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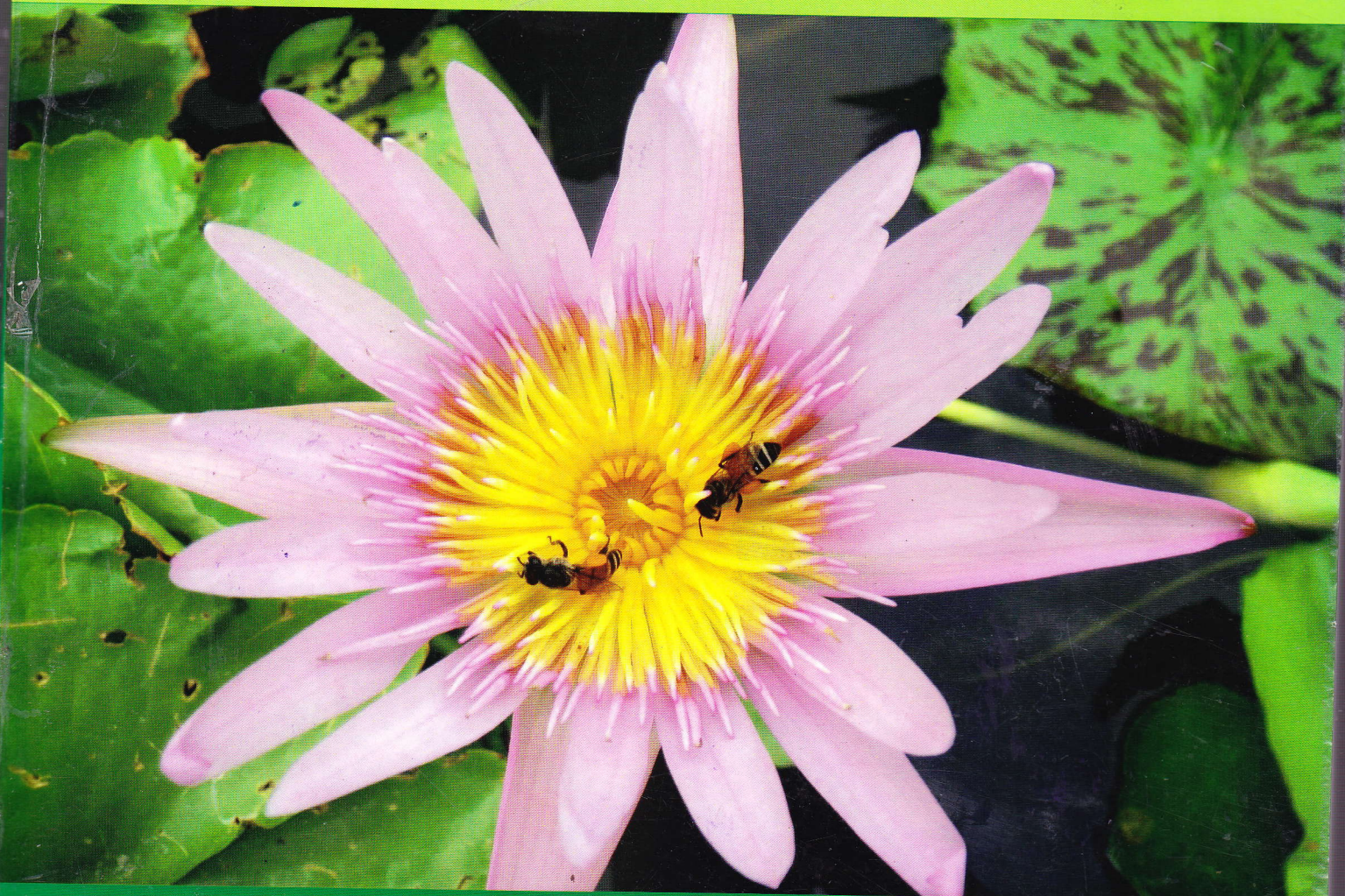
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## ***An Overview of Bio Medical Waste in India***

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### ***Abstract***

*In India environmental law has seen considerable development in the last two decades. Most of the principles under which environmental law works in India come within this period. The development of the laws in this area has seen a considerable share of initiative by the Indian judiciary, particularly the higher judiciary, consisting of the Supreme Court of India, and the High Courts of the States. The entire process is to minimize environment pollution. The history of problem of environmental pollution can be traced back with the advent of animal creature on the earth. However, initially there exist the ecological balance between the factors polluting the atmosphere and factors purifying it. But gradually, as the human civilization started to get shape and man understood the importance of resource and its value for existence and he started to give shape to this earth according to the convenience of his survival. Further, the race of development led to alarming stage due to considerable loss in the element purifying the environment and of self-cleaning capacity of the air, improper planning and complete failure of waste management, this problem has risen to alarming state and posing the question on the complete survival of this civilization. Bio-medical wastes have increased the intensity of the magnitude of environmental hazards.*

*Even, the history of bio-medical waste can also be traced back in the similar manner. Present piece of work is an effort to highlight the problem of Bio Medical Waste in India. Present work tries to explore various issues related with the problem; even steps taken to cop up with the situation are also been analyzed in the present piece of work.*

**Keywords:** *Bio Medical Waste, environmental hazards, waste management.*

### ***An Overview on Bio-Medical Waste in India<sup>1</sup>***

Health makes life meaningful. Good community health is an indicator of sustainability and hospitals and health-care institutions providing health care amenities are an indicator of better health facilities in the society. With rapid economic growth, scientific development and globalization, health care facilities had taken a boom in last

decade in India. Specifically in metropolitan areas, the development in health care facilities is symbolized as of economic growth. However, recent research data has proved the adverse impact of this development in metropolitan areas in India. Today, this growth seems to be modifies the bio-regions in metros mainly due to lack of understanding of the link between the rate of

growth and the carrying capacity of the supporting environmental settings.<sup>2</sup>

### **Bio-medical Waste - Meaning and definition**

Bio-medical waste is a term coming into common usage to replace what had been referred to as pathological or infectious wastes and to include additional related waste streams.<sup>3</sup> Bio-Medical waste is "Any waste which, is generated during the diagnosis, treatment or immunisation of human beings or animals or in any research activities pertaining thereto or in the production or testing of biologicals. It includes infectious and non-infectious waste. Infectious waste includes pathological waste, cotton, dressing, used needles, syringes, scalpels, blades, glass, etc., and non-infectious waste includes general waste from the kitchen/canteen, packaging material." Waste is generally defined as "something which is not put into proper usage at a given time".<sup>4</sup> The original definition of waste '*res derelicta*' (or the abandoned object) corresponds to the concept of "throw away" culture.

