

# Bio-Medical Waste Management System

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**Abstract** - A legislative framework for Bio Medical Waste Management (BMW) was conventional in the country more than a period ago. The consequence of waste disposal organization is a very imperative and integral part of any health care system. Health care providers have been ignorant or they did not fundamentally know the basic aspect of the importance and efficient supervision of hospital waste. Appropriate treatment, handling and removal of medicine waste play a significant role in hospital infection managing programme. Objectives of BMW management typically involves preventing diffusion of illness from patient to patient, from patient to medical expert to forestall injury to the health care employee and staff in support services, whereas handling medicine waste, to forestall general exposure to the harmful effects of the cytotoxic, geotaxis and chemical medicine waste generated in hospitals. If properly designed and applied, waste management is a comparatively valuable combine degreed an economical compliance-related observe. This critical review discusses about the gathering, segregation, treatment and disposal of medicine waste and its numerous varieties.

**Keywords:** - Bio-medical waste, Disposal, Segregation, Treatment, waste disposal, WHO approved methodology.

## I. INTRODUCTION

One of the main causes for the spread of infections and disease is the improper removal of waste. It is a health hazard for hospital employees, patients and society. Hospital employees come in close up contact with infected tissues, biological fluids, and infected materials of patients. Correspondingly doctors, nurses, labor staff, and technical staffs working in laboratories face the risk of accidental infection.

There is an option of nosocomial infection. It is a common practice that many hospitals, nursing homes, and health care centers dump all the waste at the garbage collection site from where the garbage is taken away by the vehicles for final disposal. Most of the sites are prone for rag pickers, who may get infected while handling such infected items. The items picked up are often sold to the market where the concerned persons tend to recycle the used needles, syringes,

gloves, discarded drugs. Those who use these items face the risk of infection.

## II. TERMINOLOGIES IN BIOMEDICAL WASTE

- ✓ Biomedical waste: It indicates the unnecessary substance in which generated right through the diagnosis, treatment, immunizations, research, slaughtering of animals, and veterinary practices.
- ✓ Medical waste: It resources every desecrate, which is generated in diagnosis, treatment of human beings, immunizations, treatment of animals, research, and production of biological and testing of biological.
- ✓ Hospital waste: It is the waste twisted or coming out of the hospitals which may be Nonhazardous 80%, Infectious 15% and Hazardous 10%.
- ✓ Critical waste: The waste generated as an achieve of medical care in hospitals, nursing homes, diagnostic centers, laboratories, domiciliary care.
- ✓ Pathological waste: It includes the human being tissues, person organs, and carcass fluids, containers which bring more than mentioned items during surgery, other medical actions, autopsy, and anatomy dissection.
- ✓ Infectious waste: It means any waste, which can pass on bacterial or viral or parasitic infection, even infected animal waste.
- ✓ Hazardous waste: This is perilous but not contagious, and includes radioactive substances, chemicals, liquid, gaseous, vapors, pharmaceutical waste, cytotoxic drugs, outdated drugs.

## III. DISPOSAL OF BIOMEDICAL WASTE

**A. Segregation of waste:** It means separating the waste into dry and wet. Dry waste means wood, metals and glass. Wet waste means usually generated by eating establishments and are heavy in weight due to wetness. For an easy identification to specific color code is followed by,

- a) Yellow: These plastic bags are used for segregating human anatomical waste, dressing material, cotton, bandages, animal tissue and carcasses.
- b) Red: This red plastic is used for segregating laboratory waste, culture



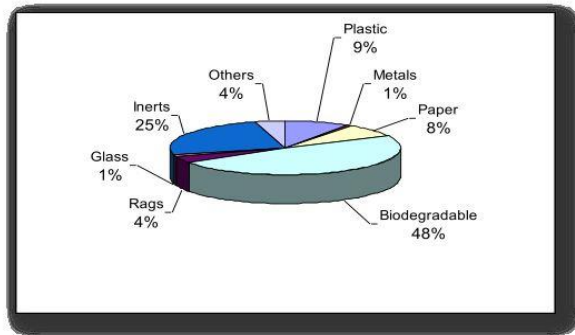
plates, items infected with blood, catheter tubings, and intravenous sets.

- c) Blue or white plastic bags: These plastic bags are used for penetrate proof bottle that is empty cans or thick cardboard boxes to stock up sharp items like senseless, syringes, scalpel blades, busted glass items.
- d) Black: Black plastic bags are used to cut off superfluous medicines cytotoxic drugs, chemicals which have been used for disinfection, insecticides and incinerated.

**B. Waste transportation:** The waste should be transported for treatment either in trolleys or in covered wheelbarrow. Manual loading should be avoided as far as for as possible. The bags or Container containing BMWs should be together before the transportation. Ahead of transporting the bag containing BMWs, it is supposed to be accompanied with a signed article by Nurse or Doctor mentioning appointment, shift, measure and target. Special vehicles must be used to avoid access to and direct contact with, the waste by the transportation operators, the scavengers and the public.

