



UNDERSTANDING THE NEW BIO MEDICAL WASTE MANAGEMENT RULE 2016 IS THE FIRST STEP TOWARDS IMPLEMENTATION

Microbiology

| | |
|----------------------------|--|
| Ankita Gupta | Resident, Hospital Infection Control Laboratory, Department of Microbiology, Subharti Medical College & Associated Chatrapati Shivaji Subharti Hospital, Meerut 250005 |
| Anita Pandey* | MD, Professor & Head, Secretary Hospital Infection Control Committee, Hospital Infection Control Laboratory, Department of Microbiology, Subharti Medical College & Associated Chatrapati Shivaji Subharti Hospital, Meerut, 250005. *Corresponding Author |
| Bhaskar Thakuria | MD, Professor, Infection Control Officer, Hospital Infection Control Laboratory, Department of Microbiology, Subharti Medical College & Associated Chatrapati Shivaji Subharti Hospital, Meerut, 250005. |
| Deepak Kumar Mittal | Consultant, Department of Clinical Oncology, Delhi State Cancer Institute, Dilshad Garden, Delhi, India. |

ABSTRACT

Background & Objectives: Improper management of Bio-Medical Waste poses serious threat to health care workers, waste handlers, patients, care givers, community and finally the environment. The need of safely managing the biomedical waste has led to the formulation of new Bio-Medical Waste Management (BMWM) rules 2016, recently published by the Ministry of Environment, Forests and Climate Change on 28th March 2016. The objective of this paper is to create awareness among the health care personnel regarding the changes mentioned in the new BMWM rules 2016 for implementation of the same in near future.

Methods: Both the new BMWM rule, 2016 and the previous BMW Management and Handling (BMWMH) rule, 1998 was thoroughly studied by the authors with reference to all its schedules and forms. The major highlights of new rules and its differences from previous one are discussed.

Results: Several new provisions have been added in the new rules. The duties of both the occupier and the operator are listed. The new rule segregates the infectious waste into four categories. Waste should be pre-treated through disinfection or sterilisation on-site as per World Health Organisation (WHO) guidelines before being sent for final disposal. The rule also emphasizes to phase out use of chlorinated plastic bags within two years from the date of notification and to establish a bar code system for disposal bags within 1 year. It ensures treatment of liquid waste in accordance of water act.

Conclusions: The rule 2016 is to be implemented with 2 years from its publication. Therefore, understanding the new BMWM Rule 2016 is the first step towards implementation followed by training and education of the Health care personnel on regular basis for compliance.

KEYWORDS

Biomedical waste, Waste rule 1998, Waste rule 2016, Management

INTRODUCTION

The Bio-Medical Waste (BMW), is defined as any waste generated during diagnosis, treatment or immunization, of human beings or animals or in research activity pertaining thereto or in the production or testing of biological or in health camps, including the categories mentioned in schedule I appended to these rules⁽¹⁾. Due to advancements and expansion in healthcare facilities, treatment modalities and use of plastic disposables there is unprecedented burden of BMW generated per day by the health care facilities⁽²⁾. The waste produced in the course of healthcare activities has a great potential and possibility for causing injury and infection than other type of waste⁽³⁾. In India the rate of waste generated ranges from 0.5-2 kg per bed per day⁽⁴⁾. Improperly managed BMW, in addition to the risk to the patients and workers who handle these wastes, poses a serious threat to public health and the environment⁽⁵⁾. According to World Health Organisation (WHO) 2009⁽⁶⁾, around 85% of the hospital waste are non-hazardous, 10% infective and remaining 5% non-infective but hazardous, thus importance of segregation so that the infectious waste does not mix up with the general non-infectious waste in black bag.

Management of the infectious waste is a major challenge to the hospitals. Ministry of Environment and Forest, Govt. of India notified the first BMW Management and Handling (BMWMH) Rules on 27th July 1998 under the provision of Environment Act 1986⁽¹⁾. These rules thereafter underwent timely amendments in the year 2000, 2003 and 2011⁽⁷⁾. Recently, the Ministry of Environment, Forests and Climate Change published the latest guidelines on 28th March 2016, these rules may be called the BMW Management (BMWM) Rules, 2016 and shall come into force on the date of their publication in the Official Gazette and is to be implemented within 2 years of its publication⁽⁸⁾.

These new rules are more comprehensive in nature and contain important features of BMWMH rules 1998 with several new provisions added to these new rules. However, implementation of the new rules in the healthcare facility is a herculean task. Before

implementation the administrators and policy makers of the health care facility need to be aware about the features of new BMWM rules and its differences from the previous one. Therefore the objective of this paper is to create awareness among the health care providers regarding the changes mentioned in the new BMWM rules 2016 for implementation of the same in near future.

APPLICATION

BMWM rule 2016 will apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste. However, the rule will not apply to radioactive, hazardous chemicals, solid wastes under the municipal solid waste, genetically engineered microorganisms or cells rules etc.⁽⁸⁾.

