

REGULATORY INTERVENTIONS IN COVID-19 WASTE MANAGEMENT IN INDIA

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ABSTRACT : Availability of safe water, sanitation and hygienic conditions is utmost important for protecting human health during all infectious disease outbreaks, including of coronavirus disease 2019 (COVID-19). In late 2019, an acute respiratory disease emerged, as Novel Corona Virus Disease 2019 (COVID-19). The ongoing COVID-19 pandemic has already spread throughout the world due to its fastest-spreading nature. Ensuring evidenced-based and consistently applied waste management practices in communities, homes, schools, market places, hospitals and healthcare facilities will help to prevent human-to-human transmission of the virus. However the pandemic brings challenges regarding municipal waste, Bio-medical waste management practices and procedures. In this regard, the Central Pollution Control Board (CPCB), had issued guidelines in March,2020 and then a revised the same in April, for handling, treatment, and safe disposal of waste generated during treatment, diagnosis and quarantine of confirmed or suspected COVID-19 patients generated from different sources *i.e.* isolated wards, sample testing pathological labs, quarantine centres and home care quarantine. Although the Bio-medical Waste Management Rules (BMWM), rules 2016 is already in place to take care of general Bio-medical waste generated from different Health Care Facilities (HCFs), the updated guidelines were issued specifically to make sure that the waste generated during testing and treatment of coronavirus patients is scientifically disposed off, given the contagious nature of the virus. The CPCB has also developed the tracking app (mobile and desktop) for tracking of COVID-19 related Bio-medical waste (<https://bwm.cpcbcr.com>) being generated from different potential sources for better management and its disposal for the SPCB, waste generator and CBWTF. This paper will help the health care providers engaged in managing the epidemic and in the management of waste generated during treatment of patients of the highly infectious disease.

Key words : COVID-19, Bio-medical waste, Tracking app, Bio-medical waste management rules,2016, HCF, CBWTF.

INTRODUCTION

Bio-medical waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps. Bio-Medical waste includes all the waste generated from the Health Care Facility which may impart adverse effect to the health of a person or to the environment in general if not disposed properly. All such waste which can adversely harm the environment or health of a person is considered as infectious and such waste has to be managed as per BMWM Rules,2016.

As per Bio-medical Waste Management Rules,2016, the quantity of such waste is around 10-15% of total waste generated from the Health Care Facility (HCFs). This waste consists of the materials which have been in contact with the patient's blood, secretions, infected parts, biological liquids such as chemicals, medical supplies, medicines, lab discharge, sharps metallic and glassware, plastics etc. waste which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining there to or in the production or testing of biological or in health camps. To manage the BMW of different sources, Ministry of Environment Forest & Climate Change (MoEF & CC), Govt. of India under the Environmental (Protection) Act,1986 notified the rules first time on 20th July,1998 known as Bio-medical Waste (Management & Handling) Rules, which was further got amended/revised time to time, now this rule is known as Bio-medical Waste Management Rules,2016.

1st Amendment Dated 06.03.2020
2nd Amendment Dated 17.09.2003
3rd Amendment Dated 24.08.2011
4th Amendment Dated 28.03.2016
5th Amendment Dated 16.03.2018
6th Amendment Dated 19.02.2019

COVID-19 Waste management :

- In late 2019, an acute respiratory disease emerged, known as novel coronavirus disease 2019 (COVID-19).
- The pathogen responsible for COVID-19 is severe acute respiratory syndrome corona virus 2 (SARS-CoV-2, also referred to as the COVID-19 virus), a member of the corona virus family.
- There are two main routes of transmission of the COVID-19 virus : respiratory and contact. Respiratory droplets are generated when an infected person coughs or sneezes.
- Any person who is in close contact with someone who has respiratory symptoms (for example, sneezing, coughing) is at risk of being exposed to potentially infective respiratory droplets .
- Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (known as contact transmission).
- The COVID-19 virus has not been detected in drinking-water supplies, and based on current evidence, the risk to water supplies is low.

Table. 1 Current scenario of Bio-Medical Waste Management.

Particulars	Uttar Pradesh	Uttarakhand	India
Total number of Health Care Facilities (HCFs)	19,495	2,312	2,70,416
Total number of beds (Approx.)	2,29,071	19,765	97,382
No. of Operational Common Bio-medical Waste Treatment Facilities (CBWTFs)	18	02	200
No. of CBWTFs/Private agencies under installation	0	0	28
No. of HCFs utilizing CBWTFs/private agencies	5,303	820	1,31,837
No. of HCFs having own Treatment and Disposal facilities	10	250	12,326
Total quantity of BMW generated (MT/day) (Approximate)	46.40	4.111	614
Total quantity of BMW treated (MT/day) (Approximate)	40.296	2,937	534
Total quantity of COVID-19 waste (MT/day) generation (Approximate)	15-20	2-3	50-60

- There is no evidence to date that the COVID-19 virus has been transmitted via sewerage systems with or without wastewater treatment.
- Many disinfectants are active against enveloped viruses, such as the COVID-19 virus, including commonly used hospital disinfectants.
- Currently, WHO recommends using : 70% ethyl alcohol to disinfect small areas between uses, such as reusable dedicated equipment (for example, thermometers); sodium hypochlorite at 0.5% (equivalent to 5000 ppm) for disinfecting surfaces.

