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**RESEARCH PAPER**

**ON**

# Regulation of Biomedical Waste and Hazardous Substance in India: Issues and Challenges with Special Reference to Mcmehta V. Union of India 2020

**BY**

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**2016-2021**

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## ACKNOWLEDGEMENT

This report has been prepared to give brief description on the **Subject-REGULATION OF BIOMEDICAL WASTE AND HAZARDOUS SUBSTANCE IN INDIA: ISSUES AND CHALLENGES WITH SPECIALREFERENCE TO MC MEHTA v. UNION OF INDIA 2020**

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

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**RASHI JOSHI**
**RADHIKA SHARMA**

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## CERTIFICATE OF THE GUIDE

This is to certify that the research work on **"REGULATION OF BIOMEDICAL WASTE AND HAZARDOUS SUBSTANCE IN INDIA: ISSUES AND CHALLENGES WITH SPECIAL REFERENCE TO MC MEHTA v. UNION OF INDIA 2020"** the work done by **Miss.RASHI JOSHI , RADHIKA SHARMA** under my guidance and supervision for the Partial Fulfilment of the**Legal Writing, 9th Semester** in Law of Amity Law School, Noida, Amity University, Uttar Pradesh.

To the best of my knowledge and belief, the assignment:

(i) Embodies the work of the candidate herself;

(ii) Has been duly completed; and

(iii) Is up to the standard both in respect of contents and language for being referred to the examiner.

**Name of Faculty Guide**

**Mr. Ashwani Pant**

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## DECLARATION BY THE STUDENT

I declare that the assignment entitled **"REGULATION OF BIOMEDICAL WASTE AND HAZARDOUS SUBSTANCE IN INDIA: ISSUES AND CHALLENGES WITH SPECIALREFERENCE TO MC MEHTA v. UNION OF INDIA 2020"** is the outcome of my work conducted under the supervision of **Mr. Ashwani Pant,** Amity Law School, Noida, Amity University, Uttar Pradesh.

I further declare that to the best of my knowledge the assignment does not contain any part of my work, which has been submitted for the award of any degree either in this University or in any other University / Deemed University without proper citation and reference.

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# PLAGIARISM CERTIFICATE

Title of my research paper is: "**REGULATION OF BIOMEDICAL WASTE AND HAZARDOUS SUBSTANCE IN INDIA: ISSUES AND CHALLENGES WITH SPECIAL REFERENCE TO MCMEHTA v. UNION OF INDIA 2020"**

I declare that:

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**TABLE OF CONTENTS**

**CHAPTER 3**

# TABLE OF FIGURES

## ABBREVIATIONS

**UOI** – Union of India

**BMW** – Biomedical Waste

**EPA** – Environment Protection Act

**UNCED –** United Nation Conference on Environment And Development

**SDG** – Sustainable Development Goals

**PPE –** Personal Protective Equipment

**HCWM –** Health Care Waste Management

**MOEFCC –** Ministry Of Environment, Forest and Climate Change

**BMW (MH) R** – Biomedical Waste Management and Handling Rules

**IJBMR –** International Journal of Biological and Medical Research

**JEM –** Journal of Experimental Medicine

**AJMDR –** Asian Journal of Multidisciplinary Research

**CPCB** – Central Pollution Control Board

**Ar**. **-** Article

**MVA** – Motor Vehicle's Act

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## ABSTRACT

**The treatment and disposal of medical and hazardous waste may pose health risk directly or indirectly through the release of many toxic pollutants into the atmosphere. The main concern is to have safe and secure management of the environment and health. One-fourth of the total wastes generated from the healthcare activities are hazardous. The main cause for the increase in infectious diseases is the improper waste management system in our country and also the risk associated is not only to the persons handling it but also the general public, that's why we need global cooperation and systems to treat and improve the healthcare sector. Biomedical waste and related hazardous waste are those, which are generated through any treatment, research or any other diagnostic activity and pose a potential threat to the environment and the public health.**

**Our research will focus on biomedical waste and its challenges in relation to the case of Mc Mehta v. UOI 2020. Through this research we are working on identifying the issues and ways which will help us to mitigate the problem related to improper disposal of medical waste. We hope to discover trends that point out why there is a need to change and upgrade the existing system. The data which we will gather will stand as a base for the research. During the COVID period, there is an increase in the demand of medical facilities and equipment which may overburden the waste system, and for that we shall require a substantially new manner of thinking if we want to change the future scenario of bio medical waste in our country.**

# CHAPTER 1

## 1.1 Introduction

Sustainable management of biomedical waste is the responsibility of every person who is related directly or indirectly to the health care facilities, medicine is a field which serves the patients but we are unaware of the harmful effects, a very serious health problem is going to develop in many countries relating to the management of biomedical waste.

BMW is mainly generated by health care facilities and labs so it becomes their duty to install such devices and disposal systems for a better and cleaner environment. The principles which deal with waste management is the Reuse, Reduce and Recycle concept, which emphasis on waste management and also recover waste as much as possible. The BMW management r[1]ules lay down that there should be a proper method for disposal, segregation, collection and treatment of waste in a sound manner which does not have any adverse impact on the health of people related to such facilities.

The issue of BMW for the first time came in 1983 when the US environment protection agency was thinking to have new legislation and also required EPA to come up with new policies and programs. SDG6, 11 and 12 talks about, how hazardous materials are polluting the water and also how to treat, handle and recycle it. Chapter (19-22) of Agenda 21 is an outcome of UNCED, which talks about safety and programs which might help us to reduce the risk of toxic and hazardous waste, and also providing an environmentally sound management system.

