



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

awareness, improve practices, change attitudes and monitor the system.

Induction training of the newly recruited staff:

'Induction Training is provided to each of the fresh new employee, involved in patient-care service in the hospitals, whether a Doctor, a Nurse a Technician or a Group D staff. It is a prerequisite for the release of first salary.

Refresher training of all the staff members:

A regular training of the staff CME's, Workshops, are the essential part to maintain the Hospital Waste Management (HWM) at the best. It is necessary to conduct the regular refresher training of all the staff members of the hospital. , A 'training calendar' for all categories of staffs of the hospitals has been prepared.

Records to be maintained: Hospital maintains records related to generation, collection, reception, storage, transportation, treatment, disposal and /or any form of handling of biomedical waste in accordance with above rules and any guidelines.

ETP & STP plant monthly reporting is submitted to MPCB and six-monthly reports is submitted to MOEF. Daily ph level and TSS are checked in hospital lab near ETP. Record is maintained in Laboratory.

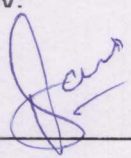
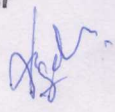
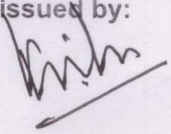
Monitoring and supervision:

A Monitoring Team which includes Infection control officer, ICN, Health inspector is responsible for day to day visits and surveillance of compliance with BMW practices. Nursing Sisters, Technicians and Sanitation staff is responsible for supervision of segregation practices in the specific area, allocated to them. The Nursing Sister in charge of the area is expected is taking round of the area every day.

CPCB Rev. 2 dated 18.04.2020

CPCB Rev 4 dated 27/7/2020

CONFIDENTIAL

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

Mercury spill management:

If accidental spill of mercury occurs it is to be collected in a special manner as follows:

- I. Do not touch mercury.
- II. Remove all jewelry, wear gloves, masks.
- III. Wear double latex gloves before handling the mercury spill.
- IV. Mercury should be collected using a pipette or syringe and collected in a container containing water.
- V. It should be further handed over to the Health inspector.

Sharps Injury Management

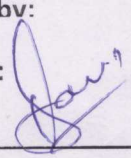
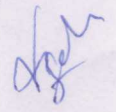

The commonest cause of injury while handling the waste is inappropriate segregation wherein sharp waste is deposited in containers meant for non-sharp waste. When sharp injury occurs, following procedures is to be followed.

- (i) Stop the procedure immediately and wash the wound with soap and water, encourage Bleeding the apply antiseptic.
- (ii) Immediately report to CMO in Casualty for First aid and emergency treatment or any other action and follow-up advice, if required. 'PEP' is provided in casualty immediately as per NKPSIMS guidelines.
- (iii) Retention, if possible, of the item and details of its source for identification of possible Infection.
- (iv) Investigation, determination and implementation of remedial measures.

Recording of Sharp injury: Needle Sticks/ Sharp injury should be recorded as per the Proforma provided by NKPSIMS PEP Guidelines. This Proforma is available in casualty and Collected by ICN

Training

Needs of different categories of persons are identified and training is provided regularly, as well as informally onsite during inspection or supervisory rounds. The objectives of training are to increase

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

SAFETY ISSUES AND OTHER PROTOCOLS PPE & VACCINATION OF THE HEALTH CARE WORKERS:

All waste handlers have been provided with Masks, Caps, Gum Boots, Gloves, and Disposable apron which they are expected to wear while dealing with the waste. All health care workers are vaccinated against Hepatitis B and tetanus.

DEALING WITH SPILLAGE:

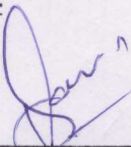
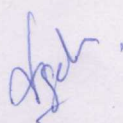
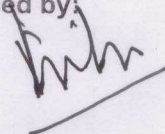
Liquid spill management:

For small volume spills:

- Cover spills of infected or potentially infected material on the floor with paper towel/ blotting paper/ newspaper. Pour 1% Phenol or freshly prepared 1% hypochlorite solution.
- Leave for 30 minutes for contact
- Then it wipe with gauze or cloth with gloved hands.
- The gauze or cloth used to wipe is to be considered as noninfectious waste and discarded in general waste.

For large volume spills:

- Cordon off the area
- Wear gloves.
- Mop with absorbent cotton/gauze and discard it to infectious waste bin
- Cover spills of infected or potentially infected material on the floor with paper towel blotting paper/newspaper. Pour 5% Phenol or freshly prepared 5% hypochlorite solution.
- Allow it for 30 min contact period.
- Wipe thoroughly with gloved hands using cotton or gauze and treat the gauze as soon as infectious waste and dispose accordingly.