Bio-medical waste arises from establishments such as referral, district, mental, primary and private hospitals, health clinics and posts, blood transfusion centers and medical research and teaching laboratory centers.<sup>5</sup>

There are two main types of risks associated with biomedical waste. Foremost is the risk to health due to infection or injury, particularly health care workers involved in handling of biomedical waste. The second types of risk are an environmental risk, if there is no

proper disposal of biomedical waste. This can lead to pollution of water, air and soil resulting in long-term exposure of the population which may lead to server adverse health effects due to poisoning.<sup>6</sup> The risk to water can be due to heavy metals, such as mercury, silver or expired pharmaceuticals for disposal. Therefore, one of the major environmental risks includes leaching of chemicals and subsequent contamination of water sources.<sup>7</sup> The risk to air can arise from emissions from improper incineration of the pharmaceuticals, burning of metal such as mercury which creates emissions of dangerous mercury and infectious biomedical wastes to minimize the potential for infection.<sup>8</sup>

In legal terms the definition of Bio-medical waste has been given in the Act. "Bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biological, and including categories mentioned in Schedule-I.<sup>9</sup> Thus the Bio-medical wastes include infectious and non-infectious waste. Infectious waste includes pathological waste, cotton, dressing, used needles, syringes, scalpels, blades, glass, etc. and non-infectious waste includes general waste from the kitchen/canteen, packaging material. What is infectious waste? As define by EPA (USA), as "waste capable of producing an infectious disease". Coupled with the definition, is the need to consider at least four factors necessary for the induction of disease:

1. Presence of a pathogen of sufficient virulence,
2. Dose,
3. Portal of entry, and
4. Resistance of the host.

Thus it can be said that, for a waste to be infectious, it must contain pathogens with sufficient virulence and quantity so that exposure to the waste by a susceptible host could result in an infectious disease. Thus it is susceptible to the health of an individual and vulnerable to the environment. The Hospitals and other health care institutions dump their wastes, containing human tissues, blood soaked items, excreta, drugs, swabs, disposal syringes and metals, bandages etc. in the municipal garbage dumps. These dumping sites are regularly visited by 'rag pickers' who scan and sort out these wastes manually to pick out plastics, disposable syringes etc. so that they can be resold at various places for recycling. The problems of waste disposal in the hospital and other health care institutions have become issues of increasing concern.<sup>10</sup>

Biomedical wastes, for the potential danger it may cause to health and latent environment hazards associated with it, requires special procedures for planning and management of its disposal. The Bio-medical waste is complex products containing disposable items that include both hazards and non-hazardous wastes. Together with Bio-medical waste, it associates with normal disposable wastes that may be carried off without any pre-treatment. This includes garbage and rubbish, including

plastic bags, jute bags, bottles, packing materials. Garbage being putrescible waste resulting from handling, preparation, cooking or serving food, while rubbish is the non-putrescible solid waste which falls into two categories – combustible and non-combustible, such as paper and metal respectively.<sup>11</sup>

This is because of the reasons that Bio-medical waste needs segregation at different level to channelize the waste according to their different path of disposal. At the very first level, the Biomedical waste shall be segregated from the general waste as the Biomedical waste shall be proceed for different process of treatment and normal waste for its separate process of treatment for disposal. Accordingly the rules prescribe the different labeling of this separated waste at the point of their origin and biohazard bags conspicuously labeled with the words "biohazard waste".

### **History of law relating to Bio-medical waste in India**

#### **Ancient period**

The history has evident that the awareness about the danger associated with Bio-medical waste in India was known even during ancient period. During the period of Chanakya,<sup>12</sup> the administration was keenly interested in keeping cities clean to protect the health of the community.

The rules for the city administration pronounced by Chanakya, during the 6th Century BC, clarify that the rulers then were keen on maintaining hygiene and cleanliness as

they believed cleanliness is godliness.<sup>13</sup> Section 26 to 30 of the depicted in Arthashastra that provided for penalties against the citizen for making the city dirty and is given below:<sup>14</sup>

Provision of Law	Prescription of law
Section-26	For throwing dirt on the road, the fine shall be one-eighth of a Pana and for blocking the same with muddy water; the fine shall be one-quarter of a Pana.
Section-27	For the same cause, on the royal high way, such fine shall be double.
Section -28	For voiding faces in a holy place for water, in a temple and in a royal property, the fine shall be one Pana and rises successively by one Pana for subsequent offences; for passing urine, the punishment is half of above.
Section- 29	It is an exceptional provision and examples punishment on the people if such pollution was due to impact of medicine or due to illness of the person.
Section-30	For throwing dead body of animals like cat, dog or serpent inside the city, the fine imposed was three Panas, and for other animals like donkey, camel, mule, horse or a cattle, the fine imposed was six Panas and for human dead bodies the fine imposed was fifty Panas.

