

# **Meghalaya Integrated Transport Project (MITP)**

*Funded by the World Bank*

**CONTINGENCY EMERGENCY RESPONSE COMPONENT (CERC)**

## **ADDENDUM ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK**

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## 1 INTRODUCTION

The Government of India (GoI) received financing from the World Bank (WB)/IDA for the purposes of implementing Meghalaya Integrated Transport Project (P168097) with an objective to improve transport connectivity and efficiency in project districts, and to modernize transport sector management in Meghalaya. At the time of project appraisal, the project took cognizance of the ongoing COVID-19 pandemic and provisioned for immediate response to any Eligible Crisis or Emergency, as needed, under **Component 4 - Contingent Emergency Response Component (“CERC”)**.

Component 4: Contingent Emergency Response, facilitates reallocation of project funds to support response and reconstruction and/or channel additional funds that become available as a result of an emergency, natural disaster and or any eligible crisis. The provisions under this component would support enhancement of emergency preparedness, management and response capacity including development of systems and processes to facilitate online functioning of government agencies including some of the transversal functions of planning and finance. The project is supported by the IBRD loan in the amount of US\$ 150 million using an Investment Project Financing (IPF) instrument structured in four components<sup>1</sup>. The CERC component can be activated, and the funds may finance emergency response and recovery activities and related eligible expenditures in support the Government’s rapid emergency response efforts.

Government of India, Ministry of Home Affairs (MoHA) has notified COVID-19 as a disaster and directed all State governments to take effective measures to prevent the spread of COVID-19 in India. In compliance with this communication and subsequent directions received, the Government of Meghalaya (GoM) had undertaken various measures across the state to ensure access and availability of essential services and supplies, including health infrastructure and services for the people to contain the spread of COVID-19. However, as the second wave of Corona virus spread has hit India in an abrupt and sudden manner, all the states of India, including Meghalaya needs financial support to ramp-up its health infrastructure and services related to COVID-19 pandemic.

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<sup>1</sup> Total project cost is US\$ 150 million and loan size of US\$ 120 million.

Meghalaya on 15<sup>th</sup> May recorded 560 new Covid-19 cases<sup>2</sup>, pushing the tally of active cases to 4,534. This is the biggest single-day spike the state witnessed this year. The last 7-day average suggest 494 cases being recorded every day.

Also, the state of Meghalaya is in top three for the 7-day average for new cases out of the seven north-eastern states after Assam and Manipur (as on 15<sup>th</sup> May, 2021). If this trend continues to grow then it is predicted that Meghalaya may end up having more than 5000 cases of Covid by end of May month.



This trend indicates an urgent need of specialized medical facilities and equipment to cater to the increasing demand.

Thus, in view of rising COVID cases in the State, the Department of Health has reached out to the Department of Finance to support the procurement of necessary emergency medical equipment and technical assistance through the ongoing Meghalaya Integrated Transport Project financed by the World Bank. This is in consistent with the Project’s development objective (MITP), triggering CERC provision and fund emergency response and recovery activities and related eligible expenditures in support the Government’s rapid emergency response efforts.

The Government of India has submitted a request to World Bank vide Letter No. PLR.73/2015/Pt./283 dated 7<sup>th</sup> May 2021 to reallocate funding within the Meghalaya Integrated Transport Project (MITP) vis-à-vis the allocation of uncommitted financial resources to CERC to address emergency response needs rising on account of the outbreak of COVID-19. In response, the World Bank in its email dated 20<sup>th</sup> May 2021 confirmed its No-Objection for reallocation of unutilized US\$ 5 million to CERC for use in COVID-19 operations in the state.

This document is an addendum to the Environment and Social Management Framework (ESMF) for MITP related to Component 4. The ESMF and this Addendum are intended to guide the environmental and social risk management activities of the emergency response component in response to the recent COVID-19 pandemic, and together form the CERC-ESMF. Please note that the state is also in the process of preparing a Health Systems Strengthening

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<sup>2</sup> Source: COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University

Project which is yet to be negotiated and hence cannot be used for necessary emergency procurement.

## 2 PROJECT DESCRIPTION

The Government of Meghalaya has prepared an Emergency Response Plan to address the spread of corona virus in the State. The plan has benefited from technical review of the World Bank and has been endorsed by the international development partners.

Based on the CERC guidelines, a subset of activities aligned with the positive list provided in the CERC Operations Manual<sup>3</sup> is proposed to be carried out as part of the Plan. The following activities amounting to a total of INR 35 crores (US\$ 5 million @INR 70) are planned as part of Contingent Emergency Response Implementation Plan (CERIP):

**Table 1: Planned Emergency Activities**

Areas of Intervention	Activities to be Implemented	Responsible	Support Institution
Health	Provision of medical oxygen to hospitals and health centres (cylinders)	PMU/PIU (health)	Health department
Health	Provision of Oxygen Concentrators	PMU/PIU (health)	Health department
Health	Expansion of beds and temporary medical treatment	PMU/PIU (health)	Health department
Health	Provision of essential medical equipment for treatment and strengthening ICU facilities	PMU/PIU (health)	Health department

### 2.1 Provision of medical oxygen to hospitals and health centres (cylinders)

After assessing the current Medical Oxygen Inventory, it has been derived that the State still require additional 2,500 D-Type Cylinders to handle the upcoming requirement of Medical Oxygen across the established and proposed COVID hospitals.

### 2.2 Provision of Oxygen Concentrators

It is although not envisaged that Oxygen Concentrators (OCs) will be required, however, looking into the dynamic condition and the ways pandemic is taking shape in India, requirement may trigger and hence procurement of OCs and their use has been provisioned.

<sup>3</sup> Appended to this document as Annex 1 – Positive List

### 2.3 Expansion of beds and temporary medical treatment

Although the current infrastructure and Human Resources are sufficient to handle the current patient load however given the continuous steep rise in cases, there would be a need of hospital beds augmentation for treatment as well as isolation of COVID patients. Due to the fact that most of the Hospitals have maxed out the bed capacity, there is a need of creating specialized standalone medical facilities that can serve as COVID hospital with at least 350 cumulative bed capacity. Given the time constraints, rapid establishment of prefabricated COVID Hospitals in critically COVID stricken cities may be sought as an effective option.

The identification of land is already finalized for the State. The pre-fabricated COVID hospitals will be constructed on the Government land coinciding the existing health facilities thus, land acquisition leading to any involuntary resettlement and/or restrictions of access to resources and livelihoods is not anticipated. All lands are free from all encumbrances. The below table provides the details of the proposed COVID Hospitals:

**Table 2: Identified list of sites and bed capacity for proposed COVID Hospitals**

SI. No.	District	City	Bed Capacity	Identified Project Site
1.	East Khasi Hills	Shillong	100	Pasteur Institute ground
2.	East Khasi Hills	Shillong	100	ISBT campus at Mawlai
3.	West Garo Hills	Tura	100	General Administration Department (GAD) land at Dakopgre, Tura
4.	West Jaintia Hills	Jowai	50	Land near Jowai Civil Hospital

The construction of the proposed Prefab COVID Hospitals will be done using a modular approach so that the facility size and bed capacity may be increased or decreased as and when required based on the real-time medical demands. With a product life of 25 years of the design material of the prefab structure and its portability feature, these structures will be shifted to remote villages once the COVID spread is under control to strengthen the medical infrastructure of rural parts of Meghalaya.

### 2.4 Provision of essential medical equipment for treatment and strengthening ICU facilities

It has been weighed that there is a need of non-invasive ventilators such as BIPAP (Bi-level Positive Airway Pressure) machines to be utilized in the treatment of COVID patients. The number of equipment required will be proportional to the rise in cases. Activities financed

under the CERC will be limited to provision of critical goods and services as per positive list of the CERC Operations Manual and are subject to the applicable ESMF guidelines and standards.

### **3 POLICY, LEGAL AND REGULATORY FRAMEWORK**

Policies, laws and regulations, relevant and applicable safeguards policies of Government of India and that of World Bank as mentioned in the ESMF<sup>4</sup> of Meghalaya Integrated Transport Project (MITP) will be applicable to the CERC component as well. All the labour laws, workers health & safety guidelines, community health & safety guidelines and Covid-19 guidelines shall be followed as applicable for workers engaged in civil works. Additionally, all project activities including those financed through the CERC, are subject to World Bank Operational Policies as identified in the ESMF and Operations Manual of the CERC Component and continue to be applicable for activities financed through CERC. Table 3 list out the additional applicable legal and regulatory environment and social rules and regulations for CERC Component.

It should be noted that to deal with the emerging shortages of required medical supplies, including PPE, medicines etc., GOI has recently waived certain regulatory requirements under the Environment (Protection Act) to encourage private sector set up manufacturing units for producing these. These may have some impacts on the environment however, these fall outside the purview of the project investments.

#### **India has also issued several national policies and guidelines specific to COVID-19 pandemic.**

While many of the policies/ guidelines are evolving based on the COVID-19 pandemic situation in the country, some of the guidance relevant to environmental and social measures issued by Ministry of Health and Family Welfare (MOHFW) are as below (listed the latest/ revised only):

1. Advisory on Social Distancing – March 2020
2. Advisory on Mass Gatherings – March 2020;
3. Guidelines for home isolation of mild/asymptomatic COVID-19 cases – July 2020
4. Guidance for General Medical and Specialised Mental Health Care Settings – April, 2020;
5. Guidelines for Home Isolation of mild /asymptomatic COVID-19 cases – April, 2021;
6. Protocol for Management of Covid-19 in the Paediatric Age Group – April, 2021
7. Clinical Guidance for Management of Adult Covid-19 Patients – April, 2021
8. Guidelines on preventive measures to contain spread of COVID-19 in workplace settings – May, 2020
9. Revised Strategy for Covid-19 testing in India – May, 2020
10. Guidelines for Quarantine facilities COVID-19 – May, 2020
11. SOP on COVID-19 Containment & Management in Peri-urban, Rural & Tribal areas – May, 2021;
12. Guidelines for management of co-infection of COVID-19 with other seasonal epidemic prone diseases – October, 2020;
13. District level Facility based surveillance for COVID-19, May, 2020

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<sup>4</sup> First published in January, 2020 and revised in June 2020.

