

Revision 3:

**Guidelines for Handling, Treatment and Disposal of Waste Generated during
Treatment/Diagnosis/ Quarantine of COVID-19 Patients**

10th June, 2020

**[In suppression of earlier guidelines uploaded at CPCB website on 18/04/2020. Text pertaining to
additional information is underlined]**



Central Pollution Control Board

(Ministry of Environment, Forest & Climate Change)

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Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3

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.

These guidelines are based on current knowledge on COVID-19 and existing practices in management of infectious waste generated in hospitals while treating viral and other contagious diseases like HIV, H1N1, etc. These guidelines will be updated if need arises. This revision-3 of guidelines issued to incorporate guidance on segregation of general solid waste and biomedical waste. Further, this revision also addresses safety of waste handlers / sanitation workers associated with healthcare facilities, local bodies (ULBs) and CBWTFs in handling of biomedical waste and solid waste generated from quarantine centers/home-care/healthcare facilities treating COVID-19 patients.

Guidelines brought out by WHO, MoH&FW, ICMR, CDC and other concerned agencies from time to time may also be referred for understanding other aspects related to COVID-19.

Guidelines for handling, treatment and disposal of COVID-19 waste at Healthcare Facilities, Quarantine Camps/ Quarantine-homes/ Home-care, Sample Collection Centers, Laboratories, SPCBs/PCCs, ULBs and CBWTFs is give below;

(a) COVID-19 Isolation wards: (isolation wards are those where COVID-19 positive patients are being kept for treatment / diagnosis)

Healthcare Facilities having isolation wards for COVID-19 patients need to follow these steps to ensure safe handling and disposal of biomedical waste generated during treatment;

- Keep separate color coded bins (with foot operated lids)¹/bags/containers in wards and maintain proper segregation of waste as per BMW Rules, 2016 as amended and CPCB guidelines for implementation of BMW Management Rules.
- As precaution double layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks;
- Collect and store biomedical waste separately prior to handing over the same CBWTF. Use a dedicated collection bin labelled as “COVID-19” to store COVID-19 waste and keep separately in temporary storage room prior to handing over to authorized staff of CBWTF. Biomedical waste collected in such isolation wards can also be lifted directly from ward into CBWTF collection van.
- In addition to mandatory labelling, bags/containers used for collecting biomedical waste from COVID-19 wards, should be labelled as “COVID-19 Waste”. This marking would enable CBWTFs to identify the waste easily for priority treatment and disposal immediately upon the receipt.

¹ Inserted in Rev. 3 of guidelines dated 10/06/2020

**Guidelines for Handling, Treatment, and Disposal of Waste Generated during
Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3**

- General solid waste like wrappers of medicine/syringes etc., fruit peel offs, empty juice bottles or tetra packs, empty water bottles, discarded papers, carton boxes of medicines, empty bottles for of disinfectants and any other items which were not contaminated by the patients secretions, body fluids should be collected separately as per SWM Rules, 2016. In order to minimize waste generation, as far as possible, non-disposable items must be used, which are to be handle with appropriate precautions and cleaned and disinfected as per hospital guidelines. The wet and dry solid waste bags to be securely tied and handed over to authorized waste collector of ULB's on daily basis.¹
- Maintain separate records of waste generated from COVID-19 isolation wards.
- Use dedicated trolleys and collection bins in COVID-19 isolation wards. A label “COVID-19 Waste” to be pasted on these items also.
- The (inner and outer) surface of containers/bins/trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochlorite solution daily.
- Report opening or operation of COVID-19 ward and COVID-19 ICU ward to SPCBs/PCCs and respective CBWTF located in the area.
- Register in CPCB mobile application namely ‘COVID19BWM’ to update the details of COVID-19 biomedical waste generation.
- Depute dedicated sanitation workers separately for biomedical waste and general solid waste so that waste can be collected and transferred timely to temporary waste storage area.
- Feces from COVID-19 confirmed patient, who is unable to use toilets and excreta is collected in diaper, must be treated as biomedical waste and should be placed in yellow bag/container. However, if a bedpan is used, then faeces to be washed into toilet and cleaned with a neutral detergent and water, disinfected with a 0.5% chlorine solution, then rinsed with clean water.²
- Collect used PPEs such as goggles, face-shield, splash proof apron, Plastic Coverall, Hazmet suit, nitrile gloves into Red bag;³
- Collect used mask (including Triple layer mask, N95 mask etc.), head cover/cap, shoe-cover, disposable linen Gown, non-plastic or semi-plastic coverall in Yellow bags.⁴
- Items like left over food, disposable plates, glass, used masks, used tissues, used toiletries, etc. used by COVID-19 patient shall become biomedical waste and shall be segregated in yellow bag. Used gloves and plastic bottle from patients will be disposed off in red bag.⁵
- Provide training to Waste handlers about infection prevention measures such as Hand hygiene, Respiratory etiquettes, social distancing, use of appropriate PPE, etc. via videos and demonstration in local language. Designated nodal officer for biomedical waste management

