

# **Implementation of the Biomedical Waste (Management and Handling) Rules, 1998 by hospitals in Satara city**

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India's progressive social development and economic growth have increased the demand for better health care and medical facility. The growth of hospitals and private clinics are surely a good sign of better health care facilities, however this has also increased the concern for generation of biomedical waste and its safe disposal.

Improper handling, treatment, storage, transport and disposal of biomedical Waste can lead to serious health hazards. If infectious waste is not segregated at the point of generation and stored separately, it can convert the entire waste into dangerous, infectious waste leading to spread of harmful, fatal and communicable diseases.

If this happens, the first casualty, i.e., persons directly at risk are the Doctors, Nurses and Hospital support staff, sanitary staff collecting and disposing waste and ultimately the general public at large. This poses a serious environmental threat.

To control the storage, transportation and final disposal of biomedical waste, the law has prescribed certain standard methods of classification of biomedical waste, its storage in color coded bins and disposal as per prescribed methods. Health Care Establishments (HCEs) are the major generators of the Bio Medical Waste (BMW). HCEs need to take authorization from MPCB for handling of BMW.

The Government in order to resolve this issue had notified Biomedical Waste (Management and handling) Rules, 1998 under the Environment (Protection) Act, 1986. These rules apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical

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waste in any form. These Rules are notified in 1998 by the Ministry of Environment & Forests (MoEF) under the Environment (Protection) Act, 1986. The 'prescribed authority' for enforcement of the provisions of these rules in respect of all the health care facilities located in any State/Union Territory is the respective State Pollution Control Board (SPCB)/ Pollution Control Committee (PCC) and in case of health care establishments of the Armed Forces under the Ministry of Defense shall be the Director General, Armed Forces Medical Services (DGAFMS). These rules consist of six schedules and five forms.

Biomedical waste has been defined as any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological and including categories mentioned in Schedule I. The increasing health care facility is a sign of growth of medical development in the country, however, it also raises concerns of safe disposal of biomedical waste. The rules framed for the safe disposal of biomedical waste impose liability on safe disposal of biomedical waste to the occupier. The occupier includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called, means a person who has control over that institution and or its premises.

According to World health organization report "waste from health care activities" the 20% of the total amount of waste generated from health care activities is infectious, toxic or radioactive. Further, this waste contains potentially harmful microorganisms which can cause infectious disease to patients, health care workers and to the general public. The world health organization estimates that in the year 2000 21 million hepatitis B virus infections, two millions hepatitis C virus infection and 26000 HIV infections worldwide have caused due to the use of contaminated syringes. The reason for this alarming statistic is non proper disposal and of needles and syringes worldwide.

In India the quantum of waste generated in India is estimated to be around 1-2 kg per bed per day in a hospital and 600 mg per day per bed in a general practitioner's clinic. The number health care establishment in Maharashtra has increased in the past few years and similarly the quantum of waste generation has also increased.

The BioMedical Waste (Management and Handling) Rules, 1998 provides for treatment and disposal of biomedical. The rules provide for disposal of waste in accordance in accordance with Schedule I, and in compliance with the standards prescribed in Schedule V. It also provides for standards of compliance to be adopted while disposal. It has been provided under Schedule V. Every occupier is required to set up required biomedical waste treatment facilities incinerator, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment facility.

The Central Pollution Control Board (CPCB) has prescribed guidelines for Common Bio-Medical Waste Treatment Facilities as well as for design and construction of Incinerators However, Health being a state subject, it is the responsibility of the concerned State Government to take necessary steps to monitor the disposal of biomedical wastes through the State Pollution Control Boards (SPCBs), and Pollution Control Committees (PCCs) in the Union Territories, as per the provisions made under the Biomedical Waste (Management & Handling) Rules, 1998.

A Common biomedical Waste Treatment Facility (CBWTF) is an important and cost effective way to treat and dispose biomedical waste. The installation of individual treatment facilities by small healthcare units requires comparatively high capital investment. Apart from it requires separate manpower and infrastructure development for proper operation and maintenance of treatment systems. The Common biomedical Waste Treatment Facility (CBWTF) is an answer to these important problems. The Central Pollution Control Board (CPCB) has prescribed guidelines for Common Biomedical Waste Treatment Facilities as well as for the design and construction of Incinerators. The State Government takes necessary steps to monitor the disposal of biomedical wastes through the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) in the Union Territories, as per the provisions made under the Biomedical Waste (Management & Handling) Rules, 1998.

The need for proper biomedical waste management has gained importance in recent years with the growth private health care sector in India. Technology is playing a major role in bringing quality in healthcare, be it better nursing communication systems, patient monitoring devices or tele-medicine to provide a low cost diagnosis to remote patients, etc. The concepts of medical tourism, is gaining importance, where hospitals of specialized nature will sooner or later come to

light. In this scenario a separate and autonomous department of the Government with penal powers is need of the time to deal with biomedical waste management in India.

In Maharashtra, Maharashtra Pollution Control Board (MPCB) enforces these Rules by

- Authorization of HCEs for generation and handling of BMW
- Authorization of CBMWTDFs for collection, treatment and disposal of BMW
- Periodic inspection and audit of the "system" to ensure compliance to the law.
- Taking action for non-compliance.
- Carrying out inventorization of BMW to report the status
- Undertaking awareness programs at HCEs

### **Biomedical Waste Management in Maharashtra**

Analysis of the BMW data carried on by the Maharashtra State Pollution Control Board shows that there was a significant increase in the number of HCEs in Maharashtra. As in 2009, Maharashtra had a total of 46,676 HCEs. Out of the total, 16,060 HCEs belonged to bedded and 30,616 HCEs were non-bedded. In 2010, Maharashtra has a total of 45,784 HCEs. Out of the total establishments, 14,438 HCEs are bedded and, 31,346 HCEs are non-bedded. It may be observed that the bedded HCEs decreased by 10 % and non-bedded HCEs increased by 2%.