### 3.1 Environmental and Social Laws, Regulations and Policies

**Table 3: Environmental and Social Laws, Regulations and Policies that are relevant to proposed CERC Component**

Applicable Act / Regulation/ Policy	Agency Responsible	Key Objective and Provisions	Relevant to the Project
Bio-medical Waste Management (BMWM) (Amendment) Rules, 2018	Meghalaya State Pollution Control Board/ DoHFW	<ul style="list-style-type: none"> <li>• Schedule 1: Categorization and Management;</li> <li>• Schedule 2: Standards for treatment and disposal of BMW;</li> <li>• Schedule 3: Prescribed Authority and duties</li> <li>• Schedule 4: Label of containers, bags, and transportation of Bio-Medical waste</li> <li>• The provisions under the rules provide for both solid and liquid medical wastes.</li> <li>• Liquid waste should be treated with 1% hypochlorite solution before discharge into sewers.</li> <li>• Hospitals not connected to municipal WWTPs should install compact on-site sewage treatments (i.e. primary and secondary treatment, disinfection) to ensure that wastewater discharges meet applicable thresholds.</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare facilities to implement Standard Operating Procedures (SOPs) in the handling of medical solid, liquid, and radioactive wastes.</li> <li>• Assess the gaps and accordingly develop capacity for BMWM including treatment and disposal of wastewater from hospitals.</li> <li>• As equipment that been retroactively procured so efforts be made to label all equipment procured under CERC.</li> <li>• Simultaneously, all treated equipment be also be labelled according to the BMWM Rules 2018; equipment and waste related to COVID-19 to be treated with CPCB guidelines issued in July 2020.</li> <li>• Labour will be engaged in handling of waste from source to destination. Accordingly, it will be required to comply with labour laws for the welfare of the labour employed.</li> </ul>
Guidelines for Handling, Treatment and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-	Meghalaya State Pollution Control Board/ DoHFW	Specific guidelines for management of waste generated during diagnostics and treatment of COVID-19 suspected / confirmed patients, are required to be followed by all the stakeholders including isolation wards, quarantine centres, sample collection centres, laboratories, ULBs and common biomedical waste treatment and disposal	<ul style="list-style-type: none"> <li>• PMU/PIU Health team to prepare a COVID-19 waste management plan in consultation with the health department following the guidelines issued by CPCB.</li> <li>• Finalized plan to be to be distributed across all centres and institution dealing with COVID-19 patients/ processes.</li> </ul>

Applicable Act / Regulation/ Policy	Agency Responsible	Key Objective and Provisions	Relevant to the Project
19 Patients (July, 2020)		facilities, in addition to existing practices under BMW Management Rules, 2016.	<ul style="list-style-type: none"> <li>All centres and institution dealing with COVID-19 patients/ processes to follow the prepared plan for disposal.</li> </ul>
Plastic Waste Management Rules 2016	Meghalaya State Pollution Control Board/ DoHFW	All institutional generators of plastic waste shall segregate and store the waste generated by them in accordance with the Solid Waste Management Rules, and handover segregated wastes to authorized waste processing or disposal facilities or deposition centres, either on its own or through the authorized waste collection agency.	Relevant as hospitals are generators of large quantity of plastics, including non-reusable types
National Building Code of India, 2016 And The Meghalaya Building Bye-Laws, 2021	Means the Meghalaya Urban Development Authority / Autonomous District Councils	The national Code and the State's by-law covers guidelines to be followed for judicious implementation of the provisions of various Parts/Sections for construction institutional buildings following an integrated approach.	Hospitals and Nursing Homes have certain special features which are not identical to other categories of Buildings. As per National Building Code (NBC) Hospital Buildings, Nursing Homes, Sanatoriums have been categories under Group-C "Institutional Building". Under the MITP CERC component, pre-fabricated hospitals also qualify under the same, hence
The Epidemic Diseases Act 1897  The Epidemic Diseases (Amendment) Ordinance, 2020	DoHFW	<p>The Epidemic Diseases Act 1897 provides for better prevention of the spread of dangerous diseases.</p> <p>The Epidemic Diseases (Amendment) Ordinance, 2020 was promulgated on April 22, 2020. The Ordinance amends the Epidemic Diseases Act, 1897. The Act provides for the prevention of the spread of dangerous epidemic diseases.</p> <p>The Ordinance amends the Act to include protections for healthcare personnel combating epidemic diseases and expands the powers of the</p>	<p>To ensure safety of communities, workers, and project staff especially during this period of COVID pandemic.</p> <p>The ordinance includes provisions for protection of health and safety of health workers from the acts of violence and aggression during management of Covid-19 response in the health facilities and communities.</p>

Applicable Act / Regulation/ Policy	Agency Responsible	Key Objective and Provisions	Relevant to the Project
		central government to prevent the spread of such diseases.	
The Indian Medical Council Act 1956 & The Indian Medical Council Professional Conduct, Etiquette and Ethics Regulations (2002)	DoHFW	Provisions are applicable to practicing doctors and medical professionals to provide quality service to the patients or healthcare seekers.	Relevant for medical professionals if hired/contracted CERC loan component.
Indian Penal Code (IPC)	DoHFW	Section 278 (making atmosphere noxious to health) and Section 269 (negligent act likely to spread infection or disease dangerous to life, unlawfully or negligently)	Relevant for medical professionals if hired/contracted CERC loan component.

### 3.2 World Bank Group Environment, Health and Safety Guidelines (EHSG)

The EHSG are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) and are referred to in the ESMF. The EHSG contain the performance levels and measures that are normally acceptable to the World Bank Group (WBG), and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. The WBG requires borrowers to apply the relevant levels or measures of the EHSG. When host country regulations differ from the levels and measures presented in the EHSG, projects will be required to achieve whichever is more stringent. In the case of the present Project the General EHSG will apply. The Implementing Agency (IA) will pay particular attention to EHS 1.5 Hazardous Materials Management; EHS 2.5 Biological Hazards; EHS 2.7 Personal Protective Equipment (PPE); EHS 2.8 Special Hazard Environments; EHS 3.5 Transportation of Hazardous Materials; and EHS 3.6 Disease Prevention. A separate EHSG on Health Care Facilities will also apply to this Project intervention. It illustrates waste management, air quality and wastewater disposal guidelines related to HCFs.

### 3.3 World Health Organization (WHO) Guidelines

The WHO is maintaining a website specific to the COVID-19 pandemic with up-to-date country and technical guidance. Some of the technical guidance available are: (i) laboratory biosafety, (ii) infection prevention and control, (iii) rights, roles, and responsibilities of health workers, including key considerations for occupational safety and health, (iv) water, sanitation, hygiene, and waste management, (v) quarantine of individuals, (vi) rational use of PPE, (vii) oxygen sources and distribution for COVID-19 treatment centers. The dedicated WHO website can be accessed at <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>.

### 3.4 World Bank Environmental, Health, and Safety Guidelines

Following are the World Bank EHS guidelines applicable to the Component:

- **Occupational Health and Safety Guidelines** – Provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. PMU Health should hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements. Further guidance for these can be found at: IFC General Environmental Health and Safety Guidelines: <http://documents.worldbank.org/curated/en/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf>
- **Community Health and Safety** - This guideline recognizes that project activities, equipment, and infrastructure can increase community exposure to health, safety, and security risks and impacts and prescribes ways and means to avoid or minimize such risks and impacts, with particular attention to vulnerable people because of their particular circumstances. In addition, communities that are already subjected to impacts from climate change and or other health impacts such as COVID 19 pandemic, may also experience an acceleration or intensification of impacts due to project activities. The guidelines to be followed by the PMU Health and contractor in case of pandemic like COVID 19 has been given in Annex 6 of MITP's ESMF. Further guidance for these can be found at: IFC General Environmental Health and Safety Guidelines: <http://documents.worldbank.org/curated/en/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf>

## 4 POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND MITIGATION

### 4.1 Steps for Assessing the environmental and social impacts

The activities proposed under the CERC have been classified into two groups: (i) those for which no environmental and social due diligence is required, and (ii) those which require environmental and social due diligence.

As a first step, the environmental and social impacts are identified through filling in an environmental and social screening report by following a screening checklist. The basic objective of the filling in the screening checklist is to collect basic information on environmental and social aspects of the proposed sub-project. The basic environmental and social data pertaining to the proposed subproject be compiled during initial field data collection stage. For this purpose and ease of following an amended Screening Checklist for CERC Component, have been formulated and annexed to this CERC-ESMF (Annex- 2). The project ESMF includes templates for relevant Environmental and Social Management Plans (ESMPs) and provides guidance for the construction of various works proposed under different components of the project.

Since the activities financed under the contingent component will be limited to provision of critical goods and services and or those specifically approved by the Bank, land acquisition leading to involuntary resettlement and/or restrictions of access to resources and livelihoods is not anticipated.

The table below identifies potential impacts of the proposed activities envisioned under CERC actions. Many of the actions or activities have low or negligible potential negative impacts, such as purchase of equipment or supplies.