OBSERVATIONS & HIGHLIGHTS OF RULE 2016

Both the new BMWM rule, 2016 and the previous BMWMH rule, 1998 was thoroughly studied by the authors in reference to all its schedules and forms. BMWM rule 2016 contains 4 schedules, 5 forms and 18 rules. The major changes in both the rules are highlighted in (Table -1)

Table-1: Major changes between BMWMH 1998 and BMWM 2016

| BMWMH 1998 | BMWM 2016 |
|---|--|
| Occupiers with more than 1000 beds required to obtain authorisation | Every occupier generating BMW, including health camp or Ayush required to obtain authorisation |
| Duties of operator absent | Duties of operator is listed |
| BMW was divided in ten categories | BMW is divided in four categories |
| No format for annual report | A format for annual report appended with the rules |
| *6 Schedules: I,II,III,IV,V,VI **5 forms (I,II,III,IV,V) | * 4 I,II,III,IV schedules **5 forms (I,II,III,IV,V) |

| | |
|---|--|
| Use of chlorinated bags | Use of non-chlorinated bags(2 yrs) |
| No Bar code system for disposal bags | Bar code system present for disposal (1 year) |
| Emission limit of SPM in incinerator 150mg/Nm ³ . Residence time 1 sec | SPM limit is 50mg/Nm ³ Residence time 2 sec |
| Chemical pretreatment with 1% sodium hypochlorite | Chemical pretreatment with 10% sodium hypochlorite |
| BMW rules were for discarding the waste | Waste disposal rules are for recycling the waste |
| Disposal of BMW was by incineration/ autoclaving /microwaving/ mutilation/shredding | Disposal of BMW is by newer methods like plasma pyrolysis /hydrolysis /encapsulation/ inertization / besides the methods mentioned in rule 1998. |

The new rule 2016 clearly lists the duties of both the “occupier” and the “operator”. An “Occupier” is a person with administrative control of the facility generating BMW. As per the new rule the occupier require to take authorisation, in accordance with the guidelines issued by the Central Pollution Control Board (CPCB) (9). Duties of an occupier are listed in (Table -2).

Table-2: Duties of Occupier as defined in Rule 2016 listed

| S. No. | Duties |
|--------|--|
| 1. | To provide safe storage of BMW in coloured bags so that the untreated waste does not mix with municipal waste |
| 2. | To pre-treat laboratory waste, blood samples as prescribed by WHO & NACO |
| 3. | To carry out training, immunization and periodical health check-up of HCWs and waste handlers. |
| 4. | To outsource the treatment and disposal facility to CBMWTF if it is within the range of 75 km. If CBMWTF is not within the range, the occupier can set up one after the approvals from the prescribed authority. |
| 5. | To document & update all the records regarding BMW. |

An "Operator" are those who collect, receive, store, transport, treat and dispose bio-medical waste with a common bio-medical waste treatment facility" (CBMWTF) Duties of an operator are listed in (Table-3)

Table-3: Duties of Operator as defined in Rule 2016 listed

| S. No | Duties |
|-------|---|
| 1. | To ensure that BMW is timely collected and handled without any adverse effect to human health. |
| 2. | To phase out use of chlorinated plastic bags within two years from the date of notification and to establish a bar code system for disposal bags within 1 year. |
| 3. | To provide training, occupational safety and immunization to health care workers. |
| 4. | To maintain all records viz. disposal, major accident etc. |

In BMW Rules 2016, there are 4 schedules, 5 forms and 18 rules (Table -4 & 5)

Table-4: Differences in Schedule in rule 1998 & 2016

| Schedule | 1998 | 2016 |
|----------|---|--|
| I | Category or type of waste (10 categories) | Categorized according to color code & type of waste with treatment & disposal options (4 categories) |
| II | Color code, type of container, waste category & treatment options | Standard for treatment & disposal of BMW (including plasma pyrolysis & dry heat sterilization) |
| III | Label for BMW container/Bags | List of prescribed authorities & heir corresponding duties |
| IV | Label for transportation of BMW | -Label for BMW container/Bags -Label for transporting |
| V | Standard for treatment & disposal of BMW | Schedule moved to Schedule II |
| VI | Schedule for waste treatment facilities | Schedule moved to Schedule III |

Table-5: Differences in Forms in rule 1998 & 2016

| Form | 1998 | 2016 |
|------|---|---|
| 1 | Application for authorization | Accident reporting |
| 2 | Annual report | Application or renewal of authorization |
| 3 | Accident reporting | Authorization for operating facility of BMWM |
| 4 | Authorization for operating facility | Annual report |
| 5 | Application for appeal against order passed by prescribed authority | Application for appeal against order passed by prescribed authority |

