CHAPTER VI

MANAGEMENT OF BIO-MEDICAL WASTE UNDER THE GENERAL AND PARTICULAR ENVIRONMENTAL LEGISLATION IN INDIA

It is clear from the previous chapters (chapter IV and chapter V) that India has been one of those few countries in the world which have paid attention in the field of environment protection right from the ancient period down to the present time. The Chapters highlighted on how ancient and medieval India paid attention on the preservation and protection of nature by adopting the method of worshipping air, water, sun, sky, earth with the purpose of infusing in the mind of the common people a kind of fear so that any attempt made in the destruction of nature would amounted to sin and accordingly the sinner would be punished by the God. Although no such laws were there available on the prevention and control of environmental pollution during that period, yet there were customary laws, conventions, etc. which guided public life. For example, cutting of trees were strictly prohibited, destruction of the forest was considered as destruction of the nature, protection of animals were considered as sacred duty etc. Due to non-availability of vehicles and industries during that period, the problem of pollution from such sources did not arise. However, during the early British period in India, we find the existence of statutory laws having bearings on the environment. These laws, however, were enacted for the purpose of meeting environment pollution under the general laws but they were not meant to deal with the specific problems of pollution. In fact, the pollution related issues were better handled under such laws only and therefore, no necessity arises for the specific laws on specific environmental issues like the problem concerning the bio-medical waste etc. This was, perhaps, due to the reason that such problem either had created no such situations which was considered dangerous from environmental point of view or the people were unaware about its ill effect on the environment. Hence, need for the enactment of necessary laws on the subject did not arise.

In the course of time, with the rapid advancement of science and technology and cropping up of new problems, provisions under such laws became inadequate to deal with the growing menace of environmental pollution on specific subject. Naturally, the necessity was felt to have some regulatory measures for the abatement

of the pollution to cope up with the new environmental issues. Such regulatory measures under the effective laws were needed to reduce the problem of environment pollution which could not always be possible to handle under such general laws. Such specific laws would help in tackling the future specific problems which includes among other, the problem relating to handling and management of bio-medical waste. Although the concern for the bio-medical waste is new and the specific laws passed in this connection is only of recent origin, however, it is necessary to make an elaborate analysis of those existing general laws passed during the British regime in order to find out whether such waste could be handled under those general laws with an obvious result had the same be managed under such laws, not question would have arose to pass new laws of different subjects directly relating to the environment. Therefore, an attempt has been made under this Chapter to make an analysis not only of those general laws enacted during pre-independence period to trace out the answer to the question relating to handling and management of such specific problem i.e. bio-medical waste, also this Chapter discusses elaborately some of the specific laws, rules, regulations etc. passed by the Parliament from time to time to deal with the specific objects involve in such waste that has an adverse effect on the environment. Of course, it is out of mention to say that the law on the subject i.e. the Bio-Medical Waste Management Rules, 2016 is the main law to deal with the problem of such waste, the researcher has made an extensive research of the Bio-medical Waste Management Rules, 2016 under a separate Chapter to find out the quest whether the existing Rules is sufficient or it has to amend further so as to include provisions on the basis of which the problem can be effectively handle. The present Chapter has been divided into two parts namely; the control and management of bio-medical waste during pre-independence period under the general laws and the post-independence general and specific laws relating to the handling and management bio-medical waste. Henceforth, an attempt has been made to discuss only those environmental legislations, both general and particular, that can be directly or indirectly referred to for the management of bio-medical waste although the Bio-Medical Waste Management Rules, 2016 have been discussed in the subsequent Chapter.

6.1 Control and Management of Bio-Medical Waste during Pre-Independence Period under the General Laws

The history of environmental legislation in India dates back to pre-independence era when the country's first legislation, The Shore Nuisance (Bombay and Kolaba) Act, 1853 was passed. This Act authorised the collector of land revenue in Bombay to order the removal of any nuisance below the high-water mark in Bombay harbour[1]. Subsequently a plethora of Acts was passed from time to time due to the roaring demands from various corners to pass laws in the various fields covering the water, air, land and also the forest. These laws, however, had a narrow purpose and limited territorial reach[2]. For example, The Oriental Gas Company Act, 1857 and the Bengal Smoke Nuisance Act, 1905 were enacted to prevent or reduce pollution in the atmosphere in and around Calcutta. The Oriental Gas Company Act, 1857, under sections 15-17 imposes fines on the company and giving a right of compensation to anyone whose water was fouled by the company's discharges[3]. The Indian Easement Act of 1882 guaranteed property rights of riparian owners against unreasonable pollution by upstream users.[4] The Bombay Smoke Nuisance Act, 1912 was passed to check smoke nuisance in Bombay area. Legislative provisions regulating the discharge of oil into port waters and prohibiting the poisoning of water in forests under Indian Ports Act, 1908 and Indian Forest Act, 1927 respectively were also enacted prior to independence[5]. Majority of these laws continued to exist during the period when India became free.

From the various Acts referred above it is clear that none of the Acts, rules, regulations etc. in existence at that time had any direct connection with the problem of bio-medical waste. Although, some of these Acts could be referred to and necessary steps could be taken under these laws to handle the same. As for instance, if there was any air pollution due to bio-medical waste creating nuisance in the locality or due to

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[1] Shyam Divan and Armin Rosencranz, *Environmental Law and Policy in India* pg. 30 (Oxford University Press, 2nd Edn., 2013).
[2] *Ibid*.
[3] *Ibid*.
[4] D.P.Tripathy, *Environmental Legislation in India-A Critical Appraisal* pgs. 239-240 (APH Publishing Corporation, 1st Edn., 2002).
[5] Shyam Divan and Armin Rosencranz, *Environmental Law and Policy in India* pg. 30 (Oxford University Press, 2nd Edn., 2013).

impractical storage or dumping of such waste water became percolated, an action could be taken under the existing law to meet the situation. The reason for not having any specific laws on the subject would be that either such waste did not create any serious harmful effect to the wholesome environment or there were lack of awareness among the people regarding the harmful effect from such waste. Another reason could be that the British rulers were keen to exploit the nature that they took least interest in protecting it.

6.1.1 The Indian Penal Code, 1860[6](IPC)

The Indian Penal Code, 1860 (hereinafter referred to as the Code) is considered as one of the most important Code among others, passed during pre-independence period. The Code was enacted with a view to provide a general penal law for India. The Code provided for punishments of those acts which not only endangered life or causes injury to human being in particular, it also covers the cases of environmental pollution in general under the head of public nuisance. Such provisions have included in the Chapter XIV under the head of Public Nuisance and are divided into twenty eight Sections (Sections 268[7] to 294A). The sole object of including Chapter XIV in the Code was to safeguard the public health (sections 269-278), safety (sections 279- 291) and public morals and decency (sections 292-294A) by causing those acts punishable which make environment polluted and thereby threaten the life of people. In other words, all those acts which endanger public health, whether directly or indirectly, have been brought under the purview of the Code[8]. The important sections relating to environment may be summed up as under.

6.1.1.1 Public Nuisance (Section 268)

Nuisance means anything that resulted in hurt, inconvenience, or damage, or interferes with the enjoyment of life or property and includes any act, omission, place,

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[6] Act No. 45 of 1860. It stands as a tribute to the genius of Lord Macaulay who was the President of the First Indian Law Commission constituted in 1834.

[7] Section 268 of the Indian Penal Code read as follows: Public nuisance- A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right. A common nuisance is not excused on the ground that it causes some convenience or advantage.

[8] Mahesh Mathur, *Legal Control of Environmental Pollution: Jurisprudence and Law Applicable to Environmental Violation and Prevention* pg. 206 (Deep & Deep Publication, 1st Edn., 1998).

or thing which causes or is likely to cause injury, danger or offence to the sense of sight, smell or hearing. According to Clerk and Lindsell, nuisance is an act or omission which results in an interference with or disturbance of or annoyance to a person in the exercise or enjoyment of:

1. A right belonging to him as member of the public when it is a public nuisance or
2. his ownership or occupation of land or of some easement, quasi-easement or other right used or enjoyed in connection with land when it is a private nuisance[9].

Public nuisance is an offence against the public in any public place or thing which is based on such act or omission. According to Russell, public nuisances are offences against the public by either doing a thing which tends to the annoyance of all the king's subjects or by neglecting to do a thing which the common good requires[10].

The maxim "*sic utere tuo ut rem publicum non laedas*", which is a part of civil law meaning thereby 'enjoy your property in such a way as not to injure the right of the public' can be referred to understand the concept of public nuisance. The term public nuisance has defined under Section 268 of the Code is that if a person does any act or omits to do any act which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity or which must cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right, then such act or omission comes within the purview of the same. The definition is capable of bringing within its ambit various types of public nuisance including environment nuisance. The Section is to be read with Section 290 of the Code which prescribed punishment with fine which may extend to two hundred rupees for public nuisance in those cases not otherwise specifically provided for in the Code. Furthermore, for the repetition or continuation of the same Section 291 of the Code provides additional punishment where a public servant has issued injunction for not repeating it.

- **Ingredients of Public Nuisance**

To constitute public nuisance the following essentials are required:

[9] *Ibid.*
[10] *Ibid.*

1. Doing of any act or illegal omission to do an act,
2. The act or omission:

   a. must cause any common injury, danger, or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or

   b. must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right.

A person must do an act or must be guilty of an illegal omission. Putting obstructions upon, causing danger, annoyance to persons upon a public road used by the public are acts causing public nuisance. The term person is defined in Section 11 of the Code to include company or association or body of the persons, whether incorporated or not and the word illegal according to Section 43 means as 'applicable to everything which is an offence or which is prohibited by law, or which furnishes ground for a civil action'. Causing a nuisance by omission is not punishable, unless prohibited by law[11].

There must be an injury, danger or annoyance. It must be caused to the public or the people in general, who live or occupy property in the vicinity. It can also be caused to anyone who may have the occasion to use a public right. A public nuisance may be created by erecting a building over part of a public highway as held in *Janki Prasad* v. *Karamat Hussain* case.[12] But if there is no annoyance to the public, it will not be a public nuisance. For instance, in *Perumal Naidu's* case a person urinating in a public place where there was no public urinal was held to have committed no offence under this section[13].

There is no *sine quo non* that a public nuisance should injuriously affect every member of the public. It is sufficient that it should affect people in general who live nearby. The term 'public' according to Section 12 of the Code includes any class of the public, or any community. But the class must be numerically sufficient to be designated 'the public'. Thus, a class or community residing in a particular locality may come within the term 'public'. In popular parlance, the word 'public' means the general body of humankind or of a nation, State or community. Thus, the words

[11] Krishna Deo Gaur, *Textbook on the Indian Penal Code* pg. 387 (Universal Law Publishing Co. Pvt. Ltd., 4th Edn., Reprint 2011).
[12] 1931 ILR 53 All 836.
[13] 1936 MWN 1151.