**Table 4: Potential impacts of the proposed activities proposed under CERC**

S. N.	Subprojects/Activities	Potential E&S Risks or Impacts	Safeguard Due Diligence
1.	Provision of medical oxygen to hospitals and health centres (cylinders)	<p>No issue during procurement and or installation.</p> <p>During operation phase there is potential risk of life and fire hazard associated with the transportation, storage, and use (foreseeable misuse/ accidents) from oxygen cylinders.</p> <p>During operation phase and end of life disposal the biomedical waste generated should be as per the CERC biomedical medical waste management plan (Annex - 4)</p>	<p>PIU (Health) should ensure:</p> <p>a) All participating hospitals/ health centres have Emergency Preparedness plan (EPP) in place including system of incident reporting, root cause analysis, taking corrective action;</p> <p>b) That the EPP includes a well define protocol allowing availability of emergency supplies for patient during evacuation or relocation, especially for the elderly, vulnerable patients, and/or those connected to life support equipment;</p>

			<p>c) Life and fire safety guidelines as per Annex 3 of this document;</p> <p>d) Capacity building trainings bring conducted for the relevant staff about hazard and risk associated with transportation, handling and storage of oxygen cylinders, other gas-based equipment, PSA plant etc.;</p> <p>e) Periodic execution of ‘fire safety and evacuation drills’; and</p> <p>f) Having appropriate waste management plan.</p>
2.	Provision of Oxygen Concentrators	No issue during procurement and or installation. During operation phase and end of life disposal the biomedical waste generated should be as per the CERC biomedical medical waste management plan (Annex - 4)	PIU (Health) to inform participating health facilities about the waste management plan and associated life and fire hazard risk that may occur during transportation, handling, and storage.
3.	Expansion of beds and temporary medical treatment	For the upgradation of public health facilities, labour will be required for civil works. The works contractor will either locally source the labour or bring them from neighbouring districts for which labour camps may be required	<p>PIU (Health) to ensure:</p> <ul style="list-style-type: none"> <li>• Participating hospitals and healthcare facilities confirms that building design comply with National Building Code of India (NBC-2016), Group C – Institutional Building;</li> <li>• That the building/ infrastructure has been designed, constructed, equipped, maintained, and operated as to provide adequate means of egress to avoid undue danger to the life and safety of the occupants from fire, smoke, fumes, or panic during the time period necessary for escape - as required in the National Building Code of India (NBC-2016) Part – IV “Fire &amp; Life Safety”;</li> <li>• That even pre-fabricated COVID Hospital/ health care centres obtain the Fire Safety and the Occupancy Certificate from the Fire Services Department with</li> </ul>

			<p>regard to Fire and Life safety requirements;</p> <ul style="list-style-type: none"> <li>• That the building/ infrastructure has appropriate access restrictions / controls in place, &amp; same have been correctly labelled,</li> <li>• That routine inspection / maintenance program is carried out without fail;</li> <li>• All constructions will be on government land that is free of encroachment and other encumbrances</li> <li>• If land is being donated, clear evidence of land donation should be registered and follow the guidelines as per the ESMF of MITP and would have to meet the requirements under World Bank's OP4.12;</li> <li>• Should there be construction on land belonging to tribe or in tribal areas, PMU/ PIU health to ensure Free and Prior Informed Consent (FPIC) is obtained.</li> <li>• The contractor to comply with the labour laws including the World Bank's Occupational Health and Safety (OHS) Guidelines and Community Safety Guidelines as stated in the ESMF of the MITP;</li> <li>• Contractor to provide all health and safety equipment.</li> <li>• Contractor to set up the construction camps (if required) according to the ESMF.</li> </ul>
4.	Provision of essential medical equipment for treatment and strengthening ICU facilities	No issue during procurement and or installation. During operation phase and end of life disposal the biomedical waste generated should be as per the CERC biomedical	<p>PIU (Health) to:</p> <ul style="list-style-type: none"> <li>• ensure staff is trained in safe handling of equipment; and</li> <li>• inform participating hospital and health facilities about the waste</li> </ul>

		medical waste management plan (Annex - 4)	management plan as delineated in this document;
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## 5 ENVIRONMENT AND SOCIAL MITIGATION AND MANAGEMENT PLAN

The following table delineates the risk categorization of the procured medical equipment and services and suggest relevant mitigation plan.

**Table 5: Risk Categorization of Procured Equipment & Civil Work and Suggested Mitigation**

Equipment	Risk Category	Suggested Mitigation
PPE – disposable	High	To be disposed separately from general solid waste and bio-medical waste following national guidelines prescribed by CPCB for COVID – 19 cases and as per Bio-Medical Waste Management Plan (annex 4).
PPE – non-disposable	Moderate	To be treated and disinfected at regular intervals before each use and disposed of by following appropriate guidelines after the life of material is over.
Other equipment such as non-physical temperature measuring devices, laboratory equipment, ICU, and general ward beds etc.	Low	Time to time disinfection with recommended chemicals To follow Life and Fire Safety Guidelines of NBC, 2016 (refer to Annex 3)
Land for additional construction if any	Low	<ul style="list-style-type: none"> <li>Screening to ensure that land is free of encroachment and other encumbrances. It is anticipated that the pre-fabricated</li> </ul>
COVID-19 Testing kits	Substantial	<ul style="list-style-type: none"> <li>Disinfecting the used kits prior to disposal (sputum, saliva, glassware etc.)</li> <li>Disposal separately from other solid waste and bio-medical waste following CPCB guidelines</li> </ul>
Civil Work for construction of additional facilities	Moderate	<ul style="list-style-type: none"> <li>To follow all safeguards guidelines for construction as stated in the ESMF of MITP</li> </ul>

## 6 MONITORING AND EVALUATION

ESMF of the project describes detailed supervision, monitoring and evaluation of the impact of the project on the environment and social aspects. The project has appointed Environment and Social experts at the PMU. The concurrent internal environmental and social monitoring are being carried out as part of the regular monitoring by the Project Implementing agency. Given in the table below

are indicators for project investments, for which monitoring need to be taken up by PIU/Health Department in a regular manner.

**Table 6: Environmental and Social Monitoring Plan**

Monitoring Indicators	Frequency Agency	Frequency Agency
<ul style="list-style-type: none"> <li>• All environmental parameter related to CERC Component including Biomedical Waste management related to COVID-19 treatment</li> <li>• Personal hygiene and Safety provisions for medical staff dealing with the waste</li> <li>• Cleaning and disinfection of contaminated areas</li> <li>• Indicators related to Civil Works</li> </ul>	Quarterly by PMU/PIU	PIU- Health and Department of Health & Family Welfare
Social Parameters	Quarterly by PMU/PIU	Health Department

## 7 INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENT

1. Since the procurement of equipment and construction works will be pertaining to Community Health and Safety, it will be guided by the World Health Organization (WHO) Guidelines and or those issued by the Ministry of Environment, Forest & Climate Change (MoEF&CC) and or Ministry of Health and Family Welfare (MoHFW)/ Indian Council of Medical Research (ICMR) and the project's Biomedical Waste Management Plan (BMWMP).
2. The PIU (Health) is responsible for the overall implementation arrangement of the CERIP and the project PMU to MITP will provide the technical support for supervising implementation of activities; both services and delivery of goods to facilitate coordination and avoid duplication of efforts from the implementation point of view.
3. Due to limitations in terms of institutional capacity and technical expertise third-party partners, including United Nations agencies and other non-governmental organizations can be recruited by the PIU for the partial implementation of the response plan and/or building the capacity of government to deliver. In such cases, PIU will be directly responsible for the fiduciary implementation/oversight. The Department of Health and Family Welfare (DOH&FW) of the State will provide technical support to ensure implementation and monitoring of the proposed activities; services and goods and closely working with any third-party institutional/agency identified in this CERIP. Therefore, some activities are envisioned to be directly contracted with technical international partners for services, such as WHO and UNICEF, or procurement of goods, such as UNICEF, UNOPS or through the Bank Facilitated Procurement.
4. The institutional and implementation arrangements to manage safeguards in CERC will follow the process that has been agreed for the CERC component and overall project. Project Management Unit (PMU) and Project Implementation Unit (PIU, health) jointly are responsible for compliance with the safeguard requirements.

## 8 ANNEXURES

### 8.1 Annex 1– Positive List

Table 7: Indicative Positive list of goods, services and works for COVID-19 Emergency Response

Goods
<ul style="list-style-type: none"><li>• Medical equipment and supplies as required, and or those approved by the State Department of Health, MOHFW<sup>5</sup>, NCDC, others as authorized by the Government of India, from time to time.</li><li>• Procurement and operationalization of items detailed in the Guidelines issued by National Center for Disease Control (NCDC) for COVID-19 Isolation Centers/wards<sup>6</sup>.</li><li>• Supply of consumables for testing, treatment and prevention including medicines, ventilators, oxygen, etc.</li><li>• Enhancement of disease surveillance systems in humans and animals, and health information systems for tracking spread of COVID-19.</li><li>• Establishment of dedicated helplines, ICT systems to track and monitor infectious outbreaks, quarantined persons, and COVID-19 affected cases both during isolation and post recovery, phases, including epidemiological surveillance networks leveraging technology including artificial intelligence and big data analytics to improve the preparedness and response to the ongoing COVID-19 pandemic interfaced with the central disease surveillance platform of MOHFW.</li><li>• Equipment and supplies for temporary quarantine like renting, buying, logistics for housing/living (gas stoves, utensils, tents, beds, sleeping bags, mattresses, blankets, hammocks, mosquito nets, kit of personal and family hygiene, etc.) and school.</li><li>• Any other procurement related to COVID-19 emergency response operations with the exception of those covered in the negative list in the operation manual of the project.</li></ul>
Non-Consulting Services
<ul style="list-style-type: none"><li>• Dead body management – including mortuary, transportation and burial/cremation services as per approved guidelines.</li><li>• Expansion of point-care molecular testing for viral disease in sub-district and district laboratories, and sample transport mechanisms.</li><li>• Transportation Services for Safe transport of patients and suspected people for quarantine and isolation</li></ul>
Consulting Services
<ul style="list-style-type: none"><li>• Consulting services related to emergency response including, but not limited to urgent and need-based studies/research/assessment necessary for planning management and recovery.</li><li>• Consulting services shall also include engagement of academic and research institutions for specific studies such as studies /assessments on epidemiological disease surveillance, COVID-19 impact assessments, etc.</li><li>• Consulting Services for IEC campaigns for raising awareness.</li><li>• Comprehensive communication and behaviour change interventions, community/awareness campaigns, to provide information on protection and promotion of hygiene practices.</li></ul>