The Stockholm declaration laid down the principles that emphasize development and planning and also the prevention of pollution by humans. Many conferences are being held on the topic world climate change and hazardous waste management which helps in global cooperation.

During this COVID pandemic there is increase in biomedical waste which is being generated while treating the patients of coronavirus and also while testing them, the excessive use of masks, PPE kits and the other medical equipment should be properly disposed of and treated before dumping or recycling them. New rules and guidelines have been established by the central and state government for proper segregation of waste material. The main concern is also to address the safety and security of heath care workers.

[1]Biomedical rules management and handling rules 1998

The main issues arising are the improper waste management system and also the damage caused to the environment like, groundwater pollution and landfill leaks.

The earth is becoming a garbage dump day by day and it's our responsibility to find alternatives and address the handling of biomedical waste. People should become aware of the effects of BMW on human health and the environment.

The case (Mc Mehta v. Uoi) [2]which we have discussed in our research will act as a base and which talks about environmental pollution and biomedical waste disposal. Which government has ordered the hospitals not to dump BMW in open areas and has asked for proper disposal and segregation system, if not then action will be taken against the authorities.

Biomedical waste is produced in large amounts on everyday basis all around the world. Proper management also depends on the awareness, attitude and practices of healthcare staff. Studies show that about 43 percentages of public health care staff does not know the exact meaning of biomedical waste and also proper ways for its disposal. On the other hand, researches revealed that doctors have very good theoretical knowledge about biomedical waste and how to dispose of them properly.

Proper management of biomedical and hazardous waste will lead to a healthy future.

## 1.2 Objectives

The main objective is to stop the transmission of disease to the public at large which is caused by the improper disposal of biomedical waste and also how we can solve this issue with the help of standards laid down by the government.

1) Determining the amount of Bio-medical waste produced and disposed of by the health care services and hospitals.
2) Studying and evaluating process that is available for the treatment of bio-medical waste.
3) Understanding the damage caused to the health of human beings, animals and the environment because of bio-medical waste.
4) Understanding the latest rules and regulations laid down by the Government that helps in the proper treatment of hazardous and toxic waste.

[2]Mc Mehta Vs. union of India 2020 06/03/2020, 46339/2020

## 1.3 Scope

The scope of my research is to illustrate about biomedical waste and how to prevent the transmission of disease (Protect Human Health), reduce the volume of solid wastes ( Follow Legal Standards) and preserve the environment ( Keep Earth Safe), and also to identify the issues and to find its solution.

## Sources

- Clinics
- Hospitals
- Health centers
- Blood banks
- Vaccination centers
- Medical waste generated from everyday use
- Other medical institutions

## 1.4 Methodology

Primary- We conducted online interviews and also through direct observation we have collected the data which will help us to analyse.

Secondary- We took help of the biomedical laws, reference books, articles, journals and various landmark cases.

## 1.5 Literature Review

The laws dealing with biomedical waste in India are MOEF, BMW (MH) R 1998 and EPA, 1986. There are also many HCWM action plans and various principles –

- Polluter pay principles
- Precautionary principles
- Duty of care principles
- Zero waste principles based on 3r

As per many reports, India is going to generate about 774.4 tonnes of biomedical waste by 2022, and for mitigating this we need a proper monitoring system to have a safe and effective waste management system. We need to prevent solid waste management, the transmission of diseases and also protect the environment from pollution of air, water and land.

**•IJBMR (2011)**

In this article[3], it was studied that biomedical waste is an outcome from hospitals and health care industries. It is very important that this waste needs to be treated properly so that there can be no hazardous effect on the health of surrounding organisms. The main aim of biomedical waste management is to reduce infections and mainly involve the prevention of transmission of diseases from person to person. Thus a proper setup needs to be installed to process biomedical waste. This article aims at providing information about the collection, treatment and proper disposal of biomedical waste.

**•JEM (2012)**

A global issue that plays a very important role in protecting the environment is the increasing amount of solid waste and its proper disposal. Incineration is the best available technology for the treatment of hazardous waste. This process destroys pathogens and reduces the volume of waste but tends to leave a solid kind of waste known as biomedical waste ash. This ash tends to increase the level of inorganic salts and organic compounds in the air. This paper represents the [4]proper use of solid waste called ash in the agriculture process and construction material.

**•AJMDR 2018)**

- [3]INTERNATIONAL JOURNAL OF BIOLOGICAL AND MEDICAL RESEARCH 2011
- 4JOURNAL OF EXPERIMENTAL MEDICINE 2012

This article tells [3]us about the new legal regime of biomedical management in India. Biomedical waste is harmful to the environment and surrounding organisms and gives rise to numerous diseases as well. This is one of the main reasons for the spread of communicable diseases and this spread can only be slow down when there is a proper waste management technique.

For proper regulation rules were laid down firstly under Biomedical Waste Management and Handling rules 1998 and then again rules were framed under Biomedical Waste Management Rules 2016. It explains the level of bio-medical waste in India and methods that India is adopting in dealing with these hazardous waste with the help of rules laid under the Environment Protection Act, 1986.

