

GAP ANALYSIS REPORT
ON
BIO-MEDICAL WASTE MANAGEMENT IN
MADHYAPRADESH

M.P. POLLUTION CONTROL BOARD
E-5 ARERA COLONY PARYAVARAN PARISAR -BHOPAL

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1. Preamble:

Ministry of Environment, Forest and Climate Change Government of India in exercise of the powers conferred by section 6, 8 and 25 of the Environment (Protection) Act 1986 (29 of 1986), and in supersession of the Bio Medical Waste (Management and Handling) Rules, 1998, notified new rules of Bio Medical Waste Management on dated 28 march 2016 named as “the Bio Medical Waste Management Roles, 2016.”

Some of the important provisions of the rules pertaining to waste collection, Transportation and treatment are as follows:

- (a) These rules shall apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, Ayush hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps blood donation camps, first aid rooms of schools, forensic laboratories and research labs.
- (b) The duties of an occupier, common treatment facility, central and state authorities are very well defined in these rules. As per these rules, the Bio-medical waste shall be treated and disposed of in accordance with Schedule I and in compliance with the standards provided in Schedule-II by the health care facilities and common bio medical waste treatment facility.
- (c) The health care facility/ waste generator (the Occupier) shall hand over segregated waste as per the Schedule-I to common bio-medical waste treatment facility for treatment, processing and final disposal, Provided that the lab and highly infectious bio medical waste generated shall be pre-treated by equipment like autoclave or microwave. ***As per these rules "No occupier shall establish on-site treatment and disposal facility, if a service of 'common biomedical waste treatment facility is available at a distance of seventy-five kilometer.***
- (d) In cases where service of the common bio-medical waste treatment facility is not available, the Occupiers shall set up requisite Biomedical Waste Treatment Equipment like incinerator, autoclave or microwave, shredder prior to commencement of its operation, as per the authorization given by the prescribed authority.

- (e) No untreated bio-medical waste shall be mixed with other wastes. The bio-medical waste shall be segregated into containers or bags at the point of generation in accordance with Schedule-I prior to its storage, transportation, treatment and disposal.
- (f) The operator of common bio-medical waste treatment facility shall transport the bio-medical waste from the premises of an occupier to any off-site bio-medical waste treatment facility only *in* the dedicated vehicles having label as provided in part "A" of the *Schedule-IV* along with necessary information as specified in part 'B' of the Schedule IV. The Vehicles used for transportation of bio-medical waste shall comply with the conditions if any stipulated by the State Pollution Control Board in addition to the requirement contained in the Motor Vehicles Act, 1988 (59 of 1908), if any of the rules made there under for transportation of such infectious waste.
- (g) The untreated human anatomical waste, animal anatomical waste, soiled waste and. biotechnology waste shall be stored beyond a period of forty-eight hours. Provided that in case for any reason it becomes necessary to store such waste beyond such a period the occupier shall take appropriate measures to ensure that the waste does not adversely affect human health and the environment and inform the prescribed authority along with the reasons for doing so.
- (h) Disposal by deep burial is permitted only in rural or remote areas where there is no access to common bio medical waste treatment facility. This will be carried out with prior approval from the prescribed authority and as per the Standards specified in Schedule III The deep burial facility shall be located as per the provisions and guidelines issued by Central Pollution Control Board from time to time.
- (i) Bio-medical waste generated in households during healthcare activities shall be segregated as per these rules and handed over in separate bags or containers to municipal waste collectors Urban Local Bodies shall have tie up with the common bio- medical waste treatment and disposal facility to pickup this waste from the Material Recovery Facility (MRF) or from the house hold directly, for final disposal in the manner as prescribed in this Schedule
- (j) Municipalities or Corporations. Urban Local bodies and Gram Panchayats have assigned duties in these rules to provide or allocate suitable land for

development of common bio-medical waste treatment facilities in their respective jurisdictions at per the guidelines of Central Pollution Control Board.

(k) State Pollution Control Boards are responsible for Inventorisation of Occupiers and data on Bio Medical Waste generation, treatment & disposal, Compilation of data and submission of the same in Annual report to Central Pollution Control Board. Board is also responsible to grant and renewal, suspension or refusal of authorization Monitoring of compliance of various provisions and conditions of authorization and action against health care facilities or common biomedical waste treatment facilities for violation of these rules State Board is also responsible for organizing training programmers to staff of health care facilities, common bin medical waste treatment facilities and State Pollution Control Board Staff on segregation collection, storage, transportation, treatment and disposal of bio-medical wastes State Board has also to undertake or support research or operational research regarding bio medical waste management SPC has also to undertake and support third party audits of the common bio medical waste treatment facilities in their States.

2. Term of Reference of Review Committee:

M.P.P.C.B. vide Office Order no. 145/BMW/MPPCB/2022 dated 03/11/2022 constituted a review committee comprising following officers:

- 1. Shri. R. S. Kori, Director (Env.),**
- 2. Shri H. K. Sharma, Director (Env.),**
- 3. Shri M.L. Patel, Superintending Engineer**
- 4. Shri Neetesh Chaurasiya, Sub-Engineer.**

The “Gap Analysis Report” has to be prepared in light of point no. 2 of revised guidelines issued by CPCB on dated 21/12/2016 for CBWTFs. reviewing coverage area of existing CBWTFs, to ensure proper collection, treatment and safe disposal of Bio-medical waste looking in to the growth of Health Care establishments / facilities in the State during next 10 years . The time limit for submission of report has not been mentioned in the above said order.

The committee reviewed the current status of Bio-medical Waste Management on the basis of record available with BMW in-charge, keeping following points in consideration as per guidelines issued by CPCB:

- 1 No. of health care facilities (Government & Private), Veterinary Hospitals/ Dispensaries etc. available in the record of MPPCB.
- 2 No. of Common biomedical waste treatment facilities operational, proposed in the Madhya Pradesh.
- 3 No. of Bedded and non bedded health care facilities, Waste generation, its mode of collection, treatment & disposal data available in the record of MPPCB.
- 4 Status of authorization obtained by various HCFs / CBWTFs.
- 5 Status of connectivity of the existing incinerators with ERC of MPPCB & sharing of real time emission data.
- 6 Status of waste water treatment system of CBWTFs.
- 7 Status of safe transportation of waste, its tracking & gap.
- 8 Current status of treatment capacity of existing and proposed CBWTFs, its treatment capacity with respect to total waste generation and availability of treatment capacity after 10 years ie. Possibility of strengthening of Waste management & treatment network in State by setting up new facilities in future or strengthening of existing CBWTFs.
- 9 Status of CBWTF location and its coverage areas of operation, collection, treatment and disposal of bio-medical waste.
- 10 Committee also discussed/ obtained views on various issues from various stack holders like CBWTF Operators, Officers of Department of Health , Department of Veterinary , CPCB.

3.0 Need of Review of Coverage Areas of CBWTF:

Ministry of Environment Forests & Climate Change, Govt. Of India has notified Bio-Medical Waste management Rules, 2016 which are effective from 28th March 2016. According to these rules, the bio-medical waste generated from various sources must be collected and disposed of in scientific and safe manner.

As Per Rule 7 (3) Of Bio-Medical Waste Management Rules, 2016, no occupier shall establish on-site treatment and disposal facility, if a service of “Common Biomedical Waste Treatment Facility” is available at a distance of seventy-five kilometers. State of Madhya Pradesh has 308,000 square kilo-meters geographical area covered under 52 districts, having population about 72627000 (As per senses 2011) and as per projected population for 2022 it is 8,55,48,000 and expected to be increased to 9,48,06,000 (in 2032).

The Bio-Medical Waste is being generated from various sources like Govt. and Private hospital, Medical Colleges, District Hospital, Civil Hospital, Community Health Centre, Primary health centre Dispensaries, Pathology labs, Veterinary

Colleges, Research Labs etc. As per inventorization carried out by various Regional Offices of M.P. Pollution Control Board and information received from Madhya Pradesh Health Directorate, there are about **10369 such institute identified** in Madhya Pradesh which are **generating about 15632 Kg/day bio-medical waste**. Apart from this the household bio-medical waste is also being generated and disposed of along with Municipal Solid Waste. Such waste has to be collected and handed over to Municipal Authority for separate collection and disposal in designated CBWTF.

There are 18 authorized CBWTFs being operated in various parts of Madhya Pradesh these common facilities are having incinerators, autoclaves, shredders for treatment of bio-medical waste. These CBWTFs are having dedicated vehicles fitted with GPS tracking system for collection of Bio-medical waste from surrounding areas. There is 01 CBWTF (M/s. Chitrakiran Waste Management Pvt. Ltd. Rewa) who has been issued authorization with coverage area of Rewa, Sidhi & Singrauli. The operation of this facility has been stayed by Hon'ble High Court, Jabalpur vide order dated 03-07-2023 in WP no. 14331/2023. The matter is sub-judicious before Hon'ble HC. Thus only 18 CBWTFs are running presently. As per record of MPPCB 04 more CBWTFs are proposed at Morena, Chhindwara, Tikamgarh & Shivpuri. Board has issued Consent to Establish to these facilities.

The details of common facilities, its present coverage areas, waste collection and treatment along with number of vehicles associated with facility are given in enclosed tables.

After thorough review of each CBWTFs, its treatment capacity, present coverage area, number of health care facilities, generation of waste, collection of waste, number of member HCFs of common facilities, following points have been emerged which have to be addressed on priority to bridge the gap of waste generation, its collection & treatment :-

- (a) The area of coverage required to be reviewed in light of waste collection and its transportation and treatment within stipulated time i.e. within 48 hrs, because few facilities are collecting waste from more than 150 Kms. and covering many districts. Therefore sometimes infectious waste left unattended due to lack in coordination and hurry in collection of waste which may cause adverse impact on health of general public.
- (b) All the HCFs are to be covered under CBWTFs so that possibility of throwing of untreated BMW and its deep burial could be eliminated.

- (c) Some common facilities are not collecting waste from rural and remote areas because of their route of collection vehicles and lack of coordination with lower staff of HCFs ,therefore such waste found to be accumulated at source of generation and may gone to deep burial
- (d) The vehicles associated with few CBWTF for collection of waste are travelling even more **than 500 KM/day and taking** lot of time in collection and transportation. This practice lead to wear and tear of vehicles and long time travelling of infectious waste on the route between source and treatment facility. It also increases the possibility of exposure of infectious waste to the general public during transportation.

4.0 Common Bio-Medical Waste Treatment and Disposal Facility (CBWTF):

According to the Bio-Medical Waste Management Rules, 2016, "Bio-Medical Waste Treatment and disposal facility" means any facility where treatment, disposal of bio-medical waste or process incidental to such treatment and disposal is carried out, and includes common bio-medical waste treatment facility and "operator of a common bio-medical waste treatment facility" means a person who owns or controls Common Bio-Medical waste treatment and Disposal Facility (CBWTF) for the collection, reception, storage, transport, treatment disposal or any other form of handling of bio-medical waste.

