

Biomedical Waste Management in Hospitals – A Review

Deepali Agrawal¹, Dr. Parag Dalal², Dr. J. K. Srivastava³

1. Research Scholar Department of Chemical Engineering, Ujjain Engineering College, Ujjain (M.P.)-456010, India.

2. Asst. Prof. Chemical Engineering Department, Ujjain Engineering College, Ujjain (M.P.)-456010, India.

3. Professor and Head Chemical Engineering Department, Ujjain Engineering College, Ujjain (M.P.)-456010, India.

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ABSTRACT

Biomedical waste management is receiving larger attention because of recent regulations of the biomedical Wastes (Management & Handling Rules, 1998). Inadequate management of biomedical waste may be associated with risks to healthcare employees, patients, communities and their environment. The current study was conducted to assess the quantities and proportions of different constituents of wastes, their handling, treatment and disposal way in numerous health-cares. In this research, we try to elaborate and discuss the of Bio-medical waste management procedure of Ujjain city. Various health care units were surveyed using a modified survey form for waste management. This form was obtained from the world Health Organization (WHO), with the aim of assessing the processing systems for biomedical waste disposal. Hazards related to poor biomedical waste management and shortcomings in the existing system were identified. The development of waste management policies, plans, and protocols are suggested, in addition to establishing training programs on correct waste management for all healthcare workers.

Keyword- Biomedical waste, Healthcare care unit, WHO, BMW

Introduction

A biomedical waste is a form which contains infectious waste in it. All hospital waste, health care waste, research waste, laboratory waste includes in it. It can be in any form of solid, liquid or semi-solid. Infectious waste include blood, injection, needle, syringe, body imputed parts, used bandages and dressings, human or animal tissues, sharps, discarded gloves etc.

Biomedical waste becomes fatal because of two principle reasons -

- i. first is infectivity
- ii. second is toxicity

BMW's consist of -

- i. general waste
- ii. Human anatomical waste
- iii. discarded drugs and medicines
- iv. sharps
- v. biotechnological and microbiological waste
- vi. animal waste generated from veterinary hospital and during research
- vii. solid waste i.e. dressings, bandages, discarded gloves, packing cover, material or cloth contaminated with blood, used cotton, tubes etc.
- viii. liquid waste
- ix. incinerated waste

Management of BMW's is still in its infancy across all over the world because there is a lot of a problem among generation, operation, treatment, disposal, safe management and lack of knowledge and awareness.

Generally, the BMW's are regulated and management by according to various rules, regulations and standards in different countries. Total biomedical waste generation in country is 484 TPD from 1, 68,869 health care facilities out of which 447 TPD is treated. India generated about three million tons of bio-medical waste every year and the amount is expected to grow at 8% annually. The GOI specifies that hospital waste management is a part of hospital hygiene and maintenance which involves theirs each and every activity begins from generation to disposal.

WHO (world health organization) informs that 85% of hospital waste are non hazardous, 10% infectious, 5% are non-infectious but they are included in hazardous waste. About 15 - 35 % of hospital waste is

treated as infectious waste.