¹ Para revised in Rev. 3 dated 10/06/2020

² Para Inserted in Rev. 2 dated 18/04/2020

³ Para inserted in Rev. 2 dated 18/04/2020

⁴ Para inserted in Rev. 2 dated 18/04/2020

⁵ Inserted in Rev. 3 dated 10/06/2020

Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3

in hospital shall provide training. Nodal officers, in turn, need to be trained by Health Departments / professional agencies in association with SPCB/ PCC of the States/ UTs.¹

(b) Sample Collection Centers and Laboratories for COVID-19 suspected patients

Report opening or operation of COVID-19 sample collection centers and laboratories to concerned SPCB/PCC. Guidelines given at section (a) for isolation wards should be applied suitably in in case of test centers and laboratories. Pre-treat viral transport media, plastic vials, vacutainers, eppendorf tubes, plastic cryovials, pipette tips as per BMW Rules, 2016 and collect in Red bags.²

(c) Responsibilities of persons operating Quarantine Camps/Homes or Home-Care facilities³

Less quantity of biomedical waste is expected from quarantine Camps / Quarantine Home/ Home-care facilities. However, the persons responsible for operating quarantine camps/centers/home-care for suspected COVID-19 persons need to follow the below mentioned steps to ensure safe handling and disposal of waste;

- General solid waste (household waste) generated from quarantine centers or camps should be handed-over to municipal solid waste collector identified by Urban Local Bodies or as per the prevailing local method of disposing general solid waste.
- General waste may comprise of the waste generated from kitchen, packaging material for groceries, food material, waste papers, waste plastics, floor cleaning dust, etc. generated and handled by patient care-takers or the suspected quarantined persons.⁴
- Waste contaminated with blood / body fluids of COVID-19 patients to be collected in yellow bag.⁵
- Biomedical waste if any generated from quarantine centers/camps should be collected separately in yellow-bags (suitable for biomedical waste collection) provided by ULBs. These bags can be placed in separate and dedicated dust-bins of appropriate size. General waste should not be stored in yellow bags.⁶
- Agency responsible for operation of Quarantine Centre/camp shall designate a nodal person who will be responsible for waste management and for maintenance of its record.⁷
- Designated nodal person of the Quarantine Centre/Camp shall register the Centre/Camp on CPCB's biomedical waste Tracking App 'COVID19BWM' (available on Google play store) and update the details of waste generated on daily basis.⁸
- Persons operating Quarantine camps/centers should call the CBWTF operator to collect biomedical waste as and when it gets generated. Contact details of CBWTFs would be available with Local Authorities.

¹ Inserted in Rev. 3, dated 10/06/2020

² Para amended in Rev. 2 dated 18/04/2020

³ Section inserted in Rev. 1 dated 25/03/2020

⁴ Para inserted in Rev. 3, dated 10/06/2020

⁵ Para inserted in Rev. 3 dated 10/06/2020

⁶ Para amended in Rev. 3 dated 10/06/2020

⁷ Para inserted in Rev. 3 dated 10/06/2020

⁸ Para inserted in Rev. 3 dated 10/06/2020

Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3

- Persons taking care of quarantine home / Home-care should deposit biomedical waste if any generated from suspected or recovered COVID-19 patients, by following any of the following methods as may be arranged by ULBs;
 - Hand over the yellow bags containing biomedical waste to authorized waste collectors at door steps engaged by local bodies; or
 - Deposit biomedical waste in yellow bags at designated deposition Centers established by ULBs. The bag again be stored in yellow bag or container; or
 - Handover the biomedical waste to waste collector engaged by CBWTF operator at the doorstep.
- Persons operating Quarantine camps/centers or Quarantine-homes/Home-care should report to ULBs in case of any difficulty in getting the services for disposal of solid waste or biomedical waste.