CPCB has published guidelines for Common Bio-Medical Waste treatment and Disposal Facility (CBWTF) and some of the important provision are as follows:

- (4.1) The Bio-Medical Waste Management Rules, 2016 (hereafter referred as BMWM 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 kilometer, as installation of individual treatment facility by health care facility (HCF) requires comparatively high capital investment. In addition, it requires separate dedicated and trained skilled manpower and infrastructure development for proper operation and maintenance of treatment systems. The concept of CBWTF is not only addresses such problems but also prevents proliferation of treatment technologies in as particular town or city. In turn it equipment at CBWTF to full capacity, the cost of treatment of per kilogram bio-medical waste gets significantly reduced. Its considerable advantages have made CBWTF popular and proven concept in most part of world.

- (4.2) The CBWTFs are also required to set-up, based on the need for ensuring environmentally sound management of bio-medical waste keeping in view the techno-economic feasibility and viable operation of the facility with minimal impact on human health and environment.
- (4.3) The CBWTF as an better option for treatment of bio-medical waste also been legally introduced considering the likely impacts that my cause to the patients undergoing treatment because of operation of the captive treatment equipment within the health care facilities (HCFs), now the bio-medical waste Management Rules, 2016 restricts the Occupier (i.e., HCF) for individual treatment of waste and to ensure treatment and disposal of generated bio-medical waste through a CBWTF, located within a distance of 75 KM. Further, these rules eased the bottleneck in upbrining the CBWTF by making department in the business allocation of land assignment in the State or UT administration responsible for providing a suitable site (s) within its jurisdiction.
- (4.4) The concept of CBWTF is also being widely accepted in India among the healthcare units, medical associations and entrepreneurs. In order to set up a CBWTF to its maximum perfection care shall be taken in choosing the right technology, development of CBWTF area, proper designing of transportation system to achieve optimum results etc.

5.0 Criteria for development of a new common bio-medical waste treatment and disposal facility for a locality or region:

As per guidelines of CPCB, following criteria or steps may be followed prior to allowing any new CBWTF:

- (5.1) State Pollution Control Board (SPCB) is required to prepare an inventory of review with regard to the bio-medical waste generation at least once in five years in the coverage areas of the existing bio-medical waste treatment and disposal facility. The prescribed authority is also required to extrapolate the coverage-area wise bio-medical waste generation for the next ten years.
- (5.2) SPCB is required to conduct gap analysis with respect to coverage area of the bio-medical waste generating and also projected over a period of next ten years, adequacy of existing treatment capacity of the CBWTF in each coverage area of radius 75 KM and based on the gap analysis, action plan for development of new CBWTFs is required to be prepared and submitted to MoEF & CC & CPCB within six month time. ***In case, any coverage area***

requires additional treatment capacity, in such a case, action may be initiated by the prescribed authority for allowing a new CBWTF in that locality without interfering the coverage area of the existing CBWTF and beds covered by the existing CBWTF.

- (5.3) SPCB shall identify the coverage area which require additional treatment facility and bring it to the notice of the concerned department in the business allocation of land assignment in the respective State Government. ***The department in the business allocation of land assignment shall be responsible for providing suitable site in the identified coverage area for setting up of a CBWTF in consultation with the prescribed authority i.e. SPCB, other stakeholders and in accordance with these guidelines issued by CPCB from time to time.***
- (5.4) Alternately, a CBWTF may also be allowed to be established on a land procured by an entrepreneur in accordance with the location criteria suggested under these guidelines.
- (5.5) The SPCB or concerned department in the business allocation of land assignment in the respective State Government may seek expression of interest from the proponents for development of new CBWTF (s) in the identified coverage area. Upon allocation of site to the proponent, the proponent is required to take necessary approvals as required under the Environment (Protection) Act, 1986 for development of the new CBWTF in accordance with these guidelines.
- (5.6) In the absence of expression of interest by any proponent, then SPCB shall insist health care facilities to form association and to develop its own CBWTF in line with these guidelines or to have captive treatment facilities for ensuring treatment and disposal of generated bio-medical waste as stipulated under the BMWM Rules, 2016.
- (5.7) In case of any regulatory action including closure of any existing CBWTF is inevitable, the respective SPCB may take action under the BMWM Rules including for making alternate arrangement to ensure safe disposal of the Bio-Medical Waste generated from the member health care facilities of such default CBWTF through CBWTF located nearby.

6.0 Legal Provisions for commissioning or operation of a CBWTF:

Operation of a CBWTF leads to air emissions as well as waste water generation as in case of an industrial operation. Most common sources of waste water generation in CBWTFs are vehicle washing floor washing and scrubbed liquid effluent from air pollution control systems attached with the incinerator. Incineration as well as DG Set is the general source of air emissions.

- 6.1 Any other approvals (such as land Use /Change in Land Use as applicable) required from the concerned authorities under various laws have to be complied with by the proponent of the CBWTF prior to development of a CBWTF.
- 6.2 Consents under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 as well as Authorization under the BMWM Rules, 2016.

The project proponent of the CBWTF is required to obtain, "Consent to Establishment" under Rule 25 of the Water (Prevention and Control of Pollution) Act, 1974 and under Rule 21 of the Air (Prevention and Control of Pollution) Act, 1981 from the respective prescribed authority i.e SPCB/PCC Upon installation of the requisite equipment, the CBWTF Operator is also required to obtain authorization under BMWM Rules, 2016 co-terminus with consent to operate under Water (Prevention and Control of Pollution) Act, 1974 & Air (Prevention and Control of Pollution) Act, 1981 from the respective SPCB/PCC prior to commencement of the CBWTF.

7.0 Requirement of Environmental Clearance:

Ministry of Environment, Forest & Climate Change (MoFE & CC), notified amendment to the EIA Notification 2006 and published vide MoEF & CC Notification of S.O. 1142 (E) dated April 17, 2015 According to this notification, the bio-medical waste treatment facility is categorized under the Item 7 (da) in the schedule, requiring environment clearance from the State Environment Impact Assessment Authority (SEIAA) Therefore the CBWTF operator is also required to obtain Environment Clearance (EC) from the respective SEIAA or Ministry of Environment Forest & Climate Change (MoEF & CC) as the case may be, before any construction work or preparation of land by the projects management which include the following:

- (7.1) All new projects or activities pertaining to the bio-medical waste treatment facility; and
- (7.2) Expansion and modernization with additional treatment capacity or existing bio-medical waste treatment facility (excluding augmentation of incineration facility for compliance to the residence time as well as Dioxins and Furans without enhancing the existing treatment capacity).
- (7.3) Any expansion or modification in the treatment capacity or relocation of the existing CBWTF (requires compliance to the relevant provisions notified under the Environment (Protection) Act, 1986 by the MoFE &CC.

8.0 Location criteria of Common Bio-Medical Waste Treatment Facility:

As far as possible, the CBWTF shall be located near to its area of operation in order to minimize the transportation distance in waste collection, thus enhancing its operational flexibility as well as for ensuring compliance to the time limit for treatment and disposal of bio-medical waste as stipulated under the BMWM Rules (i.e. within 48 hours) The location shall be decided in consultation with the State Pollution Control Board (SPCB)

The location criteria for development of a CBWTF are as follows:

- (a) A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone.
- (b) A CBWTF can be located at a place reasonably far away from notified residential and sensitive areas and should have a buffer distance of preferably 500 m so that it shall have minimal impact on these areas. In case of non-availability of such a land, the buffer zone distance from the notified residential area may be reduced to less than 500 m by SPCB/PCC without referring the matter to CPCB by prescribing additional control measures such as (i) adoption of best available technologies (BAT) by the proponent of CBWTF; (ii) prescribing stringent standards for operation of the CBWTF by the SPCB; (iii) adoption of zero liquid discharge by the CBWTF and (iv) in case of any complaints from the public then CBWTF should prove that the facility is not causing any adverse impact on environment and habitation in the vicinity. If SPCB is not in a position to resolve the issue relating to buffer zone while selecting the site for CBWTFs, in such a case, SPCBs may refer the matter to CPCB.

- (c) The CBWTF can also be developed as an integral part of the Hazardous Waste Treatment Storage and Disposal Facility (TSDF) subject to obtaining of necessary approvals from the authorities concerned including environmental clearance as per Environment Impact Assessment 2006 and further amendments notified under the Environment (Protection) Act, 1986 provided that there is no CBWTF exist within 150 KM distance from the existing TSDF.

9.0 Land requirement for CBWTFs:

Sufficient land shall be allocated to the CBWTF to provide all requisite systems which include dedicated for storage of waste (both treated and untreated), waste treatment equipment vehicle washing facility, vehicle parking space, ETP, incineration ash storage area , administrative office room, space for DG set etc:

- (a) Preferably a CBWTF shall be set up on a plot size of not less than one acre in all the areas However, a CBWTF can be developed in adjacent plots but cannot be set up in two or more different plots located in different areas. Separate plots can be permitted only for vehicle parking if located in the close vicinity of the proposed CBWTFs or the existing CBWTFs.
- (b) In case of upcoming or new CBWTFs (both in municipal limits with population more than 25 lakh or in rural areas), the land area requirement may be relaxed (but in any case not less than 0.5 acre) by the SPCB with additional control measures such as zero liquid discharge, increase in stack height stringent emission norms, odor control measures or any other measures felt necessary by the prescribed authority on case-to case basis, only in consultation with CPCB.

10. Collection and transportation of bio-medical waste

The collection and transportation of bio-medical waste shall be carried out in a manner so as to prevent any possible hazard to human health and environment. Collection and transportation are the two operations where the chances of segregated bio-medical waste coming in contact with the public, rag pickers, animals/birds, etc. are high Therefore all care shall be taken to ensure that the segregated bio-medical waste handed over by the healthcare units reach CBWTF without any damage, spillage or unauthorized access by public / animals etc. A responsible person from the CBWTF operator shall always accompany the vehicle to supervise the collection and transportation of bio-medical waste. Also for the private transportation of the bio-medical Waste, the CBWTF operator should be made responsible for collection and transportation of bio-medical waste.

(a) Collection of bio-medical waste:

Generator of the bio-medical waste is responsible for providing segregated waste in accordance with the provisions of the bio-medical waste management rules, 2016 to the CBWTF operator. Dedicated temporary storage at healthcare unit shall be designated. The colored bags handed over by the healthcare units shall be collected in similar colored containers with proper cover. Each bag shall be labeled as per Schedule IV of the bio-medical waste management rules as well as with bar coding system (to be complied by the occupier or operator of a CBWTF as per BMWM rules) so that at any time the healthcare units can be traced back that are not segregating the bio-medical waste as per BMWM rules. The coloured containers should be strong enough to withstand any possible damage that may occur during loading transportation or unloading of such containers. These containers shall also be labeled as per Schedule IV of the Rules. Sharps shall be collected in puncture resistant container. The person responsible for collection of bio-medical wastes shall also carry a register with him to maintain the records such as name of the healthcare unit, the type and quantity of waste received, time at which waste collected from the member HCF, signature of the authorized person from the healthcare unit etc. During transportation, the containers should be covered in order to prevent exposure of public to odour and contamination.

(b) Transportation of the collected bio-medical waste to the CBWTF:

All the vehicle used by the CBWTF operator shall not be sub-letted or contract vehicle should not be used by the CBWTF operator. All the vehicles owned by the CBWTF operator and intended only for collection of bio-medical waste from the member healthcare facilities should be registered under the Motor Vehicle Act with the respective RTO/Transport Department and such vehicle numbers should also be registered with the respective SPCB for the purpose of collection of bio-medical waste from the member health care facilities.