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



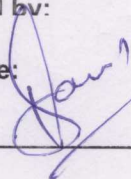

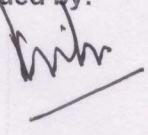
Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

LABEL FOR TRANSPORT OF BIO-MEDICAL WASTE CONTAINERS/BAGS

	Day: Month
	Year
Waste Category . (Color coding)	Date of generation
Waste Description	
Sender's Name & Address	Receiver's Name & Address
Phone No.:	Phone No.:
Telex No.	Telex No. :
Fax No.	Fax No. :
Contact Person	Contact Person:
In case of emergency please Contact:	
Name & Address:	
Phone No.	

CONFIDENTIAL

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

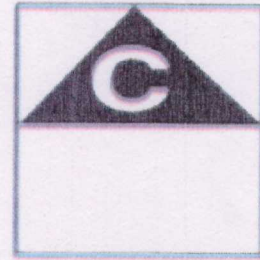
Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

BIOHAZARD SYMBOL
जैविक परिसंकट चिन्ह



BIOHAZARD
जैविक परिसंकट

CYTOTOXIC HAZARD SYMBOL
कोषिकाविध परिसंकट चिन्ह

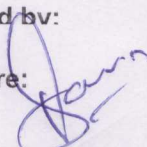
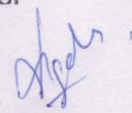
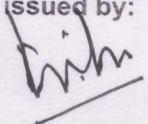


CYTOTOXIC
कोषिकाविध

CONTROL

Biohazard label is applied on all the three colored Red, Blue, yellow and sharp box.

Cytotoxic label is applied on black colored box discarded medicines and cytotoxic drugs are disposed in it.

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

No liquid waste is released in municipal sewer/land without pretreatment.

The effluent generated from the hospital should conform to the following limits (Established by MPCB)

PARAMETERS	PERMISSIBLE LIMITS
PH	63-9.0
Suspended solids	100 mg/l
Oil and grease	10 mg/l
BOD	30 mg/l
COD	250 mg/l
Bio-assay tests	90% survival of fish after 96 hours in 100% effluent.

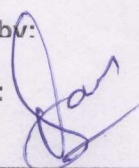
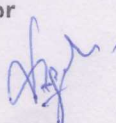
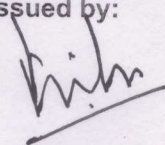
Liquid Waste (waste generated from laboratory & laundry, cleaning, housekeeping, mortuary and disinfecting activities) is treated in ETP plant. Hospital is having its own one ETP (effluent treatment plant) All the waste water generated in hospital premises is treated in these plants. Hazardous biomedical waste is treated in ETP plant its PH level is checked daily and other specifications are checked on regular basis. Waste generated in the form of dry cake is sent to agency Ramky Enviro engineers LTD. Treated water is used for irrigation and horticulture purpose inside the campus and all flush of toilets are attached with this treated water supply.

Notes:

1. Color coding of waste categories with multiple treatment options as defined in Table 1 shall be selected depending on treatment option chosen, which shall be as specified in Table 1

Different labels for Bio-medical waste containers and bags shall be required for identification and safe handling of this waste. These labels for storage/transportation of Biomedical waste are as under,:

LABEL FOR BIO-MEDICAL WASTE CONTAINERS/BAGS

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

Duties of Common Biomedical Waste Treatment Facility (CBWTF):

- Report to MPCCs about receiving of waste from wards
- Operator of CBWTF shall ensure regular sanitization of workers involved in handling and collection of biomedical waste;
- Workers shall be provided with adequate PPEs including three-layer masks, splash proof aprons/gowns, nitrile gloves, gum boots and safety goggles;
- Vehicle should be sanitized with sodium hypochlorite or any appropriate chemical disinfectant after every trip.
- Operator of CBWTF shall maintain record for collection, treatment and disposal of Infectious waste.
- Do not allow any worker showing symptoms of illness to work at the facility. May provide adequate leave to such workers and by protecting their salary.

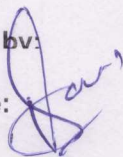
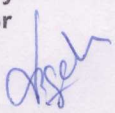
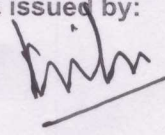
Management of wastewater from Wards and laboratory.