Clarifications:

- Quarantine Camps / Quarantine-Home are the places where suspected people or the contacts of suspected / confirmed cases who have been directed by authorized hospitals or local authorities to stay at home for at least 14 days or more for observation for any symptom of COVID-19, if any.
- Homecare – Home care facility is a home where care is to be provided to a COVID-19 positive patient at home.¹
- Biomedical waste at Quarantine Camps / Home-care may also comprise of used syringes, date expired or discarded medicines, used masks/gloves and in case of patients with other chronic diseases may also include drain bags, urine bags, body fluid or blood soaked tissues/cotton, empty ampules etc.
- Biomedical waste generated from Quarantine Camps / Quarantine-Home / Home-care would be treated as ‘domestic hazardous waste’ as defined under Solid Waste Management Rules, 2016, and shall be disposed as per provisions under Biomedical Waste Management Rules, 2016 and these guidelines.
- General waste from Quarantine Camps / Quarantine-Home / Home-care shall be segregated separately and disposed as solid waste as per provisions under SWM Rules, 2016.
- General waste such as like fruit/vegetable peel offs, left-over food, empty juice bottles or tetra packs, empty water bottles, packaging material, discarded papers, carton boxes, and any other items which were not contaminated by secretions or body fluids of COVID-19 positive person should be disposed-off as general solid waste. This waste shall not be collected in yellow bag.²
- General waste contaminated with blood or body fluids from persons infected with COVID-19 shall be segregated in yellow bag along with masks and gloves used by them.³

¹ Para inserted in Rev. 2 dated 18/04/2020

² Para inserted in Rev. 2 dated 18/04/2020 and amended in Rev. 3 dated 10/06/2020

³ Para inserted in Rev. 3 of guidelines dated 10/06/2020

**Guidelines for Handling, Treatment, and Disposal of Waste Generated during
Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3**

- Masks and gloves used by persons not infected by COVID-19 at quarantine homes or other households should be kept in paper bag for a minimum of 72 hours prior to disposal of the same as general waste. It is advisable to cut the masks prior to disposal to prevent reuse.¹

(d) Duties of Common Biomedical Waste Treatment Facility (CBWTF):

- Report to SPCBs/PCCs about receiving of waste from COVID-19 isolation wards / Quarantine Camps / Quarantined homes / COVID-19 Testing Centers;
- Operator of CBWTF shall ensure regular sanitization of workers involved in handling and collection of biomedical waste;
- Workers shall be provided with adequate PPEs including three layer masks, splash proof aprons/gowns, nitrile gloves, gum boots and safety goggles;
- Use dedicated vehicle to collect COVID-19 ward waste. It is not necessary to place separate label on such vehicles;
- Vehicle should be sanitized with sodium hypochlorite or any appropriate chemical disinfectant after every trip.
- COVID-19 waste should be disposed-off immediately upon receipt at facility.

In case it is required to treat and dispose more quantity of biomedical waste generated from COVID-19 treatment, CBWTF may operate their facilities for extra hours, by giving information to SPCBs/PCCs.

- Operator of CBWTF shall maintain separate record for collection, treatment and disposal of COVID-19 waste.
- Do not allow any worker showing symptoms of illness to work at the facility. May provide adequate leave to such workers and by protecting their salary.
- CBWTF operator shall register on 'COVID19BWM' Tracking App developed by CPCB and also ensure registration of Waste Handler (with vehicle) for entering the data of COVID-19 biomedical waste received and disposed.²
- Provide training to Waste handlers on infection prevention measures, hand hygiene, respiratory etiquettes, social distancing, use of PPE, etc. via videos and demonstrations etc. translated in local language. Sanitation workers more than 50-yr of age should be posted for management of non-COVID waste.³

(e) Duties of SPCBs/PCCs

- Shall maintain records of COVID-19 treatment wards / quarantine centers / quarantines homes in respective States.
- Ensure proper collection and disposal of biomedical waste as per BMW Rules, 2016 and this guidance document;
- Allow CBWTFs to operate for extra hours as per requirement;

¹ Amended in Rev. 2 of guidelines dated 18/04/2020; Criteria for 72 hours is as per CDC guidelines for Decontamination and Reuse of Filtering Facepiece Respirators

