

Bio-Medical Waste Pollution and Management



:
Ajay Kumar Lal
aklal87@gmail.com
9418020350

Bio-medical Waste means:

- Any waste generated during the diagnosis, treatment or immunisation of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps, including the categories mentioned in Schedule I of BMW Rules 2016 Rules





Points that call for Top Attention

- ❑ Highly toxic Bio-medical waste mixing with Municipal waste.
- ❑ Non-proper segregation could lead to mixing of categories of waste with each other.
- ❑ Proper use of protective equipments such as gloves, masks etc. by hospital staff handling the waste.
- ❑ Hitches in proper treatment and disposal



☐ Storage of infected bio-medical waste more than 48 hours before handling to the bio-medical waste collection agency.

☐ Separate room for storage of bio-medical waste in hospitals.

☐ Maintenance of record of bio-medical waste generation.

☐ Proper training to the bio-medical waste handling staff of hospitals.

☐ Lack of awareness among general public and hospital



Summary of BMW Rules, 2016

- 18 Rules, 4 Schedules and 5 Forms.
- Constituted under the powers conferred by Section 6,8, and 25 of the Environment (Protection) Act, 1986.
- Schedule I: BMW categories, segregation, colour coding, collection, treatment & disposal options.
- Schedule II: Standards for Treatment and Disposal.
- Schedule III : list of Prescribed Authorities & corresponding duties.
- Schedule IV : Labels for BMW containers & Bags.
- Form-I contains; Accident Reporting.
- Form II & III contains; Application and Authorization document
- Form IV contains; Annual Reporting
- Form V contains: Application for filing Appeal

Applicability of BMWM Rules, 2016

Applies 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.

Bio-medical waste Amendment- Highlights

Amendment 2018:-

- Every health care facility to follow guidelines on safe management of wastes from health care activities and WHO Blue Book, 2014 and then sent to the Common bio-medical waste treatment facility for final disposal.
- Every occupier shall phase out the use of chlorinated plastic bags and shall not be used for storing and transporting of bio-medical waste and occupier or operator of CBMWTF shall not dispose of such plastic by incineration.

Amendment 2019:-

- Health care bedded facilities shall maintain day to day register for bio-medical waste and less than 10 bedded shall have to comply with output discharge standards for liquid waste.
- Chlorinated plastic bags shall not include urine bags, effluent bags, abdominal bags and chest drainage bags.