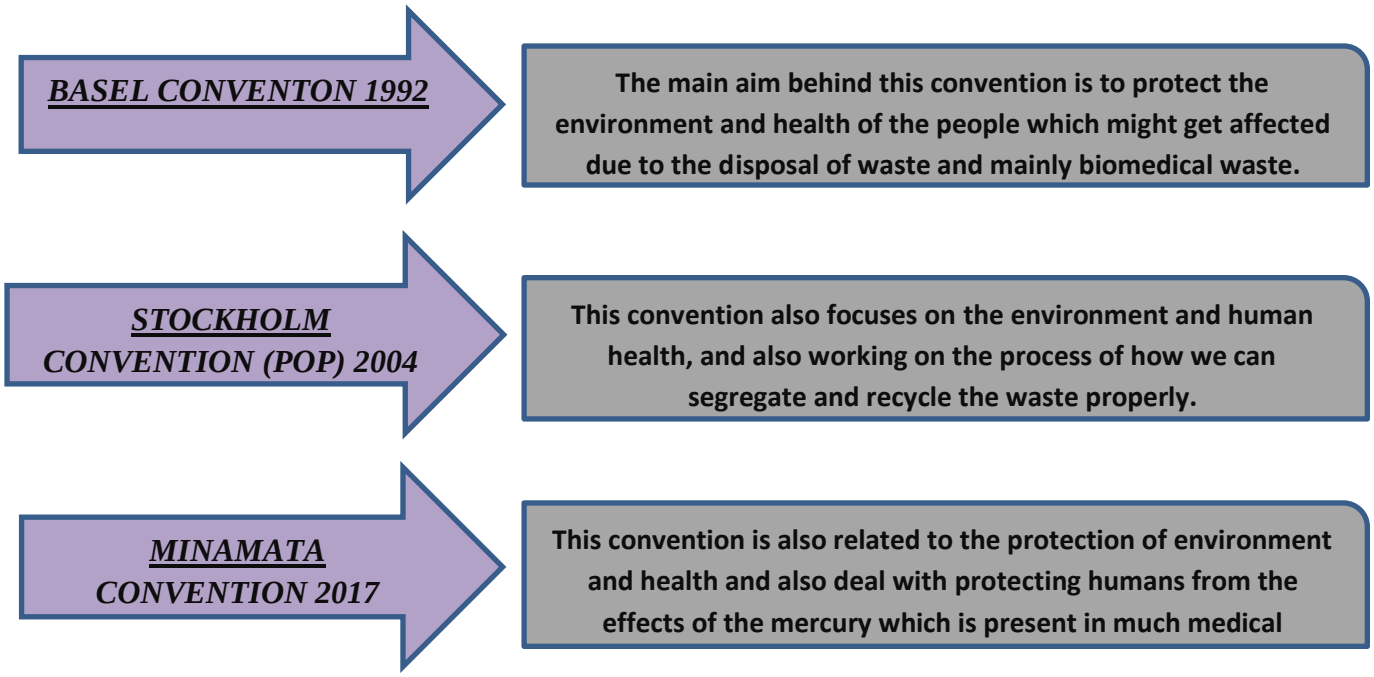
[3] ASIAN JOURNAL OF MULTIDISCIPLINARY RESEARCH 2018

**•Processing of BMW in plasma gasifier**

This paper represents the technique by which toxic wastes are converted into neutral slag. There was research laid down on thermodynamic analysis and gasification of various harmful wastes in a plasma reactor. It was found out that in plasma gasification the maximum amount of Synthesis gas can only be obtained when the temperature is not higher than 1600K. As per the results of water plasma gasification, there were no harmful impurities detected and also a huge amount of toxic waste was converted into neutral slag.

## 1.6 The Evolution of Bio Medical Laws

India is having its own biomedical rules which are (BMW Rules, 2016) [4]which has been amended many times in the years 1998, 2000, 2003 and 2011 due to lack of proper framework. Many international conventions and agreements [5]have been laid down which act as a base for the formation of these rules and laws.




In the rules of 2016 comes under the ministry of environment and forest which includes the duty of occupier, administrative control, use of plastic bags and waste, providing training to the health workers, all types of waste should be properly segregated and other rules related accident, register and the standards which should be followed. Earlier people were not that much aware of the laws but now they are coming forward to keep the surroundings clean and make people aware. Now a day's many eco-friendlies and new

[4] BIOMEDICAL WASTE MANAGEMENT AND HANDLING RULES 1998

[5] Legal Perspective on Biomedical Waste Management, by Sujata Sanjay Pawar

technologies are being introduced to process waste and it requires teamwork by the government and the society together to follow such practices. WHO has classified medical waste into different types like infectious, sharps, chemical and other pharma waste, they have given suggestions on how to assess risk and find sustainable technologies.

In the case of **(BL.WADEHRA v. UOI)**[6]which is related to biomedical waste, it has been laid down that, the people have a right to live in a clean city and so it becomes the responsibility of the municipal corporation to provide a clean and safe environment to the people as this is their fundamental right, another landmark judgment was **(ALMITRA H. PATEL v. UOI)** in which SC asked the lawyers and other authorities to come up with new methods to solve the problem of SWM which further resulted into the formation of MSWM rules 2000.

## 1.7 BMW during COVID-19

During the COVID outbreak, many hospitals, wards and quarantine center, have generated a lot of biomedical waste which includes gloves, masks, testing kit and other surgical equipment. India is generating more than 500 tonnes of medical waste daily [9]and due to this new type of waste there is going to more burdens on the environment and health issues. That's why we need proper handling and disposal system to stop the spread of this COVID-19 and also develop a mechanism which can help us to reduce the risk.

Many hospitals and medical care centre were being fined during this COVID and earlier as well for not following the rules which are given under BMWR, for handling, segregation, monitoring and disposal of biomedical waste safely and in a manner prescribed by the central and state government, it also becomes very important to segregate the medical waste and the normal waste. As the use of PPE kits and gloves are such, which cannot be used again and are of single-use plastic-type and therefore these have to be dumped properly.

