punjab	3577	4657	8234	71162	4660	4425	3765	8234	15980.7	15980.7	Nil	Nil	4	2	Nil	Nil	Nil	15980.7	3739	3739	2
28	Rajasthan	4939	1537	6476	119524	1396	1155	1702	3109	22261.756	16913.49	733	INP	8	7	Nil	3	2372.2	14541.49	1233	827	5
29	Sikkim	35	249	284	1766	232	232	52	Nil	425.1	311.82	132	8	Nil	Nil	88	Nil	311.82	Nil	9	9	Nil
30	Tamil Nadu	3949	358	4307	144731	4307	4307	715	4607	47196.9	47196.9	Nil	Nil	8	3	1	2	Nil	47196.9	103	3	8
31	Telangana	3166	1999	5165	105331	1708	1670	475	5181	16243	16243	Nil	Nil	11	Nil	Nil	0	Nil	16243	520	520	11
32	Tripura	158	1585	1743	4701	536	536	Nil	207	1401.5	1401.5	158	4	1	1	Nil	2	1169.76	231.74	Nil	Nil	Nil
33	Uttarakhand	1015	1297	2312	19765	582	328	1730	1341	4111.39	4075.39	1426	3	2	Nil	Nil	2	1137.7	2937.69	1732	102	1
34	Uttar Pradesh	14454	11148	25602	253927	21881	20927	4675	9590	52500	52500	10	10	18	Nil	Nil	Nil	6105	46395	171	27	18
35	West Bengal	2990	4757	7747	116991	7747	7619	Nil	7747	34123.62	34123.62	1	Nil	6	1	Nil	Nil	125	33998.62	571	563	6
36	DGAFMS	225	368	593	38506	593	571	Nil	Nil	6350.64	6350.64	498	4	Nil	Nil	Nil	Nil	5736.13	614.51	Nil	Nil	Nil
	Total	97382	173831	270416	2206362	111122	110356	68467	201137	614743.246	534278.346	12326	120	200	28	3832	51	57063.94	472073.45	27301	16956	172