‘public’, ‘in general’ and ‘vicinity’ clearly indicates that there can be no public nuisance unless the general public of the locality is affected by nuisance as held in *Dwarika Prasad’s* case[14].

In order to constitute the offence of public nuisance there must be a real damage as a sensible person is subjected to it would find injurious regard being had to the situation and mode of occupation of the property. The fact that a public nuisance has been in existence for a number of years in the same place will not legalise it. The second paragraph of section 268 of the Code makes it clear that a common nuisance is not excused on the ground that it causes some convenience or advantage. The nuisance must be to the general public or a section of the public and not merely to an individual or to any particular person[15].

In other words, a public nuisance is an offence against the public either by doing a thing which tends to the annoyance of the whole community in general or by neglecting to do anything which the common good requires. Acts which seriously interfere with the health, safety, comfort or convenience of the public generally, or which tend to degrade public moral have always been considered to be public nuisance[16].

In *K. Ramakishnan* v. *State of Kerala*[17] the Kerala High Court held that smoking, in any form, in public place is a public nuisance and cases can be filed under section 290 of the Code as it is violative of the right to life as provided under Article 21 of the Constitution of India.

6.1.1.2 Spreading Diseases (Section 269)

It is the very essence for the existence of life that it should not be put in danger by an act which is regarded as unlawful, negligent or otherwise which make it criminal in the eye of law. Such act, if negligent involve in spreading of infection of

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[14] *Dwarika Prasad* v. *Dr. B.K. Roy Chowdhury,* AIR 1950 Cal. 349.
[15] Mahesh Mathur, *Legal Control of Environmental Pollution: Jurisprudence and Law Applicable to Environmental Violation and Prevention* pg. 209 (Deep & Deep Publication, 1st Edn., 1998).
[16] Krishna Deo Gaur, *Textbook on the Indian Penal Code* pg.387 (Universal Law Publishing Co. Pvt. Ltd., 4th Edn., Reprint 2011).
[17] AIR 1999 Ker 385.

various diseases which endanger the life can be brought under Section 269[18] of the Code which deals with the negligent act likely to spread infection of diseases dangerous to life. This section is framed in order to prevent people from doing acts which are likely to spread 'infectious'[19] diseases. There are number of 'diseases' which medical science considered as infectious in nature and is harmful to the public health. The section is a specific provision dealing with certain acts of nuisance which are calculated to spread the infection of dangerous diseases such as cholera, smallpox, plague, AIDS, etc[20].

Such diseases which is dangerous to the life of individual due to its infectious nature as when the people comes into direct connection with it or it may communicate through others who are in direct contact with it, are constantly posing a threat to the lives of the people. The bio-medical waste being one of the reasons for spreading such diseases created a cause of concerns ever since the rapid growth of population, urbanisation, industrialisation etc. and the setting up of health care institutions in the surroundings. Such waste also contains the germs of many dangerous diseases as mentioned above and if the same is not properly handled and managed, it may partake the character of national disaster polluting the environment at large. Therefore, the section can be resorted to and made punishable any act of negligence whoever is responsible in handling and managing the bio-medical waste. But in order to bring within the fore of this section the following ingredients are required to be fulfilled:

- **Ingredients of Section 269**
    1. It must be shown that the disease in question was infectious and dangerous to life.
    2. The accused did an act which was likely to facilitate spreading of the disease.
    3. The accused did the act negligently or unlawfully and

[18]Section 269 of the Indian Penal Code runs as follows: "Whoever unlawfully or negligently does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine or with both".
[19] The term 'infectious' means those which are communicated through the atmosphere.
[20] Krishna Deo Gaur, *Textbook on the Indian Penal Code* pg. 388 (Universal Law Publishing Co. Pvt. Ltd., 4th Edn., Reprint 2011).

4. He knew or had reason to believe that his act was likely to spread the disease.

The above mentioned Section and Section 270[21] of the Code intended to avert the great danger to society from spreading of infection. The offence under this section is an aggravated form of the offence made punishable under the preceding Section. In this Section the action of the accused in spreading infection of the disease is a malignant or malicious one which involves a deliberate intention to do harm. Hence the punishment under this Section is more serious than the previous Section 269 of the Code which may extend to six months of imprisonment, fine or both.

The element of malignancy is essential in the commission of an offence under this Section. Malignant transmission is a deliberate intention to harm. The word 'malignantly' denotes that the spreading of infection should be actuated by malice[22].

Likewise, the expression 'dangerous to life' used in both the Sections is not restricted to diseases that are immediately dangerous to life. It also takes into account those diseases which act as a slow poison to the life of human beings. Therefore, all types of diseases whether of immediate effect or not could be brought under this Section and made punishable accordingly.

6.1.1.3 Fouling of Water (Sections 277 and 278)

The water of a river, spring or reservoir belongs to the public, and therefore, if a person pollutes it, he commits an offence of public nuisance. There are two specific Sections (Section 277[23] and Section 278[24]) dealing with the fouling of water and making the atmosphere noxious to health which could be used against perpetrators of

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[21]The section runs as follows: Whoever malignantly does any act which is and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to two years or with fine, or with both.

[22] Ratanlal and Dhirajlal, *Indian Penal Code* pg. 322 (Wadhwa and Company Law Publishers, 28th Edn., 1997).

[23]Section 277 of the Indian Penal Code reads as follow: Fouling water of public spring or reservoir- Whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it ordinarily used, shall be punished with imprisonment of either description for a term which may extend to three months, or with fine which may extend to five hundred rupees or with both.

[24]Section 278 of the Indian Penal Code reads as follows: Making Atmosphere noxious to health- Whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way, shall be punished with fine which may extend to five hundred rupees.

water and air pollution. The words 'corrupts or foul' mean some act which physically defiles or fouls the water. Thus the act of a woman of a so-called lower caste taking water from a public cistern does not amount to corrupting or fouling. But bathing in a tank fouls the drinking water[25].

The above two provisions have direct relevancy to water and air pollution and can be seek to prevent such pollution. However, their effective application towards achieving this objective is doubtful, because in order to bring the violator under this Sections strict compliance of the ingredients is absolutely obvious. The technicalities of Indian criminal law require a complete satisfaction of the ingredients of the offence as stipulated in the penal provisions. For instance, the provisions relating to fouling of water, the wording requires proof of the voluntary corruption or fouling of water, that the water must be of a public spring or a reservoir and that the water must have been rendered less fit for the purpose for which it was ordinarily used. Such wordings not only create a burden for the prosecution to prove, but also provide the accused enough grounds to argue his way out. The above provisions did not liberate the criminal justice process from the difficulties of the common law demanding elaborate evidence for sundry matters as well as technical interpretation of obvious things and events[26].

Therefore, for invoking the provisions of section 277 of the Code, the party has to satisfy the court on the following points:

- **Ingredients of Section 277**

    1. That the water in question was of a public spring or reservoir.
    2. That the accused corrupted or fouled such water voluntarily and
    3. That his action rendered the water less fit for the purpose for which it was ordinarily used.

It is to be noted that the offence under this Section only related to voluntarily fouling of a water of a public spring or reservoir. Therefore, this Section does not

[25]Mahesh Mathur, *Legal Control of Environmental Pollution: Jurisprudence and Law Applicable to Environmental Violation and Prevention* pg. 216 (Deep & Deep Publication, 1st Edn., 1998).
[26] C. M. Abraham, *Environmental Jurisprudence in India* pg. 43 (Kluwer Law International, 1st Edn., 1999).

apply to a 'public river' or to a continuous stream[27]. The above position is well illustrated by some of the early recorded cases. In one of the earliest case recorded in 1882, *Queen* v. *Vitti Chokkan*[28], it was held in a one sentence judgment that the words 'public spring' or 'reservoir' under section 277 did not include a river. Thus the Madras High Court, in 1881, quashed the conviction of one Vitti Chokkan for having 'dirtied the drinking waters of the Varaga River, the only drinking water available in the locality, by washing bullocks therein and also four other persons for having rendered the spring water of the Varaga River unfit for the purpose of bathing and drinking by putting up a dam across the river and catching fish'.

In *Emperor* v. *Nama Rama*[29] the accused and nine other had been convicted by the Trial Court under section 277 for the offence of fouling the waters of a river by rendering it unfit for drinking purpose. However the High Court had a different view on appeal. The Court relied upon earlier cases under the Code and held:

> "Though the fouling of the waters of a river running in a continuous stream may not be an offence under section 277 of the Code, it may well be a nuisance under section 290 of the Code if the evidence shows that the act was such as to cause common injury or danger to the public."[30]

While this was the position to handle the environmental pollution under Section 277, let us see the position under Section 278 of the Indian Penal Code. For the applicability of this Section 278 the aggrieved party has to prove the following;

Ingredients of Section 278

1. That the accused vitiated the atmosphere,
2. That he did so voluntarily, and
3. That he thus made the atmosphere noxious to the health of persons residing and carrying on business in the neighbourhood or of those passing through the highway.

[27] *Ibid.*
[28] (1882) ILR 4 Mad. 229.
[29] (1904) 6 Bom. LR 52.
[30] *Ibid* at pg. 53.

The term 'vitiate' means to disturb, spoil or pollute. Vitiating the atmosphere means polluting or disturbing the atmosphere by the addition of noise or any type of pollutant (obnoxious gases, solid or liquid)[31]. A person is said to cause an effect 'voluntarily' when he causes it by means whereby he intended to cause it or by means which at the time of employing those means he knew or had reason and belief to be likely to cause it[32]. 'Any place' means not only the public place but also private place, i.e. private property-place of business, residential house, go-down, shop or office, etc[33]. 'Noxious' according to Chamber's English Dictionary[34] means hurtful or relating to wrongful injury by an object. For the fulfillment of this clause only vitiating or disturbing the atmosphere is not sufficient but the atmosphere should be polluted in such a manner as to affect the health of persons in the neighbourhood of the place of pollution or nuisance. The words 'corrupts or fouls' water is used in their literal sense. Therefore, spitting in a public well, fishing with basket nets in a tank, cultivating paddy in the bed of a tank, etc. are instances of fouling water. The mere fact that the neighbours were using the water of a well does not establish that the well is a public well as they may be using the well under leave or licence[35].