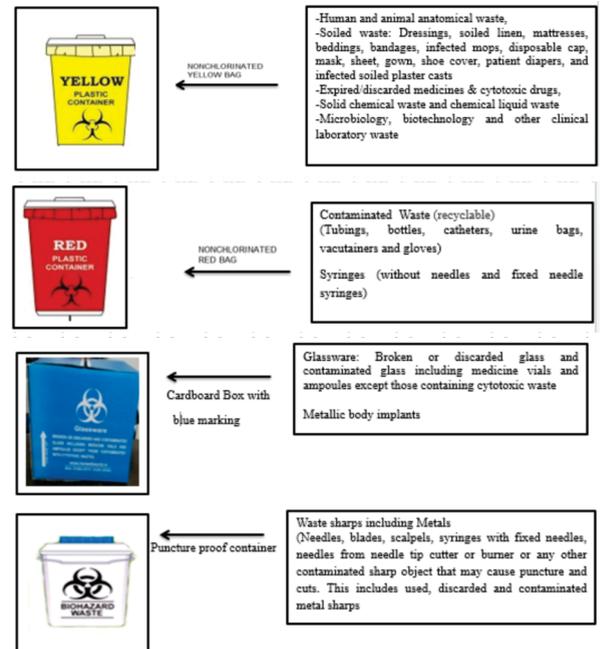


Figure-1: Category and Colour coding of Biomedical waste according to Rule 2016 in Schedule I

Segregation of different category of waste as per rule 2016 is given in Schedule I (Figure -1). The new rule emphasizes few points such as: the microbiological waste and other laboratory waste should be pre-treated or sterilized as per World Health Organisation (WHO) or National AIDS Control Organisation (NACO) guidelines before handing over to the CBMWTF. All the disposal bags should have proper bar code system and should be non-chlorinated. The health care workers and the staff handling BMW should undergo induction training and also should be immunized against Hepatitis B and tetanus. Every occupier or operator of CBMWTF need to submit an annual report to the prescribed authority on or before the 30th June every year. Monitoring is the part of BMW rules 2016 for which various committees and authorities are placed.

DRAWBACKS OF THE NEW RULE 2016

The new BMW rule 2016 though have been simplified and made easier so that they can be easily followed definitely has lots of practical drawbacks; to name a few i) Chemical liquid waste to be discarded & transported in yellow bag? Regarding the feasibility of transportation. ii) Card board boxes with blue marking have both glass and metallic implants together. However the methods of disposal for blue boxes are disinfection /autoclaving /microwaving / hydroclaving and then sent for recycling. Is it possible to disinfect cardboard boxes? Will it not be wet??? iii) Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes to be discarded in cardboard boxes with blue colored marking while, expired or discarded medicines: pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials to be discarded in yellow coloured non-chlorinated plastic bags or container??? Training and implementation in the health care setting will be a nightmare.

CONCLUSION

As rightly said “*Let the waste of the sick not contaminate the lives of the healthy*”, it should be ensured that the BMW generated from a health care setting is managed properly to safeguard proper health of mankind. Implementation of BMWM rules is the need of the hour. Ministry of Environment and climate change has given the amendments in the new BMW rule 2016 which is to be implemented within 2 years of notifications i.e. by 2018. Thus the healthcare facilities should gear up and depute persons who can first understand the new rule and then carry out repeated training and education of all the HCPs regarding the amendments so as to create awareness and finally take measures towards its implementation in near future.

Financial support: Nil

Conflict of Interest: None declared

REFERENCES

1. Ministry of Environment and Forests, Notification N.S.O.630 (E), Biomedical waste (management and handling) Rules, 1998. The gazette of India , Extraordinary, Part II, Section 3 (ii) , Dated 27th July 1998, New Delhi, pp. 10-20.
2. Malini RC, Bhowmik KT. Current perspectives on biomedical waste management: Rules, Conventions and treatment technologies. Review article. Indian J med microbiol. 2017;35(2):157-164.
3. Rutala WA, Mayhall CG. Medical waste. Infect Control Hosp Epidemiol. 1992 Jan;13(1):38-48.
4. Mathur V, Dwivedi S, Hassan M, Misra R. Knowledge , Attitude and Practices about Biomedical waste management among Healthcare personnel: A cross sectional study. Indian J Community Med. 2011 Apr; 36(2):143-5
5. Chitnis V, Vaidya K, Chitinis DS. Biomedical waste in laboratory medicine: audit and management. Indian J Med Microbiol. 2005;23(1):6-13
6. World Health Organization (WHO). Wastes from health-care activities. Fact sheet No.253, Geneva.2009.
7. BMW Rules; Biomedical waste (management and handling) Rules 2011. Ministry of Environment and Forests Notification, Government of India. -<http://moef.nic.in/downloads/public-information/salient-features-draft-bmwmh.pdf>
8. Ministry of Environment, Forest and Climate change, Notification. The Gazette of India, Extraordinary, Part II, Section 3, Sub-section (I) , Dated 28th March, 2016, New Delhi, pp.1-37.
9. Central Pollution Control Board. Manual on Hospital Waste Management, India.2000.