As there are provisions which lay down that proper label should be placed on the waste as medical waste, and also not to mix it with general municipal waste. As this pandemic is going to increase in the coming days we need to be more careful and need to develop our medical treatment facilities and waste treatment plants so that we do not face any kind of problem or challenges. But the main aim is to not only develop but also use the existing facilities in a sustainable way and without causing harm to any personal health or environment.

[6]BL.WADEHRA v. UOI, Writ Petition (civil) 179 of 1999

Many countries like Russia, the US, Spain and Canada, etc. are coming together for not only the invention of COVID vaccine but also to share their resources in a way that can help each other. Many international organizations have said that India is having the potential to become a leader and guide others, so this basically brings pressure on us, that how we handle this and come up with an effective solution. CPCB AND SPCB have issued guidelines for handling and disposal of biomedical waste generated. [10]

During this COVID we are not only dealing with the problem of waste management but also the death of many health workers, agricultural slowdown and many migrant workers have lost their job as well. The COVID guidelines have been revised by the government in the last few months which lay down new provisions relating to the treatment of waste and dumping.

Many colleges and institutions have been coming with new ideas, that how we can recycle this waste.

- [9] WHO report on covid-19 situation and biomedical waste
- [10] Ministry of Health and Family Welfare, Government of India, 1976

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# CHAPTER 2

## 2.1 Challenges/Issues

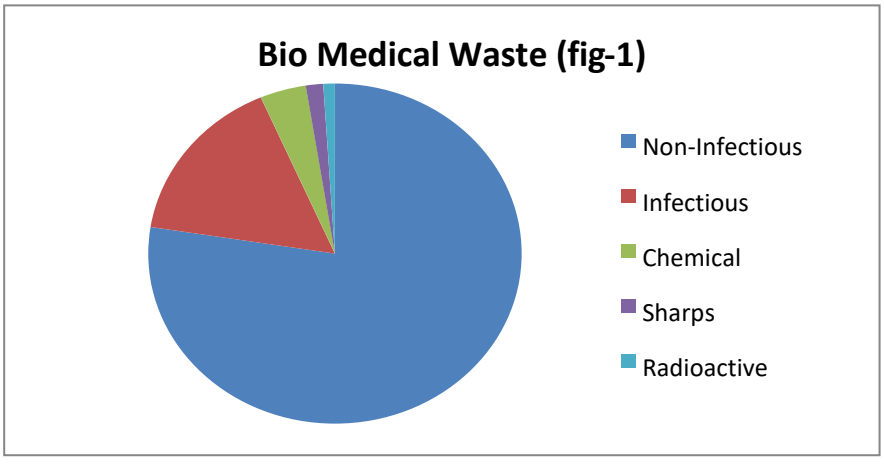
There are a few **challenges/Issues** which we can use as an **opportunity** to achieve our objective-

- Health hazards
- Identification of the source
- Proper waste management
- Bio-medical waste amid Pandemic
- Pollution caused to the environment ( Land, Water, and air )
- Alternative Disposal Technique ( Storage, Safety and Treatment )
- Improper Control Of System ( Regulatory, management and awareness/Education )

These are the main issues [11]on which we need to focus and work so that there can be a proper system for disposal, handling and treatment. But there are many other issues like lack of awareness, non-responsive citizens and lack of data which make this process more complicated and challenging. Biomedical research basically depends on the data which is provided by the hospitals and other private and public institutions, so it's very important that the data should be accurate and adequate so that there is sufficient information.

Finance resources play a vital role as for research or any new innovation in the field of medicine we will be requiring lots of resources which can only be achieved with the help of sufficient funds.

As we also know if we don't properly treat them many infections and diseases can spread like diarrhoea and TB and many seasonal as well. So it's our duty to take precautions for keeping oneself healthy and others.



**Health hazards**

- [11]Challenges in BMW in cities by, Manasi S. Department of Economics
- Environmental Protection: What Everyone Needs to Know, by Pamela hill

Bio-medical waste usually contains chemicals and substances that are radioactive in nature. If not disposed of properly may lead to various serious health related issues that may affect the health of human beings, animals and nature surrounding us. Today various environmental issues are arising because of improper dumping and handling of the toxic waste that is generated in huge amounts every day all around the world.

Chemical pollutants play a very vital role in imposing hazardous effects on the health of people. Their main source of generation is the open burning of toxic waste. Water bodies are getting polluted because in many areas these toxic wastes are directly being dumped in the water bodies thus making them toxic and dangerously affecting the natural habitat of organisms living in the water. When chemicals' coming out as waste is spilled directly on the land's surface then it causes land pollution.

**Identification of the source**

Problem areas play a very major role in controlling the amount of bio-medical waste generation. First of all the generation of toxic waste needs to be controlled at the source location. Reducing the toxic waste and disposing of it properly will in turn reduce the chances of cross-contamination and spread of unwanted infections and diseases.

A special infection control team needs to be set up that can look on the matters related to bio-medical waste, formulate proper strategies so that waste is disposed of properly and work accordingly. At the source locations, it is mandatory to make a proper air circulation system and ventilation system so that nowhere harmful toxic gases are stuck inside.

**Proper waste management**

Waste coming out of health care industries is toxic in nature and needs to be treated properly. For such purpose firstly waste needs to be segregated. As per the Bio-Medical Waste Management Rules 2016 four colors were allotted for the dumping of waste. They were yellow, red, white and blue.

After segregation comes the collection part. As per the Bio-Medical Rules of 2016 proper teams need to be made so that they can do the waste collection from different places and takes them safely to the site where such waste can be treated properly. The next step after collection is transportation and treatment of toxic and hazardous waste.

**Bio-medical waste amid Pandemic**

BMW is a great threat to the public and the environment in the time of the pandemic. Researches revealed that across 5.7 billion [12]people including children die all around the world because of unmanaged toxic waste.