Type of waste & category of waste

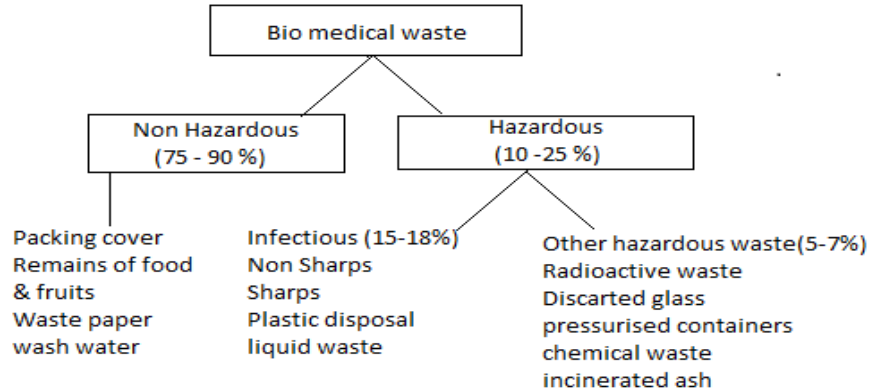


Table 1. Categories of biomedical wastes

Category	Source of waste	Treatment and Disposal
1	Human Anatomical Waste (human tissues, organs, body parts)	Incineration /deep burial
2	Animal Waste (animal tissues, organs, body parts, carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals, colleges, discharge from hospitals, animal houses)	Incineration /deep burial
3	Microbiology & Biotechnology Waste (wastes from laboratory cultures, stocks or specimens of micro-organisms live or attenuated vaccines, human and animal cell culture used in research and industrial laboratories, wastes from production of biological, toxins, dishes and devices used for transfer of cultures)	Local autoclaving / microwaving incineration
4	Waste Sharps(needles, syringes, scalpels, blades, glass, etc. that may cause puncture and unused sharps)	Disinfection (chemical treatment /autoclaving/ microwaving and mutilation/ shredding"
5	Discarded Medicines & Cytotoxic drugs (wastes comprising of outdated, contaminated and discarded medicines)	Incineration /destruction and drugs disposal in secured landfills