Similarly, contamination of the atmosphere rendering it injurious to public health also attracts the provision of this Section. In *Bijayananda Patra* v. *District Magistrate, Cuttack*[36] the Orissa High Court held that where person causing noise pollution which is noxious to health of the people, the Section can be invoked for restraining the polluter and an injunctions can be brought against him even though that person was causing noise in the course of his business. The Court further held that pollution being wrongful contamination of the environment which causes material injury to the right of an individual, noise can well be regarded as a pollutant because it contaminates environment, causes nuisance and effect the health of a person. In *St. Helen's Smelting Co.* v. *Tipping*[37] the question was whether there is danger from any trade or occupation so as to constitute a public nuisance depends

[31]Dr. Surendra Kumar, *Environment Protection* pg. 51 (Northern Central Publishers, 1st Edn., 2009).
[32] *Ibid.*
[33] *Ibid*.
[34] Catherine Schwarz, George Davidson, *et. al*., *Chambers English Dictionary* pg. 983 (Allied Publishers Limited, Reprint 1992).
[35]Mahesh Mathur, *Legal Control of Environmental Pollution: Jurisprudence and Law Applicable to Environmental Violation and Prevention* pg. 206 (Deep & Deep Publication, 1st Edn., 1998).
[36] AIR 2000 Ori 70.
[37](1865) 11 HLC 642.

upon whether the injury is to the property of person; in the former case there must be evidence of visible diminution in the value of the property for which the locality and all other circumstance must be taken into consideration. The fact of the case was that in June 1860, William Tipping purchased the Bold Hall manor house, along with 1300 acres of surrounding land. Three months later, operations began at the nearby St. Helen's Copper Smelting Company (Limited). The works emitted noxious gases and vapours which damaged Mr. Tipping's hedges and trees, sickened his cattle, adversely affected people, reduced the land's value, and generally interfered with his beneficial use of land. Mr. Tipping sued St. Helen's directors and shareholders to recover damages for injuries done to his trees and shrubs. It was held that nuisances resulting in material injury or financial harm cannot be excused, regardless of the character of the neighbourhood in which they occur.

Similarly, in *Kirori Mal Bishamber Dayal* v. *State of Punjab*[38] it was held that the question whether a particular trade is or is not a nuisance, can be determined only after taking into consideration a number of circumstances such as the place where it is located or carried on, the number of people whose rights are prejudicially affected thereby and the extend of injury, discomfort and annoyance caused to normal human beings.

Therefore, to bring a case within the purview of public nuisance, it is to be determined not merely by an abstract consideration of the thing itself, but in reference to its circumstances. The annoyance complained of must not only be real but reasonable. In an old English case[39], a number of persons objected to the erection of a hospital for treatment of cases of smallpox. It had to prove that not only the smallpox was popularly dreaded but that it was scientifically dreadful as that it was disseminated by aerial infection. The smallpox can be so conveyed has not received the unequivocal sanction of medical science, so that a hospital for the treatment of that disease is not necessarily a serious source of danger to persons resident, working or passing within fifty feet of it.

In view of the above case it can be said that construction of hospitals producing wastes on daily basis in a residential area causes public nuisance because the generation of hazardous wastes which is the cause of concern if unscientifically

[38] AIR 1958 Pun 11.
[39] *Attorney General* v. *Corporation of Nottingham*, (1904) 7 Ch 673.

handled and has an adverse effect to the public health can be brought under the several provisions of the Indian Penal Code dealing with the public nuisance.

6.1.1.4 Negligent Conduct with Respect to Certain Substances (Sections 284 to 289)

The Indian Penal Code under Sections 284 to 289 refers to negligent conduct with respect to various types of substances. The substances dealt with under these Sections vary from each other. But the nature of the conduct dealt with, is common to all the Sections. The conduct is described in the relevant sections as under:

1. Doing (with the particular substance) any act so rashly or negligently, as to endanger human life or to be likely to cause hurt or injury to any other person or
2. Knowingly or negligently omitting to take such order with the substance, in his possession, as is sufficient to guard against any probable danger to human life from such substance.
3. The substance or activities covered by the relevant provisions are the following:
   (i) any poisonous substance (section 284),
   (ii) fire or any combustible substance (section 285),
   (iii) any explosive substance (section 286),
   (iv) any machinery (section 287),
   (v) pulling down or repairing any building (section 288) and
   (vi) any animal (section 289).

Sections 284 and 285 provide punishments for negligent conduct with respect to poisonous substance and negligent conduct with respect to fire or combustible matter respectively which may extend to six months, or with a fine, which may extend to one thousand rupees or with both. Similarly, Section 286 of the Code provides punishment for negligent conduct with respect to explosive substance.

6.1.1.5 Mischief (Sections 425 and 426)

The water polluter can also be punished under section 425 of the Code for mischief. According to this section whoever, with intent to cause, or knowing that he

is likely to cause, wrongful loss or damage to the public or to any person causes the destruction of any property or any such change in any property or in the situation thereof as destroys or diminishes its value or utility, or affects it injuriously, commits mischief. Section 426 of the Code provides punishment for mischief. It states whoever commits mischief shall be punished with imprisonment of either description for a term which may extend to three months, or with fine, or both.

An analysis of the above Sections along with the judicial decisions makes it clear that during the pre-independence period as well as at present resort may have of these Sections for the purpose of tackling new menaces threatening the environment constantly such as bio-medical waste. Although *Attorney General* case have highlighted on a particular aspects that has relevancy with the health care institutions, it is nevertheless an important milestone which set forth that running of such institutions in a residential area, carrying dangerous objects with it had and will always have an ill effect to the community *vis-a-vis* the environment. Therefore, before allowing the authority to set up such institution it has to take into consideration all possible effort to stop the risk factor that might affect the lives of the people.

6.2 Post-Independence Specific Laws Relating to the Handling and Management of Bio-Medical Waste

The concern for the environment continues with more vigour after the independence also, when the government started taking initiatives on matters connected with public health, water, air and land and so on because the degradation of the same as it was felt, would amount to the gross environmental degradation. This was due to the impact of modern industrial development which was undertaken immediately after India got freedom and took a tremendous shape during 1970s. Such change in the country has also led to the change of perceptions at the national and regional levels and the necessity was felt to have effective laws to cope up with the situation and the outcome is the passing of specific laws and the establishment of governmental bodies designed especially to protect the environment that would help in the prevention of environment pollution. With the passage of time need was felt to have more laws on different environmental concern including the conservation aspects and the focus during 1980s was to put emphasis on such subjects. The need to

use the resources sustainable to treat ecosystems as integral units and promote the need to preserve forests and biodiversity[40] was also felt. The passing of the Water (Prevention and Control of Pollution) Act in 1974 and the Air (Prevention and Control of Pollution) Act, 1981 has been in tune of the serious concern shown in the field of protection of water, air, land etc. In the due course of time need was felt for an umbrella legislation to cover all aspects of pollution of the environment and the outcome was the enactment of the Environment (Protection) Act, 1986. The need for the adoption of policy resolutions in consonance with the needs of society to face new challenges in the field of science, technology etc. with new factors involved in it had prompted the government to pass various Acts to face such challenges. At present there are about two hundred laws dealing with environmental protection enacted both before and after independence in India[41]. This includes general laws[42], which deals among other thing, the environment matters, and there are specific laws[43] confining only with environment. These enacted laws are supplemented by judgments of the courts through interpretation and construction, which have binding force being precedents as per Constitutional provisions[44]. Since law so formulated cannot contain technical and other practical and procedural details; the Government has been conferred with the power to make rules, regulations and to issue orders. In pursuance thereof a large number of such rules, regulations and orders have been framed, issued and are in force. The passing of Bio-Medical Waste (Handling & Management) Rules 1998, Municipal Solid Waste Rules 1999, Hazardous Waste Rules, 2008 etc. are such laws among others which deserve special mention that are connected with the subject matter of this research topic. Following are the brief overview of the general and specific laws that could be resorted to in tackling the problem of bio-medical waste.

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[40] Bala Krishnamoorthy, *Environmental Management: Text and Cases* pg. 32 (Prentice Hall of India Private Ltd., 2nd Edn., 2008).

[41]K.R.Gupta, *Encyclopedia of Environment: Environmental* Legislation *in India* pg.1 (Atlantic Publishers and Distributors, 1st Edn., 2006).

[42] The Indian Penal Code, 1860, the Code of Criminal Procedure, 1973, the Code of Civil Procedure, 1908, the Specific Relief Act, 1963 etc.

[43] The Water Act, 1974, the Air Act, 1981, the Environment Protection Act, 1986 etc.

[44]Mohammad Naseem, *Environmental Law in India* pg. 61 (Kluwer International Law, 2011).

6.2.1 The Factories Act, 1948

With the aim to ensure the welfare of the workers in connection with working conditions and other benefits, the Factories Act, 1948 is a post-independence statute that explicitly showed concern for the environment. While ensuring the safety and health of the workers, the Act contributes to environmental protection. The Act contains a comprehensive list of 29 categories of industries dealing with hazardous substance and envisages the process to handle the same by following the rules otherwise it might cause material impairment to health of the persons engaged in it.

According to section 2(m) of the Factories Act, factory means any premises including the precincts thereof wherein ten or more workers are or twenty or more workers are working, or were working on any day of the preceding 12 months and in any part of which is manufacturing process is being carried on with or without the aid of power respectively. Under the Act a factory is that where 'manufacturing process' should be carried on within the premises. The Factory Act under Section 2(k) defines the term 'manufacturing process' as to mean any process for making, altering, repairing, ornamenting, finishing, packing, oiling, washing, cleaning, breaking up, demolishing, or otherwise treating or adapting any article or substance with a view to its use sale, transport, delivery or disposal.

The Factories Act of 1948 also provides for the effective disposal of water and effluents of a factory under section 12[45] by an amendment of 1976 to this Act. Non-observance or non-compliance has been considered as an offence under Sec. 92 of the Act. The occupier and manager of the factory shall be liable for the offences so committed and punishable with the imprisonment for a term, which may extend to two years or with fine, which may extend to one lakh rupees or with both. In case of continuing offence after the conviction further fine may be imposed.

[45] Section 12 of the Factories Act, 1948 states that: Disposal of waste and effluents- (1) Effective arrangements shall be made in every factory for the treatment of wastes and effluents due to the manufacturing process carried on therein, so as to render them innocuous, and for their disposal. (2) The State Government may make rules prescribing the arrangements to be made under sub-section (1) or requiring that the arrangements made in accordance with sub-section (1) shall be approved by such authority as may be prescribed.