**C. Waste accumulation and storage:** It occurs among the point of waste treatment and removal. While accumulation refers to the temporary holding of petite quantities of waste near the point of generation. Storage refers to characterized by longer holding periods and large waste quantity. Storage areas are typically placed near where the waste is treated.

**D. Waste minimization:** This is an imperative stride to administration of wastes safely, dependably and cost useful manner. This executive step makes use of dropping, reusing and recycling principles. There are many possible routes to minimize the amount of both general waste and biomedical wastes within the health care or related facility.



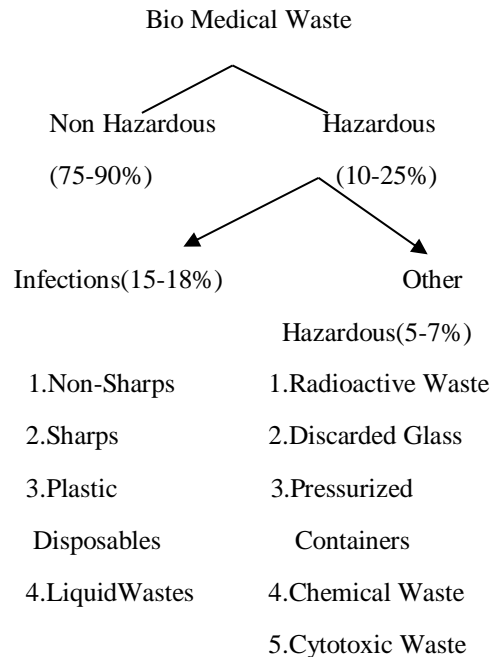
**Fig 1. Composition of Bio Medical Waste Management**

#### IV. PROBLEMS RELATING TO BIOMEDICAL WASTE

A major problem related to current Bio-Medical waste management in several hospitals is that the implementation of Bio-Waste regulation is disappointing as some hospitals are disposing of waste in a haphazard, improper and indiscriminate manner.

Inadequate Bio-Medical waste management thus will cause environmental pollution, distasteful smell, growth and multiplication of vectors like insects, rodents and worms and may lead to the transmission of diseases like typhoid, cholera, hepatitis and AIDS through injuries from syringes and needles contaminated with human. Various communicable diseases, which spread through water, sweat, blood, body fluids and contaminated organs, are important to be prevented.

The Bio Medical Waste reach about the hospitals invites flies, insects, rodents, cats and dogs that are dependable for the multiply of announcement disease like plague and rabies. The recycling of throw away syringes, needles, IV sets and other article like glass bottles without proper sterilization are accountable for Hepatitis, HIV, and other viral diseases. It becomes most important task of Health administrators to handle hospital waste in most safe and eco friendly manner.



**Fig 2. Bio Medical Waste**

The problem of bio-medical waste removal in the hospitals and other healthcare establishments has become a anxiety of increasing concern, prompting hospital administration to ask for new ways of scientific, secure and outlay capable management of the waste, and maintenance their people informed about the advances in this area. They require of proper hospital waste management system is of prime importance and is an essential component of quality assurance in hospitals.

## V. BIO-MEDICAL WASTE MANAGEMENT IN INDIA

In India, the Bio Medical Waste Management Rules, 1998 and further amendments were passed for the regulation of bio medical waste management. Each state's Pollution Control Board or Pollution control Committee will be liable for implementing the new legislation in India. There are a number of special disposal methods, yet most are harmful rather than helpful. If body fluids are nearby, the substance desires to be incinerated or put into an autoclave. Although this is the appropriate method, most medical facilities fail to follow the system. It is often found that biomedical waste is put into the ocean, where it ultimately washes up on shore, or in landfills due to inappropriate sorting when in the medical facility. Improper disposal can lead to many diseases in animals as well as humans.

Rules and guidelines in opposition to Bio Medical Waste Management System,

1. The Air (Preclusion and Organize of Pollution) Act 1981
2. The Environment (Security) Act 1986
3. The Dangerous Waste (Managing & Handling) Rules 1989
4. The National Environmental Tribunal Act 1995
5. The Biomedical Waste (Managing & Behavior) Rules 1998
6. The Municipal Solid Waste (Management & Handling) Rules 2000.

## VI. CONCLUSION AND SUGGESTIONS

In safe and proficient management of waste is not only a legal specification, but also a social liability. Lack of nervousness, stimulation, reaction and cost factor are some of the problems faced in the proper hospital waste management. Clearly there is a need for education as to the hazards associated with improper waste disposal. Need of unresponsiveness to the concept of waste management is a major confuse to the practice of waste disposal. Suitable anthology and isolation of biomedical waste are important. At the same time, the quantity of waste generated is equally important. A smaller amount of biomedical waste means a less significant burden on waste disposal work, cost saving and a more efficient waste disposal system. Hence, health care providers should always try to reduce the waste generation in day to day work in the clinic or at the hospital. If we want to protect our environment and health of community we must sensitize ourselves to this important issue not only in the interest of health managers but also in the interest of community.

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