<sup>5</sup><https://www.mohfw.gov.in/>

<sup>6</sup><https://ncdc.gov.in/WriteReadData/1892s/42417646181584529159.pdf>

- Use of NGOs, SHGs, Asha workers, Anganwadi workers, etc., and other civil society organizations for monitoring, and supporting containment of COVID-19 and other such activities authorized by the PIUs/IAs.
- Training and capacity building of human resources in ventilator management.
- Training and capacity building of human resources in community-based disease surveillance, and reporting systems,
- Capacity -building and training of health facility staff on systems operate, monitor, maintain and escalation during emergencies and state/district level staff in undertaking oxygen audits to optimize resources.

#### Works

- Setting up of LMO tanks/ PSA plants in health facilities.
- Strengthening of existing public buildings, including schools, hospitals and administrative buildings for using facilities for treatment, isolation and quarantine centers/camps and other public health facilities being used for COVID-19 emergency response operations.
- Conversion of existing buildings such as Stadiums to Isolation Wards and Quarantine Center.
- Establishment of medical labs, testing facilities and isolation centers/camps including turning hospital beds into intensive care unit beds and implementing infection prevention and control activities in public health facilities, including district hospitals, medical colleges, other civil/general hospitals, and designated infectious disease hospitals.
- Scaling up isolation wards will include establishing single occupancy negative-pressure isolation rooms in infectious disease hospitals and districts hospitals.
- Upgradation of current health facilities including strengthening of infection prevention and control measures wherever epidemic progresses.
- Temporary shelters like prefab structures for advanced medical posts, temporary housing, and classroom/daycare substitution for temporary shelters.

#### Emergency Operating Costs

- Non-perishable foods bottled water and containers.
- Day to day supply perishable goods for immediate use such as fruits, vegetables, etc. procured for hospital canteens, isolation/quarantine camps, shelters etc.
- Incremental expenses by the Government for a defined period related to preparedness and response efforts arising as a result of the impact of an emergency. This includes, but is not limited to hiring of temporary staff, incentives and costs of staff attending emergency response, operational costs and rental of equipment.
- Incremental and administration costs for management of COVID-19 operations by Project PMU, PMUs and other authorized civil society partners.

## 8.2 Annex 2 - Screening Checklist

The first and foremost task is to prepare a screening checklist defining the scope and boundary of impact assessment studies. The screening checklist shall facilitate identification of any likelihood of substantial social and environmental impacts arising due to the nature, scale, and location of the activities.

Apart from the checklist below, following should be essentially confirmed:

- All constructions to be on government land that is free of encroachment and other encumbrances;
- If land is being donated, clear evidence of land donation should be archived, and the donated land should not be more than 10% of the total land owned by the owner of the land;
- Should there be construction on land belonging to tribe or in tribal areas, PMU/ PIU health to ensure Free and Prior Informed Consent (FPIC) is obtained;
- PMU/ PIU health should ensure availability of certified Incineration Facility at CBWTF Secure landfill in case of PHCs and Sub centres;
- PMU/ PIU health to ensure that the land chosen for deep burial follows all relevant Guidelines by CPCB under COVID-19 waste management, as well as Guidelines provisioned under Bio-Medical Waste Management Plan, annexed to this document.

The table below provides a sample on Environment and Social Checklist for all Civil Work envisaged within CERC Component.

**Table 8: Environmental and Social Screening Checklist**

S. No.	Environmental & Social Features	Presence within 500mts from activity sites (Yes/No) If yes, mention distance in km)	Type of Impact (+ or -)	Significance of Impact (High (H), Medium (M), Low (L))	Likelihood of Impact (Likely, Unlikely)	Description of Impact
<b>Physical Environment</b>						
	Standing water bodies (ponds, lakes, etc.)					
	Flowing water bodies (rivers, rivulets, streams, canals, springs etc.)					
	Ground water sources (open wells, bore wells, etc.)					
	Meandering River					
	Erosion prone stretches					
	Areas with high slope (higher than 15 percent)					
	Landforms (hills, valleys)					
	Coal Mine, Strone Quarry, Sand Mining					
<b>Biological Environment</b>						
	National Park / Wildlife Sanctuary					
	Reserved Forests					
	Community Forest					
	Clearance of vegetation/tree-cover of girth size more than 20 cm					
	Sacred Groves					

	Presence of endangered species / habitat areas					
	Migratory routes					
	Ecologically sensitive areas					
<b>Human Environment</b>						
	Settlements/Habitations					
	Sensitive Receptors (schools, markets etc.)					
	Drinking water sources					
	Underground utility lines like electricity lines, pipelines for gas, etc					
	Physical cultural resources – Protected monuments, historical/ heritage sites etc.					
	Physical cultural resources – Religious structures, other sites significant to community					
	Agricultural land					
	Defence Installations / Airports					
	Heavy polluting Industry					
	Water or Waste water Treatment Plant					
	Disruption to traffic movements					
	Health risks due to unhygienic conditions at workers' camps					
	Safety hazards during construction					
	Do subprojects of this nature / type require prior environmental clearance either from the MOEF&CC or from a relevant state government department- SEIAA, State Wildlife Board, Forest Clearances, etc.?					
	Please attach photographs and location maps along with this completed Environmental Information Format for Screening.					
<b>Social Safeguard Issues</b>						
	Any loss / reduction of access to traditional dependent communities (to areas where they earn for their primary or substantial livelihood).					
	Adverse impacts to women, gender issues including economic and safety concerns					
	Presence of Indigenous / vulnerable communities					
	Involuntary acquisition of private land leading to loss of shelter, livelihood, source of livelihood					

Whether land acquired / donated is more than 10% of the total holding					
Land donated has been identified jointly in consultation with the community and owner					
Involuntary Land taking resulting to loss of income; livelihood; sources of livelihood; loss of access to common property resources and / or private residential and/or property resources.					
Possible conflicts with and/or disruption to local community					
Any displacement or adverse impact on tribal settlement(s)					
<b>Overall Assessment</b> - What is the final risk category of subproject?			<b>A/ B/ C</b>		

### 8.3 Annex 3 - Life and Fire Safety Guidelines

Hospitals and Nursing Homes have certain special features which are not identical to other categories of Buildings. As per National Building Code (NBC) Hospital Buildings, Nursing Homes, Sanatoriums have been categories under Group-C “Institutional Building”. The Institutional Buildings are having some high-risk areas with special problems relates life risk of both ambulatory and non-ambulatory patients. The first step is to understand the Hazards associated with the medical equipment, activity areas, and others as follow:

#### Hazard Analysis: -

##### A. Equipment’s Hazards

With the rapid technological advancement in medical science, hospitals and nursing homes are now equipped with a vast array of new equipment like. Computerised Axial Topography scanners, Magnetic Resonance Imagers (MRI), lasers. Sophisticated Diagnostic and Treatment Equipment, Heaters, boiler etc.

##### B. Chemical Hazards

- Flammable chemicals
- Alcohols
- Solvents.
- Acids
- Ethers
- Sprits

##### C. Gas Stores

- LPG Cylinders
- Oxygen Cylinders
- Nitrous Oxides etc.

#### **D. Plants**

- Laundry & sterilization plants
- A/C Plants & ducts
- 'X' Ray suits

#### **E. Kitchen & Canteen**

#### **F. General Store**

#### **G. Vehicle parking area**

#### **H. Mattresses, bedding, furniture, Oxygen cylinders, Pipe Line carrying Oxygen or Nitrous oxide in Patients' rooms.**

### **Preventive Measures**

- Good housekeeping in all areas, specially stores, kitchen, electrical installation, transformer house and waste disposals etc. should be maintained.
- No Smoking Zone (while applicable in office, store, depot etc) shall be enforced rigidly.
- All electrical installations shall be periodically checked & tested by competent electrical engineers, while all loose electrical wiring if any shall be replaced immediately. The Central Electricity Authority (Measures relating to Safety and Electric Supply) (Amendment) Regulations, 2019 -reg." should be followed.
- Appropriate M.C.B. shall be installed where necessary in the electrical installation as per Indian Electrical Rules.
- All old electrical wiring especially in the zone of insignificant and abundant area shall replace with the new ones.
- The basement if any should not be used as store room / material dumping / in patient ward or any other purpose which will cause Fire / Smoke.
- Lift shaft and stair lobby / landing shall be free from any obstacles / obstruction.
- Use of LPG gas cylinders not more than 320 kg come into a gas bank, to be installed with separate place with barrier and precaution as per IS: 6044.
- Trained staff in dealing with the firefighting extinguisher / appliance / Evacuation procedure shall be engaged. Firefighting drill and evacuation drill should be held on regular basis.
- Building should come into a modular by making corridors horizontal & vertical exits from the origin of the fire place to a safe area easily and also by incorporating Fire & Smoke
- Check Door in the lobby approaching to stairways and lift.
- One senior personal preferably from administration may co-ordinate & look into.
- On site Emergency / Evacuation plan shall have to be prepared and update at regular interval.
- Fire Notice, Fire order, exit sign, Floor Nos. shall be displayed at conspicuous places as per requirements of NBC Part IV.
- Arrangement should be made for proper checking, testing and maintenance of all fire protection and detection system to keep them in properly working condition at all the time.
- Electrical Safety Audit should be carried out at regular interval as per Indian Electrical Rules.