6	Soiled Waste (items contaminated with blood and body fluids including cotton, dressings, soiled plaster casts, lines, beddings, other material contaminated with blood.	Incineration autoclaving/ microwaving
7	Solid Waste (wastes generated from disposable items other than waste sharps such as tabbing, catheters, intravenous sets etc.)	Disinfection by chemical treatment autoclaving/ microwaving and mutilation/ shredding"
8	Liquid Waste(waste generated from laboratory and washing, cleaning, house-keeping and disinfecting activities)	Disinfection by chemical treatment and discharge into drains
9	Incineration Ash (ash from incineration of any bio-medical waste)	Disposal in municipal landfill
10	Chemical Waste (chemicals used in production of biological, chemicals used in disinfection, as insecticides, etc.)	Chemical treatment and discharge into drains for liquids and secured landfill for solids.

Source of waste generation

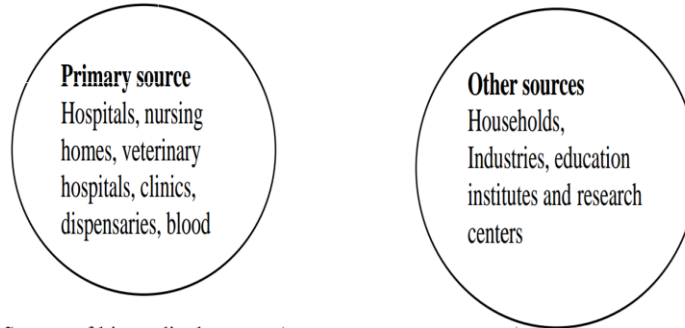
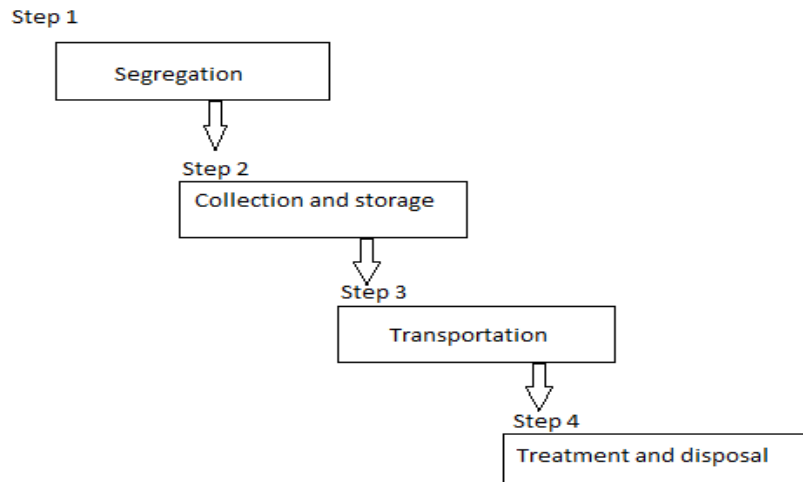
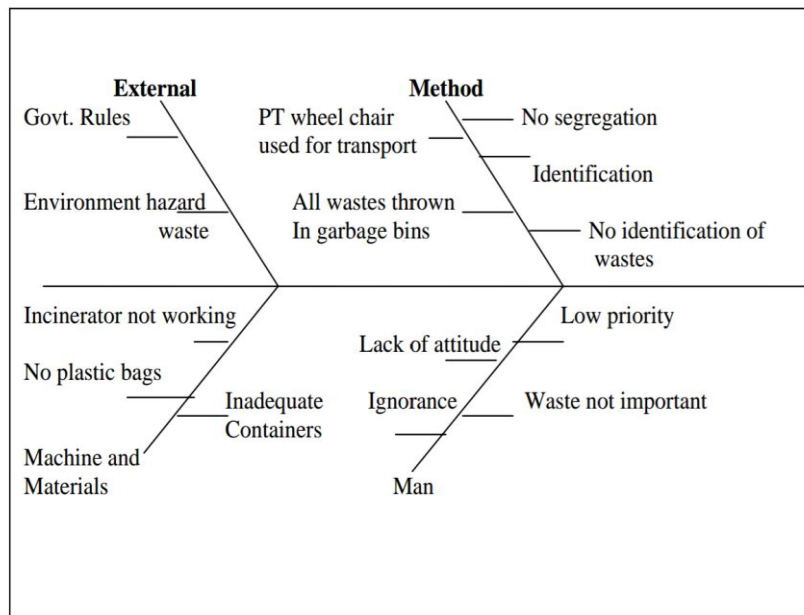


