

BIO-MEDICAL WASTE INCLUDING COVID-19 WASTE

CONCERNS AND CHALLENGES

More and more persons are being infected with the coronavirus disease (COVID-19) throughout the world. During such pandemics, many types of medical and hazardous waste are additionally generated including infected masks, personal protective equipment, gloves, syringes, empty ampules, samples, drain bags, urine bags, body fluid or blood-soaked tissues / cotton, etc. If medical waste and household waste get mixed up, it can potentially cause infection to spread through secondary routes. Collection, handling, segregation and disposal if done violating guidelines can adversely affect community health. Early estimates show that there could be a six-fold increase in medical waste generation after COVID-19 pandemic.

The great importance of COVID-19 waste management in controlling spread of infection were stressed by revised guidelines published by the Central Pollution Control Board (CPCB) on June 10, 2020. This was superseded by the fourth guideline released again on 21 July 2020, the first having been published on April 18, 2020. It was categorically stated that these guidelines have to be followed by all agencies managements in charge of isolation wards, quarantine centres, sample collection centres, laboratories, Urban Local Bodies (ULBs) and common biomedical waste treatment and disposal facilities (CBWTFs).

It is plainly evident that existing human and infrastructural resources and functioning of the monitoring bodies are not adequate to cope up with the situation of waste management and hence serious lapses are occurring in various parts of the country. And things might very soon become even more challenging.

BEST PRACTICES FROM AROUND THE WORLD

China: The disposal of medical waste generated from COVID-19 patients undergoes a strict treatment protocol to contain the spread of the virus. Firefighters have been deployed to ensure quick disposal of medical waste at safe designated sites to limit any possibility of the viral spread where the environment protection department safely disposes off the waste.

United States of America: The US Environmental Protection Agency (EPA) has been quick to release a 'temporary policy' for medical waste in the times of COVID-19. The EPA has accorded special thrust on 'proper labelling' for easier identification and safe disposal of the waste. The applicable regulations require segregation of regulated medical waste from ordinary solid waste and a special treatment process to render it non-infectious before final disposal. Moreover United States Department of Labour, advise PPE such as puncture-resistant gloves and face and eye protection for handlers.

France: In France, the government decided to ensure door-to-door collection of waste as per usual frequency, with sorting instructions to citizens. Objects (masks, glasses, gloves, tissues, etc.) that are likely to present an infection risk for both the environment and professional in charge of treating them, must be disposed in a hermetically sealed bag. Any pungent, cutting, or puncturing waste must be collected in airtight containers adapted and managed by the specifically designated organisation. Self-treatment patients have the option to obtain a waste collection-box free of charge from the pharmacy upon presentation of their prescription. Once filled, the box must be closed and returned to a collection point, after which the waste is adequately disposed.

Germany: The German government has accorded highest priority to the protection of waste management workers and the containment of COVID-19. Significant measures have been taken for handling waste from private households where there are confirmed or suspected cases of COVID-19. Handkerchiefs, tissues, and similar waste fractions are required to be disposed as residual waste and limited use of separate waste collection systems (e.g. paper bin, bio bin, yellow bag) is recommended. The residual waste is then treated in the Bavarian waste incineration plants to ensure safe destruction at very high temperatures of up to 1,000 °C.

CPCB AND DISPOSAL GUIDELINES

India was one of the first countries to take a proactive step in releasing guidelines for waste management. CPCB has released four guidelines during the last three months to ensure safe disposal of biomedical waste generated during treatment, diagnosis, and quarantine of patients with COVID-19. Waste generated in isolation wards with COVID-19 patients, sample Collection Centres and Laboratories for COVID-19 suspected patients and quarantine camps/home-care facilities are specified. The guidelines also outline the duties of Common Biomedical Waste Treatment Facilities, State Pollution Control Boards and Urban Local Bodies. The key actions mandated for stakeholders include:

- Separate yellow-colour coded bins /bags /containers in wards and maintaining proper segregation of waste as per Bio-Medical Waste Management Rules, 2016 at healthcare facilities, quarantine camps/homes, home care facilities, sample collection centre, laboratories, isolation wards and CBWTF.