The bio-medical waste collected in designated coloured containers shall be transported to the CBWTF in a fully covered vehicle. Such vehicle shall be dedicated for transportation of bio-medical waste only. Depending upon the volume of the wastes to be transported, the vehicle may be a two or three-wheeler, light motor vehicle or heavy duty vehicle. In either cases, the vehicle must possess the following:

- (i) Transportation vehicle shall be fitted with GPS to track the movement of the vehicle.
- (ii) Separate cabins shall be provided for driver/staff as well as for placing the designated colour coded bio-medical waste containers.
- (iii) Two wheelers registered under the Motor Vehicle Act shall be permitted for collection of bio-medical waste only from the clinics or dispensaries located in places where the lanes are narrow and not easily accessible to four wheeler vehicles. Such two wheeler vehicle (s) should have a provision of a suitable fixed waste collection box marked with bio-hazard symbol contact details proper lid emergency spill collection procedure first aid box and manifest record in accordance with the BMW rules.
- (iv) The base of the waste cabin shall be leak proof to avoid pilferage of liquid during transportation.
- (v) The waste cabin may be designed for storing waste containers in tiers and also should be provided with a lighting provision.
- (vi) The waste cabin shall be so designed that it is easy to wash and disinfect.
- (vii) The inner surface of the waste cabin shall be made of smooth surface to minimize water retention.
- (viii) The waste cabin shall have provisions for sufficient openings in the rear and/or sides so that waste containers can be easily loaded and unloaded.
- (ix) The vehicle shall be labeled with the bio-hazard symbol (as per Schedule IV of the BMW rules) and should display the name address and contact telephone and mobile number of the CBWTF.
- (x) The vehicle driver should carry always valid registration of the vehicle obtained from the concerned transport authority and also carry valid pollution under control certificate issued by the authorized certificate issuing agency.

Depending upon the area to be covered under the CBWTF the route of transportation shall be worked out. The transportation routes of the vehicle shall be designed for optimum travel distance and to cover all member healthcare units of the CBWTF. The CBWTF operator should ensure online and real time tracking & monitoring provisions (GPS provision) should be given access with passwords to the SPCB and CPCB to cross check the movement of the transportation vehicles on any time by the SPCB/CPCB. As far as possible the transportation shall be carried out during non-peak traffic hours.

If the area to be covered is very large, a satellite station may be established to store the bio-medical waste collected from the adjoining areas. The wastes so stored at satellite may then be transported to the CBWTF in a large vehicle.

It shall be ensured that the total time taken from generation of bio-medical waste to its treatment which also includes collection and transportation time shall not exceed 48 hours.

11. Coverage Area of CBWTF:

As per guideline of CPCB the suggested coverage area for development of a CBWTF is as follows:

- (a) A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 KM. However in a coverage area where 10,000 beds are not available within a radial distance of 75 KM. existing CBWTF in the locality (located within the respective State/UT) may be allowed to cater the healthcare units situated up to 150 KM. radius w.r.to its location provided the bio-medical waste generated is collected treated and disposed of within 48 hours as stipulated under the BMWWM rules.
- (b) In case number of beds is exceeding > 10,000 in a locality (i.e. coverage area of the CBWTF under reference) and the existing treatment capacity is not adequate in such a case a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986 to cater services only to such additional bed strength of the HCFs located.
- (c) In case of hilly areas considering the geography only one CBWTF with adequate treatment capacity may be developed covering at least two district to cater treatment services to the HCFs located in the respective Districts. The selection and allocation of site etc. Should be done as per the criteria suggested under these guidelines and the treatment charges to be prescribed by the respective SPCB/PCC in consultation with State Advisory Committee to be constituted under the BMWWM rules by the respective State Government or UT Administration.

12. Meetings held by the committee:

The Committee members convened 03 meetings along with multiple rounds of telephonic conversations with various authorities, field offices, subject experts.

During meeting dated 16.06.2023 with all CBWTF operators, Board officials and Director, Animal Husbandry and Dairy, problems being faced were highlighted by the facility operators, which are illustrated as follows :-

1. CBWTF operators are finding it difficult to ensure effective biomedical waste management due to unhealthy competition which is leading to adverse impact on collection and disposal efficiency dispute in treatment rates, false and unrestrained complaints against each other .
2. Member HCFs, after availing services of one CBWTF, contract with another CBWTF keeping payment pending of first CBWTF thus due to this tendency CBWTFs are facing financial losses.
3. Regional offices of Pollution Control Board issues permission for 15 years to Private clinic and pathology operators . This relaxation is being misused by pvt clinics and Path. Labs as After signing contract with CBWTF they submit the document to MPPCB and obtained registration and then after few months stop giving waste and payment to CBWTF.
4. Government medical institutions are keeping payment of waste treatment pending for long time due to due to non-allocation of budget on time therefore the CBWTFs which are serving Govt. hospitals are facing financial problems.
5. The entire work from transportation to incineration of bio-medical waste is fuel-driven (Fluctuation in the price of diesel) which also involved heavy overhead expenditures, wear and tear of vehicles and operation and maintenance of machinery & control equipments. Supporting staff & workers are also not easily available since the corona pandemic time. Facility operators are not able to cope-up the financial liabilities due to existing rates of treatment & demanded for time to time revision of treatment rates.
6. In small districts, the distance is more and the number of medical institutions and beds are less therefore CBWTFs are facing financial problems and demanding revision of rates.
7. It is also informed by operators that on sending the collection vehicle to the registered address in the office of the Chief Medical and Health Officer for the hospital affiliated to the Nursing College, it is informed that the hospital is not available, even if there is a hospital, there is a difference in the number of

operational beds and the quantity of waste is not in proportion to the registered number of beds. Since the number of beds are not mentioned in C.M.H.O. registration thus the payment is not made due to unavailability of waste.

8. It is also informed by the operators that “The registered medical institutions in the office of the Chief Medical and Health Officer continue to increase or decrease the number of beds several times a year as per their convenience”. It causes financial losses to the facility operators.
9. Bar coding is not being practiced by most of the member HCFs, for which C.B.W.T.F. are organizing training workshop, advice is also given to manage waste according to the guidelines.

13. State Level Gap in Bio-Medical Waste Management:

13.1 Gap in HCFs covered by CBWTFs:

- Total number of HCFs in Madhya Pradesh in year 2021 was 9811 which increased to 10369 in 2022-23.
- The HCFs covered by CBWTFs were 7661 in 2021 which increased to 7698 in 2022.
- Therefore gap in HCFs covered by CBWTFs as observed in 2021 was 2150 HCFs which increased to 2671 HCFs in 2022.

13.2 Gap in Bed Coverage:

- Total number of beds in Madhya Pradesh in year 2021 was 1,30,000 which increased to 1,36,764 in 2022-23.
- The bed coverage was 1,07,812 in 2021 which increased to 1,17,253 in 2022.
- Therefore gap in bed coverage as observed in 2021 was 22,188 beds which reduced to about 19,511 beds in 2022.

13.3 Gap in BMW Generation and Collection & Treatment:

- Biomedical waste generation in year 2021 was 19.76 MT/day and 15.64 MT/day in year 2022. Bio-medical waste was found higher in 2021 due to Covid-19 Pandemic time.
- Biomedical waste collection was 19.28 MT/day in year 2021 and 15.46 MT/day in year 2022.
- Therefore gap in generation and collection as observed in 2021 was 480 Kg/day which reduced to 181 Kg/day in 2022.

13.4 Gap in available Treatment Capacity:

a) **Present Capacity:** Current installed capacity of 19 Incinerators in MP is 3350 Kg/hour i.e. 80.4 MT/day considering 24 hour running time, which is more than five times as compared to current waste generated in state.

b) Waste generation after 10 Years (2032):

➤ Considering the trend of waste generation during previous years and the figures mentioned in Annual reports submitted in CPCB, it is estimated that the total waste generation after 10 years would be 31201 Kg/day. The forecast of waste generation has been done on the basis of Linear Regression through plotting the graph as shown in figures.

➤ The total installed treatment capacity of all CBWTFs (19 operational + 04 proposed) will be 4000 Kg/hour i.e. 96 MT/day, which is about three times of forecasted BMW generation till year 2032.

c) Waste generation after 20 Years (2042):

➤ The forecast of waste generation further estimated for next 10 years on the basis of Linear Regression through plotting the graph as shown in figures. It is estimated that the total waste generation is likely to be increased upto 42604 Kg/day.

➤ Considering no further increase in installed incineration capacity of 4000 Kg/hour i.e. 96 MT/day, the installed incineration capacity will still be available more than twice the quantity of waste generation.

➤ Therefore the installed capacity of CBWTFs is sufficient.

13.5 Gap in other compliances:

a) Transport Vehicles:

➤ There are total 115 vehicles owned by CBWTFs whereas only 107 in use and all 107 vehicles are equipped with GPS systems.

b) Bar Code System:

➤ Implementation of Bar-Code system is joint responsibility of HCFs and CBWTFs as per BMWM rules, 2016.

- Therefore both the parties should come forward for implementation of bar coding in waste collection system.
- CPCB is in process of implementation of Centralised Bar-Code system with the provision of state and national dashboard to provide an overall picture of Bio-medical waste collection at all time.

c) Online Monitoring:

- Online Real Time Continuous Monitoring Systems are installed by all the CBWTFs whereas consistency in connectivity & transmission of data (Data capture rate shall be more than 85%) needs to be ensured.

d) Sharing of data:

- Inventory of HCFs must be prepared by CBWTFs, District and category wise data of member HCFs and non-member HCFs must be available on their website for public display to ensure effective compliance of rules.

e) Deep Burial:

- Deep burial is practiced in remote and rural areas and mostly by government HCFs. The HCF Coverage of CBWTF collection vehicle need to be improved so that the entire waste could be collected from remote and remote areas.

f) Waste Sharp disposal:

- CBWTFs should dispose the collected sharp pit waste if its capacity has been exhausted, as per BMWM Rules and sent for final disposal to iron foundries (having consent to operate from the State Pollution Control Boards or Pollution Control Committees) or sanitary landfill.

g) Plastic Waste disposal by HCFs and CBWTFs:

- Plastic waste is a major and important part of Bio-Medical Waste as it need to be disinfected before its shredding and disposal to avoid the possibility of sell of infected plastic waste through local vendors/waste handlers.

14.0 Outcome of Review / Recommendations:

14.1 Based on the review of treatment capacity of existing common Biomedical Waste Treatment Facilities, its coverage area distribution and the waste being collected by these common facilities.