COVID-19 WHO declared Pandemic :

- On 11th March,2020 WHO declared Corona Virus Disease (COVID-19) as Pandemic. As on today more than 2.0 lakh positive cases identified in our Country.
- CPCB issued guidelines for "Handling, Treatment and Disposal of Waste Generated during Treatment/Diagnosis/Quarantine of COVID-19 Patients" on 19th March,2020
- BMW generated from treatment of COVID-19 patients is no different from other BMW and managed as per provisions under BMW Rules,2016. However extra care needed as COVID-19 is highly infectious.

Hon'ble NGT orders in the matter of O. A. 72 of 2020 (related to COVID-19 BMW)

- Hon'ble Tribunal reviewed the matter related to COVID-19 Waste Management in the Country during hearing on 20th April,2020
- In order dated 24th April,2020, Hon'ble NGT stated that CPCB and SPCB are essential as to monitor the COVID-19 waste management.
- Given responsibilities to State Government to ensure implementation of BMW Rules,2016 in respective States.
- Directed CPCB to revise existing guidelines to cover aspect related to waste management at individual/citizen level.
- Directed Chief Secretaries to closely look after the entire disposal of COVID-19 waste.
- Constituted High Level Task Team at National Level to review the scientific disposal of COVID waste as per CPCB guidelines.
- States asked to prepare ATR as on 31st May,2020 and CPCB to submit consolidated report by 15.06.2020.

Action taken by CPCB :

- A guidelines for management of COVID-19 waste has been revised twice on 25th March,2020 & 18th April,2020. Third revision in progress.
- These guidelines provide guidance on waste management at isolation wards, quarantine center, home cares, testing labs etc.
- These guidelines also cover specific duties of different authorizes concerned.
- Held review meeting with SPCBs/PCCs and State/UT Departments on 30th April,2020 to assess the status of compliance and to advise on compliance.
- Developed tracking app (mobile and desktop) for tracking of COVID-19 related Bio-medical waste (<https://bwm.cpcbcr.com>).
- Active follow-up with SPCB/CBWTF and other generators on implementation tracking app.
- Organized meeting of High Level Task Committee and had consultations with subject experts.
- Disseminated information through CPCB website and social media platforms.
- Developed pictorial guidelines. Assisted other organizations to develop media content for awareness.

Responsibilities of States/Union Territories and State Pollution Control Boards/Pollution Control Committees of India :

- Ensure proper segregation of solid waste and Bio-medical waste.
- Ensure daily lifting of solid waste from hospitals treating COVID-19 patients;
- Ensure adequate capacity at common facilities to handle BMW;
- Submit daily records through CPCB's COVID-19BM waste tracking app.
- Monitor the waste management on CPCB tracking software and upload the data.
- Deep burial options may be explored in case on non availability of CBWTF/incinerator.
- Monitor and ensure scientific management of burial pits.
- Compliance to CPCB Guidelines.

- Provision of Personal Protection Equipment (PPE) to waste handlers.
- Provide awareness and training to waste handlers on safety aspects and use of PPEs.
- Shall maintain records of COVID-19 management.
- Allow CBWTFs to operate for extra hours as per requirement.
- May not insist on authorization of quarantine camps.
- In absence of CBWTF, HW incinerators may be used.
- **Duties of ULBs :**
- Inform about quarantine camps/center/quarantine home/home care to SPCB.
- Engage authorized waste collectors for door steps collection of biomedical.
- Provide yellow colour bag to home quarantine or home cares.
- Create separate team for waste collection.
- Provide training for sanitization, about collection of biomedical waste, precautionary measures to handle biomedical waste.
- Provide adequate PPEs to waste handlers.
- Use dedicated carts/trolleys/vehicles for transport of biomedical waste.
- Ensure sanitization of BMW bags and vehicles with 1% hypochlorite after each trip.
- Solid waste like fruit / vegetable peel offs, empty plastic bottles, used plates etc. shall not be mixed with BMW.
- Used masks, head cover, shoe cover etc. shall be segregate in yellow colour bag.
- Collect plastic PPEs like goggles, face shields, splash proof gowns, plastic coverall, hazmet suits, nitrile gloves etc. in Red bag.
- Maintain separate records for COVID-19 waste generation.
- Register in CPCB mobile App namely 'COVID19BWM' and feed daily data for waste generation.
- Use dedicated trolleys for transportation of waste from wards to storage area.

COVID-19 waste management at Quarantine Centers/ Home Quarantine/Home Care :

- BMW is segregated in yellow colour bags.
- CBWTF shall collect BMW from quarantine centers as and when generated.
- ULBs shall collect BMW from home quarantine or home care and shall handover the same to CBWTF operator for treatment & disposal.
- Used masks and gloves generated from home quarantine or other households shall kept in paper bag for at least 72 hours prior to disposal of the same as general waste.

CONCLUSION

Being highly infectious/contagious COVID-19 waste, required to be managed in as scientific manner involving all the stakeholders *i.e.* generators, transporters, facilitator for the disposal of the waste and regulator at different level following the BMW Rules, 2016 and guidelines prescribed time to time by the Central Pollution Control Board or concerned SPCB/PCC of the country.

Management of COVID-19 Bio-medical Waste at COVID Health Care Facility :

- Segregate BMW in colour coded non-chlorinated bags labeled with COVID-19 and biohazard symbol.
- Use double layer of bags for storage of Bio-medical waste.

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