### **Protective Measures**

- Water Reservoir exclusively for firefighting shall be made available as prescribed in National Building Code (NBC) Part IV.
- Replenishment of the reservoir may be incorporated with deep tube well with auto facility.
- Fire Hydrant Ring main with Yard Hydrant & Wet Riser system with landing valve shall be installed as per NBC Part IV & IS: 3844.
- Hose Box containing two nos. 15 M long Hose & 1 No. Branch Pipe with Nozzle to be installed near each Yard Hydrant & Landing Valve.
- First-Aid Hose Reel 40 M long to be provided near each landing valve tapped off from the Wet Riser.
- Sprinkler system to be provided for all the floors & other places / areas as applicable as per NBC Code.
- Firefighting extinguisher should be provided within the building as per IS: 2190 and person having work station in that area should be trained to use the same if required initially in case of emergency.
- The main Fire Pump and one stand by pump of capacity minimum 2280 LPM and head of the pump will be such that 3.5 Kg/cm<sup>2</sup> pressure is available at the furthest/highest landing valve, to be installed. Auto start facility should be incorporated in fire pump. Accordingly, Jockey Pump of Capacity 180 LPM shall also be installed.
- The Stand by pump of equal capacity must be available on alternate sources of supply, preferably diesel operating pump.
- Fire Detection & Alarm System for the entire Building shall be provided as per IS: 2185
- Public Address System with two-way communication System
- Emergency power supply shall be provided to the following equipment and system.
  - Illumination of means of escape route.
  - Fire Alarm Panel & P.A. Console.
  - Fire Pumps
  - Fire Lift
  - Bore Well.

## 8.4 Annex 4 – BIOMEDICAL WASTE MANAGEMENT PLAN – A GUIDANCE

This plan should be read and applied along with Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 4, issued by Central Pollution Control Board, Ministry of Environment, Forest and Climate Change, Govt. of India

[https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/BMW-GUIDELINES-COVID\\_1.pdf](https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/BMW-GUIDELINES-COVID_1.pdf)

### 1.0 INTRODUCTION

Bio Medical Waste includes all the waste generated from health care facilities which can have adverse effect to the health of a person or to the environment in general, if not disposed properly. All such waste generated from the Health care facility which adversely affect the health of a person or harm the environment is considered as infectious and such waste has to be managed as per the BMW rules 2016.

In order to deal with COVID-19 pandemic, State and Central Governments have initiated various steps, which include setting up of quarantine centers/camps, Isolation wards, sample collection centers and laboratories. Following specific guidelines for management of waste generated during diagnostics and treatment of COVID-19 suspected/confirmed patients, are required to be followed by all the stakeholders including isolation wards, quarantine centers, sample collection centers, laboratories, ULBs and common biomedical waste treatment and disposal facilities, in addition to existing practices under BMW Management Rules, 2016.

### 1.1 Purpose

The purpose of the Biomedical Waste Management Plan is to provide the requirements for the proper management of biomedical waste at Health care facility, Isolation wards/quarantine centres, sample collection centers and laboratories and is specifically for the activities to be taken under CERC component. It also includes improving the collection, segregation, processing, treatment and disposal of these bio-medical wastes in an environmentally sound management and thereby reducing the bio- medical waste generation and its impact on the environment.

### 1.2 Definition

- Biomedical waste (BMW) is any waste produced during the diagnosis, treatment, or immunization of human or animal or research activities pertaining thereto or in the production or testing of biological or in health camps. Biomedical waste is also known as bio-hazardous waste. According to WHO nearly 85% is general waste of all the waste generated by the healthcare facility. About 15% of the waste is bio- medical waste which includes infectious waste (10%) and non-infectious waste such as radioactive & chemical waste (5%). This waste consists of the materials which have been in contact with the body fluids (include lymph, semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids, Blood, and blood products (human and primate; whole blood, serum plasma and blood products), Blood components which include devices which retain visible blood adhering to inner surfaces, such as IV tubing. Animal parts/tissues and animal blood that contain human disease-causing agents, used absorbent materials such as bandages, gauze, or sponges which are saturated with blood or body fluids. Needles and needle-syringe units (whether infectious or not) Scalpels, razor blades, hard plastic or glass contaminated with tissues, blood, blood products, or body fluids.
- Disinfection – the process of removing pathogenic microorganisms from objects or surfaces.
- Sterilization – the process used to destroy of all microorganisms on a surface or object, thereby rendering biomedical waste non-infectious.
- Cleaning – a process by which soap or detergent and water is applied to an area to remove dirt and

organic matter from surfaces or objects. Cleaning may not kill microorganisms but prepares the object or surface for a more effective disinfection.

- Point of origin – the room or area where the biomedical waste is generated.
- Puncture resistant - able to withstand punctures from contained sharps during normal usage and handling.
- Sharps - Objects capable of puncturing, lacerating, or otherwise penetrating the skin.

### 1.3 Classification of Healthcare Waste

Health Care Facilities (HCFs) are primarily responsible for management of the healthcare waste generated within the facilities, including activities undertaken by them in the community. The health care facilities, while generating the waste are responsible for segregation, collection, in-house transportation, pre-treatment of waste and storage of waste, before such waste is collected by Common Bio-medical Waste Treatment Facility (CBWTF) Operator. Thus, for proper management of the waste in the healthcare facilities the technical requirements of waste handling are needed to be understood and practiced by each category of the staff in accordance with the BMWM Rules, 2016.

#### Biomedical Waste

Bio Medical Waste Management Rules, 2016 categorizes the bio-medical waste generated from the health care facility into four categories based on the segregation pathway and colour code. Various types of bio medical waste are further assigned to each one of the categories, such as Yellow, Red, White and Blue Category.

Table 1: Categories of Biomedical Waste

Category	Type of waste
Yellow	<b>Human Anatomical Waste</b> Human tissues, organs, body parts and fetus below the viability period (as per the Medical Termination of Pregnancy Act 1971, amended from time to time).
	<b>Animal Anatomical Waste</b> Experimental animal carcasses, body parts, organs, tissues, including the waste generated from animals used in experiments or testing in veterinary hospitals or colleges or animal houses.
	<b>Soiled Waste</b> Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components
	<b>Discarded or Expired Medicine</b> Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.
	<b>Chemical Waste</b> Chemicals used in production of biological and used or discarded disinfectants
	<b>Chemical Liquid Waste</b> Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, Silver X - ray film developing liquid, discarded Formalin, infected secretions, aspirated body fluids, liquid from laboratories and floor washings, cleaning, house - keeping and disinfecting activities etc.
	<b>Discarded linen, mattresses, beddings contaminated with blood or body fluid, routine mask &amp; gown.</b>

Category	Type of waste
	<b>Microbiology, Biotechnology and other clinical laboratory waste (Pre-treated)</b> Microbiology, Biotechnology and other clinical laboratory waste: Blood bags, Laboratory cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of biological, residual toxins, dishes and devices used for cultures
Red	Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes without needles, fixed needle syringes with their needles cut, vacutainers and gloves
White	Waste Sharps including metals Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This includes both used, discarded and contaminated metal sharps
Blue	Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes.

### General Waste

General waste consists of all the waste other than bio-medical waste, and which has not been in contact with any hazardous or infectious, chemical or biological secretions and does not include any waste sharps. This waste consists of mainly:

- (i) Newspaper, paper, and card boxes (dry waste)
- (ii) Plastic water bottles (dry waste)
- (iii) Aluminium cans of soft drinks (dry waste)
- (iv) Packaging materials (dry waste)
- (v) Food Containers after emptying residual food (dry waste)
- (vi) Organic / Bio-degradable waste - mostly food waste (wet waste)
- (vii) Construction and Demolition wastes

These general wastes are further classified as dry wastes and wet wastes and should be collected separately. This quantity of such waste is around 85% to 90% of total waste generated from the facility. Such waste is required to be handled as per Solid Waste Management Rules, 2016 and Construction & Demolition Waste Management Rules, 2016, as applicable

## 2.0 BIOMEDICAL WASTE MANAGEMENT

There are five steps in treatment and disposal of BMW which is the prime responsibility of the Health Care facility. These include Segregation, Collection, pre-treatment, Intramural Transportation and Storage.

Treatment and Disposal is the prime responsibility of CBWTF operator. For remote areas where CBWTF facility is not available, disposal of yellow category waste can be performed using deep burial pits. Following are the responsibilities of HCF for management and handling of bio-medical waste:

- Biomedical Waste should be segregated at the point of generation by the person who is generating the waste in designated colour coded bin/container
- Biomedical Waste & General Waste shall not be mixed. Biomedical Waste & General Waste shall not be mixed. Storage time of waste should be as less as possible so that waste storage, transportation and disposal is done within 48 hours.
- No secondary handling or pilferage of waste shall be done at healthcare facility. If CBWTF facility is available at a distance of 75 km from the HCF, bio-medical waste should be treated and disposed only

through such CBWTF operator.

- Only Laboratory and Highly infectious waste shall be pre-treated onsite before sending for final treatment or disposal through a CBWTF Operator.
- Provide bar-code labels on all colour coded bags or containers containing segregated bio-medical waste before such waste goes for final disposal through a CBWTF.