- Double-layered bags for collection of waste from COVID-19 isolation wards to ensure zero-leaks.
- Dedicated/marked collection bin and temporary storage area of biomedical waste prior to handing over the same to authorized staff at CBWTF for priority treatment and immediate disposal.
- Many states have assigned this job to empaneled private agencies and deployed dedicated vehicles for waste transportation till CBWTF.
- Maintaining separate record of waste generated from COVID-19 isolation wards.
- Disinfection of inner and outer surface of containers/bins/trolleys used for storage of COVID-19 waste with 1 per cent sodium hypochlorite solution daily.
- Reporting operation of COVID-19 ward and COVID ICU ward to SPCBs and CBWTF located in the area.
- Dedicated sanitation workers for biomedical waste so that COVID-19 waste can be collected and transferred timely to temporary waste storage area.
- General solid waste generated from quarantine centers to be handed over to waste collector identified by ULBs.
- Biomedical waste, if any, generated from quarantine centers/camps to be collected separately in yellow coloured bags (suitable for biomedical waste collection) provided by ULBs.
- In case of generation of large volume of yellow color coded (incinerable) Covid-19 waste in non-CBWTF remote areas, the guidelines also permit “use of deep burial pits for disposal of yellow category waste as per standards prescribed” in the existing Rules.
- It’s the responsibility of the state pollution control boards to maintain records of Covid-19 treatment wards / quarantine centres/quarantines homes and ensure collection and disposal of biomedical waste as per guidelines
- COVID-19 waste to be disposed-off immediately upon receipt by the CBWTF. The CBWTF may employ any of the permitted methods under the Bio-medical Waste Management Rules, 2016. These methods include incineration, Plasma Pyrolysis, Autoclaving / Hydroclaving, microwaving, chemical disinfection, among others.
- The guidelines also recommends providing personal protective equipment (PPE) to all workers who are engaged in disposing of such waste and asked civic bodies to make provisions of segregation of waste using colour-coded bins, bags and containers.

Activists say that incinerators at the facility have not been upgraded as per the CPCB directions. The up-gradation is required so that the ‘yellow’ category waste (highly infectious waste) is burnt at the right temperature and it does not lead to toxic emissions.

SAFETY OF SANITATION WORKERS

CPCB Guidelines also address the safety of waste handlers and sanitation workers associated with such healthcare facilities. It emphasises extra care to be taken at COVID-19 isolation wards. Foot-operated lids in colour-coded bins must be introduced to avoid contact, according to the guidelines. General solid waste like medicine wrappers and cartons, syringes, fruit peels, empty bottles, discarded paper and other items not contaminated by patients’ secretions and body fluids must be collected separately, according to Solid Waste Management Rules, 2016. Wet and dry solid waste bags must be securely tied and handed over to waste collectors authorised by ULBs daily. Non-disposable items must not be disposed of as much as possible and should, instead, be cleaned and disinfected keeping hospital rules in mind, the guidelines said.

SEGREGATION OF WASTE

Left-over food, disposable plates, glasses, used masks, tissues, toiletries, etc. used by COVID-19 patients are classified as biomedical waste and should be put in yellow-coloured bags, while used gloves should be put in red bags. This demarcates the type of COVID-19 waste that needs to be incinerated and the kind that can be disinfected, autoclaved (a process that kills bacteria, viruses, etc.) and disposed. This helps in reducing the quantity of COVID-19 waste generated and reduces unnecessary burden on CBWTFs for incineration as well. The measures — that include hand hygiene, respiratory etiquettes, social-distancing and use of appropriate personal protective equipment — must be demonstrated through videos and in local languages. Waste contaminated with blood or body fluids of COVID-19 patients must be collected in yellow bags. The storage of general waste in yellow bags is strictly not allowed.

ROLE OF NODAL OFFICERS

The guidelines authorise ULBs to hire services of professional waste management agencies for timely collection of solid and biomedical waste if collection and transportation operations are inadequate due to existing staff conditions. The daily generation of COVID-19 waste must be updated by nodal officers of quarantine centres every day. The SPCBs and PCBs of Union territories are authorised to permit hazardous waste incinerators at existing treatment, storage and disposal facilities or captive industrial incinerators. This is to be done if the generation of yellow colour-coded (incinerable) COVID-19 waste is beyond the capacity of existing CBWTFs and captive BMW incinerators. Waste feeding for incinerators, however, needs to be separate for COVID-19 and hazardous waste.

