



Biomedical Waste Management

ST JOHN'S MEDICAL COLLEGE AND HOSPITAL
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What constitutes Bio-medical waste?

- ▶ Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining to or in the production or testing of biological or in health camps

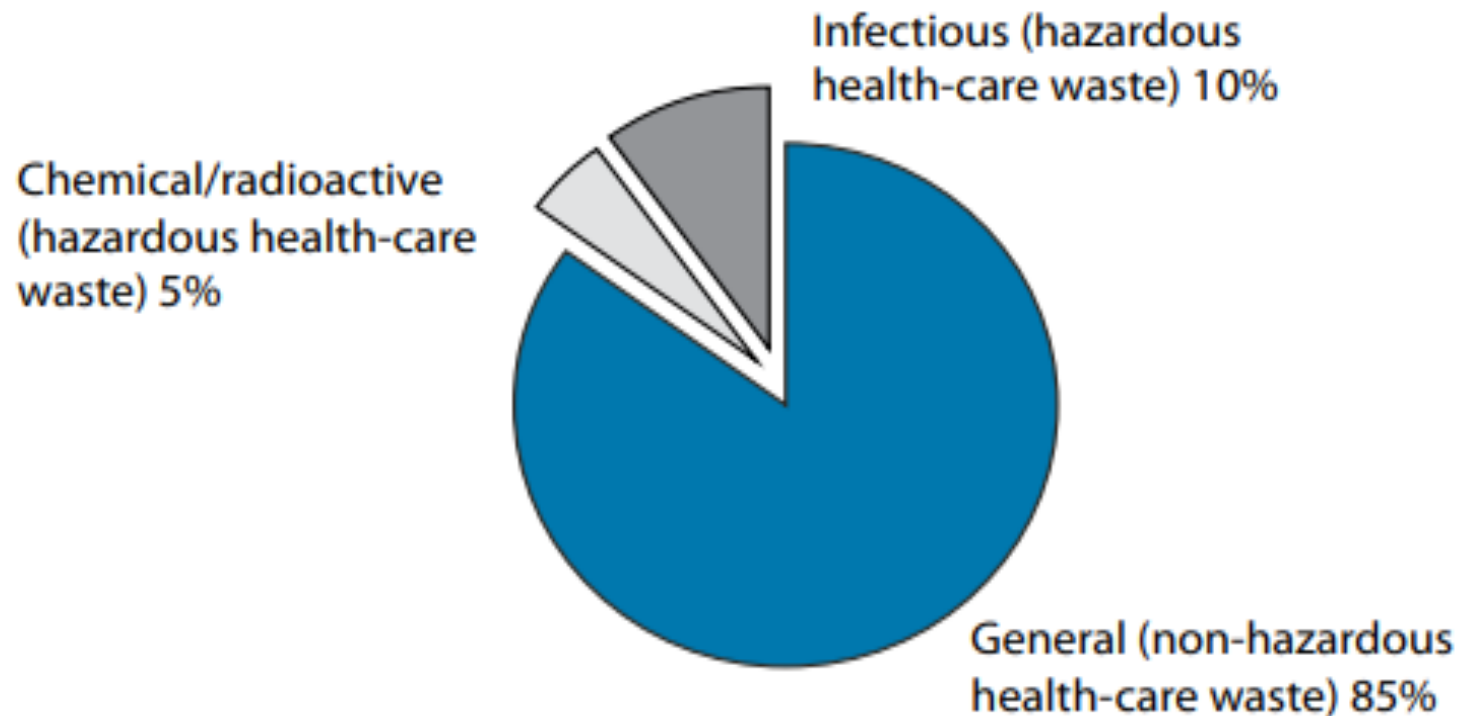
What constitutes Bio-medical waste?