#### Biomedical wastefrom COVID-19

Many types of additional medical and hazardous waste are generated from COVID-19 isolation wards including temporary Healthcare facilities like rail coach wards, COVID care centers etc. The waste includes Feces, tissues, toiletries, infected masks, gloves, syringes, samples, and other protective equipment, drain bags, urine bags, body fluid or blood-soaked tissues/cotton, empty ampules etc. BMW generated from sample collection centres and laboratories include viral transport medis, plastic vials, vacutainers, Eppendorf tubes, plastic cryovials, pipettes tips etc. Less quantity of biomedical waste is expected from quarantine camps/quarantine homes/home care facilities. Waste such as used masks, gloves and tissues or swabs contaminated with blood/body fluids of COVID-19 patients including syringes, medicines etc. will be treated as Bio-medical waste. General solid waste from quarantine camps/quarantine homes/home care facilities includes kitchen, packaging material, waste food material, waste plastics, floor cleaning dust, leftover food, disposable utensils, water bottles, tetra packs.

#### **2.1 Segregation of Biomedical Waste**

Segregation of waste at source is a single most important step in bio-medical waste management. Once bio- medical waste mixes with general waste, the waste management problem magnifies and becomes unmanageable. It is critical that wastes be segregated at the point of generation itself.

Bio-medical waste generated from a healthcare facility and COVID isolation ward will be segregated at the point of generation as per the colour coding stipulated under Schedule-I of BMW Rules, 2016 and CPCB Guidelines for Handling, Treatment and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients, 2020. There should be no segregation of biomedical waste and solid waste at temporary waste collection/storage area of Healthcare facility to ensure occupational safety. Healthcare facilities having isolation wards for COVID-19 patients will follow the following activities to ensure proper waste segregation:

- Waste shall be segregated at the point where wastes initially generate, accumulate and is under the control of doctor / nursing staff etc. who is providing treatment to the patient and in the process generating bio-medical waste.
- Separate colour coded bins/bags/containers shall to be kept in wards and shall maintain proper segregation of waste as per BMW Rules 2016 and CPCB guidelines for implementation of BMW management rules.
- Adequate number of colour coded bins/containers and bags shall be made available at the point of generation of biomedical waste.
- Colour coded plastic bags shall be in line with the Plastic Waste Management Rules, 2016.
- Personnel Protective Equipment shall be provided to the staff that is handling Bio-medical waste.

General solid waste comprising of wrappers of medicines/syringes, fruit peels offs, empty juice bottles, used water bottles, discarded papers, carton boxes of medicines, empty bottles of disinfectants, household waste such as kitchen waste, packaging material, waste food material, waste plastics, floor cleaning dust, left-over food, disposable utensils, tetra packs generated from isolation wards, quarantine centers or camps should be collected in separate bags, securely tied in

leak proof bags, sprayed with sodium hypochlorite solution and handed over to municipal solid waste collector identified by Urban local bodies for final disposal.

2.1.1 Colour Coding and Type of Container/ Bags to be used for Waste Segregation & Collection  
As per Schedule I of the Bio Medical Waste Management Rules, 2016 following colour coding and type of container/bags shall be used by the HCFs for segregation and collection of generated Bio Medical Waste from the facility.

**Table 1: Type of Waste and Type of Waste Container and Colour Coding**

Category	Type of waste	Colour & Type of Container
Yellow Category	Waste - Human Anatomical Waste - Soiled Waste - Discarded or Expired Medicine - Microbiology, Biotechnology and other clinical laboratory waste - Chemical Waste (yellow-e) - Chemical Liquid Waste	Yellow coloured non-chlorinated Plastic Bags  Note: Chemical waste (yellow-e) comprising of unused, residual or date expired liquid chemicals including spent hypo of X-Ray, should be stored in yellow container
Red Category	Contaminated (Recyclable) Waste	Red Coloured Non Chlorinated Plastic Bags (having thickness equal to more than 50 μ) and Containers 
White Category	Waste Sharps including metals	White Coloured translucent, puncture proof, leak proof, Temper Proof containers 

Blue category	Glassware Metallic Body Implants	Puncture proof, leak proof boxes or containers with blue coloured marking   <p>Cardboard Box with Blue marking</p>
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## 2.2 Waste Collection

### 2.2.1 Time of Collection

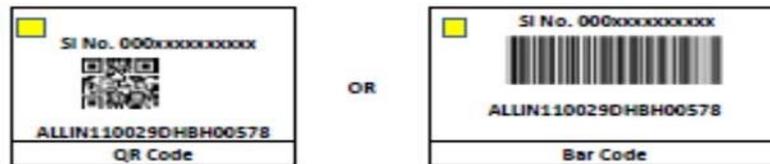
- The BMW will be collected on daily basis from each ward of the hospital at a fixed interval of time.
- The time of collection time will be fixed and appropriate to the quantity of waste produced in each area of the HCF.
- HCF will ensure collection of BMW as per BMW rules 2016 such as collection of COVID waste on the same day, data entry to be made on the CPCB app, vehicle used for waste collection should have a GPS tracker and separate waste collection and disposal for biomedical waste generated from COVID-19.
- As a precaution double layered bags (using 2 bags) will be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no leaks.
- Collection of biomedical waste from COVID isolation wards will be done separately.
- Dedicated trolleys and collection bins in COVID-19 isolation ward will be used and a label “COVID-19” waste will be pasted on these.
- General waste will not be collected at the same time or in the same trolley in which bio-medical waste is collected.
- A dedicated collection bin labelled “COVID-19” to store COVID waste will be used and kept separately in temporary storage room prior to handing over to authorised staff of MPCC (CBWTF).
- Biomedical waste collected in COVID-19 isolation wards can also be lifted directly from ward into CBWTF collection van.
- Faeces from COVID-19 confirmed patient, who are unable to use toilets and excreta is collected in diaper, will be treated as biomedical waste, and should be placed in yellow bag/container. However, if a bed pan is used, then faeces will be washed into toilet and cleaned with a neutral detergent and water, disinfected with a 0.5% Chlorine solution, and then rinsed with clean water.
- Used PPEs such as goggles, face shield, aprons, plastic coverall, HazMat suit, nitrile gloves will be collected in Red Bag.
- Used masks (including triple layer mask, N95 mask etc), head cover/cap, shoe-cover, disposable linen Gown will be collected in yellow bags.
- Collection of waste from sample collection centres and laboratories for COVID-19 patients will be Pre- treated (such as viral transport media, plastic vials, vacutainers, Eppendorf tubes, plastic cryovials, pipette tips) as per BMW rules 2016 and collected in Red bags.
- Bio-medical waste from quarantine centres/camps will be collected separately in yellow - coloured bags provided by the urban local bodies.

### 2.3 Packaging

- Bio-medical waste bags and sharps containers will not be filled to no more than three quarters full and will be sealed ready for collection.
- Plastic bags will be tied or sealed with a plastic tag or tie.
- Replacement bags or containers will be available at each waste-collection location so that full ones can immediately be replaced.
- Colour coded waste bags and containers will be printed with the bio-hazard symbol, labelled with details such as date, type of waste, waste quantity, senders name and receivers details as well as bar coded label to allow them to be tracked till final disposal.
- It will be ensured that Bar coded stickers are pasted on each bag as per the guidelines of CPCB dated 27 March, 2019

### 2.4 Labelling

- Bio-medical waste collected from COVID Isolation wards/quarantine centres/sample collection centres/laboratories for COVID-19 patients will be labelled as COVID-19 waste and will be kept separately.
- All the bags/ containers/ bins used for collection and storage of bio-medical waste, will be labelled with the Symbol of Bio Hazard or Cytotoxic Hazard as the case may be as per the type of waste in accordance with the BMWM Rules, 2016.
- Bio-medical waste bags / containers will be provided with bar code labels in accordance with CPCB guidelines for “Guidelines for barcode System for Effective Management of Biomedical Waste”.



Bio-Hazard Label and Cyto- Toxic Label

### 2.5 Storage

- Bio-medical waste will not be stored in the wards/ different departments of Health Care Facility.
- No waste will be stored in patient care area and procedures areas such as Operation Theatre.
- Used masks and gloves from home quarantine or other households will be kept in paper bag for a minimum of 72 hours prior to disposal of the same as general waste and mask will be cut prior to disposal to prevent reuse.

## **2.6 Transportation**

### **2.5.1 Trolleys for Transportation**

- In house transportation of Bio Medical Waste from site of waste generation/ interim storage to central waste collection centre, within the premises of the hospital will be done in closed trolleys / containers preferably fitted with wheels for easy manoeuvrability.
- BMW from the HCF/COVID Isolation wards will not be carried through high risk areas, areas having high traffic of patients and visitors.
- Supplies and waste will be transported through separate routes.
- Waste transportation will be transferred to avoid any spillage and scattering of waste.

**2.5.2** Central waste collection room for Bio-medical waste & COVID-19 Waste Healthcare facility will ensure that there is a designated central waste collection room in the premise for storage of Bio-medical waste. Such room should be under the responsibility of a designated person and should be under lock and key. The following should be considered for central waste collection room.