- It is observed that an immediate action should be initiated for strengthening of collection and transportation system. These facilities shall collect entire Bio-Medical Waste from all the areas to abolish deep burial practice resulted due to transportation difficulties.
- It is also observed that some facilities are not covering entire area with respect to collection of Biomedical waste from government hospitals located in remote areas like Community Health centers (CHCs) Primary Health Centers(PHCs) dispensaries etc. Therefore centralized Bar Code system as suggested by CPCB shall be implemented for service delivery and its effective tracking.
- At present 18 Facilities are in operation covering 52 districts of Madhya Pradesh. The total Biomedical waste generation in the state is 15.64 MT/Day whereas the total treatment capacity of running CBWTFs is 62 MT / day which is 4.0 times as compared to total quantity of waste generation.
- As per information received from Regional offices, available in the record, from health & veterinary department and other stake holders and considering the previous trend of waste generation it is likely to be increased up to 31MT/Day from 15.64 MT/Day after 10 years (2032) .
- As per above fact the treatment capacity of the existing CBWTFs is more than sufficient.
- The existing facilities should strengthen themselves by installing best available technology for Incinerator, shredders, ETP, sharp waste destruction devices , Air Pollution Control and monitoring equipments etc. (If required)
- In figure number 04, circles of 75 km radius are drawn keeping existing CBWTF as centre of circle. The area of circle indicates the coverage area of particular CBWTF. Some circles are intercepting which shows the common area of CBWTFs where in these facilities are covering the HCFs with mutual understanding. Few districts in this map are reflected beyond the 75 km circle. It has come to the knowledge of committee that these left over districts are also being covered by nearby facilities.
- It is suggested that the biomedical waste management division of MP Pollution Control Board shall look into this matter critically and if it is found that nearby CBWTF is not collecting waste from these areas despite notices and opportunity of hearing then new facilities may be allowed in these areas.

14.2 Recommendations :-

Looking in to the current scenario of Biomedical Waste Management and future growth of state, the committee has arrived on the following conclusions and recommendations that :-

1. *Prescribed authority (MPPCB),CBWTFs and other stake holders shall ensure compliance of Hon. National Green Tribunal Orders issued from time to time .*
2. *A committee comprising Health department, association of nursing homes, representative of CBWTFs, and representative of CPCB local office and unit head of MPPCB shall be constituted to resolve the issues of CBWTFs and Bio-Medical Waste Management. Such committee shall meet once in a Year in First week of December.*
3. *CBWTFs shall issue membership certificates to member health care facilities for such number of beds only as mentioned in the consent/authorization letter of MPPCB and CBWTF shall issue QR code to every member.*
4. *CBWTFs shall ensure implementation of Centralized Bar-Code system as directed by Central Pollution Control Board. For non-bedded HCFs provision of " Service on call" may be allowed.*
5. *CBWTFs shall be directed to strengthen waste transportation and collection facilities for effective collection, treatment & disposal of BMW from CHC, PHC, veterinary and other small health care facilities located in remote and rural areas to abolish the practice of Deep Burial in State.*
6. *Health Directorate and Veterinary department shall display the List of their facilities on their websites along with PCB-ID, Consent Letter and CBWTF Membership as per BMWM Rules. Department should also ensure compliance of Bar Code system along with budgetary provisions for the same.*
7. *The facilities practicing deep burial shall be identified and brought under CBWTF coverage to protect ground water contamination and pollution in nearby areas.*

- 8. If CBWTF covering remote rural areas and find difficult to collect waste in single trip by collection vehicle then Satellite station may be established with prior permission of the MPPCB to store the bio-medical waste so collected from adjoining rural areas with small dedicated vehicle like two wheelers & e-rickshaw fitted with prescribed compartments & safety measures. The wastes so stored at satellite station may then be transported to the respective CBWTFs ensuring that the total time taken from generation to treatment of BMW shall not exceed 48 hours. In case the waste is not collected within stipulated time then the facility of disinfection may be developed at such satellite stations.**
- 9. All the CBWTFs must share their On-line monitoring data, camera images to the CPCB and SPCB servers.**
- 10. As per para 8 of Revised Guidelines for Common Bio-medical Waste Treatment Facilities published by CPCB the provisions suggested for coverage area for development of a CBWTF is as follows:-**
 - (a) A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 KM. However, in a coverage area where 10,000 beds are not available within a radial distance of 75 KM, existing CBWTF in the locality (located within the respective State/UT) may be allowed to cater the healthcare units situated upto 150 KM radius w.r.to its location provided the bio-medical waste generated is collected, treated and disposed of within 48 hours as stipulated under the BMWM Rules.**
 - (b) In case, number of beds is exceeding >10,000 beds in a locality (i.e. coverage area of the CBWTF under reference) and the existing treatment capacity is not adequate, in such a case, a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986, to cater services only to such additional bed strength of the HCFs located.**
- 11. CTE for new CBWTFs shall only be considered for particular districts, which are situated at a distance more than 150 Km away from any operational or proposed CBWTF having valid CTE and EC. As state already has 4 times treatment capacity in comparison to existing Bio-Medical waste generation.**

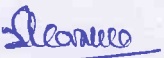
- 12. All CBWTFs shall display the list of Bedded and non-bedded member HCFs in each district and upload the waste handling, resource consumption data on their respective website for the information of general public.***
- 13. Proposal for revision of BMW disposal rates for CBWTFs is to be decided by the State Level Advisory Committee. Efforts should be made to finalize the same, considering economic sustenance by mutual consultation with all stake holders and revision of rate may be done on certain reasonable time periods based on WPI (wholesale price Index) and CPI (consumer Price index).***
- 14. Health Directorate and Veterinary department shall display the List of their health care facilities on their website along with PCB ID, Consent Letter and CBWTF Membership as per BMWM Rules.***
- 15. It has brought to the notice of committee that few facility operators are trying to Capture coverage areas of another existing facility showing their future expansion and applying before SEIAA for Environmental Clearance (EC) and after getting EC they applied to PCB and insist to issue CTE because they have obtained EC. This practice is the root cause of litigation & dispute among CBWTF operators. Therefore it is strongly felt that there should be proper co-ordination between SEIAA & MPPCB to control such unhealthy competition which may cause adverse affect on the functioning of Common facilities and regulatory authorities. Therefore SEIAA & SEAC must consider the prior opinion of the Board before issuing EC to any new CBWTFs to prevent trend of mushrooming of CBWTFs in the state.***
- 16. SPCB shall undertake third party audits (through competent institute of national repute) of the common bio-medical waste treatment facilities in the State in light of CPCB directions and conditions imposed by MPPCB in consent/authorization letter.***
- 17. The household bio-medical waste has to be collected by Municipal Authority separately and be disposed of in designated CBWTF after executing an MoU.***
- 18. The CBWTFs in consultation with prescribed authority shall chalk out a comprehensive plan for safe disposal of sharp waste stored in sharp waste pits through nearby foundry units.***

19. It is revealed from the record that there are about 18000 beds in the states which are still to be covered by CBWTFs. Therefore special drive must be conducted by all the CBWTFs so that each HCFs/waste generating establishment must be covered by common facilities within 03 months and report the same to concerning regional office of MPPCB.

20. There is a need of execution of MoU amongst the nearby CBWTFs with clear understanding of collection / transportation and treatment of entire waste in case of shut down or closure of facility due to any reason.

21. It has been observed that the number of beds available in the record of CMHO often differ from the record available in the Board. Therefore it is suggested that software of registration of Health Care Units with CMHO shall be integrated with the XGN software of MPPCB.


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Table -1

District wise Health Care Facilities & BMW Generation (Year 2022)

S. No.	Name of District	Total HCFs	Non-Bedded HCFs	Bedded HCFs	No. of Beds	Bio-medical Waste Generation (in Kg/day)
1.	Agar-Malwa	46	10	36	774	81.83
2.	Alirajpur	63	34	29	662	84.23
3.	Anuppur	75	42	33	680	85.9
4.	Ashok Nagar	45	30	15	743	91.44
5.	Balaghat	188	103	85	2057	168
6.	Barwani	121	62	59	1817	167.46
7.	Betul	70	26	44	1353	192.33
8.	Bhind	157	102	55	1631	82.66
9.	Bhopal	1108	722	386	20099	2391.48
10.	Burhanpur	75	30	45	1051	252.494
11.	Chhatarpur	190	120	70	1606	127.5
12.	Chhindwara	153	63	90	2293	239.17
13.	Damoh	112	67	45	1001	157.78
14.	Datia	64	23	41	2781	37.48
15.	Dewas	102	43	59	1449	273.99
16.	Dhar	359	208	151	3113	311.84
17.	Dindori	69	32	37	623	52
18.	Guna	120	76	44	1933	119.8
19.	Gwalior	678	343	335	18056	581.85
20.	Harda	113	83	30	634	86.4645
21.	Hoshangabad	259	196	63	1788	285.9184
22.	Indore	1490	1151	339	15811	3515.83
23.	Jabalpur	628	406	222	9379	1178
24.	Jhabua	141	100	41	1045	207.3
25.	Katni	144	77	67	1613	332.114
26.	Khandwa	169	103	66	1371	340.774

S. No.	Name of District	Total HCFs	Non-Bedded HCFs	Bedded HCFs	No. of Beds	Bio-medical Waste Generation (in Kg/day)
27.	Khargone	217	100	117	2654	345.161
28.	Mandla	106	58	48	1099	107
29.	Mandsaur	86	64	22	464	79.43
30.	Morena	178	93	85	3237	80.4
31.	Narsinghpur	186	129	57	1627	133
32.	Neemuch	24	6	18	786	89.04
33.	Panna	68	41	27	746	61.38
34.	Raisen	174	126	48	1347	95.1588
35.	Rajgarh	69	30	39	1204	104.25
36.	Ratlam	161	79	82	1308	155.21
37.	Rewa	290	196	94	3210	422.65
38.	Sagar	417	292	125	4143	236
39.	Satna	337	219	118	2876	170.24
40.	Sehore	106	52	54	1433	185.33
41.	Seoni	192	132	60	1388	128
42.	Shahdol	134	75	59	1943	286.3
43.	Shajapur	98	32	66	1405	178.06
44.	Sheopur	37	13	24	455	17.86
45.	Shivpuri	70	31	39	1951	116.44
46.	Sidhi	89	52	37	903	119.52
47.	Singrauli	73	49	24	922	111.28
48.	Tikamgarh	86	39	47	1753	79.245
49.	Niwari					
50.	Ujjain	287	243	44	2345	520.03
51.	Umaria	58	37	21	536	109.8
52.	Vidisha	87	54	33	1666	255.44
Total		10369	6494	3875	136764	15631.86

Table-2
Capacity of Existing Bio-Medical Waste Treatment Facilities

S. No.	Name of CBWTF	Incinerator	Autoclave	Shredder	GPS equipped Vehicles	CEMS
1	M/s. Elite Engineers, Jabalpur	100 Kg/Hr.	200 Lit./Batch	50 Kg/Hr.	9/9	Yes
2	M/s. Hoswin Incinerator Pvt. Ltd., Indore	500 Kg/Hr.	1000 Kg/Batch	1200 Kg/Hr.	17/17	Yes
3	M/s. Indo Water Management & Pollution Control Corporation, Satna	100 Kg/Hr.	350 Lit./Hr.	290 Kg/Hr.	12/12	Yes
4	M/s. M.P. Bio-Medical Waste Disposal System, Umaria	50 Kg/Hr.	120 Lit./Batch	20 Kg/Hr.	5/5	Yes
5	M/s. Devis Surgico, Sagar	100 Kg/Hr.	250 Lit./Batch	50 Kg/Hr.	4/6	Yes
6	M/s. Devis Surgico, Gwalior	100 Kg/Hr.	250 Lit./Batch	50 Kg/Hr.	8/9	Yes
7	M/s. Environment Protection Corporation, Sehore	100 Kg/Hr.	450 Lit./Batch	40 Kg/Hr.	9/9	Yes
8	M/s. J.K. Medical Waste Management System, Ashok Nagar	100 Kg/Hr.	430 Lit./Batch	50 Kg/Hr.	8/8	Yes
9	M/s. Bio-Medical Waste Management System, Ratlam	50 Kg/Hr.	750 Lit./Batch	70 Kg/Hr.	5/6	Yes
10	M/s. Krupa Wastages, Seoni	100 Kg/Hr.	200 Lit./Batch	50 Kg/Hr.	5/5	Yes
11	M/s. BMW Solutions, Bhopal	250 Kg/Hr.	400 Lit./Batch	100 Kg/Hr.	5/5	Yes
12	M/s. India Waste Management (P) Ltd., Raisen	250 Kg/Hr.	860 Lit./Batch	200 Kg/Hr.	7/7	Yes
13	M/s. Medisure Incinerators, Khandwa	100 Kg/Hr.	3.0 m ³	240 Kg/Hr.	3/3	Yes
14	M/s. Hostech Eco management Pvt. Ltd., Ujjain	300 Kg/Hr.	1200 Lit./Batch	70 Kg/Hr.	4/4	Yes
15	M/s. Agni Mitra, Indore	250 Kg/Hr.	500 Lit./Batch	500 Kg/Hr.	4 Proposed	Yes