² Para inserted in Rev. 3 dated 10/06/2020

³ Para inserted in Rev. 3 dated 10/06/2020

Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3

- May not insist on authorisation of quarantine camps as such facilities does not qualify as health facilities. However, may allow CBWTFs to collect biomedical waste as and when required;
- In case of States not having CBWTFs as well as rural or remote areas, not having access to CBWTFs, the existing captive facilities of any hospital may be identified for disposal of COVID-19 waste as per provisions under BMW Rules, 2016 and these guidelines. This may include permitting use of deep burial pits for disposal of yellow category waste as per standards prescribed in Schedule II of Bio-medical Waste Management Rules, 2016.¹
- Coordinate with CBWTFs and ULBs in establishing adequate facilities for collection and disposal of COVID-19 waste.
- In case of generation of large volume of yellow color coded (incinerable) COVID-19 waste beyond the capacity of existing CBWTFs and the captive BMW incinerators; permit HW incinerators at existing TSDFs or captive industrial incinerators if any exist in the State/UT. In such case, ensure separate arrangement for handling and waste feeding.²
- During COVID 19 pandemic, SPCBs/PCCs may direct the ULBs to collect dry general solid waste in bags from quarantine Centers / Quarantine homes / Homecare units, and sprayed with disinfectant solution, for disposal in waste to energy plants/ industrial incinerators/ landfills, as per existing practice or availability in the state.³
- Every SPCB/PCC shall use 'COVID19BWM' web-portal developed by CPCB to track and verify COVID-19 biomedical waste and to submit daily data to CPCB through said portal.⁴

(f) Duties of Urban Local Bodies⁵

Urban Local Bodies are responsible for ensuring safe collection and disposal of biomedical waste, if any, generated from Quarantine Camps/ Quarantine Homes/ Home Care for COVID-19 suspected persons.

- Information on each Quarantine Camps/ Quarantine Homes/ Home-Care should be available with local administration and provide updated list to SPCBs/PCCs from time to time;
- Ensure that general solid waste and biomedical waste generated from quarantine camps/ quarantine homes / Homecare is not mixed. The biomedical waste and general solid waste should be collected separately;⁶
- In quarantine camps, ensure that biomedical waste is collected directly by CBWTFs identified by ULB. Biomedical waste from quarantine camps to be lifted by CBWTFs on call basis as and when the biomedical waste gets generated. Provide contact details of CBWTF operator at Quarantine Camps;
- Provide necessary support, security including authorisation to staff of CBWTFs;

¹ Para inserted in Rev. 2 dated 18/04/2020

² Para amended in Rev. 3 dated 10/06/2020

³ Para inserted in Rev. 3 dated 10/06/2020

⁴ Para inserted in Rev. 3 dated 10/06/2020

⁵ Section inserted in Rev. 1 dated 25/03/2020

⁶ Para inserted in Rev. 3 dated 10/06/2020

**Guidelines for Handling, Treatment, and Disposal of Waste Generated during
Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3**

- ULB shall engage CBWTF operator for ultimate disposal of biomedical waste collected from quarantine home/home care or waste deposition centers or from door steps as may be required depending on local situation; ULB shall make agreement with CBWTF in this regard.
- ULBs envisage following practices to facilitate safe collection and disposal of biomedical waste from quarantined homes/Home care;
 - a) Engage authorized waste collectors for door steps collection of biomedical waste and transfer to collection points for further pick-up by CBWTF; and/or
 - b) In case number of quarantined homes/Home-care units are less, ULBs may engage services of CBWTFs to collect the waste directly from door-steps.
- Provide yellow colored bags (designated for BMW) to the persons responsible for operating Quarantine Camp or home-care. If required, such bags may be provided through CBWTF.
- ULBs shall ensure the following in engaging authorized waste collectors at door-steps or at waste deposition centers;
 - o Create a separate team of workers who shall be engaged in door step waste collection at waste deposition centres or at quarantine homes or home care.
 - o Ensure that only designated staff collects biomedical waste from quarantine homes or home care.
 - o Training should be provided for sanitization, about collection of biomedical waste, precautionary measures to handle biomedical waste.
 - o Impart training to waste collector in handling of biomedical waste including methods of sanitization. Training to waste collectors should be arranged through CBWTF operators;
 - o The staff involved in handling and collection of general solid waste and biomedical waste from quarantine homes or home care centers shall be provided with adequate Personnel Protective Equipment such as three layer masks, splash proof aprons/gowns, heavy-duty gloves, gum boots and safety goggles. These PPEs are required to be worn all the time while collecting of waste from quarantine center/quarantine homes/home care/waste deposition centres.
- ULBs may adopt following practices in handling of solid waste and biomedical waste from quarantine camps / Isolation Wards / Home Care / Home Quarantine;¹
 - o Use dedicated carts / trolleys / vehicles for transport of biomedical waste. Ensure sanitization of vehicles with 1% sodium hypochlorite after each trip;
 - o As a matter of caution, the bags containing general waste may be sprayed with disinfectant solution (1% sodium hypochlorite solution) prior to disposal;²
 - o Waste collectors arriving at quarantine center or at home care may spray the disinfectant (1% sodium hypochlorite solution) on the bin used for yellow bags.