Thus increasing amount of fine for greater intensity of bio-hazardous act, and nature of act made punishable accordingly clearly evident about the awareness of ruler from the death decay of animal and human body and probable danger cause due to it.<sup>15</sup>

#### After independence

Incidentally, in 1989 the Government of India, in exercise of powers conferred under Section 6, 8 and 25 of the Environment Protection Act, 1986 formulated the Hazardous Waste (management & Handling) Rules, 1989.<sup>16</sup> But these rules did not cover hospital wastes, despite of the fact that India was a party to Basel Convention of Medical Wastes Management and therefore is bound to implement the same. It is only in 1995 the legislative response came out when government had taken the feedback from the public on Bio-medical Waste<sup>17</sup> and afterwards government utilizing its powers conferred vide the Environment Protection Act, 1986 the Ministry of Environment & Forests notified the Biomedical Waste (Management & Handling) Rules, 1998" (BMW Mgt) in short) in July 1998. In accordance with the rules, every hospital generating BMW Mgt needs to set up requisite BMW treatment facilities on site or ensure requisite treatment of waste at common treatment facility.

#### History of legal sanctions on Bio-medical waste

The history of environmental legislation reveals that there were gradual development in the concept of law relating to Bio-medical waste

and hazards relating thereto. These laws attempted to deal with Bio-medical wastes to address and meet out the hazards of environmental issues, but practically remained ineffective and in utter failure in its application and failed to achieve its objectives. The laws relating to planning and management of Bio-medical wastes is partly a combination of an attempt to meet out its international obligations of Basal Convention to which the India was party and address the environmental problems oozing due domestically due to Bio-medical Wastes. This legislation also reflects the conceptual framework of already existing national and international piece of legislations. The legislation which indirectly related with Bio-medical waste during colonial period in India were the law passed by British parliament such as –

- a) The Public Health Act, 1936
- b) The Birth Police (Scotland) Act, 1892 and 1903 and –

A few other legislations prevalent in other nations had also proved helpful while drafting the legislation in India. The post-industrialization era has symbolized the environmental consciousness by the developing countries and international organization at various levels. Most of the developed countries are having very stringent legislation to check the environmental vulnerability in general and Bio-medical waste hazards in particular. Few legislation in developing countries are worth mentioning such as -

#### **Law prevailing in United Kingdom**

1. The Refuse Disposal (Amenity) Act, 1978
2. The Litter Act, 1958
3. The Dangerous Litter Act, 1971
4. The Deposit of Poisonous Wastes Act, 1972
5. The Health and Safety at work, Act, 1974
6. The Water Act, 1973
7. The Control of Pollution Act, 1974
8. The Solid Waste Disposal Act. 1955
9. The Resource Conservation and Recovery Act, 1976
10. The Persons Act, 1919
11. The Drugs and Cosmetics Act, 1940
12. The Prevention of Food Adulteration Act, 1954
13. The Industries (Development and Regulation) Act, 1951
14. The Insecticides Act, 1968
15. The Destructive Insects and Pests Act, 1914

Similarly, the legislations prevalent in United States dealing with the subjects were –

#### **Law prevailing in United States**

- a) The Solid Wastes Disposal Act, 1955
- b) The Resource Conservation and Recovery Act, 1976

While in India, before passing of the Environment Protection Act, 1986, and before notification of the Biomedical Waste (management & handling) Rules, 1998" (BMW Mgt) in July 1998, the law which indirectly deal with the hazards of Bio-medical wastes were – Acts prevalent in India before passing of Law relating to BMW Mgt

- a) The Persons Act, 1919

- b) The Drugs and Cosmetics Act, 1940
- c) The Prevention of Food Adulteration Act, 1976
- d) The Industries (Development and Regulation) Act, 1951
- e) The Insecticides Act, 1968
- f) The Destructive Insects and Pests Act, 1914

In last three pieces of legislations referred above, there were provisions in the Acts for controlling the discharge and disposal of effluents and toxic substances that also include the Bio-medical substances injurious and toxic to the community.

#### **Constitutional scrutiny of law relating to Bio-medical waste**

In the country like India where the written constitution prevails, the law passed by apex legislative body has to pass the acid test of constitutional validity. The law which does not pass the constitutional validity is unconstitutional and struck down as bad law. Therefore, the first questions that may be raised here that how so far the law relating to Bio-medical waste passes the constitutional scrutiny? Where from the parliament derive the power to bring legislation to deal with Bio-medical waste? In this part of this investigative writing, to examine the vital issues of planning and management of Bio-medical wastes, it is essential to analyze these basic premises.

First of all, it is evident on the record that the constitutional framers were aware about the importance of environment and its protection for human existence.<sup>18</sup> Therefore, while making of the Indian Constitution several provisions had

been enumerated to give effect to this basic objective. Article 47, Article 48A and 51-A (g) are directly deal with the subject in hand. However all these articles are in Part – IV of the constitution fall under the heading ‘Directive Principles of State Policy’. Two things are very important to be noted down about the Part – IV of the constitution. First, Part – IV- Directive Principles of State Policy is non-justiciable. It means that this part does not confer any sort of right on the living population and hence no one can move into the court of law for its execution. Secondly, thought it cast a sense of duty on the State to take into consideration these directives as principles while implementing its policy, but this duty is only in moral in nature and does not have any time bound. Specially Art. 51-A (g) is duty cast on the citizen and in absence of any specific obligations and punitive provisions, the status is merely a moral obligation.

However, Part-IV of the Indian Constitution unless implemented by State while executing their policy is not justifiable, but once State bring any piece of legislation while giving effect to these principles enumerated under Directive Principles of State Policy, such legislation have force of law and under certain circumstances, such law cannot be called in question in any court of law.<sup>19</sup> Therefore, any legislation deriving force from any of the articles falling under Part-IV of the constitution and included in Schedule IX of the constitution under Art. 31-C has special protection under Indian Constitution and may be treated on

different footing and may remain stand despite it challenge any provision under Part III of the Constitution.