S. No.	Name of CBWTF	Incinerator	Autoclave	Shredder	GPS equipped Vehicles	CEMS
16	M/s. VNS Solution, Bhind	200 Kg/Hr.	200 Kg/Hr.	200 Kg/Hr.	2/2	Yes
17	M/s. CBWTF, Narsinghpur	200 Kg/Hr.	100 Kg/Batch	100 Kg/Hr.	2/2	Yes
18	M/s. JRR Waste Management Pvt. Ltd., Bhind	250 Kg/Hr.	850 Lit./Batch	200 Kg/Hr.	2/2	Yes
19	M/s. Chitra Kiran Waste Management Pvt. Ltd., Rewa	250 Kg/Hr.	1200 Lit./Batch	100 Kg/Hr.	HC Stay on CTO	
Total		3350 Kg/Hr.	-	3580 Kg/Hr.	107/115	-

Table-3

Capacity of Proposed Bio-Medical Waste Treatment Facilities

S. No.	Name of CBWTF	Incinerator	Autoclave	Shredder	CTE	EC
1	M/s. Medicare Environmental Management Pvt. Ltd., Morena	250 Kg/Hr.	430 Lit./Batch	150 Kg/Hr.	Yes	Yes
2	M/s. Enviro Clean Solutions, Chhindwara	100 Kg/Hr.	500 Lit./Batch	100 Kg/Hr.	Yes	Yes
3	M/s. Indo Tech Waste Solution, Tikamgarh	100 Kg/Hr.	250 Kg/Batch	100 Kg/Hr.	Yes	Yes
4	M/s.J. K. Medical Waste Management System, Shivpuri	200 Kg/Hr.	1000 Kg/Hr.	200 Kg/Hr.	Yes	Yes
Total		650 Kg/Hr.	-	550 Kg/Hr.		

Table-4
BMW Collection & Disposal (As per Annual Report -2022)

S. No.	Name of CBWTF	District Covered	No. of HCF	No. of Member HCF	No. of Beds	No. of Beds Covered	BMW Collected & disposed
1.	M/s. Elite Engineers, Jabalpur	Jabalpur	772	480	10992	8876	1188.88
		Katni					
2.	M/s. Hoswin Incinerator Pvt. Ltd., Indore	Indore	2174	1840	22448	21626	4176.54
		Barwani					
		Dhar					
		Jhabua					
		Alirajpur					
3.	M/s. Indo Water Management & Pollution Control Corporation, Satna	Satna	857	689	8657	8981	1003.47
		Panna					
		Rewa					
		Sidhi					
		Singrauli					
4.	M/s. M.P. Bio-Medical Waste Disposal System, Umariya	Shahdol,	267	142	3159	2422	485.34
		Anuppur					
		Umariya					
5.	M/s. Devis Surgico, Sagar	Sagar	719	289	6750	3699	251.38
		Damoh					
		Chhatarpur					
6.	M/s. Devis Surgico, Gwalior	Gwalior	779	494	21292	9860	495.59
		Datia					
		Sheopur					
7.	M/s. J.K. Medical Waste Management System, Ashok Nagar	Ashok nagar,	390	273	7584	5004	513.23
		Guna					
		Shivpuri					
		Rajgarh					
		Tikamgarh					
		Niwari					
8.	M/s. Bio-Medical Waste Management System, Ratlam	Ratlam	271	361	2558	4752	323.68
		Mandsaur					
		Neemuch					

S. No.	Name of CBWTF	District Covered	No. of HCF	No. of Member HCF	No. of Beds	No. of Beds Covered	BMW Collected & disposed
9.	M/s. Environment Protection Corporation, Sehore	Sehore	635	706	6874	8818	1377.9
		Betul					
		Harda					
		Hoshangabad					
		Vidisha					
10.	M/s. BMW Solutions, Bhopal	Bhopal	1104	402	17999	4788	268.29
11.	M/s. India Waste Management (P) Ltd., Raisen	Raisen	174	625		12256	2423.84
12.	M/s. Krupa Wastages, Seoni	Seoni,	894	356	9087	7620	775.61
		Mandla					
		Balaghat					
		Narsingpur					
		Chhindwada					
		Dindori					
13.	M/s. Medisure Incinerators, Khandwa	Khandwa	461	365	5076	4714	938.72
		Burhanpur					
		Khargone					
14.	M/s. Hostech Eco management Pvt. Ltd., Ujjain	Ujjain,	533	567	5973	9220	1053.92
		Dewas					
		Shajapur					
		Agar-Malwa					
15.	M/s. JRR Waste Management Pvt. Ltd., Agra	Bhind	335	105	4868	2517	111.27
		Morena					
16.	M/s. Peoples Medical College & Research Centre, Bhopal	Captive	4	4	2100	2100	63.11
Total			10369	7698	136764	117253	15450.77

Table-5**Status of Bio-Medical Waste generation and No. of Beds in MP**

S. No.	Name of District	No. of Beds				Bio-Medical Waste Generation in Kg/day			
		As per Health Deptt.	As per MP PCB	Average	Max.	2021	2022	Average	Max.
1	Agar-Malwa	791	774	782.5	791	173.41	81.83	127.62	173.41
2	Alirajpur	585	662	623.5	662	100	84.23	92.115	100
3	Anuppur	744	680	712	744	50	85.9	67.95	85.9
4	Ashok Nagar	744	743	743.5	744	14.57	91.44	53.005	91.44
5	Balaghat	1947	2057	2002	2057	160	168	164	168
6	Barwani	2199	1817	2008	2199	545	167.46	356.23	545
7	Betul	300	1353	826.5	1353	222.43	192.33	207.38	222.43
8	Bhind	300	1631	1631	1631	202.32	82.66	142.49	202.32
9	Bhopal	22107	20099	21103	22107	3101.96	2391.48	2746.72	3101.96
10	Burhanpur	1101	1051	1076	1101	274.5	252.494	263.497	274.5
11	Chhatarpur	1622	1606	1614	1622	139	127.5	133.25	139
12	Chhindwara	2581	2293	2437	2581	184.8	239.17	211.985	239.17
13	Damoh	1083	1001	1042	1083	99	157.78	128.39	157.78
14	Datia	5220	2781	4000.5	5220	31.08	37.48	34.28	37.48
15	Dewas	3375	1449	2412	3375	129.93	273.99	201.96	273.99
16	Dhar	3318	3113	3215.5	3318	290	311.84	300.92	311.84
17	Dindori	466	623	544.5	623	44	52	48	52
18	Guna	1884	1933	1908.5	1933	64.49	119.8	92.145	119.8
19	Gwalior	28113	18056	23084.5	28113	939.32	581.85	760.585	939.32
20	Harda	582	634	608	634	80.62	86.464	83.542	86.464
21	Hoshangabad	2191	1788	1989.5	2191	239.04	285.918	262.479	285.918
22	Indore	13588	15811	14699.5	15811	6258	3515.83	4886.91	6258
23	Jabalpur	7874	9379	8626.5	9379	1135	1178	1156.5	1178
24	Jhabua	1196	1045	1120.5	1196	214	207.3	210.65	214
25	Katni	1581	1613	1597	1613	219.09	332.114	275.602	332.114
26	Khandwa	1397	1371	1384	1397	364	340.774	352.387	364
27	Khargone	1018	2654	1836	2654	288.5	345.161	316.830	345.161
28	Mandla	1126	1099	1112.5	1126	78	107	92.5	107
29	Mandsaur	1828	464	1146	1828	141.94	79.43	110.685	141.94
30	Morena	2179	3237	2708	3237	72.83	80.4	76.615	80.4

S. No.	Name of District	No. of Beds				Bio-Medical Waste Generation in Kg/day			
		As per Health Deptt.	As per MP PCB	Average	Max.	2021	2022	Average	Max.
31	Narsinghpur	1708	1627	1667.5	1708	290	133	211.5	290
32	Neemuch	1720	786	1253	1720	101.26	89.04	95.15	101.26
33	Panna	746	746	746	746	67	61.38	64.19	67
34	Raisen	1677	1347	1512	1677	111.76	95.1588	103.459	111.76
35	Rajgarh	1597	1204	1400.5	1597	67.18	104.25	85.715	104.25
36	Ratlam	2225	1308	1766.5	2225	174.9	155.21	165.055	174.9
37	Rewa	2604	3210	2907	3210	339.8	422.65	381.225	422.65
38	Sagar	3600	4143	3871.5	4143	400.4	236	318.2	400.4
39	Satna	3051	2876	2963.5	3051	122	170.24	146.12	170.24
40	Sehore	2688	1433	2060.5	2688	228.78	185.33	207.055	228.78
41	Seoni	1503	1388	1445.5	1503	110	128	119	128
42	Shahdol	1323	1943	1633	1943	80.3	286.3	183.3	286.3
43	Shajapur	1264	1405	1334.5	1405	255.21	178.06	216.635	255.21
44	Sheopur	611	455	533	611	20.45	17.86	19.155	20.450
45	Shivpuri	2003	1951	1977	2003	25.56	116.44	71	116.44
46	Sidhi	796	903	849.5	903	66	119.52	92.76	119.52
47	Singrauli	1016	922	969	1016	102	111.28	106.64	111.28
48	Tikamgarh	3111	1753	2432	3111	38.4	79.245	58.8225	79.245
49	Niwari								
50	Ujjain	3945	2345	3145	3945	971.89	520.03	745.96	971.89
51	Umariya	437	536	486.5	536	40	109.8	74.9	109.8
52	Vidisha	1559	1666	1612.5	1666	284.61	255.44	270.025	284.61
Total		152224	136764	145160	163730	19754.33	15631.86	17693.09	21182.322

