

ENVIRONMENTAL PROBLEMS

CAUSES AND SOLUTIONS



Editors

Dr. S. V. Rankhamb
Dr. V. B. Kulkarni



NOTION PRESS

India. Singapore. Malaysia.

Published by Notion Press 2021

Copyright © Dr. S. V. Rankhamb and Dr. V. B. Kulkarni 2021

All Rights Reserved.

ISBN 9781639043583

This book has been published with all reasonable efforts taken to make the material error-free after the consent of the author. No part of this book shall be used, reproduced in any manner whatsoever without written permission from the author, except in the case of brief quotations embodied in critical articles and reviews.

The Author of this book is solely responsible and liable for its content including but not limited to the views, representations, descriptions, statements, information, opinions and references ["Content"]. The Content of this book shall not constitute or be construed or deemed to reflect the opinion or expression of the Publisher or Editor. Neither the Publisher nor Editor endorse or approve the Content of this book or guarantee the reliability, accuracy or completeness of the Content published herein and do not make any representations or warranties of any kind, express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose. The Publisher and Editor shall not be liable whatsoever for any errors, omissions, whether such errors or omissions result from negligence, accident, or any other cause or claims for loss or damages of any kind, including without limitation, indirect or consequential loss or damage arising out of use, inability to use, or about the reliability, accuracy or sufficiency of the information contained in this book.

BIOMEDICAL WASTE MANAGEMENT IN INDIA



Mukundraj B. Patil

Department of Botany

Late Ramesh WarpuDKar ACS college, Sonpeth, Dist.

Parbhani (MS)

mukundrajbpatil@gmail.com

Biomedical waste is "Any solid and/or liquid waste including its container and any Intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals.

human beings or animals".

Biomedical waste may be solid or liquid. Examples of infectious waste include discarded blood, sharps, unwanted microbiological cultures and stocks, identifiable body parts, human or animal tissue, used bandages and dressings, discarded gloves, other medical supplies that may have been in contact with blood and body fluids, and laboratory waste that exhibits the characteristics described above. Waste sharps include potentially contaminated used and unused discarded needles, scalpels, lancets and other devices capable of penetrating skin. ⁽¹⁾

Biomedical Waste (BMW) is the biggest problem in the world. As Proper management of biomedical waste in accordance to the stipulated rule was one of the neglected aspects especially in developing countries like India. Since the BMW Management Rules, 2016 by Government of India (GoI), Ministry of Environment, Forest, and Climate Change initiated changes by

prescribing simplified categories (color coded) for segregation of different BMWs, an amendment in 2018 also came into force with the aim to improve the compliance to the rules. ^(2, 3) Proper segregation, handling, and disposal remained a serious concern for health care facilities across India.

The GOI guidelines for segregation of bio-medical waste recommend the following color coding ⁽⁴⁾

- **Red Bag** – Syringes (without needles), soiled gloves, catheters, IV tubes etc. should be all disposed of in a red colored bag, which will later be incinerated.
- **Yellow Bag** – All dressings, bandages and cotton swabs with body fluids, blood bags, human anatomical waste, body parts are to be discarded in yellow bags.
- **Cardboard box with blue marking** – Glass vials, ampules, other glass ware is to be discarded in a cardboard box with a blue marking/sticker.
- **White Puncture Proof Container (PPC)** – Needles, sharps, blades are disposed of in a white translucent puncture proof container.
- **Black Bags** – These are to be used for non-bio-medical waste. In a hospital setup, this includes stationary, vegetable and fruit peels, leftovers, packaging including that from medicines, disposable caps, disposable masks, disposable shoe-covers, disposable tea cups, cartons, sweeping dust, kitchen waste etc.

During COVID-19 pandemic, initial experiences shows that problem of BMW has become a worst, with piles of personal

protective equipment (PPE) accumulating in the hospitals, Masks thrown on open spaces etc. (Fig. 1).



Fig. 1 – The pile of personal protective equipment

In spite of the guidelines by World Health Organization and Ministry of Health and Family Welfare, Govt regarding the rational use of PPE for COVID-19, health care settings are experiencing high demand of PPE from all strata of health care workers owing to the fear of infection.^(5,6) The apprehension is often resulting in the misuse of PPE on many occasions aggravating the problem by generating huge quantity of BMWs which are difficult to store and transport with limited resources and manpower available at the time of crisis. Added to the menace, is the indiscriminate use and disposal of single-use surgical masks even in the community (Fig. 2).