Art. 47 of the Constitution read as follows –

“The State shall regard the raising of the level of nutrition and standard of living of its people and *improvement of public health* as among its primary duties.”<sup>20</sup>

The words ‘improvement of public health’ incorporated in the article has wider connotation and health does not merely means free of disease. The words ‘improvement of public health’ implies free employment.<sup>21</sup> Further, List-II of the State list, Entry-6 deals with *Public Health and Sanitation*, Entry-18 deals with *land and right in and over the land* and under List-III (Concurrent List) Entry-20 the state has the power to enact on economic and social planning which includes Bio-Medical Wastes Management regulations.

Article 48A further envisages that it the duty of the state to endeavor, protect and improve the environment. In 1976, Part IV of the Constitution further widen the scope and include the citizenry to give effect to some of the basic objectives envisages by the Constitution and cast duties on them. This also includes protecting the environment and Article 51 - A (g) made it a fundamental duty on every citizen of India who shall have to protect and improve the natural environment.

### **Planning and Management of Bio-medical Waste**

The need for formulation of objectives, planning, management, and its achievements are

important for improving the community health and bio-medical waste management at the national, regional, and local level. Planning connotes to demarcate and define a strategy that will facilitate careful implementation of the necessary measures and the appropriate allocation of resources according to the identified priorities. This is important for the motivation of authorities, the personnel involve in health-care facilities and disposing mechanism of bio-medical waste and the public, and for defining further actions that may be needed. Research, observation, monitoring and surveys of the bio-medical waste generated during the course of health management will be the basis for identifying opportunities and setting targets for waste minimization, reuse and recycling, and cost reduction. The sound community health and ‘health-for-all’ can be ensured by proper waste management as per the interventional norms, national strategy and may be achieved through an action plan.

### **Problem of Bio-medical Waste : responsible factors**

The problem of biomedical wastes is serious form the point of view of environment and community health. There are various factors which are responsible for causing the bio-medical waste which can be categorized in various categories. Depends upon the causative factors, the problems of Bio-medical waste may be classified in following factors-

a. Man-related-

- Lack of attitude

- Law priority
  - Ignorance
  - Waste not important
- b. Method-related-
- PT chair used for transportation waste
  - No segregation
  - All waste thrown in garbage bin
  - No Identification of waste
- c. Machine & malt related-
- Incinerator not working
  - No plastic bags
  - Inadequate containers
- d. External factors-
- Ineffective Government rules
  - Defective Environmental hazards programmes

#### **Bio-medical Waste: A serious predicament**

Wastes are unwanted material<sup>22</sup> and the non-disposable or improper disposal of waste has become one of the major factors responsible for environmental pollution in urban areas. This is primarily because there is enormous pressure on land due to the growing population in the cities. Rapid industrial development, urbanization and regular flow of persons from rural to urban areas have made major contribution towards environment degradation. This growing population puts severe strains on the Government's ability to provide services relating to sanitation, waste disposal and creating infrastructure preventing health hazards.<sup>23</sup>

Hospital waste management is part of hospital hygiene and maintenance activities. General hospital hygiene is a prerequisite for

good medical waste management. A part of the hospital waste is hazardous and may cause a threat to health and life not only to patients and staff but also to the community at large. Besides the effect of hospital/clinical waste on hospital personnel and patients within the hospital, the impact on human health and environment outside the hospital is also important.<sup>24</sup>

Biomedical waste is the infectious or contagious waste generated from hospitals. The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste.<sup>25</sup>

Delhi produces 7,000 metric tonnes of waste every day. It is expected to grow to 17,000 metric tonnes (MT) per day by 2024. This makes Delhi the highest municipal solid waste producer in the country, followed by Mumbai. Out of this, construction and demolition waste is nearly 880 MT, out of which 23 percent is concrete, 36 per cent is sand and 31 percent is bricks. Biomedical waste generated by 1,700 healthcare establishments is 8,880 kg of waste per day or 32.41 lakhs kg per year approximately.<sup>26</sup>

It is reiterated that there are more than 3000 health-care facilities in Delhi of which more than 1200 treat/service 1,000 and more patients every month. The view of the Ministry of Environment and Forest, Central Government, in 2000 was that health-care facilities in Delhi generate between 20-25 tonnes of medical waste daily.<sup>27</sup> Since Delhi generates an estimate 7,000 tonnes of municipal waste per day, biomedical waste forms less than 0.5 % of Delhi's total waste.<sup>28</sup>

It produces 580 MT of plastic waste per year. The use of plastics below 40 microns is banned and there is a special Delhi Degradable Plastic Bag (Manufacture, Sale and Usage) and Garbage (Control) Act, 2000, to regulate this activity. The Capital generates 15,000 tonnes of e-waste per year. Over 25,000 people handle 50,000 tonnes of e-waste in various scrap yards across the city. Shastri Nagar and Seelampur are among the scrap dumping and processing grounds in Delhi. There are 2,000 units in approved industrial areas generating hazardous waste of about 5,300 MT per annum.<sup>29</sup>

Improper management of waste generated in health care institutions facilities causes a direct health impact on the community, the health care workers and on the environment.<sup>30</sup> The situation in metros is even more pathetic and frustrating. A cursory visit at any of the local civil hospital in this region shows the apathy of this vital department. Biomedical waste like tubes, disposable gowns, masks, scrubs, disposable tools, medical gloves, wound dressings, blood, and materials made of glass and plastic pipes, syringes and needles are scattered abundantly and carelessly. The situation of reach to such an alarming stage that India and the United Nations Industrial Development Organization (UNIDO) have joined hands to implement a \$40 million pilot project for managing the country's health care system effectively and dispose of hazardous medical waste.<sup>31</sup>

Biomedical waste if not handled properly may pose hazards to human health and environment in the form of fatal infection,

genotoxicity and cytotoxicity, physical injuries and public sensitivity.<sup>32</sup> The threat from the biomedical waste may directly link with the hazards to the health of both individual and community. Today 'health' has brought on the agenda by WHO<sup>33</sup> as one of the indexes of sustainable development. Community health in general and individual fitness in particular is key factor to determine the health index of a nation. The health status of given nation may be determined by taking into account the two ecological factors, internal and external factors i.e. internal factor includes the 'Health' of an individual and external factor consists 'safe and secure' environment surrounds of his habitat. It is the community health which determines the sustainability and possibility of survival. Industrial progress of a nation comes later. However, these two factors, 'Health' and 'Environment' are inter-related and parts of total ecological status. The imbalance between man and his environment may cause diseases and deficiency and led unhealthy atmosphere unfit for the survival of human being. Sanitation, as known to the people traditionally, is science of safeguarding health of community and it covers the complete discipline of controlling the environment with a view to prevent disease and promote health.

