



CRH SIKKIM
MANIPAL
UNIVERSITY
CENTRAL REFERRAL HOSPITAL - SMIMS

Documented Procedure

TITLE: HANDLING AND MANAGEMENT OF
BIOMEDICAL WASTE

DOCUMENT NO: SOP/CRH/MIC/BMW/31

REVISION NO: 00

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VERSION NO. 01

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Standard Operating Procedure

Handling and Management of Biomedical Waste

MASTER

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|  Ms. Priya Ravi- Operations Executive |  Dr. Dechen Chomu Tshering- Microbiologist |  Dr. Gautam Dey- MS Dr. Mingma L. Sherpa | DP |
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SOP ON BIOMEDICAL WASTE MANAGEMENT

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1. Introduction:

Biomedical waste is any waste generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in production or testing of biological substance/elements.

2. **Objective:** To ensure that biomedical waste is generated, segregated, stored, handled, transported and disposed as per applicable statutory regulations.

3. Scope of Service:

It is applicable across the HCO to all areas generating the biomedical waste.

4. Functional Structure:

The functioning and management of biomedical waste is supervised by the Biomedical Waste Committee. It includes members nominated by the Head of the Institution and Microbiologist.

Members include-

Representatives from:

- Nursing Administration
- General Administration (Operations)
- Engineering
- Continuous Nursing Educators
- Headed by the HOI as Chairperson and Assisted by the Microbiologist as Member Secretary

Frequency of meeting: Once in 3 months and as and when required

5. Procedure:

- Segregation of biomedical waste
- Collection as per designated schedules
- Transportation through dedicated vehicles and route

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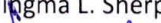
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- Final treatment and disposal

6. Roles and Responsibilities:

| Sr. No | Procedure | Functional Responsibility |
|--------|---------------------------------------------------------------------------------------------------------|-----------------------------|
| 1. | Segregation of waste at source without intermixing different categories of waste | Staff Nurse/Ward Incharge |
| 2. | Following the colour coded segregation as per guidelines 2016 | Staff Nurse/Ward Incharge |
| 3. | Sending biomedical waste to treatment and disposal site with labels on plastic bags | Staff Nurse/Ward Incharge |
| 4. | Educating and providing updates on the guidelines | Continuous Nursing Educator |
| 5. | Collection and transportation of biomedical waste | Housekeeping staff |
| 6. | Operating the Equipment and treatment at the central site | Engineering |
| 7. | Facility Management at the central site | Engineering |
| 8. | Handover of treated recyclable items to registered scrap vendor and movement of items from central site | Housekeeping and Security |
| 9. | Record keeping of weighing of biomedical waste | Housekeeping Supervisor |
| 10. | Submission of Annual Report | Operations |
| 11. | Checking adherence to statutory norms | Operations |
| 12. | Adherence to standards of autoclave sterilisation | ADNS and Microbiologist |
| 13. | Adherence to standards of incineration | Engineering |
| 14. | Contract with the registered scrap vendor | Engineering |

7. Schedule- 1

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Biomedical wastes categories and their segregation, collection, treatment, processing and disposal

| Category | Type of Bags/Container Used | Type of Waste | Treatment/Disposal Options |
|----------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Yellow | Non-Chlorinated Plastic Bags | <ul style="list-style-type: none">Human Anatomical WasteAnimal Anatomical WasteSoiled WasteExpired/Discarded MedicinesChemical WasteMicrobiology, other clinical lab wasteChemical liquid waste | Incineration Separate Collection system leading to Effluent Treatment System |
| Red | Non-chlorinated Plastic Bags | Contaminated Recyclable Waste like tubings, IV bottles, intravenous tubes, IV sets, catheters, syringes (without needles), gloves | Autoclaving, Shredding and sent for recycling |

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|-------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| | | and urine bags, vaccutainers | |
| White | Translucent puncture and leak proof containers | Waste metal sharps including needles, syringes with fixed needles, scalpels, blades, any other metal sharp | Needles burnt in the needle destroyer. Pre-treatment with 1- 2% hypochlorite solution. Encapsulation in cement concrete pit |
| Blue | Puncture proof containers | Glasswares | Autoclaving and sent for recycling |

8. Collection and Transportation of Waste

Waste is collected thrice a day and transported in dedicated wheel barrow vehicles and carried through a dedicated route by housekeeping staff.