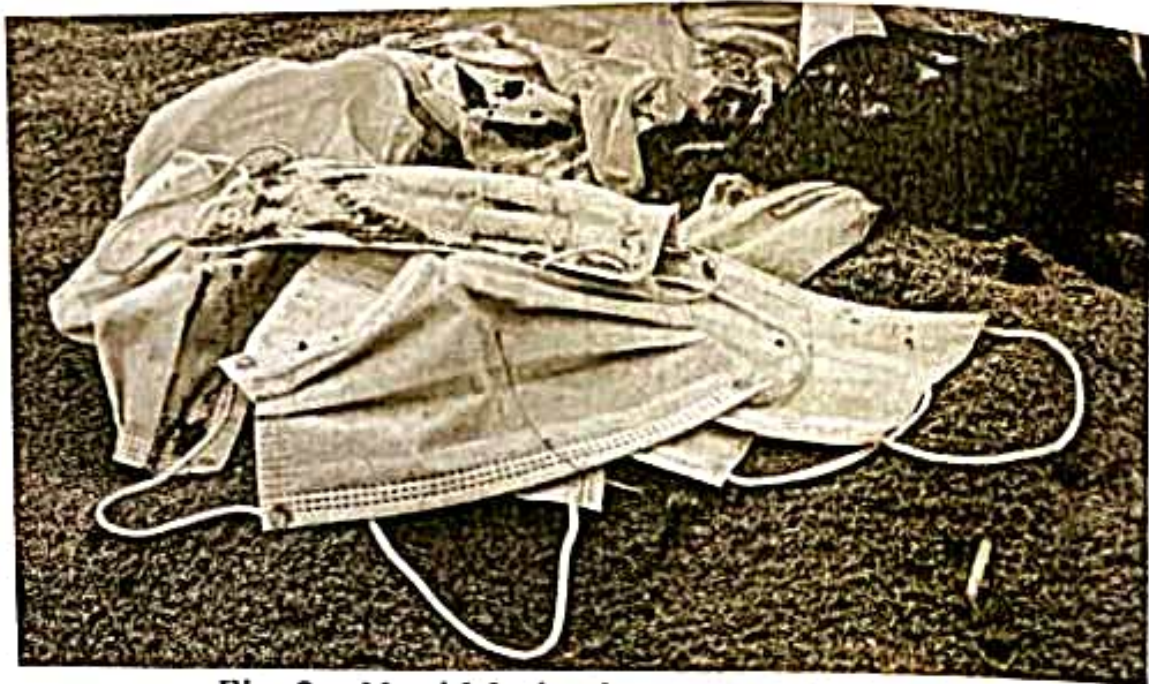


Fig. 2 – Used Masks thrown on open spaces

India has generated 18,006 tonnes of biomedical waste in four months (June-September), as per Central Pollution Control Board (CPCB) data. Maharashtra generated a whopping 3,587 tonnes of Covid-19 biomedical waste, followed by Tamil Nadu (1,737 tonnes), Gujarat (1,638 tonnes), Kerala (1,516 tonnes), Uttar Pradesh (1,432 tonnes), Delhi (1,400 tonnes), Karnataka (1,380 tonnes) and West Bengal (1,000 tonnes). The report for the month of September also revealed that 5,500 tonnes of Covid-19 waste was generated in one month. ⁽⁷⁾

In response to the COVID-19 pandemic in India, CPCB, Ministry of Environment, Forest & Climate has published guidelines for the management of waste generated during treatment/diagnosis/quarantine of COVID-19 patients. ⁽⁸⁾ These guidelines have advocated use of double layered bags (using two bags), mandatory labeling of bags and containers as "COVID-19 waste," regular disinfection of dedicated trolleys, separate record keeping of waste generated from COVID-19 isolation wards, in addition to the recommendation for following existing practices of BMW Management Rules, 2016.

Suggestions –

- Government has taken good effort to prepare rules and regulation for the management of the BMWs but a separate system should be developed for surveillance and strict implementation of these regulations.
- Hospitals, Laboratories, research institutions etc. should develop their own BMW management system which must work in accordance to the rules and regulations laid by WHO, GoI and other government recommended authorities. These Institutions should conduct regular training of all concerned staffs for BMW management and monitor the practices.
- As is evident from the current COVID-19 pandemic, basic infection control practices are the only measures for containment and Proper waste disposal is an integral part of these control measures.
- Biomedical waste this concept is unknown to many peoples hence it is frequently collected by unauthorized scrap collector and it is disposed by unscientific way it is biggest problem in India regarding BMW, it can be reduced by awareness campaigns, strict implementation of laws and training to this unauthorized sector.

References -

1. https://en.wikipedia.org/wiki/Biomedical_waste#India
2. Ministry of Environment, Forest and Climate Change, Government of India. Biomedical Waste Management Rules-2016. New Delhi; 2016. Available at:



<http://www.indiaenvironmentportal.org.in/files/file/BMW%20Rules,%202016.pdf>. Accessed April 25, 2020

3. Ministry of Environment, Forest and Climate Change, Government of India. Biomedical Waste Management (Amendment) Rules-2018. New Delhi; 2018. Available at:
[http://www.indiaenvironmentportal.org.in/files/file/Bio%20medical%20waste%20management%20\(amendment\)183847.pdf](http://www.indiaenvironmentportal.org.in/files/file/Bio%20medical%20waste%20management%20(amendment)183847.pdf). Accessed April 25, 2020
4. https://web.archive.org/web/20171128035216/http://cpcb.nic.in/Bio_medical.php
5. World Health Organization. Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19). Interim Guidance. World Health Organization; 2020. Available at:
https://apps.who.int/iris/bitstream/handle/10665/331498/WHO-2019-nCoV-IPCPPE_use-2020.2-eng.pdf. Accessed April 25, 2020
6. Ministry of Health and Family Welfare, Government of India. Novel Coronavirus Disease 2019 (COVID-19): Guidelines on Rational Use of Personal Protective Equipment. Available at:
<https://www.mohfw.gov.in/pdf/GuidelinesonrationaluseofPersonalProtectiveEquipment.pdf>. Accessed April 25, 2020.
7. <https://www.thehindubusinessline.com/news/national/india-generates-over-18000-tonnes-of-covid-19-biomedical-waste-in-4-months/article32840651.ece>

8. National Centre for Disease Control, Ministry of Health and Family Welfare, Government of India. Guideline for quarantine facilities COVID-19. New Delhi; 2020. Available at: <https://ncdc.gov.in/WriteReadData/1892s/90542653311584546120.pdf>. Accessed April 25, 2020



PRINCIPAL

Late Ramesh Warpudkar (ACS)
College, Sonpeth Dist. Parbhani