The recent developments in healthcare units are precisely made for the prevention and protection of community health. Sophisticated instruments have come into existence in various operations for disease treatment. Such

improvement and advances in scientific knowledge has resulted in per capita per patient generation of wastes in health care units. Waste generated in the process of health care are composed of variety of wastes including hypodermic needles, scalpels, blades, surgical cottons, gloves, bandages, clothes, discarded medicine and body fluids, human tissues and organs, chemicals etc., Other wastes generated in healthcare settings include radioactive wastes, mercury containing instruments, PVC plastics etc., These are the most environmentally sensitive healthcare by products and needs a greater attention which has to be monitored.<sup>34</sup>

However, the science of preventing disease and promoting health, that necessarily involve the entire faculty of medical science generate a great range of products, diagnostic material, treatment articles and immunization items that are used in hospitals to supervise the health of patient to prevent disease and promote health. But in the process of diagnosis, treatment or immunization of the patients these hospitals create a huge quantity of bio-medical products which are contaminated by coming in contact with body fluid of patient and happens to be agency of carrier for contagious diseases. These contaminants known as bio-medical waste, and if not checked properly and timely by effective planning and management, may pass from the hospitals and pathological laboratories to the community and spread out to create further havoc and danger for the community health. Therefore, planning and management of

these 'bio-medical waste' are equally important to achieve an objective of community health and safe environment. The objectives of preventive disease and promoting health will be far reaching goal in absence of effective planning and proper management of bio-medical waste.

#### **Waste Management-International Standards**

The concern for environmental protection is at the core of international standards to safeguards the health and environment. In the race of competing development, the various countries initially isolated the environmental concern. However, soon, the international institutions has brought the environmental concern on their agenda and resorted the government to balance between economic development and environmental safeguards. In this attempt, a doctrine of 'sustainable development' has been coined at international level with an expected from the national governments to implement it as per their economic feasibility and legislative convenience, but without ignoring them.

The debate between the developmental and economic needs and that of the environment is an enduring one, since if environment is destroyed for any purpose without a compelling developmental cause; it will most probably run foul of the executive and judicial safeguards. However, the international community has often encountered the situations where the needs of environmental protection have been pitched against the demands of economic development. In response to this difficulty, policy makers and

judicial bodies across the world have produced the concept of "sustainable development".<sup>35</sup> Returning to the Stockholm Convention, a support of such a notion can be found in Paragraph 13, which states:

In order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population. Subsequently the *Rio Declaration on Environment and Development*, passed during the Earth Summit at 1992, to which also India is a party, adopts the notion of sustainable development. Principle 4 of the declaration states:

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Both United Nation [UN] and World Health Organisation [WHO] have taken community health on their agenda and *inter alia* the waste management as on priority. The United Nations Conference on the Environment and Development (UNCED) in 1992 led to the adoption of Agenda 21, which recommends a set of measures for waste management in general and bio-medical waste management in particular. The recommendations, that include-

- Treatment to waste by safe and environmentally approved methods

- Reuse or recycle the waste up to the possible extend without any hazards
- Prevent the generation of waste, and
- Minimize the waste production

In the Agenda 21, it has also been stressed that waste producer is responsible for the treatment and final disposal of its own waste; wherever possible each community should dispose of its waste within its own boundaries.

#### **Analysis of BMW Mgt Rules, 1998**

The Bio-Medical Waste (Management and Handling) Rules, 1998 has come into existence to deal with its hazards on environment and health and prescribe the procedure for its safe disposal and elimination. It is therefore, essential to analyse the rules so as to understand the methodology it prescribe for the safe and secure disposal of bio-medical waste.

#### **Notification of the BMW Rules, 1998**

Government of India had published notification<sup>36</sup> exercising the power conferred under the Environmental Protection Act, 1986 and had sought objections from the general public to raise their contentions within 60 days from the date of the publication of the said notification the Bio-Medical Waste (Management and Handling) Rules, 1998. After giving due diligence and consideration to the objections so raised, government notified the Bio-Medical Waste (Management and Handling) Rules, 1998.

#### **Application of the BMW Rules, 1998**

The S2 of the Bio-Medical Waste (Management & Handling) Rules, 1998 made

these rules applicable to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form. Thus any person who by any means involve in the process of production, collection, store, transportation, treatment, disposal or handling the bio-medical waste. Thus, in bring under the umbrella of these rules not only the hospital authorities who are directly engaged in for production and disposal of bio-medical waste, but the provisions also applicable to all those agencies who are involved in the process of its disposal and related activities. S. 2 of the act creates subject to which this rules are made application.<sup>37</sup>

The rules are applied to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form. The use of phraseology "all persons" clearly indicate that it include the legal persons as well as natural person. Hence, it is also application to institutions, establishments, company, firms and individuals. It also include to government agencies that generate, collect, receive, store, transport, treat, dispose, or handle bio-medical waste in any form. Thus, not only the hospitals, pathological laboratories, clinics, who are in the category where the bio-medical waste generate, but also the person who collect, by any means either on hired basis or other, receive, or any agency which store, transport, treat or dispose it off, handle. Therefore, if the contract for cleaning the hospital has been given to any agencies, this rule are also made

applicable to that agencies in addition to hospital management or any transporter who receive the bio-medical waste, or the owner of incinerator, electro-cleaving who receive the bio-medical waste for burning or chemical treatment. The definition is too vast to cover who are related in any way in the process given in the section. Therefore, no-body who are directly or indirectly involve in the process mentioned in S. 2 of the rules, he will come within the purview of Bio-medical waste management rules and shall held responsible for any failure if fails to comply with any obligations conferred by the rules.<sup>38</sup>