Therefore, considering the health care institutions as a factory where manufacture processes are being carried on which include among others, altering, packaging, cleaning, demolishing or treating any article or substance with a view to transport and dispose of the same, an action may be taken under this Act. The process of packaging, demolishing, treating etc. has connection with the treatment methodology provided for the handling and management of bio-medical waste also. It also provides for the effective disposal of the waste the violation of which would be subject to penalty under Section 92 of the Act. Therefore, same could be brought under the purview of the Act considering its ill effect on the environment if proper handling is not made.

6.2.2 Code of Criminal Procedure, 1973 (Cr. P. C.)

Corresponding to the Indian Penal Code, the Code of Criminal Procedure, 1973 consisted of a Chapter (Chapter X) which has divided into four parts that provides effective, speedy and preventive remedies for public nuisance cases concerning air, water and noise pollution. Part A of the Chapter deals with unlawful assemblies (Sections 129-132). Part B consisted of Sections 133-143 relating to public nuisance in general. Part C envisages provisions relating to urgent cases of nuisance or apprehended danger under Section 144 and Part D consisted of provisions concerning the disputes as to immovable property under Sections 145-148. Among all the Sections, the most relevant is Section 133, which can be resorted to as an effective, independent, speedy and summary remedy to abate public nuisance in instances of environmental harm as to compare with the cases of public nuisance under the Indian Penal Code which requires the fulfillment of strict essential ingredients following lengthy procedure to avail the benefit of it.

Under Section 133[46] of the Cr.P.C., the District Magistrate or Sub-Divisional Magistrate or an Executive Magistrate, if he is so empowered by the State

[46] Section 133 of the Code of Criminal Procedure reads as follows-Conditional order for the removal of nuisance- (1) Whenever a District Magistrate or a Sub-divisional Magistrate or any other Executive Magistrate specially empowered in this behalf by the State Government, on receiving the report of a police officer or other information and on taking such evidence (if any) as he thinks fit, considers –

(a) that any unlawful obstruction or nuisance should be removed from any public place or from any way, river or channel which is or may be lawfully used by the public; or

(b) that the conduct of any trade or occupation or the keeping of any goods or merchandise; is injurious to the health or physical comfort of the community, and that in consequence such

Government, on receipt of report from the police officer or other information, may make conditional order within a fixed time or immediately to remove the public nuisance causing pollution. The phrase 'public nuisance' has been defined in Section 268 of the Indian Penal Code and this definition can very well be imported for the purposes of Section 133. Therefore, this provision can be effectively invoked to prevent and control the discharge of toxic substances, gaseous emissions, dust, vapour, etc. The conditional order may be made absolute and if the person fails to carry it out, he can be prosecuted under Section 188[47] of the Indian Penal Code. But for invoking this Section the Magistrate must be satisfied that-

1. It is a public nuisance i.e. the number of persons injuriously affected is so considerable that they may reasonably be regarded as the public or a portion of it.

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trade or occupation should be prohibited or regulated or such goods or merchandise should be removed or the keeping thereof regulated; or

(c) that the construction of any building, or the disposal of any substance, as is likely to occasion conflagration or explosion should be prevented or stopped; or

(d) that any building, tent or structure, or any tree is likely to fall and thereby cause injury to persons living or carrying on business in the neighbourhood or passing by, and that in consequence the removal, repair or support to such building, tent or structure or the removal or support of such tree, is necessary; or

(e) that any tank, well or excavation adjacent to any such way or public place should be fenced in such manner as to prevent danger arising to the public; or

(f) that any dangerous animal should be destroyed, confined or otherwise disposed of, such Magistrate may make a conditional order requiring the person causing such obstruction or nuisance or carrying on such trade or occupation, or keeping any such goods or merchandise, or owning or possessing or controlling such building, tent, structure, substance, tank, well or excavation, or owning or possessing such animal or tree, within a time to be fixed in the order concerned, within a time to be fixed in the order- (i) to remove obstruction or nuisance, or (ii) to desist from carrying on, or to remove or regulate in such manner as may be directed, such trade or occupation, or to remove such goods or merchandise, or to regulate the keeping thereof in such manner as may be directed; or (iii) to prevent or stop the construction of such building, or to alter the disposal of such substance; or (iv) to remove, repair or support such building, tent or structure, or to remove or support such trees; or (v) to fence such tank, well or excavation; or (vi) to destroy, confine or dispose of such dangerous animal in the manner provided in the said order; or, if he objects so to do, to appear before himself or some other Executive Magistrate subordinate to him at a time and place to be fixed by the order, and show cause, in the manner herein after provided, why the order should not be made absolute.

(2) No order duly made by the Magistrate under this section shall be called in question in any civil Court.

Explanation- A 'public place' includes also property belonging to the State, camping ground and grounds left unoccupied for sanitary or re-creative purposes.

[47] Section 188 of the Indian Penal Code says- Whoever knowing that, by an order promulgated by a public servant lawfully empowered to promulgate such order, he is directed to abstain from a certain act, or to take certain order with certain property in his possession or under his management, disobeys such direction and if such disobedience causes or tends to cause danger to human life, health or safety, or causes or tends to cause a riot or affray, shall be punished with imprisonment for six months or fine which may extend to one thousand rupees or with both.

2. It is not a private dispute between different members of the public for which the proper forum is the civil court.

3. It is a case of great emergency of imminent danger to the public interest.

Section 133 of the Cr. P. C. deals with certain specific public nuisances and provides a summary remedy for their removal[48]. But no period is prescribed within which the court could be moved under this Section for the removal of an evil in existence and each case will have to be regulated by its own circumstance[49]. In order to invoke Section 133(1)(a), the nuisance has got to be public nuisance and then only it can be stated to affect the members of public and hence can be removed from the public place. The expression 'public place' as per the explanation includes also property belonging to the State. In *Ram Kishore* v. *State*[50] it has been held that a place in order to be public must be open to the public i.e. a place to which the public have access by right, permission, usage or otherwise. But Clause (b) of section 133 (1) is applicable only in such cases where the conduct of any trade or occupation, etc., is injurious to the health or physical comfort of the community. The word 'regulated' indicates that the court, instead of prohibiting the trade etc. completely, can regulate the same in such a way as not to become a nuisance. The scope of the provision as an instrument of pollution control came under scrutiny in several cases.

The object and purpose of this Section is essentially to prevent public nuisance and involves a sense of urgency in the sense that if the Magistrate fails to take recourse immediately irreparable damage would be done to the public. It applies when the nuisance is in existence. The proceedings under Part B of Chapter X are of a summary nature and intended to enable the Magistrate to deal with the cases of emergency and are not intended to settle private disputes between the different members of the public. They are not supposed to be used as a substitute for litigations in a civil court in order to settle a private dispute and if a person has any private right, which he wishes to be enforced, he should take recourse to the civil Courts. However, In *Krishna Gopal* v. *State of Madhya Pradesh*[51] the Madhya Pradesh High Court has

[48] R.V. Kelkar, *Criminal Procedure* pg. 801 (Eastern Book Agency, 6th Edn., 2014).
[49] *Ibid*.
[50] 1973 Cri L J 1527 (HP).
[51] 1986 Cri L J 396 (MP).

ordered the closure of the factory even though the contention of the defendant was that the inconvenience to the inmates of a house is not of public nuisance but only private in nature. The High Court observed:

> "It is not the intent of the law that the community as a whole or large number of complainants should come forward to lodge their complaint or protest against the nuisance: that does not require any particular number of complainants. A mere reading of section 133 (1) of Cr.P.C. would go to show that the jurisdiction of sub-divisional magistrate can be invoked on receiving a report of a police officer or other information and on taking such evidence if any, as he thinks fit. These words are important. Even on information received the sub-divisional magistrate is empowered to take action in his behalf for either removal or regularising a public nuisance"[52].

The Court further said that smoke and noise emanated from the glucose manufacturing factory is injurious to health and physical comfort of the community, and dismissed the revision petition filed by the defendant.

For defying the orders, even the head of the government department or public bodies can be prosecuted. It may be noted that section 133 of Cr.P.C. can be used even against statutory bodies like Municipalities, Corporations and other government bodies if they do any act or omission which causes public nuisance and air pollution. For example, in *Municipal Council, Ratlam* v. *Vardichand*[53], the residents of the Municipality used to suffer from stench and stink caused by open drains, effluents from alcohol plant flowing into streets and poor sanitation including open public excretion by nearby slum-dwellers. The residents moved the Magistrate under Section 133 of Cr. P.C. requiring the Municipality to do its duty towards the members of the public. The Magistrate issued directions to the Municipality to draft a plan for the removal of nuisance within a period of six months. The Municipality instead of complying with the order of the Magistrate, moved in appeal to Sessions Court which reversed the order. In further appeal, the High Court set aside the order of the Sessions Court and approved the Magistrate's order. The Municipality went for further appeal to the Supreme Court. From Trial Court to Supreme Court, it took eight

[52] *Ibid* at pg. 403.
[53] AIR1980 SC 1622.

years and the Municipality took the plea of "financial inability" in the Supreme Court. Justice Krishna Iyer declared that

> "…the guns of section 133 go into action wherever there is public nuisance. The public power of the Magistrate under the Code is a public duty to the members of the public who are victims of the nuisance.' If the order is defied or ignored, section 188, I.P.C. comes into penal play. It held that 'section 133, Cr.P.C. read with the punitive temper of section 188 I.P.C. makes the prohibitory act a mandatory duty".

The Court also pointed out that Article 47 of the Constitution of India makes it imperative that 'steps are taken for the improvement of public health as amongst its primary duties.' Despite legal provisions, there is very little effort at implementation. The issue of lack of implementation was brought up in *Almitra Patel's*[54] case, where it was pointed out referring the judgement of *Dr. B.L Wadhera's*[55] case pertaining to solid waste management in New Delhi, had not been complied with. One of the difficulties pointed out to the court was that even though the MCD and the NDMC Acts permit action being taken, inter alia, against persons who litter the city, sufficient number of judicial magistrates are not available for ensuring proper enforcement of the provisions of the said Acts. The court opined that the shortage of judicial magistrates can be easily overcome by the Government appointing suitable persons as Executive Magistrates under Section 20 or Special Executive Magistrates under section 21 of the Code of Criminal Procedure who can be empowered to deal with such minor offences under the provisions of the MCD and NDMC Acts. There are large number of retired government officials and ex-defence officers who have held responsible posts and are living in Delhi who, we are sure, will be willing to act as such Magistrates. Despite efforts at evolving innovative solutions, the formal sector continues to struggle with effective implementation of the primary laws that govern the sector.