- Transmission to operators may be possible during treatment of sewage treatment plants, however there is no evidence to date that this has occurred. Therefore, following guidance recommended for HCFs and the operators of STPs;
- Responsible agencies are Healthcare Facilities / Isolation Wards / operators of terminal sewage treatment plants (PHED/Jal Board/etc.).
- HCFs and the agencies operating Sewage Treatment Plants should continue to ensure disinfection of treated wastewater as per prevailing practices to inactivate coronaviruses.
- Operators of ETPs/STPs attached with discharge from Healthcare Facilities and isolation wards should adopt standard operational practices, practice basic hygiene precautions, and wear personal protective equipment (PPE) prescribed for operation of STPs. PPEs should include Goggles, face mask , liquid repellent coveralls, waterproof gloves and Rubber boots.

Treatment:

Lata Mangeshkar hospital has its own plan for all BMW transportation from hospital for treatment and final disposal.

TREATMENT AND DISPOSAL OF LIQUID WASTE:

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---

 Viral Research & Diagnostic Laboratory Microbiology Department	Reference Standard	ISO 15189 :2012
	Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
	Document Number	MI/VRDL/SOP/19
	Date of Initial Issue	10/09/2020
	Current Version No.	02
	Revised Issue Date	22/12/2021
	Review Schedule	Annual

bags (as per Maharashtra pollution board.)

Sample Collection Centers and Laboratories for COVID-19 suspected patients

Report opening or operation of COVID-19 sample collection centers and laboratories to concerned SPCB/PCC. Guidelines given at section (a) for isolation wards should be applied suitably in in case of test centers and laboratories. Pre-treat viral transport media, plastic vials, vacutainers, eppendorf tubes, plastic cryovials, pipette tips as per BMW Rules, 2016 and collect in Red bags.

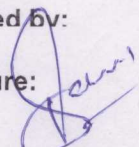
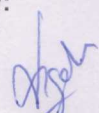
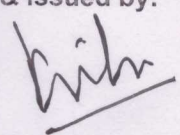
Ensure that general solid waste and biomedical waste generated from quarantine camps/ quarantine homes / Homecare is not mixed. The biomedical waste and general solid waste should be collected separately. Inform the persons responsible for operating isolation wards, quarantine centers and residents of homecare units to collect solid waste and biomedical waste in separate bags securely tied prior to hand over to authorized waste collectors of ULBs. ULBs should ensure that left-over food and general solid waste is not collected in yellow bags; (Revision 2)

Revision-4 of guidelines issued to provide revised guidance on segregation of general solid waste and biomedical waste from quarantine centers/home-care/healthcare facilities treating COVID-19 patients and to recommend on disposal of PPEs.

Used masks, tissues and toiletries, of COVID-19 patient shall become biomedical waste and shall be segregated in yellow bag.

Segregation of biomedical waste and general solid waste should be done at the point of generation in wards / isolation rooms. There should be no segregation of biomedical waste and solid waste at temporary waste collection / storage area of Healthcare Facility to ensure occupational safety.



ULBs required to ensure daily collection of segregated general solid waste from quarantine centers, home-care and hospitals in securely tied bags (without opening to ensure waste collector safety and to avoid pilferage). As a precautionary measure, liquid disinfectant (1% sodium hypochlorite solution) may be sprayed over bags containing general wastes prior to collection or disposal. General solid waste may be disposed as per SWM Rules, 2016, which may include disposal in landfills, waste to energy plants, depending on available infrastructure. In case of landfilling, identify dedicated area on landfill and the bags should be spread and covered daily with layer of soil or stabilized waste after sprinkled with lime / bleaching powder. Access to landfills sites should be strictly restricted;

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature 
--	---	---



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

		[a1 to a3 Inserted in Rev. 2 of guidelines dated 18/04/2020]	
White 	(Translucent) Puncture, Leak, tamper proof containers	Waste sharps including Metals and plastics. e.g. Needles, syringes with fixed needles, needles from needles tip cutter or burner, scalpels, blades or any other contaminated sharp objective that may cause puncture and cuts. This includes both used, discarded and contaminated metal sharps	Auto or Dry Heat Sterilization followed by shredding or mutilation or encapsulation. - Disposed by authorized agency
Blue 	Cardboard boxes with blue colored marking	Glassware e.g. flask, slides, broken injection vials, / Metallic Body Implants	Disinfection or autoclaving, microwaving, hydroclaving and then sent for recycling

Pre-treatment:

Needle used in all patient care areas to be cut. Discarding sharps and needles in white translucent bags. Glass wares discarded in blue bags.

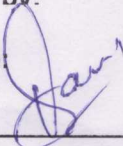
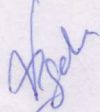
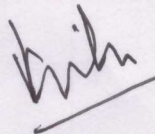
Chemicals treatment using at least 1% hypochlorite solution or any other equivalent chemical reagent. It must be ensured that chemical treatment ensures disinfections.