Table - 6
Bio-Medical Waste Treatment and Capacity Utilisation of CBWTFs

S. No.	Name of District	Name of CBWTF	Capacity in Kg/Day	BMW Generation in district of Establishment in Kg/Day (Average)	District Allotted		BMW generation in Additional Area Allotted in KG/day (Average)	Total BMW in Allotted Area in Kg/Day	Current Capacity Available in Kg/day	Capacity Utilisation in %
					Established in	Additional Area				
1	Ashok Nagar	M/s. J.K. Medical Waste Management System,	2400	53.005	Ashok Nagar	Guna, Shivpuri, Rajgarh, Tikamgarh & Niwari	307.6825	360.6875	2039.313	15%
2	Bhind	M/s. JRR Waste Management Pvt. Ltd.	6000	142.49	Bhind	Morena	76.615	219.105	5780.895	4%
3		M/s. VNS Solution	4800		Bhind (Not Allotted)	Datia & Sheopur	53.435	53.435	4746.565	1%
4	Bhopal	M/s. BMW Solutions	6000	2746.72	Bhopal	Nil	0	2746.72	3253.28	46%
5	Gwalior	M/s. Devis Surgico	2400	760.585	Gwalior	Nil	0	760.585	1639.415	32%
6	Indore	M/s. Hoswin Incinerator Pvt. Ltd.	12000	4886.915	Indore	Barwani	356.23	5243.145	6756.855	44%
7		M/s. Agni Mitra	6000		Indore	Dhar, Jhabua & Alirajpur	603.685	603.685	509.4	10%

8	Jabalpur	M/s. Elite Engineers	2400	1156.5	Jabalpur	Katni	275.602	1432.102	967.898	60%
9	Khandwa	M/s. Medisure Incinerators	2400	352.387	Khandwa	Khargon & Burhanpur	580.3275	932.7145	1467.286	39%
10	Narsinghpur	M/s. CBWTF, Narsinghpur	4800	211.5	Narsinghpur	Nil	0	211.5	4588.5	4%
11	Raisen	M/s. India Waste Management (P) Ltd.	6000	103.4594	Raisen	Bhopal	2746.72	2850.1794	3149.821	48%
12	Ratlam	M/s. Bio-Medical Waste Management System	1200	165.055	Ratlam	Mandsour & Neemuch	205.835	370.89	829.11	31%
13	Rewa	M/s. Chitra Kiran Waste Management Pvt. Ltd.	6000	381.225	Stay on CTO by High Court Jabalpur			381.225	-381.225	6%
14	Sagar	M/s. Devis Surgico	2400	318.2	Sagar	Damoh & Chhatarpur	261.64	579.84	1820.16	24%
15	Satna	M/s. Indo Water Management & Pollution Control Corporation	2400	146.12	Satna	Panna, Rewa, Sidhi & Singrauli	644.815	790.935	1609.065	33%
16	Ujjain	M/s. Hostech Eco management Pvt. Ltd.	7200	745.96	Ujjain	Dewas, Shajapur & Agar-Malwa	546.215	1292.175	5907.825	18%

17	Sehore	M/s. Environment Protection Corporation	2400	207.055	Sehore	Betul, Harda, Hoshangabad, Vidisha & Bhopal	3570.14645	3777.20145	-1377.2	157%
18	Seoni	M/s. Krupa Wastages	2400	119	Seoni	Mandla, Balaghat, Dindori & Chhindwada	516.485	635.485	1764.515	26%
19	Umaria	M/s. M.P. Bio-Medical Waste Disposal System	1200	74.9	Umariya	Shahdol & Anuppur	251.25	326.15	873.85	27%
20	Morena	M/s. Medicare Environmental Management Pvt. Ltd.	6000	Proposed		CTE Issued				
21	Chhindwara	M/s. Enviro Clean Solutions	2400	Proposed		CTE Issued				
22	Tikamgarh	M/s. Indo Tech Waste Solution	2400	Proposed		CTE Issued				
23	Shivpuri	M/s.J. K. Medical Waste Management System	4800	Proposed		CTE Issued				

Table-7**Current Coverage area & Distance of CBWTF**

S. No.	Name of CBWTF	Coverage area	Distance in Km	No. of HCF	No. of Beds
1.	M/s. Elite Engineers, Jabalpur	Jabalpur	46	772	10992
		Katni	136		
2.	M/s. Hoswin Incinerator Pvt. Ltd., Indore	Barwani	165	121	1817
		Indore	10	1490	15811
3.	M/s. Agni Mitra, Indore		9		
		Dhar	75		
		Jhabua	160		
		Alirajpur	214		
4.	M/s. Indo Water Management & Pollution Control Corporation, Satna	Satna	15	405	3622
		Panna	84		
5.	M/s. Chitra Kiran Waste Management Pvt. Ltd. Rewa	Rewa	28	452	5035
		Sidhi	53		
		Singrauli	157		
				These HCFs and beds are covered by CBWTF Satna after stay from HC, Jabalpur	
6.	M/s. M.P. Bio-Medical Waste Disposal System, Umariya	Shahdol	11	267	3159
		Anuppur	58		
		Umariya	67		
7.	M/s. Devis Surgico, Sagar	Sagar	35	719	6750
		Damoh	78		
		Chhatarpur	187		
8.	M/s. Devis Surgico, Gwalior	Gwalior	25	678	18056
9.	M/s. VNS Solution, Bhind	Datia	93	101	3236
		Sheopur	234		
10.	M/s. J.K. Medical Waste Management System, Ashok Nagar	Ashok nagar	67	390	7584
		Guna	115		
		Shivpuri	125		
		Rajgarh	232		
		Tikamgarh	85		
		Niwari	127		

S. No.	Name of CBWTF	Coverage area	Distance in Km	No. of HCF	No. of Beds
11.	M/s. Bio-Medical Waste Management System, Ratlam	Ratlam	6	271	2558
		Mandsaur	85		
		Neemuch	139		
12.	M/s. Krupa Wastages, Seoni	Seoni	15	708	7460
		Mandla	116		
		Balaghat	75		
		Chindwada	84		
		Dindori	220		
13.	M/s. CBWTF, Narsinghpur	Narsinghpur	18	186	1627
14.	M/s. Environment Protection Corporation, Sehore	Sehore	5	635	6874
		Betul	216		
		Harda	125		
		Hoshangabad	109		
		Vidisha	92		
			39		
15.	M/s. BMW Solutions, Bhopal	Bhopal	26	1108	20099
16.	M/s. India Waste Management (P) Ltd., Raisen		26		
	Raisen		59		
17.	M/s. Medisure Incinerators, Khandwa	Khandwa	25	461	5076
		Burhanpur	75		
		Khargone	67		
18.	M/s. Hostech Eco management Pvt. Ltd., Ujjain	Ujjain	11	533	5973
		Dewas	49		
		Shajapur	75		
		Agar-Malwa	60		
19.	M/s. JRR Waste Management Pvt. Ltd., Bhind	Bhind	60	335	4868
		Morena	40		
Total				10369	136764

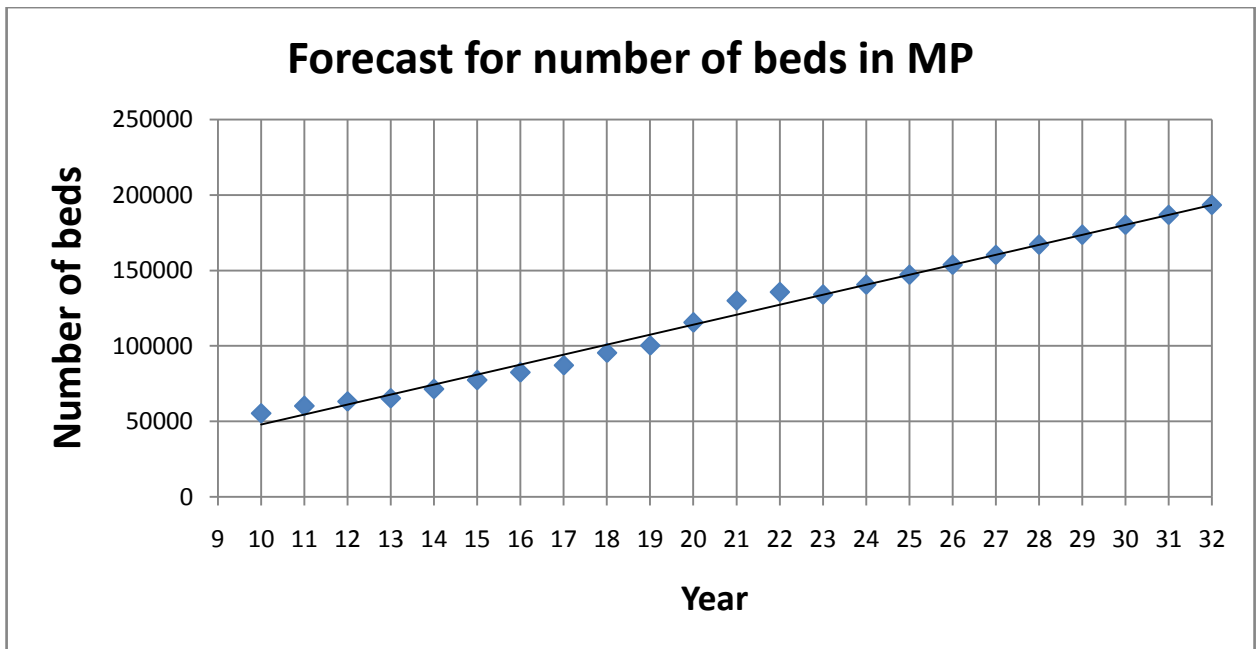
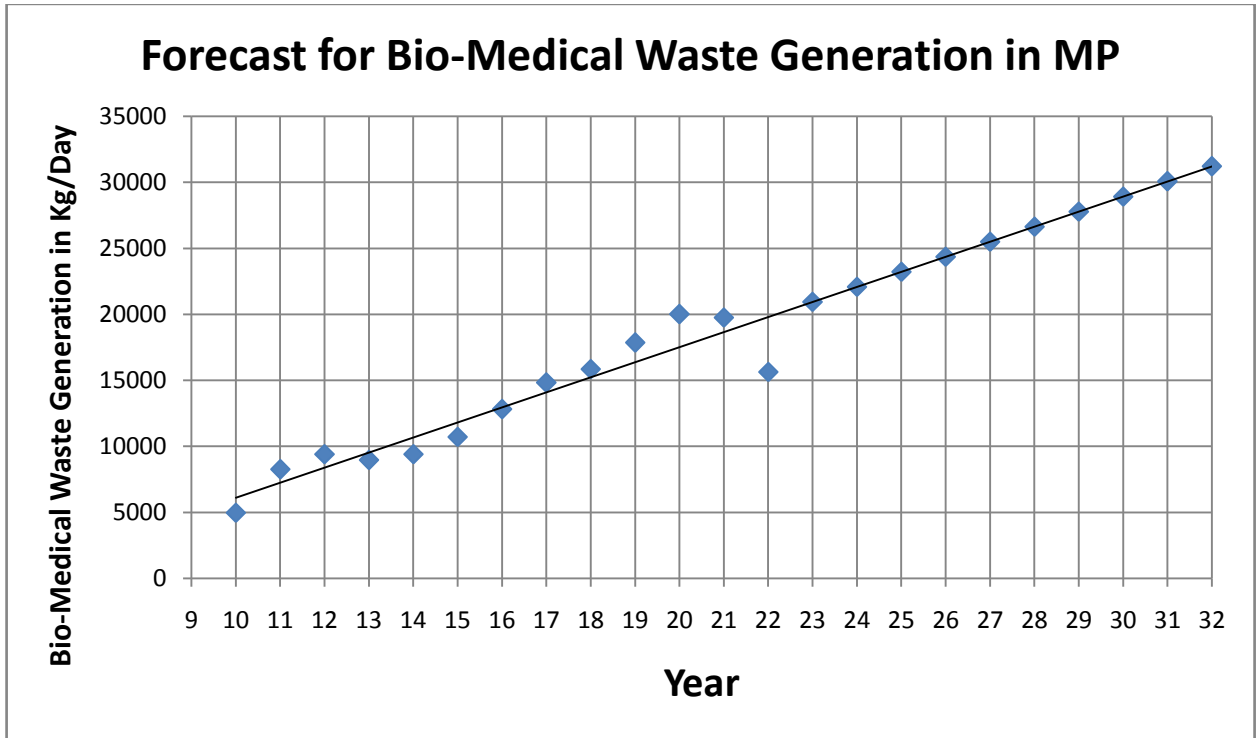