Again, in *Avarachan* v. *Srinivasan*[56] it has been held by the Supreme Court that the omission of the SDM to draw up a preliminary order, which is *sine qua non* for initiating proceedings under section 133 of Cr. P. C. and without following

[54] *Almitra H.Patel* v. *Union of India,* (1998) 2 SCC 416.
[55] *Dr. B. L. Wadhera* v. *Union of India,* AIR 1996 SC 2969.
[56] (1996) 7 SCC 71.

procedure provided for under section 138 the order of SDM to permanently close down a quarry was not valid.

Almost all types of pollution can be controlled or removed by the District and Sub-Divisional Magistrates or by Magistrates specially empowered for the purpose, by exercising powers under Section 133 of the Cr. P. C., 1973. In *Deshi Sugar Mill* v. *Tupsi Kahar*[57] the Patna High Court held that the law of nuisance under section 133 Cr. P.C. would be applicable to pollution related cases also. The Court also recognized that the magistrate has the power to proceed against the discharge of effluents injurious to the health of the community.

In *Govind Singh* v. *Shanti Swaroop*[58] the Supreme Court upheld the Magistrate's order of demolition of the bakery causing air pollution and dismissed the special leave petition, relied on the findings of the magistrate believing him to have made a local inspection of the site. The Supreme Court captured the potentiality of the law of nuisance in the Criminal Procedure Code.

From the various case laws decided by the Apex court and different High Courts it is clear that the Section not only covers the cases of environmental pollution under the purview of public nuisance, it can also be referred in other matters such as creating obstruction by constructing an illegal building or a building which is in a condition that it is likely to fall causing injury to persons living etc. The bio-medical waste being one of the sources of environmental pollution causing water, air and land pollution can be brought under the purview of this Section. However, in spite of the existing laws, there was a need of specific legislations under which the pollution matters in general and bio-medical waste in particular could be properly dealt with.

6.2.3 The Water (Prevention and Control of Pollution) Act, 1974

The first important specific environmental law enacted by the Parliament is the Water (Prevention and Control of Pollution) Act, 1974. The Act provides for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the

[57] AIR 1926 Pat 506.
[58] (1979) 2 SCC 267.

purposes aforesaid, of Boards for the prevention and control of water pollution and for conferring on and assigning to such Boards powers and functions relating thereto[59]. It defines pollution[60] as 'such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or it is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or of aquatic organisms'.

The main provisions dealing with the prevention and control of water pollution are under Chapter V of the Act particularly Section 21 which confer power on the State Pollution Control Board (SPCB) to take samples of effluents and procedure to be followed in connection therewith. Sub-Sections 3 to 5 of Section 21 deals with the procedures to be followed in this regard which *inter alia* provides for the service of notice, division of samples so collected in two parts in the presence of the occupier or his agent and placing the same in the container with mark and seal properly to be sent to the laboratory for analysis. It also lay down the power of Board under Section 33 to make application to courts for restraining apprehended pollution of water in streams or wells. Section 33-A confers power on the Board to issue direction and the closure, prohibition or regulation of any industry, operation or process or the storage or regulation of supply of electricity, water or any other service in case of non compliance of the direction.

Chapter VII of the Act deals with penal provisions, according to which whoever fails to comply with any order issued under clause (e) of Sub-Section (1) of Section 32 or any direction issued by a court under Sub-Section (2) of Section 33 or any direction issued under Section 33-A shall, in respect of each such failure and on conviction, be punishable with imprisonment for a term which shall not be less than one year and six months but which may extend to six years and with fine, and in case the failure continues, with an additional fine which may extend to five thousand

[59] Preamble to the Water (Prevention and Control of Pollution) Act, 1974.
[60] Section 2 (e) of the Water (Prevention and Control of Pollution) Act, 1974.

rupees for everyday during which such failure continues after the conviction for the first such failure[61].

There are many instances where direct untreated bio-medical solid and liquid wastes are dumped into open drain or let out into municipal sewer causing hazardous effect upon health and environment. The health care institutions, right from the generation of bio-medical waste contributes to water pollution which continues till its disposal with or without treatment. The incinerators used for treating bio-medical waste shall come under the purview of the Act as it discharges trade effluents.

Under this Act, duties have been conferred on the occupier[62] who has control over the affairs of the factory or the premises which includes any substance whether liquid or solid. The liquid waste including bio-medical waste howsoever small in proportion is to be treated properly and then disposed of through outlet to the Municipal sewers. If the untreated bio-medical waste is or let out into municipal sewer[63] and stream[64], it causes water pollution.

The Act also prevents water pollution through bio-medical waste by prohibiting on use of stream or well for disposal of polluting matter etc[65]. The Act also restricts on new outlets[66] and new discharges when any step to establish any industry, operation or includes process, or any treatment and disposal system (for e.g., incineration plant) which is likely to discharge sewage[67] or trade effluent[68] into a

[61]Section 41(2) of the Water (Prevention and Control of Pollution) Act, 1974.

[62] Section 2(d) of the Water (Prevention and Control of Pollution) Act, 1974 Ins. by the Amendment of the Act 44 of 1978. "occupier" in relation to any factory or premises, means the person who has control over the affairs of the factory or the premises, and includes, in relation to any substance, the person in possession of the substance.

[63]Section 2(gg) of the Water (Prevention and Control of Pollution) Act, 1974- "sewer" means any conduit pipe or channel, open or closed, carrying sewage or trade effluent

[64]Section 2(j) of the Water (Prevention and Control of Pollution) Act, 1974- "stream" includes- (i) river; (ii) water course (whether flowing or for the time being dry); (iii) inland water (whether natural or artificial); (iv) sub-terranean waters; (v) sea or tidal waters to such extent or, as the case may be, to such point as the State Government may, by notification in the Official Gazette, specify in this behalf.

[65]Section 24 of the Water (Prevention and Control of Pollution) Act, 1974- Prohibition on use of stream or well for disposal of polluting matter, etc.

[66]Section 2(dd) of the Water (Prevention and Control of Pollution) Act, 1974- "outlet" includes any conduit pipe or channel, open or closed, carrying sewage or trade effluent or any other holding arrangement which causes or is likely to cause, pollution.

[67]Section 2(g) of the Water (Prevention and Control of Pollution) Act, 1974– "sewage effluent" means effluent from any sewerage system or sewage disposal works and includes sullage from open drains.

[68]Section 2(k) of the Water (Prevention and Control of Pollution) Act, 1974- "trade effluent" includes any liquid, gaseous or solid substance which is discharged from any premises used for carrying on any industry, operation or process, or treatment and disposal system, other than domestic sewage.

stream or well or sewer or on land and before the Act was commences, it should resume back to the present law and abide by the existing law[69].

6.2.4 The Air (Prevention and Control of Pollution) Act 1981

The Air Act is passed with a view to prevent, control and abatement of air pollution and to maintain good quality of the air. The Act was modelled on the Water Act and it provides a very wide definition of 'air pollutant' under Section 2(a) to mean 'any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment. This definition has been inserted with a view to get a clear idea regarding the meaning of the 'air pollution'[70] according to which the presence in the atmosphere of any air pollutant is air pollution. The Act empowered the State Governments to designate air pollution areas and to prescribe the type of fuel to be used in these designated areas. The definition of air pollutant brings within its fore the matter connected with the bio-medical waste also as it has been seen that the improper management of bio-medical waste also causes severe environmental problems in the field of atmosphere by polluting the air. The bio-medical waste is one of the major contributors to the air pollution. It produces mainly two kinds of air pollution: indoor air pollution and outdoor air pollution. The biological, chemical and radioactive substances present in such waste, after mixing in the air causes an ill effect in the environment. Pathogens present in the waste can enter and remain in the air for a long period in the form of spores or as pathogens. The indoor air pollution caused due to the above chemicals from poor ventilation may result diseases like Sick Building Syndrome (SBS)[71] etc.

Outdoor air pollution can be caused by pathogens. The bio-medical waste containing pathogens, if without any pre-treatment transported outside the institution or if it is dumped in open areas, can enter into the atmosphere. Chemical pollutants that cause outdoor air pollution have two major sources viz. open burning and

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[69] Section 26 of the Water (Prevention and Control of Pollution) Act, 1974.
[70] Section 2 (b) of the Air (Prevention and Control of Pollution) Act, 1981.
[71]B. Ramesh Babu, A.K. Parande, *et. al.*, "Management of Biomedical Waste in India and Other Countries: A Review" Vol. 4 Journal of International Environmental Application & Science pg. 67 (2009).

incinerators. Open burning of bio-medical waste is the most harmful practice. When inhaled can cause respiratory diseases. Certain organic gases such as dioxins and furans are carcinogenic. The improper combustion emits air pollutants like dioxins, furans, particulate matter, fly ashes etc. and that cause severe air pollution. Research and radio-immunoassay activities may generate small quantities of radioactive gas. Gaseous radioactive material should be evacuated directly to the outside[72].

Therefore, the need of control equipment[73] that are essential to control emission[74] of the industrial plant[75] arises and the Act has included this terms considering its effectiveness to control and prevent air pollution. Therefore, it is made mandatory duty on the occupier to take notice of the regulations and establish the industrial plant and it shall be governed under State or Central Government as the case may be. The Act also lay down certain restrictions[76] on the use of certain industrial plants in an air pollution control area which is similarly applicable to the bio-medical waste incinerator plant as all required permission must be obtained under Air Act to set up health care industry. The industrial set up is also required to follow certain standards as laid down by State Board[77].

Regarding penalties and procedure[78] the Act states that if there is a failure to comply with the provisions of Section 21 or Section 22 or with the directions issued under Section 31A, the occupier is held liable and shall be punishable with imprisonment for a term of one year or may extend to six years and with fine and in case of future continuance, additional fine of five thousand rupees for every day may be imposed and if there is continuation of violation, the imprisonment shall be for two

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[72] *Ibid*.

[73]Section 2 (i) of the The Air (Prevention and Control of Pollution) Act 1981-"control equipment" means any apparatus, device, equipment or system to control the quality and manner of emission of any air pollutant and includes any device used for securing the efficient operation of any industrial plant, under Air Act 1981.

[74]Section 2(j) of the The Air (Prevention and Control of Pollution) Act 1981- "emission" means any solid or liquid or gaseous substance coming out of any chimney, duct or flue or any other outlet under Air Act 1981.

[75]Section 2(k) of the The Air (Prevention and Control of Pollution) Act 1981- "industrial plant" means any plant used for any industrial or trade purposes and emitting any air pollutant into the atmosphere, under Air Act 1981.

[76]Section 21 of the The Air (Prevention and Control of Pollution) Act 1981.

[77]Section 22 of the The Air (Prevention and Control of Pollution) Act 1981- Persons carrying on industry, etc., and to allow emission of air pollutants in excess of the standard laid down by State Board-No person operating any industrial plant, in any air pollution control area shall discharge or cause or permit to be discharged the emission of any air pollutant in excess of the standards laid down by the State Board under clause (g) of sub-section (1) of section 17.

