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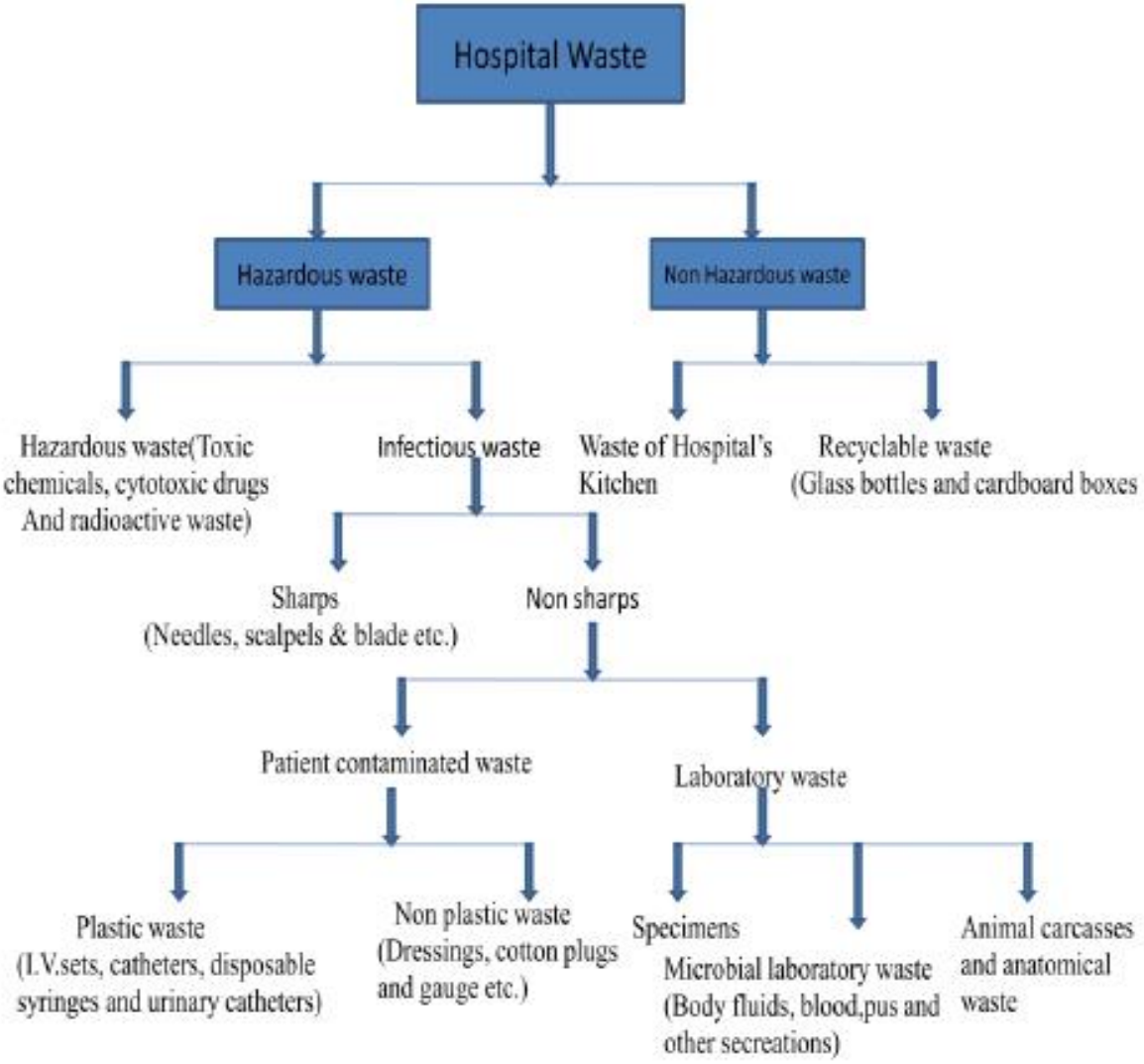
Biomedical waste

- Biomedical waste is any waste in the form of solid or liquid, including its containers and any product, which are generated during the treatment, diagnosis and immunization of human beings and animals in research and capable of causing infectious diseases.