Mutilation/shredding must be such so as to prevent unauthorized reuse.

- There will be no chemical pretreatment OR autoclaving before incineration. Chlorinated plastics shall not be incinerated.

Transportation:

The waste collection Van collects the waste between 3-4 pm every day. These vans are covered to protect the waste from spillage on the way to incinerator. Within the hospital the waste is transported in dedicated trolleys. The infective waste is collected in different colored polythene



Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---

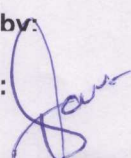

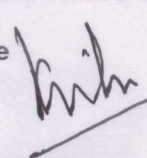



Viral Research &
Diagnostic Laboratory
Microbiology Department

Reference Standard	ISO 15189 :2012
Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
Document Number	MI/VRDL/SOP/19
Date of Initial Issue	10/09/2020
Current Version No.	02
Revised Issue Date	22/12/2021
Review Schedule	Annual

C. CATEGORIES OF BIO-MEDICAL WASTE & COLOR CODING (Table 1)

<p>Yellow</p> 	<p>Non-chlorinated plastic bags.</p> <p>Separate collection system leading to effluent treatment system</p>	<p>- Collect used masks (including triple layer mask, N95 mask, etc.), head cover/cap, shoe-cover, disposable linen Gown, non-plastic or semi-plastic coverall in Yellow bags.</p> <p>[a1 to a3 Inserted in Rev. 2 of guidelines dated 18/04/2020]</p>	<p>Incineration or Plasma Pyrolysis or deep burial - disposal by authorized agency</p>
<p>Red</p> 	<p>Non-chlorinated plastic bags or containers</p>	<p>Contaminated Waste (non- sharp items like plastic and metals) e.g. Waste generated from disposable items such as - tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needle and fixed needle syringes) and vacuum containers with their needle cut) .</p> <p>- Collect used PPEs such as goggles, face-shield, splash proof apron, Plastic Coverall, Hazmet suit, nitrile gloves into Red bag; a2</p>	<p>Autoclaving/microwaving/ hydroclaving and then sent for recycling not be sent to landfill. - Disposed by authorized agency</p>

<p>Prepared by: Signature: </p>	<p>Reviewed by: Lab Director Signature: </p>	<p>Approved & issued by: Dean Signature: </p>
--	---	--

 <p>Viral Research & Diagnostic Laboratory Microbiology Department</p>	Reference Standard	ISO 15189 :2012
	Document Name	SOP FOR BIOMEDICAL WASTE MANAGEMENT
	Document Number	MI/VRDL/SOP/19
	Date of Initial Issue	10/09/2020
	Current Version No.	02
	Revised Issue Date	22/12/2021
	Review Schedule	Annual

SOP FOR BIOMEDICAL WASTE MANAGEMENT

A. Purpose:

- i. To ensure proper segregation, storage, transport and disposal of waste generated in the Hospital
- ii. To ensure that the Waste generated in the hospital is managed and disposed off in an environment friendly manner, in conformance with the M.P.C.B, Maharashtra State National regulations (Ministry of Environment, Forest and Climate Change, GoI).

B. Responsibility: Health inspector, infection control doctor, infection control committee.

Biomedical waste management has the following elements:

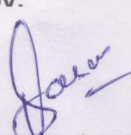

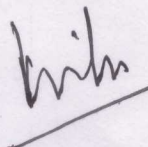
1. Segregation
2. Transportation
3. Pretreatment
4. Treatment and final disposal

These guidelines are based on current knowledge and existing practices in management of infectious waste generated in hospitals while treating viral and other contagious diseases like HIV, HCV, SARS CoV2 etc. These guidelines will be updated if need arises. This Revision-2 of guidelines is mainly to incorporate specific requirements and responsibilities of persons operating sewage treatment plants at Healthcare Facilities and to clarify on management of general waste from quarantine homes and masks/gloves from other households.

Guidelines brought out by WHO, MoH&FW, ICMR, CDC and other concerned agencies from time to time may also be referred.

Segregation:

The most essential part of hospital waste management is the segregation of Bio-medical waste. Bio-medical waste shall not be mixed with other waste. BMW shall be segregated into containers/bags at the point of generation. The segregation of the waste should be performed within the premises of the hospital. The containers shall be duly labeled as per schedule III. The color coding, type of container to be used for different waste category and suggested treatment options are listed below.

Prepared by: Signature: 	Reviewed by: Lab Director Signature: 	Approved & issued by: Dean Signature: 
--	--	---