The example shows that Bangladesh was one of the many countries that were already struggling with the poor bio-medical waste management and on top of that COVID-19 situation has made it worse. The country has almost 620 government hospitals and around 5057 private clinics and hospitals which are now generating a massive amount of waste that is causing more health-related issues to people living there.

In this time of pandemic usage of gloves that come in plastic form and rubber form are used in a great amount so as masks and PPE kits. PPE kits are asked to use it for a limited number of hours then after that, it is being dumped. All these things come under bio-medical waste and have increased enormously during these days and the world is facing many disposal management issues.

**Pollution caused to the environment**

Sustainable development is a new way of living. There are many dangerous chemicals substances which pollute the air, water and land, and for that, we need a proper recycling system or other waste treatment facilities which mitigate such kind of waste.

Medical wastes are of many kinds but the four main are-

- General
- Infectious
- Hazardous
- Radioactive

These are the main sources for contamination of land and water and also the living organism using those resources, that’s why it is very important to first treat and segregate them and then dump or dispose of.

Air, water and land are the main sources from which we get resources and due to improper waste management systems these might get contaminated, and that's why the steps for the dumping of these waste should be followed. This is the duty of the generator and occupier to handle whether these wastes are being properly treated and then dumped.

Having proper systems is very important if we lack them we need to incur extra expenses and damages, not only under BMWR but also many environmental statutes. These are the 3main natural resources we have and utilizing them in a sustainable way is our responsibility. Few of these wastes can be recycled but others have to be properly treated and then disposed of. These are some of the main reasons for environmental pollution and may also lead to the transmission of many harmful health diseases. **(Table-1)**

- [12]Biomedical and Pharmacology journal, BMW: STUDY by Divya Rao, M. R. Dhakshaini and others ( Study on health care professionals)

| **WASTE TYPE** | **BIN COLOUR** |
|---|---|
| Soiled Waste, Expired Waste, Human Waste | **Yellow** |
| Clinical Lab Waste | **Yellow** |
| Contaminated Waste | **Red** |
| Metallic Waste | **White** |
| Glass Waste | **Blue** |
| Liquid Waste etc | **Grey** |

**Alternative Disposal Technique**

Storage and safety are the most important elements for treating BMW, as these are the initial steps that have to be followed. As given in BMWMH rules that waste should be segregated into containers and safely stored and then transported to the treatment plants, and should be properly labelled. It's the duty of every state authority to look after the institutions.

ADT this is one of the issues because India such a developing country but then also we are facing issues like waste management and problem in recycling and treatment system, so that's why we need proper storage and treatment facilities. Many new techniques have been introduced for the treatment of biomedical waste like-[13]

1. Incineration
2. Land disposal
3. Inertization
4. Using microwave irradiation
5. Treatment by using chemicals

- **Incineration**

For hazardous and toxic waste to be treated by this method it should have its calorific value within the prescribed range that is 1500-2500 kcal/kg. In this process, the toxic waste that is combustible in nature is reduced by its volume and then it is converted into non- combustible inorganic matter. Bio-medical waste requires higher temperatures as compared to any other solid waste. Studies have shown that high temperature tends to reduce odor and pollution. Paralytic incinerators are an appropriate choice for infectious and pathological waste. For using this method, the lower heating value (LCV) of the waste should be more than 3500 kcal/kg. The incinerator temperature required is about 1000°C. Rotary kilns can be used to operates at 1000-1500°C.

- [13]Manual on health care facilities and BMW, government of Uttar Pradesh

- **Land disposal**

For disposing of any kind of waste there are two options available open dumping and landfill dumping. If the open dumping method is used for dumping bio-medical waste then in such cases it will lead to pollution and will cause many health problems also for organisms surrounding the area. For disposal, the better option is considered as landfill dumping. Under this method, the waste is dumped in a landfill that is made in an area which is away from the population. Proper layering is done while disposing of the waste and it is taken proper care so that it does not come in direct contact with the environment.

- **Inertization**

This process mainly focuses upon reducing the exposure of toxic waste and substance directly into water bodies or ground etc. This process is used where waste consists of pharmaceuticals and incineration ashes. In this process a mixture of water and cement is added and a homogenous kind of mass results. This mass is then fragmented into small cubes and is being transported to the waste site. This is not kind of a worldwide solution to the problem of the bio-medical waste but definitely a healthy alternative to trust on.

- **Using microwave irradiation**

This method of microwave irradiation is commonly used in cases where the waste contains water as well. This process works as firstly the waste is made to cut into smaller pieces and the whole treatment is carried out. This treatment does not treat pathogenic waste. Syringes used in health care facilities are melted. Most of the microorganisms are killed under this method and a minimal amount of residue is left.

- **Treatment by using chemicals**

As we all know chlorine is used as a disinfectant at various places so does in this method chlorine is used to disinfect biomedical waste. While treating the waste by the chemical method the most important factor that is to be considered is the amount of waste. If chemicals are expensive and the amount of waste is huge then in such a scenario the cost of the process will be very high and thus it will be considered an uneconomical way to treat waste.