- The location of the central waste collection room must be away from the public/visitor access.
- The room specified for waste collection must be sufficient to store at least two days generation of waste.
- The entrance of the room must be accessible through a concrete ramp for easy transportation so that no spillage occurs.
- The floor of the specified area should be of tiles or glazed material so as to ease the cleaning. Exhaust fans should be provided in the waste collection room for ventilation.
- The specified area should be inspected for safety for potential fire hazard. Fire extinguisher, smoke detector should be installed in the room. There should also be provision for water supply adjacent to central waste storage area for cleaning and washing of this station and the containers.
- The drainage from the storage and washing area should be routed to the Effluent Treatment Plant. Sign boards indicating relevant details such as contact person and the telephone number should be provided.
- The entrance of this station must be labelled with “Entry for Authorized Personal Only” and Logo of Bio Medical Waste Hazard.
- It is to be ensured that no general waste is stored in the central waste collection area.
- HCF need to maintain record of waste generated and handed over to the authorized recyclers. Separate record of waste generated from COVID-19 isolation wards should also be maintained.
- No stray animal should enter the area. Cattle traps to be installed at the entrance of the HCF.
- Pest control measures should be taken care off in the storage area on regular basis.

## **2.7 Treatment and Disposal**

### **2.7.1 Yellow Category**

#### **2.7.1.1 Yellow (a & c)- Human Anatomical Waste and Soiled Waste**

Human anatomical waste includes human tissues, organs, body parts and foetus below the viability period. This includes placenta and extracted tooth.

Soiled waste includes Items contaminated with blood/body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components. This includes used infectious material such as caps, shoe-cover, blotting paper/gauze, wooden swab stick, paraffin

blocks, indicator tapes and disposable (single use non-linen based) masks and gowns.

#### Treatment and Disposal

Yellow category waste will be stored in central storage point and will be handed over to MPCC (CBWTF operator).

For primary health centres (PHCs) and sub centres where CBWTF is not available, disposal of the waste will be done in deep burial pits.

#### 2.7.1.2 Yellow Category (d)- Expired and Discarded Medicine

Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.. This includes cytotoxic drugs dispensed in dextrose / saline bottles and disposables used in delivery of cytotoxic drugs.

#### Treatment and Disposal

As per BMW Rules, 2016 all the expired and discarded medicines including cytotoxic drugs expired `cytotoxic drugs will be returned back to the manufacturer or handed over to MPCC Van to be disposed of through incineration at temperature > 1200°C.

For healthcare facilities where there is no established system for returning the drugs to the manufacturer it is general practice that the expired and discarded medicines are destructed, crushed and disposed in secured landfill.

#### 2.7.1.3 Yellow Category- Discarded Linen, Mattresses, beddings contaminated with Blood, body fluids, routine mask, and gown

This includes discarded linen from bedsheets, beddings, re-usable routine masks and gowns.

#### Treatment and Disposal

The waste linen will be disinfected with non-chlorinated chemical disinfection and be cut into pieces and then handed over to the CBWTF operator for final disposal by incineration. Disposable (single use non-linen based) masks and gowns after use shall be treated as yellow-c (Solid waste).

#### 2.7.1.4 Yellow Category- Microbiology, Biotechnology and Other Clinical Laboratory Waste

Microbiology, Biotechnology and other clinical laboratory waste, waste blood bags (containing date expired or contaminated blood), Laboratory cultures, stocks or specimen of micro- organisms, live or attenuated vaccines, human cell cultures used in research, industrial laboratories, production of biological, residual toxins, dishes and devices used for cultures. This includes plastic culture plates and other highly infectious wastes.

#### Treatment and Disposal

The waste will be Pre-treated (Autoclave, microwave, hydroclave or using non chlorinated chemical disinfectants like aldehydes, lime based powders or solutions, ozone gas, ammonium salts and phenolic compounds) by disinfection before handing over the waste to CBWTF operator. The pre-treated waste should be handed over to the CBWTF operator on daily basis.

Pretreated waste will only be disposed in captive deep burial pits in case of the hospitals located in remote in rural or isolated places. Use of deep burial pit will be as authorised by UEPPCB.

#### 2.7.2 Red Category

Red category waste is contaminated recyclable waste containing primarily plastics generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and fixed needle syringes with their needles cut), vacutainers and gloves. This includes waste pipette tips, plastic pipette, Eppendorf, rubber teats, drains, oxygen mask, thick plastic splash proof gowns, rubber apron, ICT test cards, ELISA plate and vials not containing blood samples.

## Treatment and Disposal

Contaminated recyclable waste containing mainly plastics and rubber will be pretreated with 5% Hypochlorite solution for 30 minutes and will put in red coloured non chlorinated plastic bags and containers. Syringes after removing/cutting the needles will also be put in this category. All the waste will to be sent to CBWTF where the waste will be autoclaved and shredded and finally the same will be secure landfilled.

### **2.7.3 White Category**

This waste comprises of needles, syringes with fixed needles, needles from needle cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This includes waste sharps such as lumbar puncture needle, trocar cannula, IABP cannula, arthroscopy blade, insulin pen needle, lancet needle, removac needle, eye needle, Cardioplegia needle and surgical stab knife.

#### **Treatment and Disposal:**

After collection in puncture proof, leak proof, tamper proof container, the waste will be treated with 1% hypochlorite solution for 30 minutes and handed over to the CBWTF. At the CBWTF the same will be autoclaved and finally encapsulated or recycled.

### **2.7.4 Blue Category**

#### **2.7.4.1 Blue (a) Glassware**

Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes. This includes glass slides and glass pipettes.

#### **Treatment and Disposal:**

The empty glass bottles will be treated with 1% hypochlorite solution for 30 minutes and handed over to the CBWTF. At the CBWTF the same will be autoclaved and finally encapsulated or recycled.

#### **2.7.4.2 Blue (b) Metallic Body Implants**

The waste includes implants used for orthopaedic surgeries such as metal sternal wire, Gigli saw wire and Orthopaedic Splint.

#### **Treatment and Disposal**

This waste will be handed over to CBWTF. In case of no access to CBWTF, metallic body implants will be disinfected (either by autoclaving or microwaving or hydroclaving or by Sodium Hypochlorite Solution) and later washed with detergent prior to sending/sold to metal recyclers.

## **3.0 GENERAL GUIDELINES**

- For HCFs having its own treatment and disposal facility through use of deep burial pits i.e. Primary Health Centres (PHCs) which doesn't fall under coverage area of any CBWTF, interim storage area used for daily waste collection will serve as Central Waste Collection Area. The collected waste is needed to be store in this place before it is disposed of by the deep burial pits as per the specifications under the BMW Rules 2016.
- General waste collected from COVID-19 Isolation wards which is not having contamination should be disposed as per Solid Waste management Rules 2016.
- The inner and outer surface of the containers /bins/trolleys used for storage of COVID-19 waste should be disinfected daily with 1% sodium hypochlorite solution.
- General solid waste (household waste) generated from quarantine camps or centers should be handed over to the waste collector identified by the urban local body.

### **4.0 INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITY**

#### **4.1 Health Care Facility**

As per the BMW Rules, 2016, the liability for implementing these rules lies with the Medical Superintendent (MS)/Chief Medical Officer (CMO)/Senior Medical Officer (SMO)/ Principal Medical Officer (PMO) of the District Hospital, Sub Divisional Hospital and Community Health Centre (CHC).

In case of Primary Health Centre (PHC) and Sub Centre, the duties of occupier are to be performed by designated Medical Officer in charge (MO I/C) of the PHC. The CMO/ SMO/ MS/Medical Officer in charge of the HCFs is responsible and liable for implementing, monitoring and review of activities related to Bio Medical Waste Management.

It is the prime responsibility of the In-charge of the HCF to take all necessary steps to ensure that the bio- medical waste including COVID-19 waste is handled carefully without any adverse effect to the human health and the environment. In-charge shall ensure that the BMW from the HCF is properly segregated, handled, stored, packaged, transported and disposed of as per BMWN rules 2016 and CPCB 2020 for COVID-19 waste. For collection, segregation, transport, storage and treatment a waste management team should be constituted with the Health care facility. The team shall mainly constitute of the following people

- a. The Medical Superintendent who shall be the Chairperson
- b. The Head of the Departments
- c. The infection control officer
- d. The Chief Pharmacist
- e. The Radiology Officer
- f. The Senior Matron
- g. The Head of the administration
- h. The Hospital Engineer
- i. Senior Nursing officer
- j. Such other staff members as the MS may designate

Roles and responsibilities of the various personnel in confirmation to the Bio-Medical Waste Management (Management and Handling) Rules have been presented below.

#### **4.1.1 Medical Superintendent (MS)**

He has the overall responsibility for the formulation and implementation of guidelines for hospital waste management and has to ensure that waste is handled without any adverse effect to human health and environment. As the "occupier", he is responsible for applying for grant of authorization (in Form 1) to the prescribed authority i.e., Uttaranchal Environment Protection and Pollution Control Board. He is also responsible for submitting an annual report in Form II to the Uttaranchal Environment Protection and Pollution Control Board (prescribed authority) by 31st January regarding information about categories and quantities of Bio-Medical Wastes handled during the previous year.

#### **4.1.2. Hospital Waste Management Committee**

- a. To ensure the circulation of enough copies of Bio- Medical Waste Rules and guidelines for implementation of the same in Clinical Departments.
- b. To conduct awareness programme for making the Faculty and the Residents aware of the Biomedical Waste (Management & Handling) Rules.
- c. To conduct training programmes for Medical Professionals, Nursing Professionals and Sanitation Professionals.
- d. To hold meeting of the Hospital Waste Management Committee and formulate the detailed plan of action in regard to segregation, collection, storage, and transport of waste from all the patient care areas. To procure the items required in. this regards and makes them available in all patient care areas.
- e. Each Clinical Department (Unit), Lab Services, Blood Bank, Microbiology, Pathology will make one Faculty Member responsible for supervision of segregation in their area of activities.
- f. Floor wise one Nursing Sister (Dy. Nursing Superintendent). will be responsible for supervision of segregation in the wards of each floor. In each and every Operation Theatre the same instruction of supervision will be followed and one Sister In charge will be

responsible.