Total Quantity of BMW Generated and Treated Total BMW generated in Maharashtra is close to 43,380 kg/day. This estimate includes BMW generated from both bedded and non bedded HCEs. Region wise, Mumbai contributes approx. 23.26% of the total BMW load. Pune contributes approx. 19.58% and Nagpur is close third with a 17.33% contribution.

Total BMW treated in Maharashtra is close to 38,202 kg/day out of a total of generated BMW of 43,380 kg/day from both bedded and non bedded facilities. However, as per information from CBMWTDF Operators, the total BMW treated in Maharashtra is close to 41,154 kg/day. This variation in the data shows a lack of coordination on BMW - between MPCB, HCEs and CBMWTDF operators.

Awareness is crucial for the compliance and so, the frequency of such activities needs to be increased by Regional Offices of MPCB, especially across non-bedded HCEs and bedded HCEs with less than 50 beds, as in Satara city. Arrangement should be made for periodic awareness

programs and training campaigns to generate awareness amongst MPCB, HCEs, CBMWTDF operators and transporters as well as common public to understand the risk associated with BMW management.

In order to know whether all relevant legal provisions are being followed by the HCEs in Satara, and to find out the difficulties and problems in implementing these rules The researcher has undertaken this Minor Research Project on this topic, which is approved by Shivaji University and UGC and is funded by UGC.

The present study is conducted in Satara city. Hence it is limited to all health care establishments within the boundaries of the Satara Municipal Council. Satara Municipal Corporation has divided the area of the Satara city into 39 wards (Prabhag) for governance and representation. Health care establishment, especially hospitals in Satara City, were selected randomly by applying the simple random sampling method. Questioner, Interview and observation techniques have been used for collection of data. A questioner sheet was given to selected hospitals. Few in depth case studies have been conducted to collect detailed information about implementation of legal norms and difficulties if any in their compliance.

In Satara, Association of Hospital Owners (AHO) along with CBMWTDFs, namely, NATURE IN NEED and Indian Medical Association (IMA) have arranged for simple, feasible, and environmentally friendly solutions for BMW management at different hospital routes for every type of biomedical waste as per the BMW (management and Handling) Rules 1998 as amended in 2011.

Former President of AHO, Dr Sandip Shrotri and President of AHO, Dr Amita Mahajani and the authority of CBMWTDF operator Shri A. B. Jadhav and Sagar Jadhav have developed the coherent scheme for biomedical waste management in Satara City, where the biomedical waste is collected by employees of Nature in Need and is transported to and disposed off at the CBMWTDF Centre at Songoan near Satara City. CBMWTDF Nature in Need has Incinerator, shredder, Autoclaving machine, sterilization tank, Disinfectant Tank etc. and is substantially following the guidelines prescribed by the Central Pollution Control board and the Maharashtra Pollution Control Board from time to time regarding collection, transportation and disposal of biomedical waste. Waste audits have been made mandatory for renewal of Consent to Operate.

This has ensured an increase in credibility of CBMWTF Nature in Need and better Health, Safety and Environmental compliance from employees from HSEs in Satara city.

However, in practice, sometimes it is difficult for the HCEs to monitor the waste generated under different categories as only nos. of colored bags and total weight of the bags are recorded and reported in the registers. This can lead to difficulties in exact mapping between data from authorization and data generated through the weighing of color coded bags. It may be worth therefore to revisit categorization and color codes to achieve simplicity as well as a mapping in data recording and management.

Very few and isolated awareness generation activities have been undertaken by the Regional Office of MPCB and the zonal office at Satara. Awareness is crucial for the compliance and so, the frequency of such sensitization programs needs to be increased, especially across non-bedded HCEs and bedded HCEs in Satara, with less than 5 beds.

Arrangement should be made for periodic awareness programs to raise awareness amongst the common public to understand the risk associated with BMW management. Parameters related to awareness should be selected and monitored before and after training to evaluate the change imparted by training amongst hospital support staff, sanitary staff as well as general public.

If requirements (under the Shops and Establishment Act, and BMW Rules) could be integrated with BMW authorization, then this will ensure that more HCEs (which are not authorized and /or not members of CBMWTFs) will be brought under compliance with this Act.

Special incentive may be provided to those HCEs and CBMWTFs who are strict and rigorously following all the norms as per legal provisions. Similarly, penal action ought to be taken by the Zonal pollution Control Board against the HCEs who violate the rules and procedure.

E-resource (manual) on BMW management should be made easily accessible to all. All information available regarding BMW management should be made available on the website and social media, for the enlightenment of the entire population of Satara regarding Bio Medical waste management and Disposal and various health hazards associated with it.

## **Conclusion**

From the research conducted in Satara city through the site visits to Health Care establishments and supervision, inspection of record with Nature in Need and on discussion with doctors and support staff in health care establishments, it can be stated that Common Biomedical Waste Treatment Facility (CBWTF) Nature in Need in Satara, plays an essential role in the collection, transportation and the safe disposal of biomedical wastes at Songaon. Many health care establishments have clear policy with regard to removal of biomedical waste.