**Improper Control of System**

The main challenge is to have a proper system of waste management and for that, we have laws by which we should abide, many authorities have been appointed by the government for controlling and handling these issues, some of them[14] are-

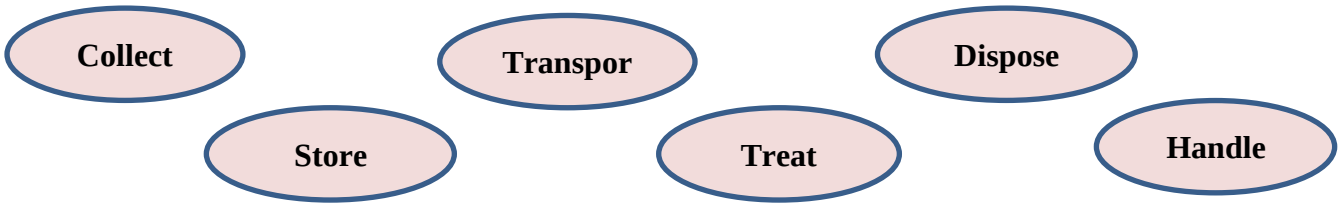
- CPCB, SPCB
- Ministry of defence
- State government of health
- MOEFCC, Government of India
- Environment protection act,1986
- Urban and Municipal Corporations
- Central ministry of animal husbandry
- BMW management and handling rules, 1998
- Central ministry for health and family welfare

We also have many constitutional provisions that deal with leading a healthy life, like Article 21, article 47, article 48A and Ar.51A (g). As we know the right to a clean and healthy environment comes under Ar 21 it’s a fundamental right given to every citizen.

As we are dealing with BMW we should know few important points dealing with these laws, the waste includes only those wastes which are generated through the process of any surgery or any other medical

treatment or diagnosis. In this act, it becomes the duty of the occupier and the authority to look after the process of disposal and also what steps are been taken by the hospitals without any damage to any one's health or the environment.

The main steps which are followed are-




This waste shall be disposed of as given under the act and should also install such a facility by which we can easily treat the BMW, one of the main steps is packing and labelling without which we cannot segregate the waste. There should be proper labels on the waste containers and bags so that later there can be handling in a prescribed way.

- [14]Environment protection Act, 1986
- Ministry of Health and Family Welfare, Government of India, 1976
- Biomedical waste, management and handling rules, 1998

The time period for which a BMW can be stored for maximum 48 hours and not more than that and in big hospitals, it can be 8to9 hrs and in clinics 24 hr. beyond which no one should store such waste and directly handle it to the municipal authorities, and municipal authority can also take the BMW in such vehicle's which are authorized by the MVA, 1988.

We should have a monitoring system which keeps a record of the activity's going on. The institutions should have proper records of transportation and storage so that if any fault is seen then the person can directly be penalized for the wrong done. There are different kinds of waste which should be stored in different containers. These laws are not enough because we need more penalty provisions and also new provisions relating to the innovation and research in this sector, biomedical is a very important field nowadays and that's why we need to strengthen our laws and new provisions. Like-

- Penalties
- New techniques
- Set up new facilities
- Training and education
- And also including new proviso relating to waste disposal and treatment

There are so many laws dealing with waste, so we should interlink them and find how they affect each other. How the environment affects health and how waste affect the environment.

We can come up with 3 step process which is collection, treatment and disposal, in the first stage we can collect the waste, segregate them and then we can go for treatment and in the last we can finally dispose of them. For having a proper control system we need to amend laws and want people to come with new techniques for recycling these waste. Just by the way of dumping and disposing of waste, this won't go far we need to recycle waste then only we can decrease the landfills. There can be many plans but for that, we need awareness in people and need to give them proper training that how waste can be disposed of and in which container goes what kind of waste, these thing will directly help the whole country to develop and live sustainably and healthy for long.

## 2.2 Analysing Mc Mehta v. UOI in relation to BMW

**(In the supreme court of India, (Writ Petition(s) (Civil) No(s). 13029/1985) before Justice Arun Mishra, Vineet Saran, and MR Shah, Interlocutory Application No. 181745/2019 AND 46339/2020, order date 06/03/2020**

This case consist of many important issues such as-

- Air pollution
- Water pollution
- Installation of smog tower
- Disposal of biomedical waste
- And garbage by the side of railway tracks

But we are going to discuss only the biomedical waste generated by the private hospitals in Delhi. First, we have discussed the facts of the cases and then the decisions and order by the court.

**FACTS**

This case basically deals with the matter of dumping Biomedical waste[15] (BMW) and wastes generated through the treatment of corona patients, were mixed with the general municipal waste and were thrown in the open areas of Delhi, this complain was done by a student studying in Delhi university, HarshitaSinghal.

As we know that no one is allowed to mix medical waste with general waste and also under BMWMH rules it has been laid down that all the waste should be properly segregated and labelled and then should be sent for treatment and disposal. But here these private hospitals are without taking any precaution and safety are dumping these waste in open areas and that to mix with general waste and without segregation.

- Waste was being dumped near forest areas
- General waste was being mixed with that of corona patients
- Waste was not properly segregated which can be very harmful
- Waste generated should be recycled and new techniques should be adopted
- Enter into contracts with SPCB and meeting with CPCB, NCT, EPCA, and other related

For this kind of behaviour they should be penalized and the occupier should be punished and asked to take proper steps in the future while disposing of such waste. Later it was found that these 3 hospitals were working without the approval of the bar code system.

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- [1515]Mc Mehta v. UOI, 2020 date 06/03/2020 46339/2020

As there is a need to have a proper system working together for collecting and processing waste and also to find new ways to recycle these waste and comply with the bar code system. Many hospitals and contractors are required to respond back, within a period of time which is 3 days. **(Table -2)**

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| STATE | HOSPITAL/CONTRACTOR | ADDRESS |
|---|---|---|
| Delhi | Biotic waste solution Pvt | Karnal road, 46 |
| NCR | Synergy waste Pvt Ltd. | NH 58 Meerut |
| Rohtak | S D biomedical waste mang | Village Balland |
| Rajasthan | Hoswin incinerator pvt. Ltd. | Alwar near MIA |
| Meerut | ChhatrapatiShivaji hospital | Subhartipuram |
| Ghaziabad | Paras hospital | Sec 4, Vaishali |
| Ghaziabad | Lyf hospital | Indrapuram |

**DECISIONS**

This list contains the name of the hospitals that are required to attend that meeting along with other authorities and need to give an action plan within a time period and also they are required to comply with the rules of bar code and BMW rules.