#### **4.1.3 Officer In-charge of Waste Management**

The Officer In charge of waste management will be In charge of implementation and will liaise with the Heads of Departments. Infection Control Officer, Chief Nursing Officer. He will be the member of the Hospital Waste Management Committee. He will be responsible for monitoring the Programme from time to time at various levels i.e., generation, segregation, collection, storage, transportation and treatment including disposal. He will be responsible for circulation of all policy decisions and the hospital waste management manual.

#### **4.1.4 Concerned Heads / In charge of Labs; Units/Departments**

They will be responsible for the formulation and implementation of waste management procedures for their departments in conformity with the general guidelines issued by administration. They will also be responsible for getting all staff, doctors, nurses, paramedics and group-D staff, trained in hospital waste management, and will liaise with the Officer In charge of waste management for administrative support. Arrange Proper supervision of the sanitary staff and sweepers to ensure that they comply with waste management procedures at all times. With regard to the departments, which generate radioactive waste, one of the consultants should be designated as Radiation protection officer and he will be responsible for implementation of the necessary guidelines.

#### **4.1.5 Waste Management Officer**

##### **I. For waste collection**

- a. Ensure internal collection of waste bags/containers & their transport to the central storage facility of the hospital on a daily basis.
- b. Liaise with the stores and supplies department to ensure that an adequate supply of waste bags, containers, protective clothing, and collection trolleys are available at all times
- c. Ensure that sanitary staff and sweepers immediately replace used bags and containers with the new bag and containers of the same type at the required time or when it is full and where a waste bag is removed from the container, that container is properly cleaned before a new bag is fitted
- d. Directly supervise the hospital sweepers assigned to collect and transport the waste on the specified time.
- e. Ensure that bio-medical waste is not mixed with other Municipal Solid waste.
- f. Ensure that housekeeping staff, wear protective devices such as gloves, face masks, gowns, while handling the waste.
- g. Ensure that posters are put on the walls adjacent to the bins giving details about the type of waste that has to be disposed in the bag/container as per biomedical waste management rules.

##### **II. For waste storage**

- a. There is biomedical waste label on waste carry bags and waste carry trolleys
- b. Carry bags also have the biohazard symbol on them
- c. Ensure correct use of the central storage facility and that is kept secured from unauthorized access
- d. Prevent unsupervised dumping of waste bags and waste container on the hospital premises even for short period of time.

##### **III. For waste disposal**

- a. Ensure that barcode system of bar-coding of bags or containers containing bio-medical waste to be sent out of the premises or place for a purpose, is complied with and records of the same maintained.
- b. Coordinate and monitor all waste disposal operations and for this purpose meet regularly with the concerned representative of the designated agency
- c. Ensure that the correct methods of transportation of waste are used on-site to the central

storage facility and off-site by the designated agency.

- d. Ensure that the waste is not stored on the hospital premises for longer than 48 hrs, by coordinating with the incinerator operators and with the designated agency.

#### **IV. For staff training and information**

- a. Liaise with the Heads of the department, Head of Administration and Senior Matron to ensure that all doctors, clinical staff, nursing staff, and medical assistants are fully aware of their duties and responsibilities.
- b. Ensure that sanitary staff and sweepers are not involved in waste segregation and that they only handle waste bags and containers in the correct manner.

#### **4.1.6 Chief Pharmacist**

- a. Give advice regarding formulation of appropriate procedures for management of Pharmaceutical waste and coordinate implementation of these procedures
- b. Ensure that the concerned hospital staff members receive adequate training in pharmaceutical waste management procedures
- c. Ensure that the pharmaceutical waste is being disposed of in accordance with the waste management plan

#### **4.1.7 Infection Control Officer**

- a. Achieving reduction in infection rates
- b. Giving advice regarding the control of infection and the standards of the waste disposal system
- c. Identifying training requirement for each category of staff
- d. Organizing with others, training, and refresher courses on safe waste management procedures

#### **4.1.8 Senior Matron and Head of Administration**

- a. Shall be responsible for ensuring induction and refresher training of nursing staff, medical assistants and sanitary staff and sweepers in waste management procedures
- b. Liaise with the waste management officer, infection control officer and chief pharmacist to maintain high standards of infection control.
- c. Liaise with department heads to ensure coordination of training activities, decide waste management issues specific to particular departments.

#### **4.1.9 Hospital Engineer**

- a. Shall be responsible for installation, maintenance and safe operation of waste storage facilities and waste handling equipment.
- b. Should ensure that the concerned hospital staff members are properly trained for these purposes.

#### **4.1.10 Infection Control Officer**

- a. Achieving reduction in infection rates
- b. Giving advice regarding the control of infection and the standards of the waste disposal system
- c. Identifying training requirement for each category of staff
- d. Organizing with others, training, and refresher courses on safe waste management procedures

#### **4.1.11 Sister Nursing**

- a. Will designate one of the senior administrative level deputies as Sister In charge of Hospital Waste Management, who will be responsible for close monitoring of the activity.
- b. Conduct surprise rounds and will review and evaluate the various aspects of hospital waste management at all levels from generation and segregation to final disposal.
- c. She will also attend the meetings of Hospital Waste Management Committee on behalf of the Sister nursing, and co-ordinate the training of nurses on Hospital Waste Management with administration.

#### **4.2. Authority- Uttarakhand Environment Pollution and Prevention Control Board (UEPPCB)**

As per BMW Rules, 2016 and CPCB guidelines July 2020 (Handling, Treatment and Disposal of Waste generated during Treatment/ Diagnosis/ Quarantine of COVID-19 Patients), every hospital,

clinic, dispensary, pathological laboratory, blood bank, health care facility and clinical establishment, are required to obtain authorization from the prescribed authority i.e., UEPPCB. Validity of authorization in case of bedded health care facilities will be synchronized with the validity of the consents. It will be the responsibility of the In-charge of the HCF to obtain valid authorizations and consents under various acts.

#### **4.3 Common Bio-medical waste treatment facility**

- They must report to the UEPPCB about receiving of waste from COVID-19 isolation wards/Quarantine Camps/Quarantine homes/COVID-19 testingcenters.
- CBWTF operator should ensure regular sanitization of workers involved in handling and collection of biomedical waste.
- Workers should be provided with PPEs including triple layer masks, splash proof aprons/gowns, nitrile gloves, gum boots and safetygoggles.
- Dedicated vehicles should be used for collection of COVID-19 waste.
- Vehicles should be sanitized with Sodium hypochlorite solution.
- COVID-19 waste should be disposed off immediately upon receipt at facility.
- CBWTF operator shall maintain separate record for collection, treatment, and disposal of COVID- 19waste.

**Table 2: Biomedical Waste Management Plan**

S.No	Type of Waste	Location	Segregation	Institution Treatment	Treatment and Disposal
1	Human anatomical waste	Operation Theatre, Labourroom & Wards	Yellow bags	-	Incineration and deep burial in case of PHCs and Sub centres
2	Microbiology & Biotechnology Waste	Culture Laboratories	Yellow Bags	Autoclave, microwave, hydroclave or using non-chlorinated chemical disinfectants	Incineration & deep burial in case of PHCs and Sub centres
3	Expired & Discarded medicines	Kept at medical stores after collection from department or HCF	Yellow bags	-	Incineration, Crushed, Destroyed and Secure landfill in case of PHCs and Sub centres
3	Infectious organic Waste	All wards, OT, Labour rooms, Lab, ICU,	Red bucket lined with red plastic liners stored in red drums with plastic liners	-	Autoclaving Deep Burial Secure Landfill
4	Infectious plastic Waste	All wards & departments	Red buckets stored in Red drum lined with Red plastic liner	5% Hypo chlorite solution for 30 minutes	Autoclave & Shredding Secure Landfill
5	Sharps (needles, slides, bottles etc.)	All wards & departments	Mutilation by needle destroyer then put in sharps container with hypo chlorite solution 1%	1% hypochlorite for 30 minutes	Autoclave Encapsulation or recycled

**Table 3: Biomedical Waste Management Plan- COVID-19**

S.No	Type of Waste	Location	Segregation	Institution Treatment	Treatment and Disposal
1	Goggles, face shield, Splash proof apron, HazMat suit, nitrile gloves	Isolation wards, quarantine camps/ homes	Red bucket lined with red plastic liners stored in red drums with plastic liners	5% Hypo chlorite solution for 30 minutes	Autoclave & Shredding Secure Landfill
2	Diapers	Isolation wards	Yellow bag	-	Incineration at CBWTF Deep burial in case of PHCs and Sub centres
3	Masks, head cover/cap, shoe cover	Isolation wards	Yellow bag	-	
3	Disposable linen gown, non-plastic or semi plastic coverall	Isolation wards	Yellow bag	-	
4	Tissues and Toiletries	Isolation wards, quarantine camps/ homes	Yellow bag	-	
5	Swabs contaminated with blood/body fluids	Isolation wards, quarantine camps/ homes	Yellow bag	-	
6	Sharps (needles)	Isolation wards, quarantine camps/ homes	White category	1% hypochlorite for 30 minutes	Autoclave Encapsulation or recycled
7	Discarded Medicines	Isolation wards, quarantine camps/homes	Yellow Bag	Destructed, crushed	Incineration at CBWTF Secure landfill in case of PHCs and Sub centres
8	Plastic vials, vacutainers, Eppendorf tubes, plastic cryovials, pipette tips	Sample collection centres & laboratories	Yellow Bags	Autoclave, microwave, hydro-clave or using non chlorinated chemical disinfectants	Incineration & and deep burial in case of PHCs and Sub centres