



# The Big Picture: Biomedical Waste Management during Covid Pandemic

## Why in News

The second wave of the Covid-19 pandemic has posed numerous challenges before India on multiple fronts -health, economy and also the environment.

- One such impact the Covid outbreak has posed on the environment is the **exponential increase in biomedical waste generation.**

## Key Points

- **Covid as a Challenge:** Biomedical waste **poses various health and environmental hazards**, and this is the wider challenge that the pandemic has posed before us.
  - Although there are guidelines to handle medical waste with utmost care and dispose of them safely, the exponential rise in the quantity of biomedical waste due to the pandemic has made the task very challenging.
- **Data as per CPCB:** As per the estimates of [Central Pollution Control Board \(CPCB\)](#), the average quantity of [Covid-19](#) related biomedical waste generation during May, 2021 is about 203 Tonnes Per Day.
  - The **peak generation of biomedical waste was about 250 Tonnes** per day.
    - The earlier peak generation in the year 2020 was in the range of 180 - 220 Tonnes Per Day.
  - This 250 tons includes only Covid related waste.
    - The peak amount of waste generated by India on a daily basis is 1000 tons. Covid waste is only 25% of it.

## Biomedical Waste

- **Definition:** Biomedical waste is defined as human and animal anatomical waste, treatment apparatus like needles, syringes and other materials used in health care facilities in the process of treatment and research.
  - Covid-19 related Biomedical waste includes: personal protective equipment (PPE), gloves, face masks, head cover, plastic coverall, hazmat suit, syringes among other gears and medical equipment used by both healthcare providers and patients.
- **Hazardous Waste:** Biomedical waste is a **biologically and chemically hazardous waste containing biological and microbiological contamination.**
  - It has the **potential of spreading various types of diseases.**
  - The covid related biomedical waste contains various medicines that are toxic in nature.
- **Provisions for Biomedical Waste Management:** The Ministry of Environment, Forest & Climate Change (MoEFCC) has notified the '[Biomedical Waste Management Rules, 2016](#)'.
  - Also, a separate facility called **Common Biomedical Waste Treatment Facility (CBWTF)** is there.
    - It is a set up where biomedical waste generated from member health care facilities is imparted necessary treatment to reduce adverse effects that the waste may pose

- on human health and environment.
- The treated recyclable waste is finally sent for disposal in a secured landfill or for recycling.
- About 200 such facilities are there in India to manage the waste.
- India has also **ratified the [Basel Convention](#)** on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal.

## Biomedical Waste Management Rules, 2016

- Biomedical waste management rules **came into force in 1998 and have undergone many amendments since then.**
  - The rules provide that the biomedical waste shall be properly collected, treated and disposed of.
  - The rules also provide that all the data that is collected from the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) has to be submitted to CPCB and finally it should go to the MoEFCC.
  - The **latest major amendment was made in 2016.**
    - There were also a few amendments to the rules in 2018 and 2019 **which included the colour coding of the containers.**
- The objective of the rules is to properly **manage the per day bio-medical waste from Healthcare Facilities (HCFs)** across the country.
- Under the amendment in the rules in 2016, the **ambit of the rules has been expanded** to include vaccination camps, blood donation camps, surgical camps or any other healthcare activity.
- The **rules back the pre-treatment of the laboratory waste**, microbiological waste, blood samples and blood bags through disinfection or sterilisation on-site in the manner **prescribed by the [World Health Organization \(WHO\)](#)** or by the **[National AIDS Control Organisation \(NACO\)](#)**.
  - Bio-medical waste has been classified into 4 categories instead of the earlier 10 categories to improve the segregation of waste at source.
  - The rules prescribe more stringent standards for incinerators to reduce the emission of pollutants in the environment.

## Basel Convention

- Adopted on March 22, 1989 by the Conference of Plenipotentiaries in Basel, Switzerland, the **“Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal”**, generally known as the Basel Convention, came into force in 1992.
  - It is an **international treaty that aims to reduce the movement of hazardous waste between countries.**
- It particularly focuses on preventing transfer of hazardous waste from developed to less developed countries.
  - It provides for cooperation between the parties, including exchange of information on issues relevant to the implementation of the Convention.
- **India is a member of the Basel Convention.**
  - It ratified the convention in June 1992 and brought it into force on 22nd September 1992.
  - However, India has **not ratified the Basel ban amendment.**
    - Adopted by the parties in the Basel Convention in 1995, the amendment prohibits all export of hazardous wastes, including electronic wastes and obsolete ships from 29 wealthiest countries of the Organization of Economic Cooperation and Development (OECD) to non-OECD countries.