#### **Authorisation and responsibility of 'occupier'**

The occupier has been held responsible for the disposal of 'Bio-medical Waste'. It is the primary duty of the occupier to dispose off the bio-medical waste in the manner prescribed by the rules. Thus S. 3 (8) of the rule prescribe that the "**Occupier**" in relation to any institution generating bio-medical waste, which includes a hospital, nursing home, clinic dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called, means a person who has control over that institution and/or its premises. The 'control' has very important connotation. The management, owner or any such person who exercise the control over the activities of any hospital or health care institution shall be held as 'occupier' within the meaning of the rule. The rule casts the primary responsibilities of disposal of bio-medical waste on the person who are 'occupier' of the hospital or health-care institutions.<sup>39</sup>

### Duty of Occupier

The Bio-Medical Waste (Management & Handling) Rules, 1998 imposes duty of an occupier of an institution responsible for generating bio-medical waste which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called to take all steps to ensure that such waste is handled without any adverse effect to human health and the environment.

### Treatment and disposal of Bio-Medical Waste

For the safe management of bio-medical waste, its treatment and disposal is very important stages. The treatment and disposal of bio-medical waste has been prescribed by S. 5 of the rule. It prescribe that Bio-medical waste shall be treated and disposed of in accordance with Schedule I, and in compliance with the standards prescribed in Schedule V. Thus treatment and disposal mechanism has been prescribed in the schedule I of the rule while the standard in accordance with the bio-medical waste shall be treated has been prescribed in schedule V of the rules.<sup>40</sup> S. 3 (8) of the BMW Mgt Rules, 1998 defined "**Bio-medical waste treatment facility**" as facility wherein treatment. Disposal of bio-medical waste or processes incidental to such treatment or disposal is carried out (and includes common treatment facilities).<sup>41</sup> 7 (a) Form means Form appended to these Rules) and defined "**Operator of a bio-medical waste facility**" means a person who owns or controls or operates

a facility for the collection, reception, storage, transport, treatment, disposal or any other form of handling of bio-medical waste.

It has also been prescribed by the S. 5 (2) that every occupier, where required, shall set up in accordance with the time-schedule in Schedule VI, requisite bio-medical waste treatment facilities like incinerator, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment facility or any other waste treatment facility.

### Segregation, Packaging, Transportation and storage

According to WHO (1999), with regard to life threatening virus infectious such as HIV/AIDS and Hepatitis B and C, health care workers, particularly nurses, are at greatest risk of infection through injuries from contaminated sharps (largely hypodermic needles)<sup>42</sup>. To eliminate or at least minimize the effect and hazards of Bio-medical waste, it is utmost necessary to take care for its disposal and safe removal from the premises of health care units. Waste should be collected and segregated at the site of generation itself. Segregation of waste denotes the separation of waste into various specified categories as per its nature. Its aims to keep the harmless and non-contagious waste. It also helps in the appropriate disposal of a particular waste type. Briefly, segregation of the hospital waste is the key to ensure that most of the hospital waste that is non-infectious in nature is treated easily at an economical cost. For this

purpose, use of specifically colored waste containers and plastic bags is mandatory.<sup>43</sup> It is already mentioned and noted by WHO and other agencies that approximately 85-85 % of the waste generated by the hospitals and health care units are non-hazardous and remaining 20-15 % waste is medically hazardous. If both these waste are allowed to mix with each other, the entire waste would turn to bio-hazardous. Therefore, at the place where it is generated, it is essential to separate it and dispose it in the manner prescribes for its removal. In short, the waste generated in the hospitals and other health care units must be segregated as municipal waste, hazardous waste, bio-medical waste so that its disposal and removal may be ensured according to the intensity of its danger. The municipal waste, as it do not have any hazardous effect, shall be allowed to dispose off through municipal garbage.

Segregation is also essential as it is cost-effective and economical. Segregation of the waste generated in the hospitals and health care units are not only important only because it has hazards to get mixed with remaining non-hazardous waste. It is already mentioned that bio-medical waste has such elements which is hazardous and shall not be allowed to mix with non-hazardous waste. This bio-medical hazardous waste is required to be disposed off in different manner and this process is very costly. If the segregation has been done, the economic cost of disposing off this waste which is very less in percentage will be affordable. This is

estimated that only due to high cost of disposing off the bio-medical waste, most of the health care units used to adopt illegal mode of throwing it in municipal waste. Therefore, if the segregation is carried out at the place of production of bio-medical waste, it will be more cost effective, and thus ensure its proper mechanism. Keeping these vital consideration, S. 6 (1) of the Bio-Medical Waste (Management & Handling) Rules, 1998 prescribe that the Bio-medical waste shall not be mixed with other wastes.

Furthermore, after segregation, this classified waste shall be stored in different containers for routing it at different location of its disposable according to the method prescribed for. S. 6 (2) prescribe that Bio-medical waste shall be segregated into containers/bags at the point of generation in accordance with Schedule II prior to its storage, transportation, treatment and disposal. The containers shall be labeled according to Schedule III. Schedule III of the Bio-Medical Waste (Management & Handling) Rules, 1998 prescribe the 'color code' scheme for storage of waste according to hazardous, non-hazardous, bio-medical waste as per the location it required to be disposed off.

The color code scheme prescribe by the Bio-Medical Waste (Management & Handling) Rules, 1998 is very useful. As most of the staff engaged in the collection and classification of waste is below the level of attendant, this color code scheme provides very useful way of

distribution which may be understood easily by any unskilled labours engaged in the collection and distribution of this waste according to colors.