Classification of bio-medical waste

Fig- 2.1: Classification of hospital waste:



Source:http://www.WHO.int/water/_sanitation_health/medical waste

Sources of Biomedical Waste:

- Health Care centers produce different types of wastes, which have been increasing over the years in its type and amount. The hospital waste, in addition to the risk for workers and personnel who handle them also poses a threat to public health and their environment ,so sources of wastes are classified into two groups as major or minor according to the quantities of waste production:

Sources of Bio-Medical Waste

Major Sources

- ❑ Hospitals
- ❑ Labs
- ❑ Research centers
- ❑ Animal research
- ❑ Blood banks
- ❑ Nursing homes
- ❑ Mortuaries
- ❑ Autopsy centers

Minor sources

- Clinics
- Dental clinics
- Home care
- Cosmetic clinics
- Paramedics
- Funeral services
- Institutions

Who's at Risk ?

- Doctors and nurses

- Patients

- Hospital support staff

- Waste collection and disposal staff
- General public and
- the Environment

Why bio-medical waste regulated?

- In all over the world, the management of hazardous wastes has received many much attention since the early1980s due to its toxicity and infectious nature ,so the incorrect management of healthcare waste can have direct impacts on the community, individuals working in hospitals and their natural environment.

- To minimize the potential for spread of infection from medical setting to general public.
- To reduce to overall amount of infectious medical waste product.
- Prevention of environmental pollution .
- Infectious agent may be become toys of terrorist ,as bio weapons of mass destruction .

How can we mange biomedical test ?

Principles of Waste Management

1. Identification of points of generation of waste.
2. Waste minimization & recycling of waste.
3. Waste segregation at source.
4. Waste treatment (disinfection etc.) at the site.
5. Waste collection and transportation, on-site and off-site.

Process of BMW management

Biomedical Waste Management Process

- 1. Source Identification.
- 2. Segregation.
- 3. Collection and storage.
- 4. Transport.
- 5. Treatment and Disposal.

Waste Treatment & Disposal System

Category	Waste category	Treatment
Category 1	Human anatomical waste	Inc/burial
Category 2	Animal waste	Inc/burial
Category 3	Microbiology & biotechnology waste	Inc/alternate
Category 4	Waste sharps	Disinfection & autoclaving/microwaving/shredding & mutilation
Category 5	Discarded medicines, cytotoxic drugs	Inc/landfill
Category 6 & 7	Solid waste	Autoclaving, microwaving & mutilation for category 7
Category 8	Liquid waste	Disinfection
Category 10	Chemical waste	Drain/secured landfill after treatment

Schedule II

Colour coding	Type of Container I	Waste Category	Treatment options as per Schedule I
Yellow	Plastic bag	Human, animal, microbiology, soiled waste	Incineration/deep burial
Red	Disinfected container/ plastic bag	Microbiology, solid & soiled waste	Autoclaving/Microwaving/Chemical Treatment
Blue/White translucent	Plastic bag/puncture proof container/Sharps Blaster	Waste sharps & solid waste	Autoclaving/Microwaving/Chemical Treatment & destruction/shredding
Black	Plastic bag	Discarded medicine, cytotoxic drugs, incineration ash & Chemical waste	Disposal in secured landfill

Approved treatment methods

- **Autoclave**
- **Chemical disinfection**
- **Microwave**
- **Incineration**
- **Any other technology after CPCB approval**

References

1-Astuto-Gribble, L.M. & Caskey, S.A. 2014. Laboratory Biosafety and Biosecurity Risk Assessment Technical Guidance Document (No. SAND2014- 15939R). Sandia National Lab. (SNL-NM), Albuquerque, NM (United States).

2-World Health Organization Staff & World Health Organization. 2004. Laboratory biosafety manual. 3 rd. ed. World Health Organization