Chapter 10

Assessment of Available Technologies for Hospital Waste Management: A Need for Society

Alok Rai
Babasaheb Bhimrao Ambedkar University, India

Richa Kothari
Babasaheb Bhimrao Ambedkar University, India

D. P. Singh
Babasaheb Bhimrao Ambedkar University, India

ABSTRACT

Modern hospital practices with galloping growth in medical technology facilitate increase human life span, decrease mortality rate and increase natality rate. Life supporting health services generates potentially hazardous and infectious hospital wastes like pharmaceuticals, cottons, food, paper, plastics, radionuclide, sharps, and anatomical parts etc. These wastes are complex in nature with maximum part of municipal solid waste and small part of biomedical waste (anatomical parts, body parts etc.). Improper conduct and management of hospital waste create several problems and nosocomial diseases to human beings and harms environment. Traditional practices included for management are open burning, mixing waste, liquid discharge and waste disposal without treatment normally. Hence, this issue comes in lime light and several guidelines come to sort out this problem. Thus, challenges associated with traditional hospital waste management techniques and modern techniques for management are assessed in general and association with human society in particular in this chapter.
Assessment of Available Technologies for Hospital Waste Management

INTRODUCTION

With rapid growth of human population and urbanization there is increase in quantity of waste generation. Most developing and developed part of the world is facing challenges of waste. Waste is the substances which have resource but not value. Waste is classified by their source of generation, process by the wastes is produced, and also by its composition. According to literature, there are several attempts to define waste, enlisted in Table 1. Similarly, source of generation, compositional structures, and regulatory framework also supports and defines waste, given in Table 2, in Indian context only.

Among the varieties of waste, as listed in Table 2, Bio-medical waste (BMW) has a serious thought, because inappropriate treatment and final disposal of the wastes directly shows the negative impact on human health and local environment. Thus, bio-medical waste, which consists of pathological and hazardous healthcare wastes, included as a major part of study in this chapter. In general wastes generated from

Table 1. Definitions of Waste

<table>
<thead>
<tr>
<th>Agency</th>
<th>Definition</th>
<th>Reference</th>
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<tbody>
<tr>
<td>BASEL Convention</td>
<td>&quot;Wastes&quot; are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.</td>
<td>BASEL Convention, 1989</td>
</tr>
<tr>
<td>OECD</td>
<td>Wastes are materials other than radioactive materials intended for disposal, for reasons specified.</td>
<td>OECD, 1994</td>
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<tr>
<td>World Bank</td>
<td>Unwanted materials left over from any human activity, or, Refuse from places of human or animal habitation. Waste may be generically defined as heterogeneous mixture of material which is discarded as superfluous and has no further use or value to its owner.</td>
<td>World Bank, 2000</td>
</tr>
<tr>
<td>EU</td>
<td>Any substance or object which the holder discards or intends or is required to discard.</td>
<td>European Commission, 2012</td>
</tr>
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</table>

Table 2. Different type of wastes according to Indian regulatory framework

<table>
<thead>
<tr>
<th>Rules</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Hazardous Wastes (Management and Handling) Rules- 1989</td>
<td>Hazardous waste means any waste by reason 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.</td>
</tr>
<tr>
<td>Bio-Medical Waste (Management and Handling) Rules- 1998</td>
<td>Bio-Medical Waste (BMW) means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological.</td>
</tr>
<tr>
<td>Municipal Solid Wastes (Management and Handling) Rules- 2000</td>
<td>Municipal Solid Waste (MSW) includes commercial and residential wastes generated in municipal or notified areas in either solid or semi solid form excluding industrial hazardous wastes but including treated bio-medical wastes.</td>
</tr>
<tr>
<td>E-Waste (Management and Handling) Rules- 2011</td>
<td>E-Waste means waste electrical and electronic equipment whole or in part or rejects from their manufacturing, refurbishment and repair process which are intended to be discarded as waste.</td>
</tr>
<tr>
<td>Plastic Waste (Management and Handling) Rules- 2011</td>
<td>Plastic waste means any plastic products such as carry bags, pouches or multilayered packaging, which have been discarded after use or intended life is over.</td>
</tr>
<tr>
<td>Solid Waste Management Rules- 2015*</td>
<td>Solid Waste means and includes solid or semi-solid domestic waste including sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, construction and demolition waste and treated bio-medical waste and e-waste generated in an area under urban local body.</td>
</tr>
</tbody>
</table>

*(It is in draft stage. It will come into force on the date of their final publication in the Gazette of India.)
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