Figure-1- Forecast for the Year 2032

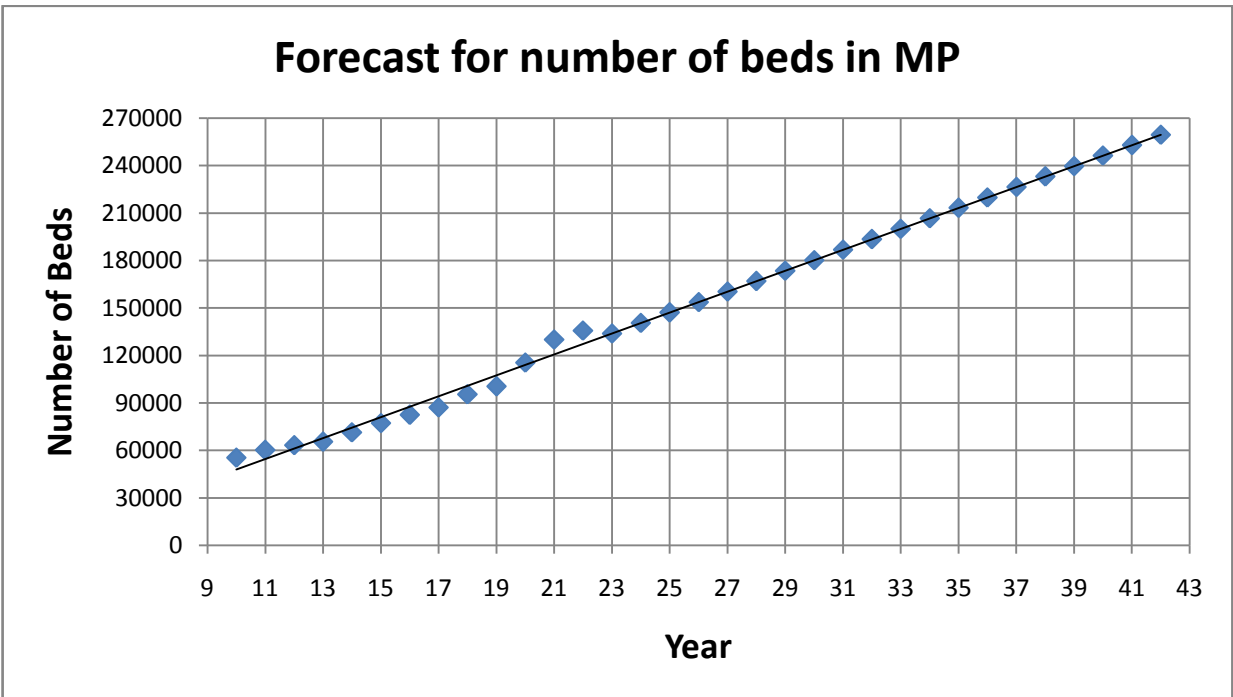
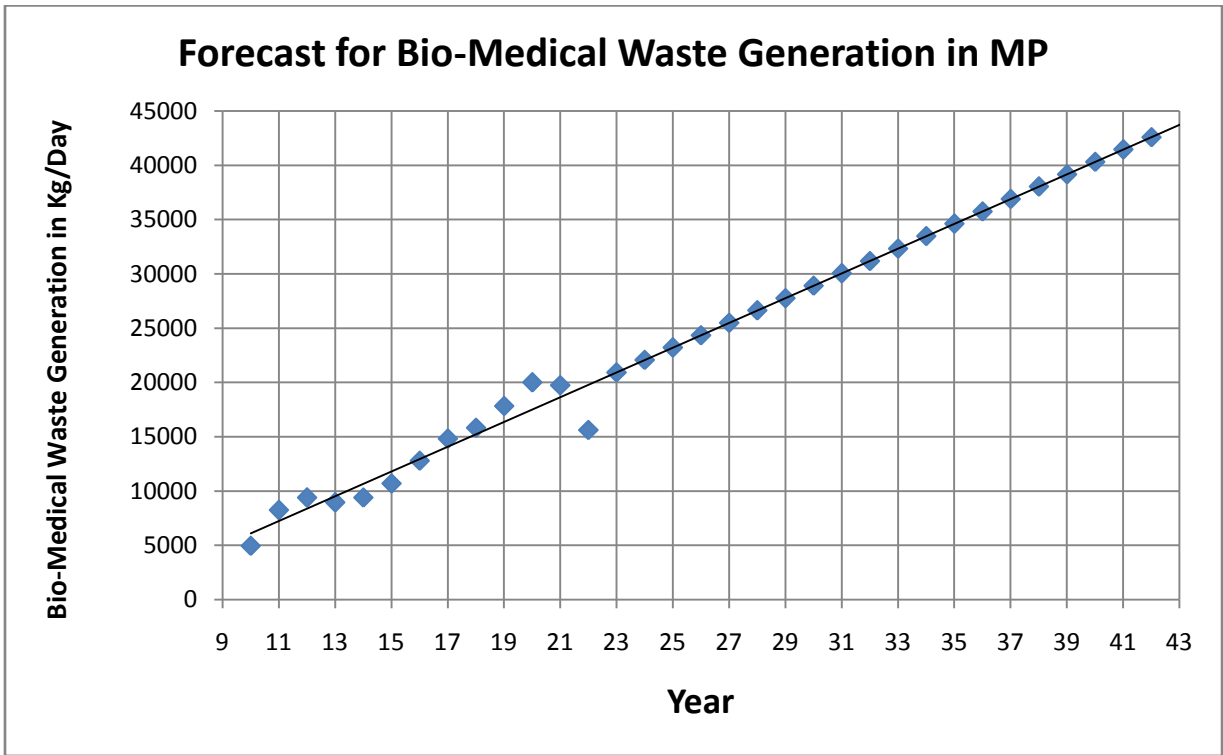
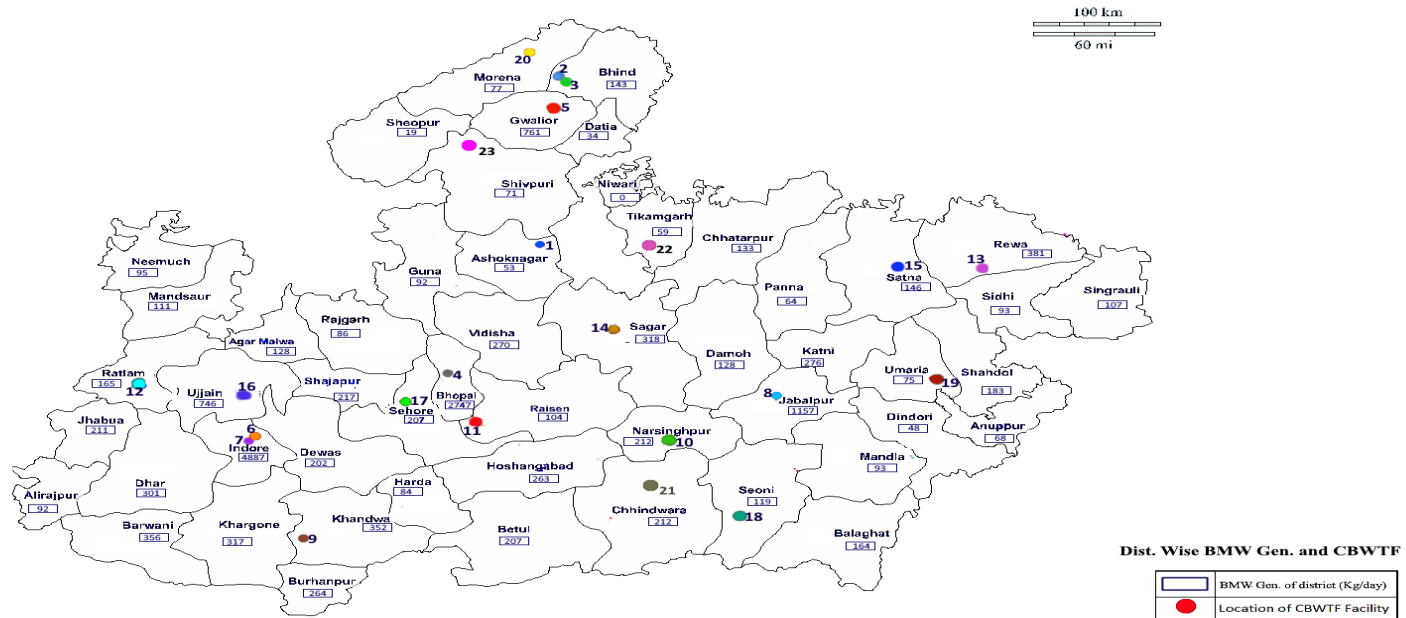
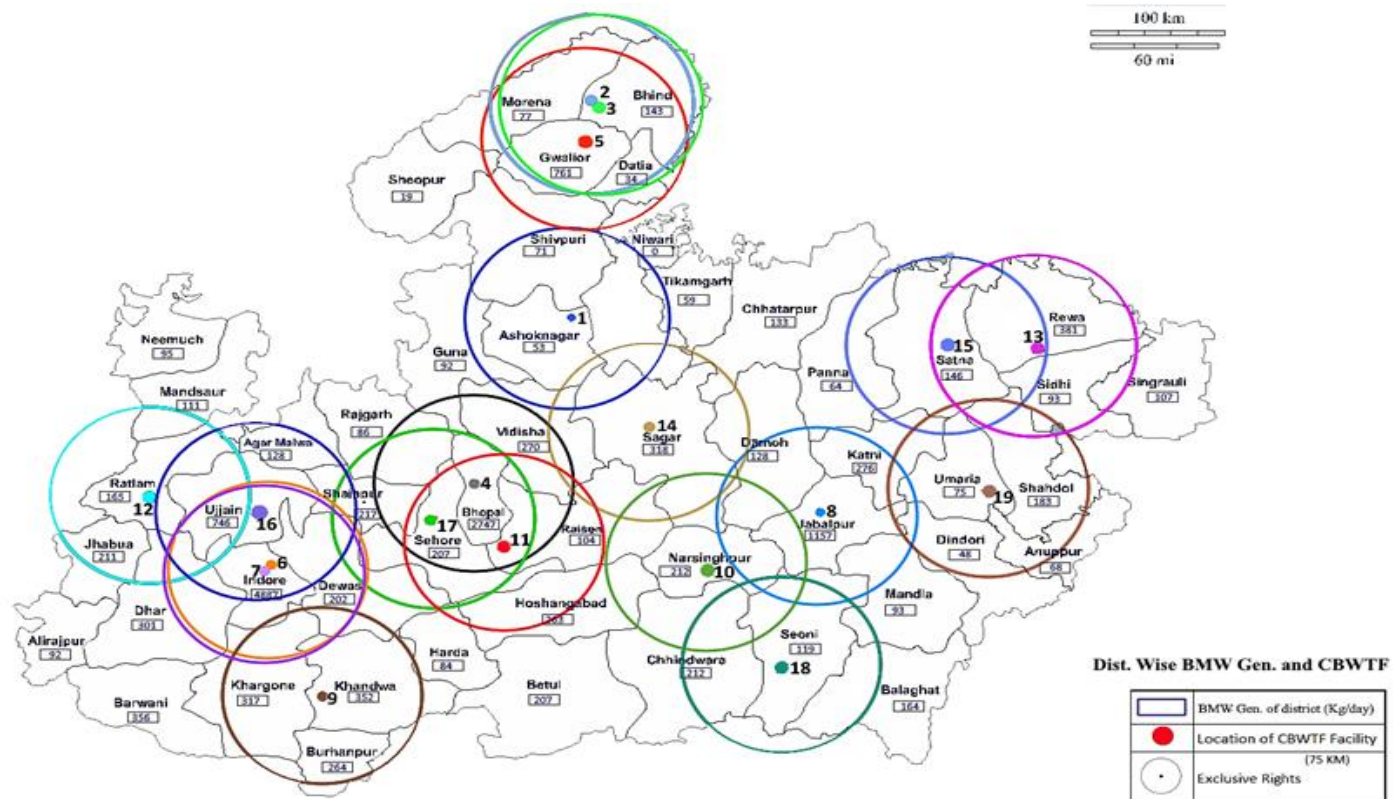