## Challenges in Biomedical Waste Management

- **Major Waste Generated at Home:** The Covid related biomedical waste is generated not just in the hospitals but also at homes. Only 20% of the patients had to go to hospital.
  - **80% of Covid patients are recuperating/have recuperated at home.**
    - **They are generating the biomedical waste at the places where it can not**

**be treated properly.**

- There is no proper facility for the management of the biomedical waste generated at home; it is **being dumped in the ordinary municipal waste.**
- **Issues with Local Hospitals:** Although India has the facility of managing this high amount of waste but because a large amount of this waste is being generated at homes and at provincial and local level hospitals, the waste is getting mismanaged.
  - These local hospitals are not as updated in facilities and infrastructure and hence, don't have proper biomedical waste management facilities.
- **Municipal Workers at Risk:** As such a large amount of covid waste is being generated at home, **it makes the municipal workers the frontline workers too.**
  - Data shows that these workers too have been impacted extensively amid the pandemic, a lot of them have died too.
  - There is a common perception that the virus must have been transmitted by respiratory droplets, aerosols or by touching an infected surface.
    - However, there is less attention given to the poor management of the biomedical waste, **a large number of people, specially the municipality workers getting infected due to coming in contact with the waste disposed of in the open.**
- **Lack of Awareness:** People are also not aware of how to segregate the waste at source and this is a bigger concern.
- **Issue with the Waste Management Rules:** The legal provisions for the same are designed to tackle biomedical waste at hospitals only.
  - They do not provide any information about how to manage such waste at home or any place other than hospitals.
- **Unequal Distribution of CBWTF:** India has about 200 **Common Biomedical Waste Treatment Facilities (CBWTF)** across the country but they are located only in a few cities/districts like Mumbai or in Delhi.
  - However, in far off corners of the country, there is no such treatment facility at all.
  - Maharashtra had the highest number of such facilities (29) followed by Karnataka (26) and Gujarat (20). Kerala, which had witnessed the highest rate of daily generation, had only one CBWTF.
- **Lack of Accurate Data:** The CPCB, during the first wave of the pandemic, was very quick in providing clear guidelines and a mobile app for collecting data on biomedical waste generation.
  - But with the occurrence of the second wave, the impact is so bad that the hospitals are not even able to upload any data now.
  - Also, considering the fact that the second wave has hit India in a worse way, the covid related biomedical waste generated should have been a lot more than 250 tons (probably around 500 tons) as in the first wave the daily biomedical waste generation was 200 tons.

## Way Forward

- **Judiciously Managing the Waste:** The potential of biomedical waste of spreading a disease through the environment, largely by polluting water, is extremely high.
  - The biomedical waste generated should be collected and treated properly and must not be allowed to reach the water bodies as then it will be a problem too big to handle.
  - The biomedical waste generated should either be incinerated or gasified.
  - Along with managing the biomedical waste generated, nature should also be taken care of.
    - The waste must be managed so judiciously so that it does not contribute to climate change or trigger any other harm.
- **Role of State Agencies:** The state agencies responsible for providing the data to higher authorities have to play a crucial part in ensuring that data is not missed and no wrong data is forwarded to the CPCB.
- **Awareness Among People:** The waste segregation and management is done by the state agencies by colour coding like the red coloured container means that the biomedical waste is highly hazardous.
  - So the people must also be aware about these color codings as they represent the hazard level of each biomedical waste.
  - If people will have knowledge about such basic things then they will be more cautious about keeping themselves away from such hazardous waste.
  - People must also understand that even if they are not infected, they should not put their

- masks and gloves in the same municipal bins that they have; waste segregation is a must.
- People have to follow the SOPs generated by not just the WHO but other various health agencies to control the infection.

- **SOPs for Waste Management at Home:** The CPCB shall come out with SOPs for managing biomedical waste at home for rural as well as urban communities.
  - While burning biomedical waste is not an option in urban areas as the pollution levels are already high, burning biomedical waste in pits can be a possible way of managing waste in the village areas.

## Conclusion

- The ultimate goal of biomedical waste management is to drastically reduce the environmental damage that is posed by this waste. A healthy environment at the end of the day is essential for healthy lives.
  - The COVID-related biomedical waste has to be disposed of in a scientific manner as per the provisions of the Biomedical Waste Management Rules, 2016.
- Awareness drives are the need of the hour and only through these drives can we take care of all these challenges that the pandemic is posing before us.
  - The government shall introduce the SOPs to the common people as well as the municipality workers to handle this waste at home or any other place in order to avoid more damages.

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