9. Equipment at the Central Treatment Site

- Incinerator- 50kgs
- Shredder- 50kgs
- Autoclave- 80ltrs

10. Standards for Incineration

- The temperature of the primary chamber shall be a minimum of 800 °C and the secondary chamber shall be minimum of 1050 °C + or - 50 °C.
- The secondary chamber gas residence time shall be at least two seconds.
- Stack Height: Minimum stack height shall be 30 meters above the ground and shall be attached with the necessary monitoring facilities as per requirement of monitoring of 'general parameters' as notified under the Environment (Protection) Act, 1986 and in

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accordance with the Central Pollution Control Board Guidelines of Emission Regulation Part-III.

- Ash from incineration of biomedical waste shall be disposed of at common hazardous waste treatment and disposal facility. However, it may be disposed of in municipal landfill, if the toxic metals in incineration ash are within the regulatory quantities as defined under the Hazardous Waste (Management and Handling and Transboundary Movement) Rules, 2008 as amended from time to time.
- The BMW committee shall monitor the stack gaseous emissions (under optimum capacity of the incinerator) once in three months through a laboratory approved under the Environment (Protection) Act, 1986 and record of such analysis results shall be maintained and submitted to the prescribed authority. In case of dioxins and furans, monitoring should be done once in a year.

11. Standards for Shredding:

- The waste shall shred into 5mm pieces

12. Standards for Autoclaving:

- The autoclave should be dedicated for the purposes of disinfecting and treating bio-medical waste.
- A temperature of not less than 121° C and pressure of 15 pounds per square inch (psi) for an autoclave residence time of not less than 60 minutes; or
- A temperature of not less than 135° C and a pressure of 31 psi for an autoclave residence time of not less than 45 minutes; or

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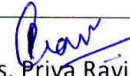
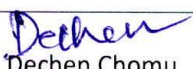
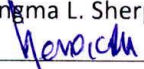
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- A temperature of not less than 149° C and a pressure of 52 psi for an autoclave residence time of not less than 30 minutes.
- Medical waste shall not be considered as properly treated unless the time, temperature and pressure indicators indicate that the required time, temperature and pressure were reached during the autoclave process. If for any reasons, time temperature or pressure indicator indicates that the required temperature, pressure or residence time was not reached, the entire load of medical waste must be autoclaved again until the proper temperature, pressure and residence time were achieved.
- Recording of operational parameters: Each autoclave shall have graphic or computer recording devices which will automatically and continuously monitor and record dates, time of day, load identification number and operating parameters throughout the entire length of the autoclave cycle.
- Spore testing: The autoclave should completely and consistently kill the approved biological indicator at the maximum design capacity of each autoclave unit. Biological indicator for autoclave shall be Geobacillusstearothermophilus spores using vials or spore Strips; with at least 1×10^6 spores. Under no circumstances will an autoclave have minimum operating parameters less than a residence time of 30 minutes, a temperature less than 121° C or a pressure less than 15 psi. The occupier or operator of a common bio medical waste treatment and disposal facility shall conduct this test at least once in a month and records in this regard shall be maintained.

13. Submission of Annual Report:

- The Annual Report is submitted by the Head of Institution on or before 30th June every year to the State Pollution Control Board, in the prescribed format as provided in Form-IV of biomedical waste handling rules 2016.

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- The Annual Report shall also be uploaded in the hospital website.

14. Staff Welfare and Safety:

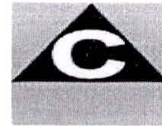
- All biomedical waste handlers shall be vaccinated against hepatitis B vaccines and immunized with tetanus toxoid
- All waste handlers will be provided with sufficient and suitable Personal Protective Equipment (PPE)

15. LABEL FOR BIO-MEDICAL WASTE CONTAINERS or BAGS



HANDLE WITH CARE

CYTOTOXIC HAZARD SYMBOL



HANDLE WITH CARE

| | | | |
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16. Records and Documents:

- Biomedical Waste Weighing Record
- Autoclave graph records
- Autoclave sterilisation records
- Staff vaccination records
- Vendor handover records
- Minutes of Meeting
- Needle stick injuries records if any
- Logbook of Autoclaves, Shredder and Incinerator
- Correspondence with Pollution Control Board

17. References:

- Biomedical Waste Handling and Management Rules 2016/2018

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