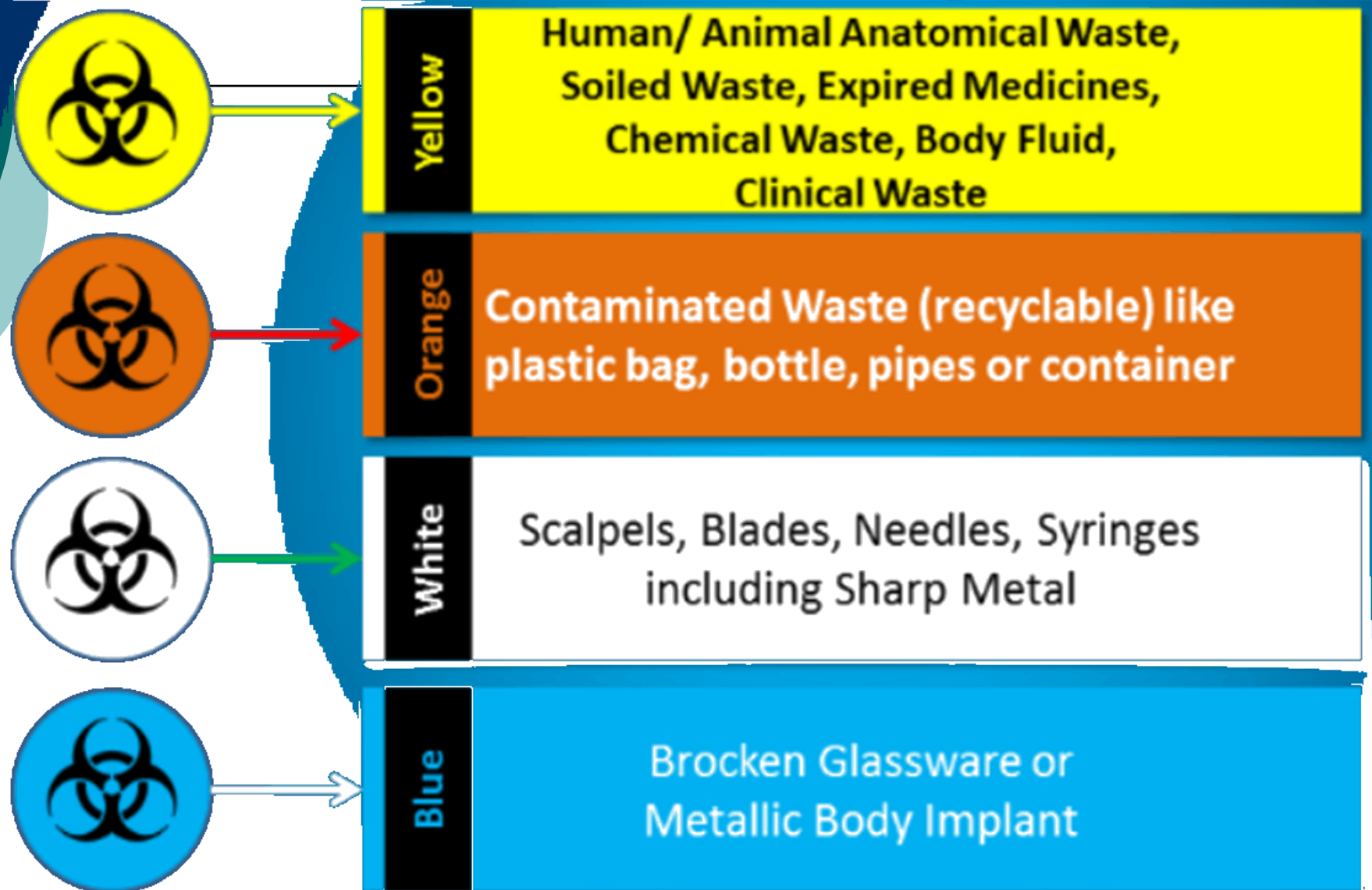


Authorities responsible for implementation of BMW Rules, 2016 in the State

- State Pollution Control Boards.
- State Ministry of Health and Family Welfare or State Department of Animal Husbandry and Veterinary.
- State Government of Health or Administration.
- Municipalities or Corporations, ULBs and Gram Panchayats.

* Their corresponding duties are specified in **Schedule III** of BMW Rules, 2016

Bio-Medical Waste Management Rules, 2016



Collection and Segregation of Bio-medical waste as per BMW Rules, 2016

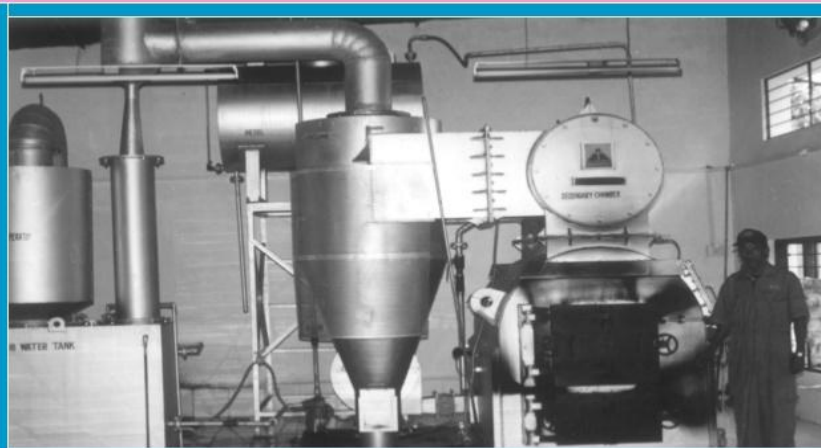
Category	Type of Bag or Container
Yellow	Yellow colored Non-chlorinated Plastic Bags or Containers
Red	Red Colored Non-chlorinated Plastic Bags or Containers
White (Translucent)	White or translucent Puncture proof, Leak proof, tamper proof containers
Blue	Cardboard boxes with blue colored markings



Treatment and Disposal

Category	Treatment and Disposal
Yellow	Incineration or Plasma Pyrolysis or Deep Burial. However, deep burial is permitted only in rural or remote areas where there is no facility for common bio-medical waste treatment facility

Bio Medical Wastes Destruction by Double Chambered Incinerator



Contd.....

Category	Treatment and Disposal
Red	Autoclaving or micro-waving/ hydroclaving followed by shredding. Treated waste to be sent to registered or authorized recyclers or for energy recovery or plastics to diesel or fuel oil or for road making, whichever is possible. Plastic waste should not be sent to landfill sites.



Contd....

Category	Treatment and Disposal
White (Translucent)	Autoclaving or Dry heat sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete; combination of shredding cum autoclaving; and sent for final disposal to iron foundries (having consent to operate from PCB or PCC) or sanitary landfill or designated concrete waste sharp pit



Needle Destroyer

Contd...

Category	Treatment and Disposal
Blue	Disinfection (by soaking the washed glass waste after cleaning with detergent and Sodium Hypochlorite treatment) or through autoclaving or microwaving or hydroclaving and then sent for recycling



Some Basic Must Actions for collection, transport and storage:

- Collection bins properly labelled and different for each category.
- Designation of different people for collection of each types of waste.
- Collection in closed containers.
- Trolleys to be provided for movement.
- Protective masks, gloves, boots, aprons, gowns etc during collection.
- For transportation of waste patients/ crowded area should be avoided.
- Waste bags should be sealed properly.

Contd....

- Storage room should not be accessible by the animals and visitors.
- Separate room for storage of bio-medical waste and room should have written warning on the front.
- Storage room should be locked.
- Surface should be clean and proper drainage outlet.
- Storage room should be accessible by vehicle coming for collection of bio-medical waste.
- As per BMWWM Rules, 2016 storage is prohibited beyond 48 hours.

Thank You



Handle with Care