The discussion held was that some of these hospitals were dumping waste in open areas and also some near forest areas that to without segregation and also as the cases of corona patients are increasing few people are mixing general waste with that of waste generated through COVID treatment. There were also asked to treat the waste using techniques such as incinerators and with help of chemical treatments.

They are also required to have an agreement with the SPCB approved facilities who are responsible for the collection of waste and there disposal. They are required to keep a record and track of waste generated. Court had asked to provide them with proper action plans regarding the disposal of waste and also not to store BMW for more than 24hrs in their premises.

The order regarding this case came on 6/3/20, in which they issued notice to many hospitals and contractors to comply with BMW rules and mainly to, Biotic waste solution Pvt. to provide the court with a compliance report and to come up with necessary plans.

The main issue, in this case, is that as per rules occupier is liable for the actions of his subordinate and also for the things going on in his premises but here the case is that the hospitals have dumped there BMW

in the open that too during COVID period which might harm people living nearby. On this court has asked them to clear that waste and to comply with rules and adopt a treatment plan.

As most of the waste is harmful/infectious this cannot be used again but the other waste which is noninfectious can be properly collected and then recycled by using various treatments. The central and state pollution board and municipal authorities are the main authorities who are required to look after this and see that the clinics, hospitals and other medical institutions are complying with the act and rules.

In this case the main aim is to have a proper system that collects and tracks that information related to BMW and also to adopt new ways of treatment for handling medical waste and general waste, these waste are not only harmful to us but also other living organism and the environment.

As BMW rules are not completely implemented till yet because of which they are not that binding and becomes hard for the authorities to penalize anyone. Maybe with the help of such cases we might achieve the main objective of implementation of the BMW rules and also may support many institutions to come up with new technology and innovation in the field of BMW.

Many such cases have been observed earlier as well in-

- *M Sansad vs. the State of Orissa, 15 Nov 2006*[7]

In this case they came up with new techniques and treatment of waste and also talked about incinerators and how improper waste management can affect the people handling it but also those who come in its proximity.

- *Synergy Waste Mang. Vs. Uoi, 15 Jan 2013*[17]

In this they are asking hospitals and clinics to comply with the rules of EPA, BMW rules and CPCB, also to set up such facilities away from particular areas and treat in a way that after dumping has less impact on the environment and health.

[7]M Sansad vs. the State of Orissa, 15 Nov 2006, 103 (2007) CLT 191.[17]Synergy Waste Mang. Vs. Uoi, 15 Jan 2013, W.P.(C)NO. 6976/2008

So these are the issues which came up in this case and how the government has issued guidelines from time to time, also we got to know the issues which pertained in this case.

## 2.3 Analysis

The data collected and analysed by me during this research gives us the idea that only 15 to 20% of BMW is harmful and other can be recycled or is not infectious, but the main concern was how we recycle, handle and dispose of these waste. As we go through the issues and also many alternatives which can be used to mitigate the effect of these wastes, now we have an idea that these waste if handled in a proper manner and with the use of proper techniques we can surely achieve our objective and can overcome the challenges.

During this research, we got to know the views of many Doctors and experts that how BMW can affect us and also with that we got to know that what all are the main sources from which these waste are generated and what steps do they take to mitigate this.

During the period of lockdown we had and a small online interview through which we collected this data. **(Table -3)**

| NAME | ADDRESS/DESIGNATION | REMARKS |
|---|---|---|
| Dr. Nimish Sharma | MBBS - DELHI | There is a need to protect env. And health and therefore few amendments have been made by law to strengthen the process and to have a proper medical system. We also need to increase the investment in the health sector because daily the numbers of treatments are increasing by which BMW will also increase. In their premises, they have a separate room for waste treatment and storage which is being collected by the municipality within 24 hrs. |
| Dr.PuneetKansal | BDS, MDS - MEERUT | Biomedical waste safe disposal is the main tool for eff. Mang. Of BMW and therefore all medical institutions shall follow the protocols and guidelines of government which is issued from time to time, and takes precaution in this COVID period. We are using new technology which can decrease the level of waste and can be easily recycled. |

| | | |
|---|---|---|
| Dr. Tanu Joshi | BDS, MDS - JAIPUR | Biomedical waste is highly harmful waste which can in the future give rise to many serious harmful diseases and heath-related problems that's why it a very serious matter and also a global concern. Not only waste from hospitals but also household medical waste is also a big issue nowadays. |
| Dr. Varun Pareek | MBBS - JAIPUR | Many patients have also complained about BMW disposal as they live nearby hospitals and dumping area where sometimes people throw the waste in open and untreated which later is been consumed by many animals and result in adverse effects. Many people have also faced serious skin issues resulting from such wastes. |
| Dr. B Vageesh Padiyar | MBBS, MS, DNB - NOIDA | People living in urban areas have seen tonnes and tonnes of waste being collected nearby their homes and is untreated for many months, because of which the harmful chemicals get mixed into the land and air and later result in harmful diseases. This COVID has also burdened the workload of workers to and hospitals to take a high level of precautions.<br>Few patients came with issues like pain in the eyes and ear but they dint have any symptoms of cold this was due to an increase in pollution level they faced such issues. Because all the waste after getting disposed to gets mixed into the air and water and then reaches to us. |
| Dr. NeelimaBapat | MD, DGO - MUMBAI | During this COVID most of the cases came from pregnant women and old age people that they already are suffering from many diseases and now due to lockdown they are not able to take care of their health properly. Waste during pregnancy and various surgery are needed to be properly disposed of, otherwise may affect the patient and their surroundings. |
| | | In their clinics, they have different containers for diff waste and are labelled as per.<br>BMW is something which will get generated on daily basis and therefore we need to find some permanent solutions to this problem. |