[78] Penalties and Procedure (Chapter VI) of the Air (Prevention and Control of Pollution) Act, 1981.

years with fine. In case the emission from incineration plant exceeds the standard, it is also subject to penal provision.

6.2.5 The Environment (Protection) Act, 1986

One of the most important specific environmental legislation that deals with all aspects of environmental pollution is the Environment (Protection) Act, 1986[79]. The Act is umbrella legislation and has been passed with the aim of covering all cases of environment pollution. The Act provides a framework for the coordination of central and state authorities established under the Water (Prevention and Control) Act, 1974 and Air (Prevention and Control) Act, 1981. Under this Act, the Central Government is empowered to take measures necessary to protect and improve the quality of the environment by setting standards for emissions and discharges; regulating the location of industries; management of hazardous wastes and protection of public health and welfare. The Central Government has also empowered to issue from time to time, notifications and guidelines under the Environment (Protection) Act relating to and connected with the environment. The Act empowers the Ministry of Environment and Forests to enact Rules under it that would govern the management of all kinds of waste in India. The framing of bio-medical waste Rule under this Act is an attempt towards eradicating such problem. The Act is the outcome of India's international commitment made at the United Nations Conference on the Human Environment held at Stockholm in June 1972.

The Act defines the term 'environment'[80] to include water, air and land and the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property. Since the subject of the research is to deal with various aspects of bio-medical waste, it is important to understand the definition of the various terms explained under the Act having relevancy with it. The term 'hazardous substance'[81] means any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism, property or the environment. It also defines 'environmental pollutant' under Sec. 2(b) so as to mean any solid, liquid or gaseous substance present

[79] Act No. 29 of 1986
[80] Section 2(a) of the Environment (Protection) Act, 1986.
[81] Section 2 (e) of the Environment (Protection) Act, 1986.

in such concentration as may be, or tend to be, injurious to environment. The above definitions cover a wide range of environment aspect which is the result of the deteriorating condition of the environment. Thus, anything that pollutes the water, air and land has to be checked, prevented and controlled. The scheme and enforcement of law has to be framed with such objective in mind. The legislative intent in framing these expressions liberally is indicative of the fact that the law has to be applied stringently to all such subjects and matters including the bio-medical waste which are likely to be environmental pollutants or hazardous substances which could cause harm to human beings and other living creatures etc. as well[82].

Section 2(d) defines the term 'handling'. It means any substance and its manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale. The substance or preparation which is liable to cause harm to any living being, property or the environment and it need not by itself be harmful. If the effect produced by it is harmful, it is specified as hazardous substance. Any factory or a premises which is controlled by any person and who has possession of the substance is stated to be an 'occupier'[83]. These definitions have great impact on bio-medical waste management as all these components are part of it. Under the Act the Central Government is empowered under Section 3 (1) to take necessary steps as it deems fit for the purpose of protecting and improving the quality of environment and preventing environmental pollution. The Central Government is also authorised[84] to set new standards rationally for the quality of environment in its various aspects and also to sets out standards for the emission or discharge of environmental pollutants from various sources which also include the health care institutions. It also imposes restrictions, obligations, safeguarding measures, preventive actions, and remedies for all the operating industries. Apart from this it also lay down provisions for carrying out examination, sponsoring, investigations, research, inspection, establishments of laboratories and institutions, preparations of manuals, guides, codes etc. such other things in order to prevent, control and abate environmental pollution. The Act also specifies power to give directions under Section 5 on the Central Government relating to closure, prohibition or regulation of

[82] Yuvraj Dilip Patil, "Disposal of Bio-medical Waste in India" Vol. 4 Journal of Krishna Institute of Medical Sciences University pg. 189 (Jan-Mar 2015).
[83] Section 2 (f) of the Environment (Protection) Act, 1986.
[84]Section 3 (2) of the Environment (Protection) Act, 1986.

any industry, operation or process etc. Sections 7 to 17 lay down the provisions relating to prevention, control and abatement of environmental pollution and also punishment[85] there under. Section 8 signifies that the persons handling hazardous substances have to comply with procedural safeguards. Mention should also be made of Section 25 which deals with the power to make Rules on various environmental issues for the prevention and control the same. The passing of bio-medical waste Rules under the Act has proved an effective measure undertaken by the Ministry of Environment and Forest to meet the challenge.

Highlighting on having such umbrella legislation the Delhi High Court in *Delhi Medical Association* v. *Union of India*[86] has clearly stated that the base for any environmental provision is the Environment (Protection) Act, 1986. Therefore, all environmental laws shall comply with the Act and it is equally applicable to bio-medical waste Rules. The bio-medical waste is, of course hazardous if not properly managed. It should not be taken lightly that if express/direct provisions is not found in the Act it is not applicable to the bio-medical waste, instead the health care establishments are responsible for following the standards laid in the Act and in Environment (Protection) Rules, 1986[87] framed under it.

The Rules, 1986 plays an important role in the management of bio-medical waste. The main provision that attracts is Rule 3, which sets out the standards for emission or discharge of environmental pollutants. It clearly notifies that specific industries should follow the standards for emission or discharge of environmental pollutants as specified in Schedule I to IV within one year. Therefore, if proper collection, segregation, storage, treatment and final disposal of such waste involving systematic procedures are not taken it would be in violation of emission or discharge standards provided by the Rules which would cause environmental impact.

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[85] Section 15 of the Environment (Protection) Act, 1986 provides for imposition of penalty of Rupees one lakh and imprisonment up to five years or both for any violation of the provisions. It also provides for higher penalty in case of continuous violation.

[86] AIR 2009 Delhi 163.

[87] Section 6 of the Environment (Protection) Act, 1986.

6.2.6 The Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987[88]

Healthcare establishments, nowadays, generate enormous amount of radioactive wastes[89] consisting of radioactive substances or radioactive materials[90] due to the use of radioisotopes for diagnostic and therapeutic applications. The bulk of the hospital radioactive waste gets generated in the department of nuclear medicine. Most of the radioactive waste is liquid, with lesser amount of solid and minimal gaseous. The solid waste containing traces of radioactivity is in the form of syringes, needles, cotton swabs, vials, contaminated gloves and absorbent materials. Clothing and utensils of patients administered high doses of radioisotopes like I-131 constitute the solid radioactive waste material[91]. Such radioactive elements are very hazardous in nature and prove fatal when come in direct contact with the persons involved in its handling. Therefore, safe disposal[92] of the radioactive waste is a vital component of the overall management of the hospital waste. An important objective in radioactive waste management is to ensure that the radiation exposure should not exceed the prescribed safe limits. Keeping the exposure levels within the prescribed limits reduces the short term and long-term effects of ionizing radiations on humans, besides reducing its negative impact on environment.

The management of radioactive waste involves two stages; collection and disposal. The radioactive waste should be identified and segregated within the area of work. Foot operated waste collection bins with disposable polythene lining should be used for collecting solid radioactive waste and polythene carboys for liquid waste. Collecting radioactive waste in glassware should be avoided. Each package is monitored and labeled for the activity level before deciding upon the mode of disposal. Some hospitals that have incinerators and permission to dispose of

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[88] As per Sub Section I cl. (i) of sub section (2) of Section 30 and Cl.(b) of Sub-Section (1) of Section 17 of the Atomic Energy Act 1962 (33 of 1962).

[89]Under Rule 2(xxii) of the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987 radioactive waste means any waste material containing radionuclides in quantities or concentrations as prescribed by the competent authority by notification in the official gazette.

[90]Rule 2(i) of the Atomic Energy Act, 1962- means any substance or material which spontaneously emits radiation in excess of the levels prescribed by notification by the Central Government.

[91] Shoukat Khan, Syed, Reyaz Ahmad, *et. al.,* "Radioactive Waste Management in a Hospital" Vol. 4 International Journal of Health Science pg. 39 (Jan., 2010).

[92] 'Safe disposal' as per Rule 2(x) of the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987 means release of any material to the environment in a manner leading to loss of control over the future disposition of the radionuclides contained therein and includes emplacement of waste materials in a repository.

combustible radioactive waste through incineration may also segregate combustible radioactive waste from non-combustible waste. When two different isotopes of different half-lives like Tc-99m and I-131 are used, separate waste collection bags and bins should be used for each. Each bag or bin must bear a label with name of the isotope, level of activity and date of monitoring[93].

The following are the relevant Rules that govern the disposal of radioactive waste that are pertinent to mention. Under Rule 3 no person shall dispose of radioactive waste –

(a) unless he has obtained an authorization from the competent authority under these rules;

(b) in any manner other than in accordance with the terms and conditions specified in the authorisation issued under these rules;

(c) in any location different from those specified in the authorisation;

(d) in quantities exceeding those specified in the authorisation.

Special provisions have been lay down under Rule 15 for the installation or institution[94] hospitals and Tracer Research Laboratories according to which

(a) persons using small amounts of radioisotopes of very short effective half life (such as in medical practice and tracer applications) may submit their application in Form V for authorisation to dispose of radioactive waste and

(b) without prejudice to the generality of these rules, a person thus authorised may dispose of wastes containing short lived radioisotopes, contaminated materials and contaminated effluents, in accordance with the procedures and conditions laid down in the Schedule.

The Schedule specifies that institutions such as hospitals and tracer research laboratories, handling small quantities of radioisotopes of short effective half life[95]

[93]Shoukat Khan, Syed, Reyaz Ahmad, *et. al.*, "Radioactive Waste Management in a Hospital" Vol. 4 International Journal of Health Science pg. 39 (Jan., 2010).

[94] 'Institution' as per Rule 2(xvi) of the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987 means any location wherein the processes incidental to the waste generation, conditioning, storage and disposal are carried out.

[95] Long half-life waste (half-life more than a month) and short half-life waste (half-life less than a month).

may, after obtaining the authorisation, under rule 3, undertake disposal of radioactive waste in accordance with the following procedures:

a. The disposal of radioactive waste by release into sanitary sewerage system provided the waste is readily soluble or dispersible in water and the maximum quantity of radioactive material released in the sanitary sewerage system is less than the quantity prescribed in Table I of this Schedule.
b. The disposal of solid radioactive waste must be by an authorised person which should be buried into pits prepared in an exclusive burial ground located in an isolated area. The total activity in the wastes buried in any one pit of the burial ground should not exceed the limits specified in Table 2 of this Schedule.
c. Incineration of Radioactive Waste. An authorised person may undertake incineration of radioactive wastes, including incineration of radioactive animal carcasses, provided the competent authority is duly satisfied with regard to the design of the incinerator, emissions of the incinerator and is suitable for the intended operations. Up-to-date records should be maintained of the incineration operations indicating the names of radionuclides and their amounts finally disposed of in gaseous, liquid and solid form.