Once the waste is segregated and stored in the containers of different colors, it is required to route it at different destination for its disposal. S. 6 (3) prescribe that if a container is transported from the premises where bio-medical waste is generated to any waste treatment facility outside the premises, the container shall, apart from the label prescribed in Schedule III, also carry information prescribed in Schedule IV.

Looking to the risk associated with the rules also prescribed to have labeling and identification of the vehicles used for the purpose of transportation of bio-medical waste. As the bio-medical waste is highly infectious and contagious, merely coming in direct contact of within the vicinity of the bio-medical waste, it is possible to affect and infect the person. Therefore, the vehicle which is supposed to carry the bio-medical waste at the destination of its final disposal must have specific identification marks so that the general public in public roads shall take proper care and precaution. In this respect S. 6 (4) prescribe that notwithstanding anything contained in the Motor Vehicles Act, 1988, or rules there under, untreated biomedical waste shall be transported only in such vehicle as may be authorised for the purpose by the competent authority as specified by the government.

#### **Time limit for disposing the bio-medical waste**

It is essential to dispose off the biomedical waste as early as possible. If the bio-medical

waste is kept stored for longer period, it starts to decompose and saprophytes, parasite is likely to develop on it. The fungus, bacteria, virus may be developed in the organic waste in the bio-medical waste specifically, anatomical waste. Therefore, the Bio-Medical Waste (Management & Handling) Rules, 1998 prescribe the maximum period of storage of bio-medical waste as 48 hours and categorically mentioned that no untreated bio-medical waste shall be kept stored beyond a period of 48 hours.

However, in case of any unforeseen circumstances, if the occupier or operator has been required to keep bio-medical beyond 48 hours, it must be allowed under prior permission and authorization by competent authority. Thus the provision of the Bio-Medical Waste (Management & Handling) Rules, 1998 provides that if for any reason it becomes necessary to store the waste beyond such period, the authorised person must take permission of the prescribed authority and take measures to ensure that the waste does not adversely affect human health and the environment.

The rules also made it clear that the municipal waste which is generated in the health care units and hospitals shall be disposed off by allowing municipal body of the area to pick up and transport segregated non-bio-medical solid waste generated in the hospitals and nursing homes. S.6 (6) prescribed that the Municipal body of the area shall continue to pick up and transport segregated non bio-medical solid waste generated in hospitals and nursing homes, as

well as duly treated bio-medical wastes for disposal at municipal dump site.<sup>44</sup>

#### **Procedural Requirement BMW Mgt Rules**

- a. Hospitals are required to file Form I to the prescribed authority for grant of Authorisation accompanied with the payment of the fee as prescribed by the State or Central Government.
- b. They are also required to submit a copy of their Annual Reports to the prescribed authority under Form II by January 31st every year.
- c. These reports shall be sent to the Central Pollution Control Board by the state pollution control board.

Hospitals are mandatorily required to maintain records and report accidents under form III.

#### **Sum up**

In the light of above discussion, this is quite clear that environmental and health hazards associated with biomedical waste has some traces in the history, but regulating such hazards in scientific manner is totally new task and legal regulation of bio-medical waste management and handling is too new to make any mark. Therefore, despite there is evidence that human society has been aware about the hazards associated with bio-medical waste, any serious attention has not yet been paid towards it.

This has been quite clear that the bio-medical waste is the species of environmental jurisprudence is genus and it is constitutional mandate to have safe and secured environment. The waste management to have community

health also flow from the 'right to health' with constitutes integral part of Art. 21 of Constitution of India. However, both 'right to safe environment' and 'right to health' are making their mark in India slowly. But looking to the pace of environmental destruction and degrading index of health, the legal regulation of bio-medical waste management in twelfth year of its inception is still unsatisfactory. This is clear from the above discussion that planning and management of bio-medical waste is special task required the skilled and trained persons, advance machines, action plan. In absence of all these factors, the planning and management of bio-medical waste management would become mere formalities to comply with legal rules which will remain only on paper, the hazards from bio-medical waste, instead to go to its disposal sites, will have chances to leak from hospitals to free environment to attack healthy community. This will even more dangerous as the hospitals would become meaningless to provide any healthy services to community. In short this can be concluded that there will be no alternatives to action plan, policy and programmes, continuous training and monitoring more specifically in the metro cities like Delhi, Hyderabad, Mumbai and madras which are very crowded and densely populated. Here, there are not only having internal migration rate very high in the country, but also the place of tourists, diplomats, foreigners, which has the highest degree of vulnerability of attack which is required to be monitor and check.