SITUATION IN WEST BENGAL

The West Bengal government too has engaged empanelled private agencies for collection and disposal of BMW, but the state doesn't have streamlined waste disposal facilities from households where people are kept in home isolation. It may be dangerous if the disposal system where the biomedical wastes gets mixed with municipal waste and goes straight to Dhapa landfill site. Compliance of the CPCB guidelines in disposing of the biomedical wastes related to Covid-19 is most important. The CPCB guidelines also have specific provisions on how to collect and dispose of used PPE and N95 masks. It also asks health departments of all states to provide adequate PPE including three layer masks, splash proof gowns, nitrile gloves, gum boots and safety goggles to workers at the CBWTF.

What is extremely unfortunate is that even the organisations of the doctors, despite having petitioned the West Bengal Government, have not highlighted their concerns about managing COVID-19 waste, despite the fact that it has such potential in spreading infection during pandemics.

- **Bio-Medical Waste, Generated:** More than 75% of bio-medical waste, generated in the health care units (HCUs), is not going to the CBWTF. The amount of waste being transferred to the CBWTF vehicles does not at all match with the number of occupancies in the hospitals. A good amount of valuable but contaminated recyclable waste is being salvaged directly from the HCUs and going into the business channel. On the other hand, a large proportion of soiled contaminated waste is getting mixed up with the municipal waste owing to mismanagement. Also there are instances of redirection of waste on the way to the CBWTFs. There are several hot spots in several towns of the state, particularly in Kolkata, Howrah and Siliguri. Contaminated BMW items can be rearranged and repacked for further inclusion in illegal market. Some are being recycled in completely unhygienic and polluting manner. Basic infrastructure for bio-medical waste management leaves much to be desired in districts like Cooch Behar, Murshidabad, Jalpaiguri and Alipurduar, to name some.
- **Management of Covid-19 Waste:** There is concern regarding management of COVID-19 waste, which are being generated in the processes of diagnostic, quarantine, treatment and management of COVID-19 patients or suspected patients. It is understood that there is tremendous pressure on infrastructure and activities of the government in controlling outbreak of COVID-19. However if management of waste is not given the priority, the crisis will deepen, and infection spread.
- **Segregation of Waste:** As experienced even in the large government hospitals, COVID-19 waste is not properly segregated. Double layer bags are not being used at many places. Dedicated trolleys for carrying of such waste separately are not always being used. Even labelling of the bags and the trolleys are not done everywhere. There are ample chances for such waste to get mixed up with other BMW or even general municipal waste of the HCUs.
- **Waste Generated in Quarantine Camps and Home-Care Units:** Outsourced agencies engaged by corporations and municipalities are in charge of collection of waste generated in quarantine camps and home-care units adhering to the CPCB guidelines. However during the last three months very little arrangement has developed for organised collection of such waste from quarantine camps and it is worse in case of homes, despite the fact that a huge number of 'infected patients' and 'suspected patients' are now in home care.

INTERVENTIONS SUGGESTED BY SABUJ MANCHA, KOLKATA

Sabuj Mancha, Kolkata, a 'Platform of Organizations and People Supporting Environment', in a letter dated 14 July 2020 to the Chief Minister of West Bengal expressed its concern on management of bio-medical waste including Covid-19 waste in the state. The following is an excerpt from the aforementioned letter.

"We suggest the following interventions to improve the present situation of management of BMW including COVID-19 waste:

1. Develop coordination among the Dept. of H&FW, WBPCB, ULBs, HCUs, laboratories and sample collection centres, sewage treatment facilities etc. to develop uniform approach towards handling, collection, transfer and treatment of BMW including COVID-19 waste, strictly following the Bio-medical Waste Management Rules, 2016 and CPCB Guidelines dated 18th March 2020 in this regard.
2. Develop awareness among all the health workers, municipal workers, and common citizens regarding handling of COVID-19 waste. Information, Education and Communication (IEC) material should give more importance on handling of waste as being given for precautionary steps.
3. We request you to kindly institute an enquiry and thereafter a permanent vigilance structure under the authority of WBPCB to ensure safe management of bio-medical waste and COVID-19 waste in the state. Accordingly 'Surveillance Team' at all ULB level may be formed to oversee the COVID-19 waste handling, collection, transportation, treatment and disposal.
4. Personal Protective Equipment (PPEs) should be provided to health care workers at all levels including workers of sewage treatment facilities."

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Kolkata, 23 July 2020

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