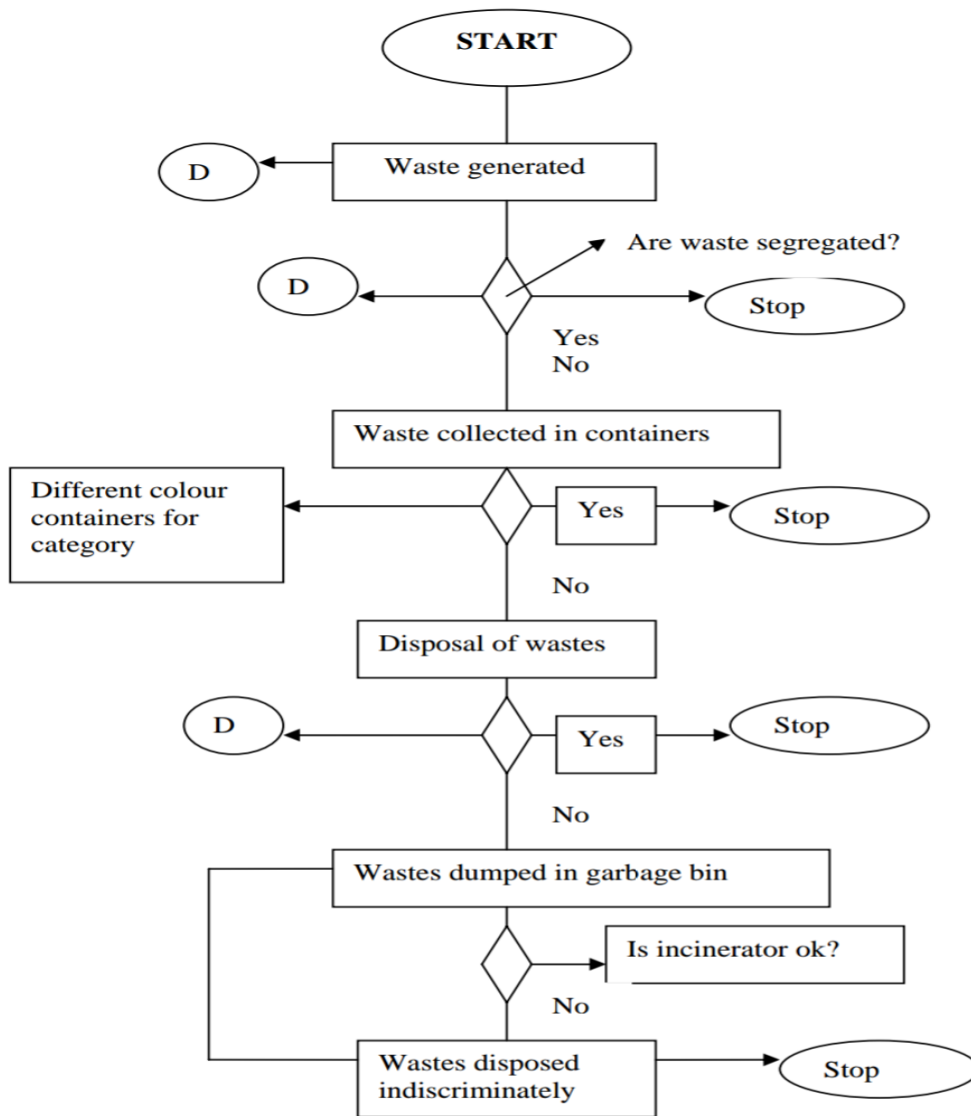
Figure 1. Source of biomedical wastes (The Gazette of India, 1998)