**References**

1. Dr. Vaibhav Goel Bhartiya Professor and Coordinator – law, Lal behadur Shashtri National Academy of Administration, Govt. of India Mussoorie.
2. Reddy A N Yellappa, Effluent management in health care settings – challenges for developing countries, Published in Journal of ISHWM [Journal of the Indian Society of Hospital Waste Management] Vol 6 Issue 1 Sept. 2007 pg.29
3. Frank Kreith & George Tchobanoglous, Handbook of Solid Waste Management, McGraw-Hill Publication 1st Ed. Pg. 13.53
4. See, <http://www.nlsenlaw.org/waste-management/articles/the-law-relating-to-bio-medical-waste-management-in-india-a-critical-analysis#ref1> Accessed on 12.02.2010
5. National Conservation Strategy, 1995
6. World Bank Report, 1989
7. World Bank Report, 1989
8. Rogers W/O. Okot-Uma & Georges E. Ekosse, Pollution control and waste management in developing countries, Commonwealth Secretariat and SRI Publishing, 1st Ed. Pg. 305
9. See, Rule 5 of the Bio-medical Waste (Management and Handling) Rules, 1998.
10. Patnaik (Dr.) Raghunath, Bio-Medical Waste Management and the process of environmental governance, Central India Law Quarterly, Vol. IV, pg.326
11. Hosetti B.B., Prospects and perspectives of Solid Waste Management, New Age international Publishers, 1st Ed. 2006, pg. 156
12. Around VIth Century B.C. Chanakya (also known as Kautilya), who was the famous law maker during the regime of Chandragupta Maurya, the King of Magadha.
13. See, Kangle R.P., 'The Kautilya Arthashastra', 2nd Edn., Part-I, p.94.
14. Patnaik (Dr.) Raghunath, Bio-Medical Waste Management and the process of environmental governance, Central India Law Quarterly, Vol. IV, pp.323-324
15. Patnaik (Dr.) Raghunath, Bio-Medical Waste Management and the process of environmental governance, Central India Law Quarterly, Vol. IV, pp.324-325
16. Amended further twice in 2000.
17. In consonance with the same draft vide notification on Bio-Medical Wastes (Management and Handling) Rules, 1995 was issued on 24th April 1995 vide 5.0. 378 (E) II 3 (II) Gazette of India Extra. 51-No. 19 for seeking objections from the public at large.
18. Though there is no direct provision has been made by Constituent Assembly on 'Environment' protection as such, but the Constitution Assembly Debate is enough to give clue that Constitutional framers were about the importance of 'Environment' for human survival.
19. As per, Article 31-c, any law which gives effect to the policy of the state towards securing objectives enumerated in Part IV of the Constitution shall not be treated as void or inconsistent, even if it abridges or takes away any of the fundamental rights conferred by Article 14 or 19, nor any such law shall be called in question in any court on the ground that it does not give effect to that policy.
20. See, Art. 47 of the Constitution of India, 1950
21. See, Baig M.A.A., Environment Law and Justice, Regency Publications, New Delhi, 1st Ed. 1996 p.17
22. Wastes are defined as "substances, solutions, mixtures, or articles for which no direct use is

- envisaged but which are transported for reprocessing. dumping. elimination by incineration or other methods of disposal. Wastes, generally, are of three kinds: solid wastes, liquid wastes and gaseous wastes. From the point of view of source they may be further classified as domestic wastes, industrial wastes and other hazardous wastes. See, Usha Tandon and Jagdev, "Urbanisation - The Problem of waste and The Law" 28 (2&3) Indian Bar Review (2000) at 38.
23. Dr. B.L. Wadhwa v. Union of India and others, AIR 1996 SC 2989.
  24. 'Towards a HealthyFuture', Bio-medical Waste Management, Gujrat Pollution Control Board, Report 2008. pg.28
  25. Park K. Hospital Waste Management. Park's Textbook of Preventive and Social Medicine. M/s Banarasidas Bhanot Publications, New Delhi. 18th Edn, 2005: 595-598.
  26. See, News item published by Sobhana K., on Monday, Feb 08, 2010 at 0010 at Indian Express.com. available at, <http://www.w3c.org/TR/1999/REC-html401-19991224/loose.dtd> accessed on 12.02.2010.
  27. State of Environment Report for Delhi 2001, op. cit., p. 65
  28. Dhamija Urvashi, Urvashi Dhamija Sustainable Solid Waste Management: Issues Policies and Structures, Academic Foundation, Published in 2006, Page No. 199
  29. See, News item published by Sobhana K., on Monday, Feb 08, 2010 at 0010 at Indian Express.com. available at, <http://www.w3c.org/TR/1999/REC-html401-19991224/loose.dtd> accessed on 12.02.2010.
  30. Mukherjee (Dr.) Nita [Sr. Editor], Bio-Medical Waste Management, Understanding our Civic Issues, [A bulletin by the Bombay Community Public Trust], pg. 3
  31. The Hindu, New Delhi, February 12, 2010. Available at, <http://www.w3c.org/TR/1999/REC-html401-19991224/loose.dtd>. Accessed on 17.02.2010.
  32. Bio-Medical Waste Status Report, 2006, Biomedical Waste Management Cell Directorate of Health Services Government of NCT of Delhi Pg. 4
  33. World Health Organisation
  34. Remy, L., Managing Hospital Waste is a Big, Nasty Deal, Great Western Pacific Coastal Post, Ed. 2001. Quoted from, Quoted From, Ratha, K.V., Kalaivani K., Lavanya R., A Case Study of Biomedical Waste Management in Hospitals, Published in Global Journal of Health Science, Vol. 1 No. 1 April 2009 pg. 82 [See, [www.ccsenet.org/journal.html](http://www.ccsenet.org/journal.html)]
  35. This concept, as defined in the 1987 report of the World Commission on Environment and Development (Brundtland Report) defines it as "Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs". See, also Intellectuals Forum, Tirupathi Vs. State of A.P. and Ors. AIR2006SC1350. Decided on 23.02.2006 [para 56].
  36. Notification in the Gazette vide S.O. 746 (E) dated 16th Oct, 1997
  37. See, S. 2 of the Bio-Medical Waste (Management & Handling) Rules, 1998
  38. See, S. 2 of the Bio-Medical Waste (Management & Handling) Rules, 1998
  39. See, S. 3 (8) definition of "Occupier".
  40. S. 5 (1) of the Rule.

41. Added by Rule 2 (1) of the Bio-Medical Waste (Management & Handling) (Second Amendment) Rules, 2000 notified vide notification No.S.O.545 (E), dated 2-06-2000 and came into force w.e.f 2-6-2000.
42. Sharma Madhuri, Hospital Waste Management and its monitoring, Jaypee Brothers Publishers, 1st Ed. 2002 Pg. 7
43. Sharma Madhuri, Hospital Waste Management and its monitoring, Jaypee Brothers Publishers, 1st Ed. 2002 Pg. 20
44. Inserted by Rule 3 of the Bio-Medical Waste (Management & Handling) (Second Amendment) Rules, 2000 vide notification S.O.545 (E), dated 2-6-2000.