Besides this, every hospital should have a designated Radiation Safety Officer (RSO) under the Radiation Protection Rules, 1971 who oversees all aspects of radiation safety including radioactive waste management. The RSO co-ordinates such measures in accordance with guidelines prescribed by the International Commission on Radiation Protection and the national regulatory body.

6.2.7 The Municipal Solid Wastes (Management and Handling) Rules 2000[96]

Municipal Solid Waste (MSW) is the trash or garbage that is discarded day to day in a human settlement. Since majority of the health care institutions are located within the municipal area their waste management naturally has a close linkage with

[96] Government of India, Notification No. S.O. 908 (E), Ministry of Environment and Forests, dated September 25, 2000, Extra., Part II, Section 3(ii), dated 3rd October, 2000, 24-49, No. 648 [F. No.17-2/95 HSMD]

the municipal system. Moreover, since it would not be possible for each and every health care institution to have its own full-fledged treatment and disposal system for bio-medical waste, there would be need for common treatment and disposal facilities under the ownership/supervision/guidance of the civic authority. The Rules lay down the steps to be taken by all municipal authorities to ensure management of solid waste (including the solid waste generated by the health care institutions) according to best practice and are applicable to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solids.

The Rules contains four Schedules. Schedule I of the Rules is relating to implementation Schedule. Schedule II of the Rules mentioned the specifications in connection with the collection, segregation, storage, transportation, processing and disposal of the waste. Under Schedule III of the Rules specifications for land filling indicating site selection, facilities at the site, pollution prevention, water quality monitoring, ambient air quality monitoring, plantation at landfill site, closure of landfill site and post care have been laid down and Schedule IV of the Rules indicate waste processing options including standards for composting, treated leachates and incinerations.

In the definition it has shown concern toward bio-medical waste. Under Rule 3(xv) 'municipal solid waste' is defined which includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes. Therefore, the Rules have taken care of treated bio-medical waste to include in the municipal solid wastes and are disposed of with municipal waste after properly treating it.

Under the Schedule II[97], criteria (iv) has clearly mentioned that bio-medical waste and industrial wastes shall not be mixed with municipal solid wastes and such waste shall follow the rules separately specified for the purpose. The Schedule notifies that bio-medical waste shall not be mixed in municipal dustbins or openly dumped in the municipal area and if any negligence or nuisance is committed by dumping such wastes, it would be violating the Rules and action would be taken

[97] Rules 6(1) and (3), 7(1) of the Municipal Solid Wastes (Management and Handling) Rules 2000.

accordingly. Necessary precautions shall be taken to minimise nuisance of odour, flies, rodents, bird menace and fire hazard[98].

Under Schedule III[99] which deals with specifications for landfill sites, regarding site selection, para 6 has mentioned that bio-medical waste shall be disposed off in accordance with the Bio-Medical (Management and Handling) Rules, 1998. This implies that such wastes are not to be dumped with municipal solid waste land fill sites and any act against the Rules shall be offensive and concerned authorities shall have the right to take action against it.

Form II read with Rule 4(4) of the Rules on the other hand requires the submission of annual report by the Municipal Authority conferred a duty on such authority also to submit report relating to number of hospitals /clinics under the control of the Corporation, what methods are followed for the disposal of bio-medical waste, number of private nursing homes are operating in the city etc.

6.2.8 The Batteries (Management and Handling) Rules, 2001

The Batteries (Management and Handling) Rules, 2001 apply to the handling of batteries and their components. Batteries[100] are defined under the rules to include lead acid batteries that contain metal and are a source of electrical energy. The Batteries Rules apply to every manufacturer[101], importer[102], reconditioner[103], assembler[104], dealer[105], recycler[106], auctioneer[107], bulk consumer (like departments,

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[98] Para 3 (ii), Schedule IV of the Municipal Solid Wastes (Management and Handling) Rules 2000.
[99] Rules 6(1) and (3), 7(2) of the Municipal Solid Wastes (Management and Handling) Rules 2000.
[100] As per Rule 2(e) of the Batteries (Management and Handling) Rules, 2001 defines 'battery' as lead acid battery which is a source of electrical energy and contains lead metal.
[101]As per Rule 3(l) of the Batteries (Management and Handling) Rules, 2001 'manufacturer' in relation to any factory manufacturing lead acid batteries or components thereof means a person or Chief Executive Officer (CEO) of the company who has control over the affairs of the factory or the premises for sale and collection of lead acid batteries or components thereof.
[102]As per Rule 3(k) of the Batteries (Management and Handling) Rules, 2001 'importer' means a person who imports new lead acid batteries or components containing lead thereof for the purpose of sale.
[103]As per Rule 3(n) of the Batteries (Management and Handling) Rules, 2001 'reconditioner' means a person involved in repairing of lead acid batteries for selling the same in the market.
[104]As per Rule 3(b) of the Batteries (Management and Handling) Rules, 2001 defines 'assembler' as a person who manufacture lead acid batteries by assembling various components.
[105] As per Rule 3(i) of the Batteries (Management and Handling) Rules, 2001 'dealer' means a person who sells and receives lead acid batteries or components thereof to and from the consumers or other

organisations purchasing more than 100 batteries) and consumer. The scope of duties of each type of entity is provided in detail to ensure collection, recycling, transportation and sale of batteries. For instance, Rule 10 mandates that all consumers deposit used batteries with dealer, manufacturer, importer, assembler, recycler, re-conditioner or designated collection centres have specific responsibilities[108] under the rules including stated procedures for collection, recycling and transportation[109].

Under the Batteries Rules, SPCBs are responsible for ensuring that regulated parties comply with the rules and with the conditions imposed by their registrations. SPCBs must file annual compliance status reports to the CPCB by April 30 each year[110]. The Joint Secretary, Ministry of Environment and Forests (or any officer designated by the Ministry or other agency) will ensure that recyclers possess appropriate facilities, technical capabilities, and equipment to recycle used batteries and dispose of any hazardous wastes generated during the recycling process.

A recycler must register with an SPCB for a five-year license. To obtain a registration as a battery recycler, an applicant must possess consents under the Air and Water Act, valid authorisation under the Hazardous Wastes Rules, registration with their District Industries Centre, and documentation of their installed capacity. Noncompliance with the Rules also attracts punishment under the Environment (Protection) Act, 1986[111], whereby the person-in-charge may be imprisoned for up to five years and/or fined up to rupees one lakh and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

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dealers or retailers on behalf of the manufacturers, importers, assemblers and reconditioners or to otherwise.

[106]As per Rule 3(o) of the Batteries (Management and Handling) Rules, 2001 'recycler' means an occupier who processes used lead acid batteries or components thereof for recovering lead.

[107]As per Rule 3(d) of the Batteries (Management and Handling) Rules, 2001'auctioneer' means a person(s) who auctions used lead acid batteries or components thereof.

[108] For example, Rule 4 (of manufacturer, importer, assembler etc.), Rule 7 (of dealer), Rule 8 (of recycler), Rule 10 (of consumer or bulk consumers),etc.

[109] Rule 2(I), Rule 2(k), Rule 2(b), Rule 2(n), Rule 4 of the Batteries (Management and Handling) Rules, 2001.

[110] Rule 12 of the Batteries (Management and Handling) Rules, 2001.

[111] Section 15 of the Environment (Protection) Act, 1986.

6.2.9 The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008

Improper disposal of hazardous waste may pose serious risks to human health and the environment. For example, waste that is disposed of improperly may leach into the groundwater, where they may cause long term contamination of a region's water supply. Contamination due to improper disposal of hazardous waste can be harmful if untreated waste flows into open drains and enters water distribution systems. At the same time, exposure to hazardous waste through consumption, inhalation of polluted air or through direct contact with skin may cause many acute and long term health risks. These threats vary greatly depending on the type of hazardous waste at issue, but may include carcinogenesis, reproductive abnormalities, and central nervous system disorders and so on.

The Hazardous Wastes (Management and Handling) Rules, 1989, is the first set of Rules relating to hazardous wastes and after few amendments (in the year 2000 and 2003), and in the course of time, new Rules has been replaced by The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

It is important to note that there are certain wastes that are excluded from the definition of hazardous waste. These include wastes covered under the Water Act, Air Act, Municipal Solid Wastes (Management & Handling) Rules, Batteries (Management and Handling) Rules, Bio-Medical Waste (Management and Handling) Rules, and Merchant Shipping Act[112].

Health care waste is a source of generation of hazardous biomedical waste. Hazardous wastes refer to wastes that may, or tend to cause adverse health effects on the ecosystem and human beings. These wastes pose present or potential risks to human health or living organisms, due to the fact that they are non-degradable or persistent in nature, can be biologically magnified, highly toxic and even lethal at very low concentrations.

[112]Mahesh Menon, Manjeri Subin *et. al.*, "Enforcing Hazardous Waste Rules in India: Strategies and Techniques for Achieving Increased Compliance" Environmental Law Institute pg. 9 Washington D.C., (2014).

Exposure to hazardous healthcare waste/BMW can result in disease or injury. The hazardous nature of healthcare waste may be due to one or more of the following characteristics:

1. it contains infectious agent;
2. it is genotoxic;
3. it contains toxic or hazardous chemical or pharmaceuticals;
4. it is radioactive;
5. it contains sharps.

Although the HW Rules do not apply directly to BMW but as it consists of hazardous wastes in it and the regulation for it is important criteria and therefore those hazardous wastes are termed and governed under this Rule and help to abate pollution caused due to hazardous wastes present in the BMW.

According to the HW Rules, 2003, 'hazardous waste'[113] means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include wastes listed in the Schedules[114]. Under the Explanation to Rule 3 (14), all wastes mentioned in column (3) of Schedule 1 are hazardous wastes irrespective of concentration limits given in Schedule-2 except as otherwise indicated and Schedule 2 shall be applicable only for wastes or waste constituents not covered under column (3) of Schedule -1.

The Schedule-I (a) has listed nearly eighteen categories of wastes. Some of this hazardous wastes like lead, copper, zinc, chromium, mercury, heavy metals, laboratory chemicals, phenols, incineration ash, date expired, discarded and off specification drugs/pharmaceuticals, sludge from wet scrubbers, lead acid from waste treatment processes, e.g. incineration, distillation etc. can be found in the BMW and hence it is important to refer some of the important provisions of this Rules having connection with Bio-Medical Waste.

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[113] Rule 3 (14) of the Hazardous Waste Rules, 2003.