Steps for waste management



Environmental management system for BMW





Biomedical waste in Ujjain, India

With increasing awareness of waste treatment and Swachh Bharat mission, Ujjain city also develop the following procedure for health care waste management for city. Ujjain is generating approximately 225 tons per day of waste out of which about 80 tons are Biomedical Waste. The Government hospitals and some big private hospitals have their own arrangement for treatment of biomedical waste (Dalal 2011).

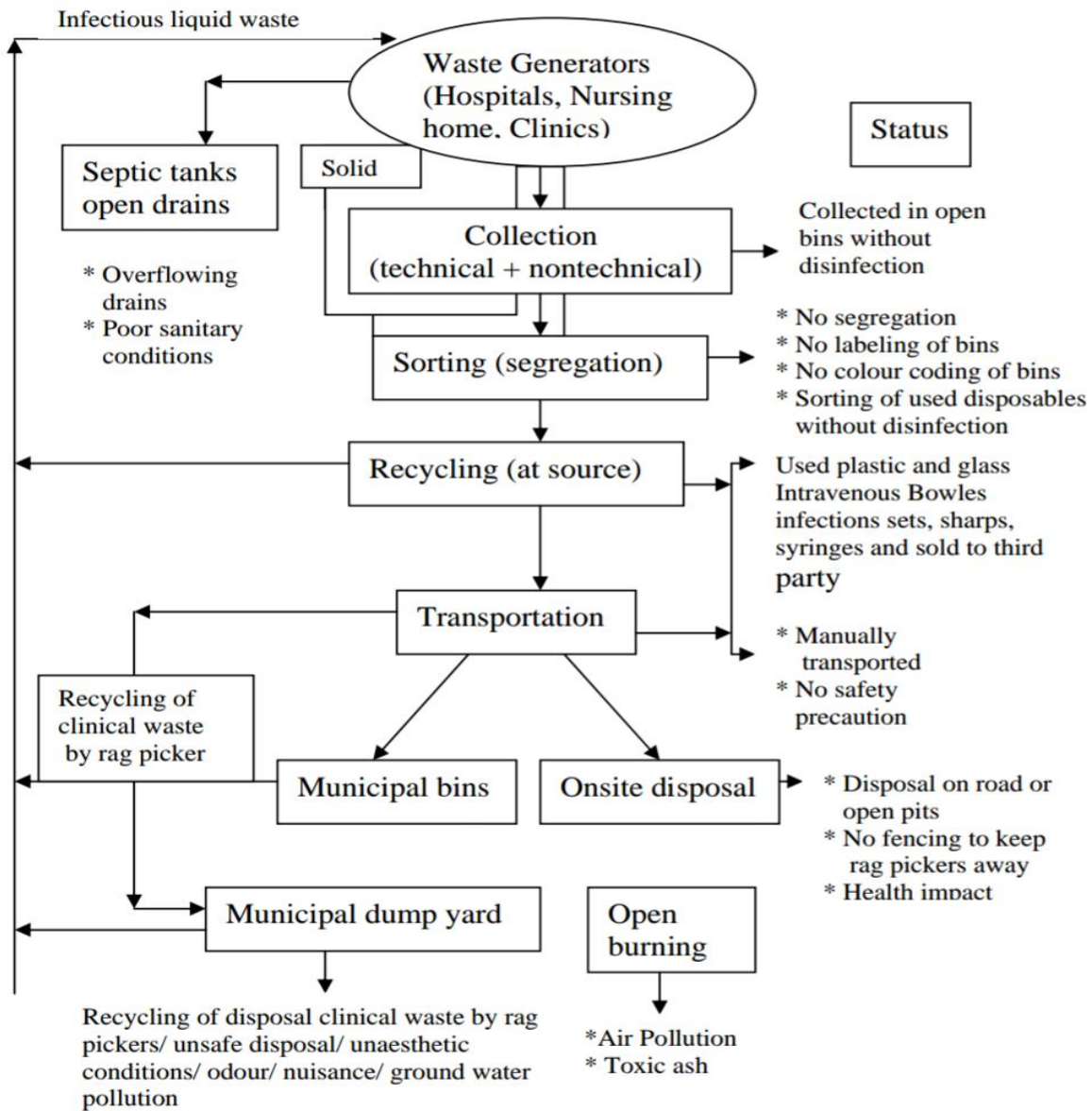


Fig 3. Current Status of medical waste disposal in Ujjain

Problem related to biomedical waste

- Major issue is lack of knowledge and awareness of importance of waste management among the people.
- Main hurdle in health care is the implementation of standards and regulations.
- Carelessness in proper collection and segregation of biomedical waste.
- Inadequate waste maintenance invites other pollution too.
- Unpleasant smell, growth of flies, insects, rodent, and worms may lead to other diseases and injuries too.
- Rag pickers and the person who handles the waste is in most danger.

Need of BMW in healthcare centers

The reason by which proper management is needed in hospital or health cares of Ujjain are as

- If proper management of waste is not done by the organizations then there will be a lot of risk arises due to infection inside as well as at outside of centers.

- Biomedical waste will cause air, water and soil pollution directly and leads harm to flora and fauna
- Disposable solid and liquids might be repacked and resold in market by illegal traders or unscrupulous elements.

Recommendation

- Biomedical waste should not be get mixed with other type of noninfectious waste. If by mistaken this happened then this will have treated as BMW.
- If segregation is done at the point of generation or collection then further treatment will be one step less.
- The containers in which collection or segregation is done, it should have labelled with non-washable and easily visible BMW or Hazardous symbol.
- All plastic bags, glass wares, equipment, machines, containers should be as per BIS standards.
- Untreated anatomical waste (humans and animals), solid and biotechnological waste should not be kept more than 48 hours. But if it stored more time then prescribed, then handler should take appropriate steps so that this waste will not affect the surroundings.
- Hand washing and proper drinking water facility must be available at all necessary areas.
- Health care organization should take all the responsibility for maintenance and proper management of their generated waste.
- Patient care area and storage area should be clean on regularly basis.
- Time to time proper collection is needed by responsible persons.
- Waste collection bag should be removed when 3/4 is full.
- Staff handling waste must use PPE and proper rules & regulations for waste treatment.
- Proper training and guidance should be recommended.
- Waste should be segregated into colour coded bags.
- Waste collection bag should be tied up tightly and transferred to storage place carefully without any spillage.
- At the end of the day, whole waste of each floor is transported or collected to the central collection area and a proper record of each day collection should be maintained.

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