| | | |
|---|---|---|
| Dr. MD Dadhich | MS, MBBS, SURGEON - AJMER | We got to know due to this COVID many people could not go for their treatments and lost their lives and loved ones and also people who used to have weekly consultation for many serious issues could not contact their doctors. People who had no symptoms of any disease were also getting affected by new types of infections. So this might seems like a small issue to some people but this is the most important concern on which we should work right now and find the best technology for treatment by which waste can be minimized.<br>Health is the most important thing. |

Many other Dr. such as Dr. Sudhir Pant, Dr. V Dahiya and Dr. Sharma, have also given their views on BMW and also how COVID is affecting human health and lifestyle. It's very important for people to know the harmful effects of BMW on employees handling it and also the environment. Due to excessive waste which is being generated by many health care centers and hospitals, it's very important for the authorities to follow the protocols and management rules of their respective centers.

So these are the views of Doctor on BMW and how they are taking all precautions during COVID, and also they described the new techniques they are using for fast treatments and also disposal of waste. The main issue which everyone came up with was that people in India are not aware and educated enough to understand the difference between general waste and BMW and therefore they end up mixing both together. Which also make it hard for the municipal workers to handle and dispose of, as all type of waste is mixed together and segregation of that waste becomes a big challenge for them, which in return requires a lot of resources and time.

We also got to know how badly the environment gets affected by many issues such as groundwater contamination, land pollution and other types of pollution caused by harmful chemicals and hazardous waste. Most waste of the country comes from the urban areas and rural as well but most of the time these issues are ignored. There are many risks that might be caused to the workers handling it such as harm from sharp equipment, reaction by harmful chemicals and also chances of getting infected due to improper waste mang. We learned that there are different types of waste which need different methods of treatment, like animal waste, micro biotechnology waste, and pharma waste and ashes after incineration. These all need to be dumped separately and treated separately because some are harmful to the humans and environment and others are not.

We also learned the steps involved for treating BMW- first, we need to collect them properly and then segregate them in different containers after which we treat and store the waste and then transport it to the respective municipal authorities and after that, they can be treated again and then disposed of. If all the waste gets mixed together then it will contribute to increasing the infectious waste and also make it hard for the municipal workers to segregate them.

During this COVID, Delhi and Mumbai are the two states which are on the top list, whether its an increase in COVID cases or an increase in biomedical waste[18]. Many Doctors and health care workers have also lost their lives while working for the last 6 months and that also becomes a challenge for us to take high precautions in this matter and not only decrease the level of the waste but also saving the lives of many people. This research gave us information regarding the challenges our country is facing because of biomedical waste and also how establishment is lacking in giving proper attention to these kinds of issues and matter which if not solved now then in future might become a very serious issue.

So it's the duty of every individual weather healthcare worker or normal citizen to follow the rules lay down by the government and be safe because this is the duty of every person and that's why everyone should get involved in this process and make people aware about the harmful effects of MW on health.

•[18]WHO report on covid-19 situation and biomedical waste

# CHAPTER 3

## 3.1 Conclusion

The report deals with the challenges and issues we are facing because of BMW and also with the help of judicial judgments and various legislations we analysed that this waste cycle is not going to stop and that's why we need to find a permanent solution to this issue. We also learned about the new techniques and methods which can help us to reduce the effect of this waste. Many doctors also gave view regarding the present situation and the process of waste disposal.

As there is a boom in population, technological and medical needs are increasing day by day. As a result medical facilities are booming so as the waste generated from it. Waste generated from medical and health care centers is toxic in nature and if came in direct contact with the environment can cause a lot of damage to human health as well as other surroundings of the environment. It is the prime duty of health care centers to treat and dispose of the toxic and hazardous waste generated from them so that there is no harm caused to anyone.

During this COVID 19 situation, it was found out that many numbers of garbage collectors are getting infected because dumped PPE kits, masks and all other equipment used in hospitals to fight this pandemic are being dumped without taking proper precautions. So it is mandatory that it should be kept in mind that infected equipment should not be thrown carelessly and proper dumping protocol needs to be made and followed by every individual be it a health care worker or any citizen.

As biomedical waste is dumped carelessly it gives rise to many communicable diseases that are transmitted from person to person. To overcome this situation Bio medical waste management rules were set up in 2016 which told about how garbage needs to be treated. Four colours were used that is yellow, orange, and white, blue. Yellow was for animal waste, human waste, expired medicines, chemicals, body fluid and all kinds of clinical waste. Orange was for plastic bags, pipes and plastic containers. White was for sharp objects including blades, syringes, metal etc. and lastly blue was for glassware and metallic body transplant.

Studies and researchers have found out that biomedical waste is the most dangerous waste created by mankind and its disposal has become a major issue. Government and research institutes have considered it as a real major problem that is badly affecting the environment and many steps are being taken by respective agencies to fight with this problem. Thus for a healthy and safe environment, need proper actions needs to be taken and its proper application should be done.

We need to make an impact and come up with a few impossible things which are never done before.

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