[114] (a) wastes listed in column (3) of Schedule-1; (b) wastes having constituents listed in Schedule -2 if their concentration is equal to or more than the limit indicated in the said Schedule; and (c) wastes listed in Lists 'A' and 'B' of Schedule -3 (Part-A) applicable only in case(s) of import or export of hazardous wastes in accordance with rules 12, 13 and 14 if they possess any of the hazardous characteristics listed in Part-B of Schedule 3".

The Hazardous Waste Rules specifies the 'operator of facility'[115] who engaged in activities from collection to disposal of hazardous waste and also specifies the responsibility of the occupier and operator of a facility under the Rule 4 relating to:

- Handling generated hazardous waste in a safe and "environmentally sound" manner;
- Taking all adequate steps to contain contamination and prevent accidents; and
- Providing employees with training, equipment and information for their safety.

Under Rule 4(3) it also laid emphasis on taking all steps to ensure that the wastes listed in schedules-1, 2 and 3 are properly handled, and disposed of without any adverse effects to the environment.

The operator of a treatment, storage, and disposal facilities is responsible for its 'safe and environmentally sound operation'[116] In addition, both occupiers and operators have the general responsibility to 'take all the steps, wherever required, for reduction and prevention of the waste generated or for recycling or reuse…' They must also comply with all the conditions set out in their authorization[117].

Apart from these general responsibilities, the Hazardous Wastes Rules also set out specific responsibilities in handling hazardous waste. This includes responsibilities regarding packaging and labeling hazardous waste which specifies that the occupiers, operators, and recyclers must ensure that hazardous wastes are properly packaged and labeled for their safe handling and storage.[118] Occupiers, recyclers, re-processors, re-users, and operators of facilities may only store hazardous waste for 90 days.[119] Any accidents involving hazardous waste must be reported 'immediately' to the relevant SPCB[120].

Rule 4A specifies the duty of the occupier and operator of facility to take adequate steps while handling hazardous waste containing contaminants and prevent accidents and limit their consequences on human and the environment. It also

[115] Rule 3(28) of the Hazardous Waste Rules, 2003.
[116] Rule 18(4) of the Hazardous Waste Rules, 2003.
[117] Rule 5(8) of the Hazardous Waste Rules, 2003.
[118] Rule 19 of the Hazardous Waste Rules, 2003.
[119] Rule 7(1) of the Hazardous Waste Rules, 2003.
[120] Rule 24 of the Hazardous Waste Rules, 2003.

specifies duties to provide information, training and equipment necessary to ensure the safety of persons working on the site.

The Hazardous Wastes Rules set out responsibilities under Rules 4 and 9 for various actors in the disposal and transport of hazardous waste. These include some general responsibilities for occupiers, who must:

- Send or sell hazardous waste only to a registered recycler or an authorized disposal facility;
- Transport hazardous waste in accordance with the rules; and
- Provide required information to an operator of a treatment, storage and disposal facilities.

The rules also set out specific responsibilities with respect to the disposal and transport of hazardous waste. As a general matter, hazardous waste may only be 'collected, treated, re-cycled, re-processed, stored or disposed of' at facilities authorized by an SPCB.[121]

The Hazardous Wastes Rules address transport:

- within a state;
- across state lines; and
- across country lines.

For the transport of hazardous waste within a state, the rules set out particular procedures that must be followed. These procedures include properly packaging and labeling hazardous wastes before they are transported[122]. Hazardous waste must then be transported in accordance with all relevant rules[123]. This includes preparing a manifest, which must be forwarded to, among others, the SPCBs[124].

6.2.10 The Plastic Waste Management[125] Rules, 2016[126]

The Rules shall apply to every waste generator, local body[127], Gram Panchayat, manufacturer[128], importers[129] and producer[130]. Earlier the application of

[121] Rule 5(2) of the Hazardous Waste Rules, 2003.
[122] Rule 19 of the Hazardous Waste Rules, 2003.
[123] Rule 20(1) of the Hazardous Waste Rules, 2003.
[124] Rules 21 of the Hazardous Waste Rules, 2003.
[125] Handling included in the word 'Management'.
[126]Ministry of Environment, Forest & Climate Change, Notification No. S.O. 782(E), the 18th March, 2016, Published in the Gazette of India, Part-II, Section-3, Sub-section (i).

the Rules was confined only to the Municipal area, thus under the existing Rules 2016 importers are brought since importing is also a route of brining plastic[131] carry bags[132]/ multilayered packaging[133] to the country. The jurisdiction has been extended to rural area also since plastic are being used in the rural areas also. The Rules increases thickness of plastic carry bags from 40 to 50 micron and stipulation 50 micron thickness for plastic sheets will likely to increase about 20% cost hence, the tendency to provide free carry bags will come down and the collection by the waste pickers[134] also increase to some extent.

Rule 4 lay down several conditions to be fulfilled by the manufacture, importer, stocking, distribution, sale and use of carry bags, plastic sheets or like, or cover made of plastic sheet and multilayered packaging such as:

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[127]As per Rule 3(v) of the Plastic Waste Management Rules, 2016 'local body' means urban local body with different nomenclature such as municipal corporation, municipality, nagarpalika, nagarnigam, nagarpanchayat, municipal council including notified area committee (NAC) and not limited to or any other local body constituted under the relevant statutes such as gram panchayat, where the management of plastic waste is entrusted to such agency

[128] As per Rule 3(m) of the Plastic Waste Management Rules, 2016 'manufacturer' means and include a person or unit or agency engaged in production of plastic raw material to be used as raw material by the producer.

[129] As per Rule 3(k) of the Plastic Waste Management Rules, 2016 'importer' means a person who imports or intends to import and holds an Importer - Exporter Code number, unless otherwise specifically exempted

[130]As per Rule 3(s) of the Plastic Waste Management Rules, 2016 'producer' means persons engaged in manufacture or import of carry bags or multilayered packaging or plastic sheets or like, and includes industries or individuals using plastic sheets or like or covers made of plastic sheets or multilayered packaging for packaging or wrapping the commodity.

[131]As per Rule 3(o) of the Plastic Waste Management Rules, 2016 'brining plastic' means material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, Vinyl, low density polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, Polybutylene terephthalate.

[132]As per Rule 3© of the Plastic Waste Management Rules, 2016 'carry bag' means bags made from plastic material or compostable plastic material, used for the purpose of carrying or dispensing commodities which have a self carrying feature but do not include bags that constitute or form an integral part of the packaging in which goods are sealed prior to use.

[133]As per Rule 3(n) of the Plastic Waste Management Rules, 2016 ' multilayered packaging' means any material used or to be used for packaging and having at least one layer of plastic as the main ingredients in combination with one or more layers of materials such as paper, paper board, polymeric materials, metalised layers or aluminium foil, either in the form of a laminate or co-extruded structure.

[134] As per Rule 3(z) of the Plastic Waste Management Rules, 2016 'waste picker' means individuals or agencies, groups of individuals voluntarily engaged or authorised for picking of recyclable plastic waste.

- carry bags and plastic packaging shall either be in natural shade which is without any added pigments or made using only those pigments and colourants which are in conformity with Indian Standard.
- Carry bags made of recycled plastic or products made of recycled plastic shall not be used for storing, carrying, dispensing or packaging ready to eat or drink food stuff.
- Carry bag made of virgin or recycled plastic, shall not be less than fifty microns in thickness.
- Recycling of plastic waste shall conform to the Indian Standard etc.

The use of plastic in health care establishment is an important aspect and it is used in abundance. Plastic commodities[135] like catheters, tubes, pharmaceutical products are mostly packed in plastic containers, also gloves, syringes etc. are made out of plastics so on and so forth. The practice of using plastic and related commodities is rapidly growing in health care system. These plastics are effectively growing in health care system due to transparency, low cost, high resale value, and low infection rate with single use. To make effective check the Rules under Rule 8 imposes responsibilities of waste generators[136] including institutional generators, event organizers who shall not litter the plastic waste[137] instead after segregate the waste to be handover to authorized agency. All institutional generators of plastic waste shall segregate and store the waste generated by them in accordance with the Municipal Solid Waste (Management and Handling) Rules, 2000[138]. Earlier there were no specific responsibilities for the event organisers, institutional generators. Introducing responsibility for the waste generator will improve the segregation and

[135]As per Rule 3(d) of the Plastic Waste Management Rules, 2016 'commodity' means tangible item that may be bought or sold and includes all marketable goods or wares.
[136]As per Rule 3(x) of the Plastic Waste Management Rules, 2016 ' waste generator' means and includes every person or group of persons or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defense establishments which generate plastic waste.
[137]As per Rule 3(q) of the Plastic Waste Management Rules, 2016 'plastic waste' means any plastic discarded after use or after their intended use is over.
[138]Rule 8(2) of the Plastic Waste Management Rules, 2016.

reuse/ recycle. It also aims at reducing littering[139]. This will improve plastic waste 'management'[140].

Rule 11 lays down that each plastic carry bag and multilayered packaging shall mark or labelling on such bag and packaging bearing the name and registration number of the manufacturer in English. If the carry bag is recycled it should be labelled as "recycled" on it and also shall conform tothe Indian Standard.

Rule 13 mandates every manufacturer, producers and recyclers of plastic carry bags, multilayered packaging to seek registration with State Pollution Control Board (SPCB). The registration granted under this rule shall initially be valid for a period of one year, unless revoked, suspended or cancelled and shall subsequently be granted for three years[141].

6.11 An Overview

From the above analysis it can be said that the problem concerning bio-medical wastes can be properly handled under the general and specific laws as described above. For example, the dumping of the bio-medical wastes such as human tissues, blood stained clothes, bandages, disposable syringes, needles etc. in the open field poses harmful effect to the environment by way of creating nuisances and can be said to be a fit case under both the Indian Penal Code and the Code of Criminal Procedure considering the act or omission as a crime. On the other hand, the specific laws on the subject such as Factories Act, Municipal Solid Wastes Management Rules, Plastic Waste Management Rules etc. have direct connection with such wastes and therefore the management of the bio-medical waste can be effectively handled under these laws as well. Thus, it can be concluded that the Bio-Medical Waste Management Rules, 2016 along with the laws as discussed under this Chapter would help in the proper and effective management of it.

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[139]Rule 8(1)(b) of the Plastic Waste Management Rules, 2016.

[140]As per Rule3(y) of the Plastic Waste Management Rules, 2016 'management' means the collection, storage, transportation reduction, re-use, recovery, recycling, composting or disposal of plastic waste in an environmentally safe manner.

[141] Rule 13(9) of the Plastic Waste Management Rules, 2016.