Figure – 2- Forecast for the Year 2042



CBWTF Code	District	Name of CBWTFs	BMW Authorization	Capacity (kg/day)
1	Ashoknagar	M/s. J.K. Medical Waste Management System	Apr-17	2400
2	Bhind	M/s. JRR Waste Management Pvt. Ltd.	Mar-18, Apr-23	6000
3	Bhind	M/s. VNS Solution	Apr-23	4800
4	Bhopal	M/s. BMW Solutions	Mar-19	6000
5	Sagar	M/s. Devis Surgico	May-21	2400
6	Indore	M/s. Hoswin Incinerator Pvt. Ltd.	Jan-02	12000
7	Indore	M/s. Agni Mitra	Oct-22	6000
8	Jabalpur	M/s. Elite Engineers	Sep-14	2400
9	khandwa	M/s. Medisure Incinerators	Dec-20	2400
10	Narsinghpur	M/s. CBWTF, Narsinghpur	Apr-23	4800
11	Raisen	M/s. India Waste Management (P) Ltd.	Dec-19	6000
12	Ratlam	M/s. Bio-Medical Waste Management System	Jan-03	1200
13	Rewa	M/s. Chitra Kiran Waste Management Pvt. Ltd.	May-23	6000
14	Gwalior	M/s. Devis Surgico	Apr-19	2400
15	Satna	M/s. Indo Water Management & Pollution Control Corporation	May-09	2400
16	Ujjain	M/s. Hostech Eco management Pvt. Ltd.	Sep-21	7200
17	Sehore	M/s. Environment Protection Corporation	Dec-11	2400
18	Seoni	M/s. Krupa Wastages	Jan-08	2400
19	Umaria	M/s. M.P. Bio-Medical Waste Disposal System	Dec-15	1200
20	Morena	M/s. Medicare Environmental Management Pvt. Ltd.	Proposed	6000
21	Chhindwara	M/s. Enviro Clean Solutions	Proposed	2400
22	Tikamgarh	M/s. Indo Tech Waste Solution	Proposed	2400
23	Shivpuri	M/s.J. K. Medical Waste Management System	Proposed	4800

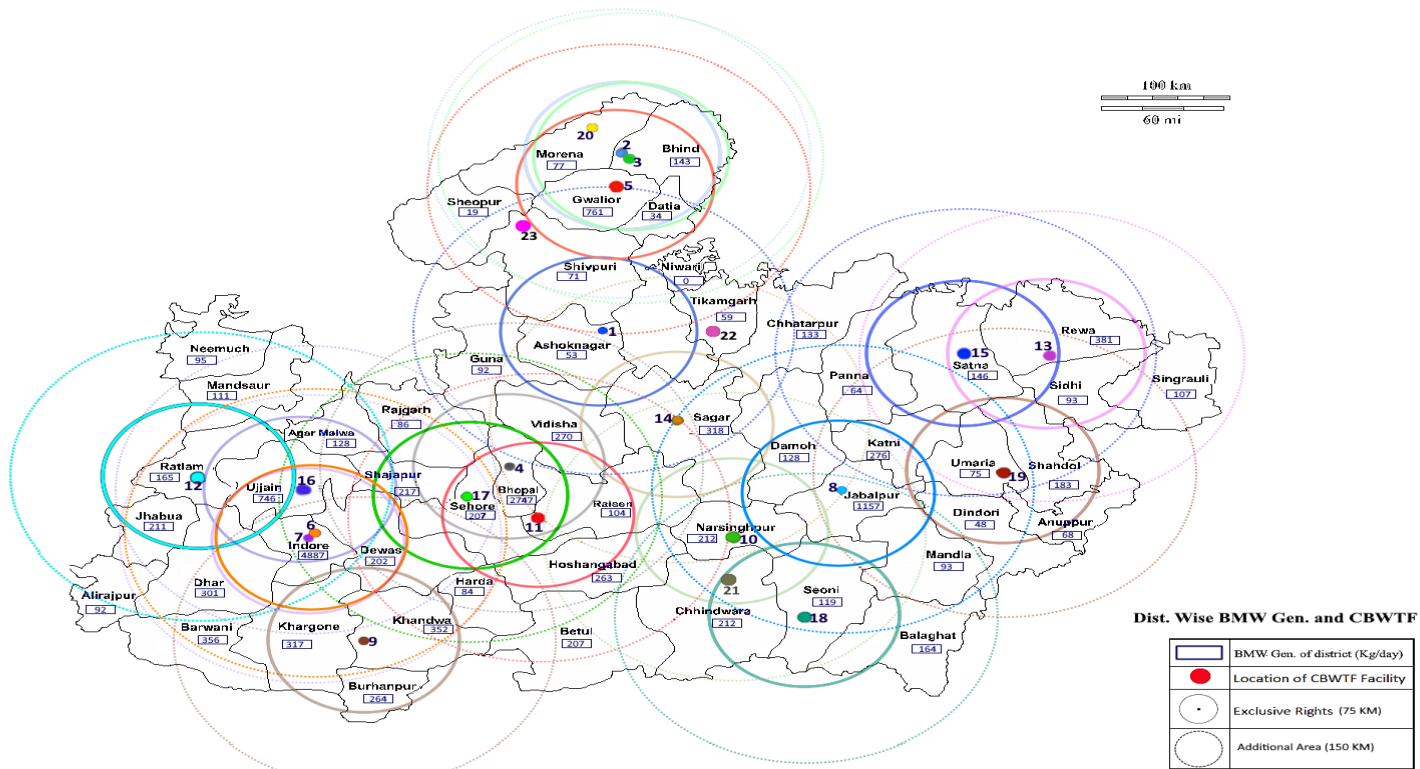
Figure - 3- Location of Installed and Proposed CBWTFs in M.P.



CBWTF Code	District	Name of CBWTFs	BMW Authorization	CBWTF capacity (kg/day)
1	Ashoknagar	M/s. J.K. Medical Waste Management System	Apr-17	2400
2	Bhind	M/s. JRR Waste Management Pvt. Ltd.	Mar-18, Apr-23	6000
3	Bhind	M/s. VNS Solution	Apr-23	4800
4	Bhopal	M/s. BMW Solutions	Mar-19	6000
5	Gwalior	M/s. Devis Surgico	Apr-19	2400
6	Indore	M/s. Hoswin Incinerator Pvt. Ltd.	Jan-02	12000
7	Indore	M/s. Agni Mitra	Oct-22	6000
8	Jabalpur	M/s. Elite Engineers	Sep-14	2400
9	khandwa	M/s. Medisure Incinerators	Dec-20	2400
10	Narsinghpur	M/s. CBWTF, Narsinghpur	Apr-23	4800

CBWTF Code	District	Name of CBWTFs	BMW Authorization	CBWTF capacity (kg/day)
11	Raisen	M/s. India Waste Management (P) Ltd.	Dec-19	6000
12	Ratlam	M/s. Bio-Medical Waste Management System	Jan-03	1200
13	Rewa	M/s. Chitra Kiran Waste Management Pvt. Ltd.	May-23	6000
14	Sagar	M/s. Devis Surgico	May-21	2400
15	Satna	M/s. Indo Water Management & Pollution Control Corporation	May-09	2400
16	Ujjain	M/s. Hostech Eco management Pvt. Ltd.	Sep-21	7200
17	Sehore	M/s. Environment Protection Corporation	Dec-11	2400
18	Seoni	M/s. Krupa Wastages	Jan-08	2400
19	Umaria	M/s. M.P. Bio-Medical Waste Disposal System	Dec-15	1200

Figure - 4- Installed CBWTFs in M.P. with 75 km radius



CBWTF Code	District	Name of CBWTFs	BMW Authorization	Capacity (kg/day)
1	Ashoknagar	M/s. J.K. Medical Waste Management System	Apr-17	2400
2	Bhind	M/s. JRR Waste Management Pvt. Ltd.	Mar-18, Apr-23	6000
3	Bhind	M/s. VNS Solution	Apr-23	4800
4	Bhopal	M/s. BMW Solutions	Mar-19	6000
5	Sagar	M/s. Devis Surgico	May-21	2400
6	Indore	M/s. Hoswin Incinerator Pvt. Ltd.	Jan-02	12000
7	Indore	M/s. Agni Mitra	Oct-22	6000
8	Jabalpur	M/s. Elite Engineers	Sep-14	2400
9	khandwa	M/s. Medisure Incinerators	Dec-20	2400
10	Narsinghpur	M/s. CBWTF, Narsinghpur	Apr-23	4800
11	Raisen	M/s. India Waste Management (P) Ltd.	Dec-19	6000
12	Ratlam	M/s. Bio-Medical Waste Management System	Jan-03	1200
13	Rewa	M/s. Chitra Kiran Waste Management Pvt. Ltd.	May-23	6000
14	Gwalior	M/s. Devis Surgico	Apr-19	2400
15	Satna	M/s. Indo Water Management & Pollution Control Corporation	May-09	2400
16	Ujjain	M/s. Hostech Eco management Pvt. Ltd.	Sep-21	7200
17	Sehore	M/s. Environment Protection Corporation	Dec-11	2400
18	Seoni	M/s. Krupa Wastages	Jan-08	2400
19	Umaria	M/s. M.P. Bio-Medical Waste Disposal System	Dec-15	1200
20	Morena	M/s. Medicare Environmental Management Pvt. Ltd.	Proposed	6000
21	Chhindwara	M/s. Enviro Clean Solutions	Proposed	2400
22	Tikamgarh	M/s. Indo Tech Waste Solution	Proposed	2400
23	Shivpuri	M/s.J. K. Medical Waste Management System	Proposed	4800

Figure – 5- Installed an proposed CBWTFs in M.P. with 150 km radius