¹ Para inserted in Rev. 3 dated dated 10/06/2020

² Para inserted in Rev. 3 dated dated 10/06/2020

**Guidelines for Handling, Treatment, and Disposal of Waste Generated during
Treatment/Diagnosis/ Quarantine of COVID-19 Patients – Rev. 3**

- Establish common waste deposition centers (as stipulated under SWM Rules, 2016) for receiving / collection of biomedical waste. For this purpose, existing Dhalaos if any may be converted suitably.
- The general solid waste collected from quarantine homes or home care shall be disposed off as per SWM Rules, 2016.
- Create awareness among citizens regarding segregation of municipal solid waste and biomedical waste (as part of Domestic Hazardous Waste) generated from homes/ quarantine homes/ home care facilities.¹
- Services of Common Biomedical Waste Treatment & Disposal Facilities (CBWTFs) and staff associated with CBWTFs for collection, transportation, treatment and disposal of biomedical waste generated from hospitals including COVID-19 isolation wards, Quarantine Camps, etc. may be considered an essential service as part of health infrastructure.
- Facilitate smooth operations of CBWTFs.
- Local agencies / ULBs may take additional measures considering prevailing ground situations and feasibility, however while implementing such measures requirements outlined in these guidelines should be complied.²
- ULB shall designate a Nodal person who will be responsible for waste management for specific quarantine center or an area and for maintenance of its record.³
- Designated nodal person shall download and use biomedical waste Tracking App 'COVID19BWM' developed by CPCB to feed daily data on quantity of biomedical waste collected from home-cares or home quarantines.⁴
- Waste handlers must be given basic/elementary training by ULBs/SPCBs/PCCs with help from NGOs on SWM, Hand hygiene, Respiratory etiquettes, social distancing, Use of PPEs and its disposal, and screening clinics via videos and practical demonstrations in local language.⁵
- ULBs required to collect segregated general solid waste from quarantine centers, home-care and hospitals in bags (without opening them to ensure waste collector safety and to avoid pilferage). As a precautionary measure, liquid disinfectant (1% sodium hypochlorite solution) may be sprayed over bags containing general wastes prior to collection or disposal. General solid waste may be disposed as per SWM Rules, 2016, which may include disposal in landfills, waste to energy plants, depending on available infrastructure. Access to landfills sites should be strictly restricted.⁶
- In case ULBs are unable to manage solid waste with their existing staff, professional solid waste management agencies may be engaged/authorized during COVID-19 situation for timely collection of solid waste and biomedical wastes separately from quarantine centers, home-care, COVID-19 isolation wards and quarantine homes.⁷

¹ Para inserted in Rev. 3 dated June, 2020

² Para Inserted in Revision 2 dated 18/04/2020

³ Para Inserted in Rev. 3 dated 10/06/2020

⁴ Para Inserted in Rev. 3 dated 10/06/2020

⁵ Para Inserted in Rev. 3 dated 10/06/2020

⁶ Para Inserted in Rev. 3 dated 10/06/2020

⁷ Para Inserted in Rev. 3 dated 10/06/2020

(g) Management of wastewater from HCFs / Isolation Wards¹

As per the information available at CDC, the risk of transmission of virus that causes COVID-19 through sewerage systems is thought to be low. Transmission to operators may be possible during treatment of sewage treatment plants, however there is no evidence to date that this has occurred. Therefore, following guidance recommended for HCFs and the operators of STPs;

- Responsible agencies are Healthcare Facilities / Isolation Wards / operators of terminal sewage treatment plants (PHED/Jal Board/etc.).
- HCFs and the agencies operating Sewage Treatment Plants should continue to ensure disinfection of treated wastewater as per prevailing practices to inactivate corona viruses.
- Operators of ETPs/STPs attached with discharge from Healthcare Facilities and isolation wards should adopt standard operational practices, practice basic hygiene precautions, and wear personal protective equipment (PPE) prescribed for operation of STPs. PPEs should include Goggles, face mask , liquid repellent coveralls, waterproof gloves and Rubber boots.
- During the period of COVID-19 pandemic, utilization of treated wastewater in utilities within HCFs may be avoided.

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¹ Section inserted in Revision 2 dated 18/04/2020