- ▶ Hospital generates two types of wastes
 - ▶ General waste (non-hazardous)
 - ▶ Bio-medical waste (hazardous)
- ▶ Of the total amount of waste generated in a hospital, about 85% is general waste
- ▶ Remaining 15% is considered hazardous material that may be infectious, toxic or radioactive

Sources of Bio-medical waste

- ▶ The major sources are:
 - ▶ Hospitals and other health facilities
 - ▶ Laboratories and research centres
 - ▶ Mortuary and autopsy centres
 - ▶ Animal research and testing laboratories
 - ▶ Blood banks and collection services
 - ▶ Nursing homes for the elderly

Typical waste compositions in health care facilities



Types and examples of Bio-medical waste

- ▶ **Infectious waste:** waste from autopsies, swabs, bandages and disposable medical devices etc
- ▶ **Pathological waste:** human tissues, organs or fluids, body parts and contaminated animal carcasses
- ▶ **Sharps waste:** syringes, needles, disposable scalpels and blades, etc.
- ▶ **Chemical waste:** disinfectants, sterilants and heavy metals contained in medical devices (e.g. mercury in broken thermometers) and batteries

Types and examples of Bio-medical waste...

- ▶ **Pharmaceutical waste:** expired, unused and contaminated drugs and vaccines
- ▶ **Cytotoxic waste:** waste containing substances with genotoxic properties (i.e. highly hazardous substances that are, mutagenic, teratogenic or carcinogenic), such as cytotoxic drugs used in cancer treatment
- ▶ **Radioactive waste:** such as products contaminated by radionuclide including radioactive diagnostic material or radio therapeutic materials

Why hospital waste is dangerous?

- Hazardous waste is capable of producing infectious diseases such as Hepatitis B, HIV
- Sharps inflicted injuries, chemical burns, radiation burns, exposure to toxic metals such as mercury can happen
- Improper management of hospital waste can cause air pollution, contamination of drinking, surface and ground water

How can healthcare providers be protected?

- This plan should include:
 - Universal precautions
 - Hepatitis B vaccination, Post-exposure evaluation and follow-up
 - **Proper *bio-medical waste management***



Bio-medical waste management

Guidelines for managing infective waste

Three key points

All infected **non plastics** will go to yellow

All infected **plastics** will go to red

All wastes segregated at the time of generation

Containers (Bins)

- Plastic Bins with preferably foot-pad operated lids with Biohazard and Cyto toxic C (for Cytotoxic drug waste) symbol emblazoned
- Can bear a label announcing the type of waste such as:
 - Infectious soiled Waste
 - Plastic Waste
 - Waste Sharps
 - Glass waste
 - Metal implants waste
- Liner must be tied with a tag before being loading into the waste trolley



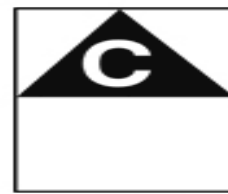
Plastic Liners-At the ward level...

- All the waste containers must be lined with appropriate colour coded non chlorinated polythene liners
- These liners must have Biohazard symbol printed by the manufacturer
- The yellow colour liners for Cytotoxic drugs must have Cytotoxic C symbol printed by the manufacturer



CYTOTOXIC HAZARD SYMBOL

कोषिकाविष परिसंकट चिन्ह



CYTOTOXIC

कोषिकाविष

Plastic Liners- At the ward level

- Liners must have the following labeling details:
 - Name of the hospital
 - Location/name of ward where waste is generated
 - Floor where the ward is located
 - Date of handing over/or collection of waste from ward
 - Signature (name of person) handing over the waste to waste handlers at the ward

Plastic Liners- At the storage level

- Every polythene liner/ BMW containing plastic bag must bear the above mentioned details

Plus

- At the final storage and before handing over to the common treatment facility operator (Maridi), must be identified with **QR CODE**

St Johns Medical Collegehospital
Ward:Male Surgical Ward "B"
B(G) 1624983645943

Male Surgical Ward "B"



YELLOW(S)

02334809

St.Johns Medical College Hospita

Male Surgical Ward "B"



RED

02334968

St.Johns Medical College Hospita

▶ Types of wastes to be discarded in yellow bin:

- ▶ Human Anatomical Waste
- ▶ Animal Anatomical Waste
- ▶ Soiled Waste
- ▶ Expired and Discarded Medicine
- ▶ Chemical Waste
- ▶ Discarded Linen, Mattresses, beddings contaminated with Blood, body fluids, routine mask and gown

▶ Collect the waste in yellow coloured non chlorinated plastic bag and store in yellow coloured container

▶ Biohazard, cytotoxic symbol and ORcode

**Yellow container-
Infectious waste
(non-plastic)**

- ✓ Human tissues, organs, body parts, placenta and extracted tooth, experimental animal carcasses
- ✓ Soiled dressings, plaster casts, cotton swabs, blood bags
- ✓ Caps, masks, gown, shoe-cover, blotting paper/gauze, wooden swab stick
- ✓ Antibiotics, cytotoxic drugs
- ✓ Infected secretions, aspirated body fluids, liquid from laboratories

Yellow Container- Cytotoxic drug waste



- ▶ Types of wastes to be discarded in red bin:
 - ▶ Contaminated recyclable waste containing primarily plastics generated from disposable items
- ▶ Collect the waste in red coloured non chlorinated plastic bag and store in red coloured container
- ▶ Syringes after removing/cutting the needles should also be put in this category
- ▶ Biohazard symbol and QRcode

Red container- Infectious waste (plastic)

- ✓Catheters
- ✓Syringes
- ✓Fixed needle syringes with their needles cut
- ✓Tubings
- ✓Stoma systems
- ✓Urobags
- ✓Plastic IV fluid bottles
- ✓Gloves
- ✓Rexene
- ✓McIntosh

▶ Types of wastes to be discarded in blue bin:

▶ Glassware

▶ Metallic Body Implants

▶ Puncture proof, leak proof boxes or containers with blue coloured marking

▶ Double liner, KG cardboard

▶ Labeled “ Glass ware waste” and wrap seal with blue scotch tape

▶ Biohazard symbol and QRcode

Glass ware waste

✓ Broken or discarded and contaminated glass

✓ Medicine vials and ampoules except those contaminated with cytotoxic wastes

✓ Glass slides and glass pipettes

✓ Implants used for orthopaedic surgeries- metal sternal wire, Gigli saw wire and Orthopaedic splint

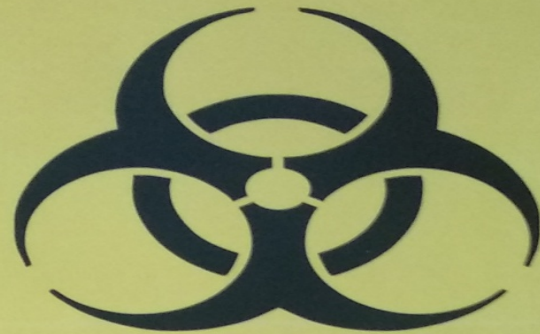
- ▶ Types of wastes to be discarded in white bin:
 - ▶ All sharps
- ▶ This waste comprises of scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts
- ▶ Collect the waste in white translucent, puncture proof, leak proof, tamper proof container
- ▶ Biohazard symbol and QRcode

White translucent (puncture proof) container

- ✓ Needles, syringes with fixed needles, needles from needle tip cutter or burner
- ✓ Lumbar puncture needle, trocar cannula, IABP cannula
- ✓ Arthroscopy blade
- ✓ Insulin pen needle, lancet
- ✓ Eye needle
- ✓ Cardioplegia needle and surgical stab knife

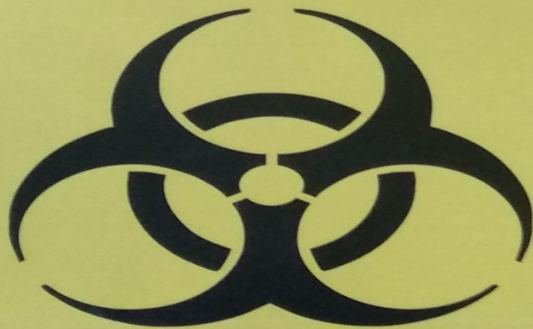


**CAUTION
BIOHAZARD**



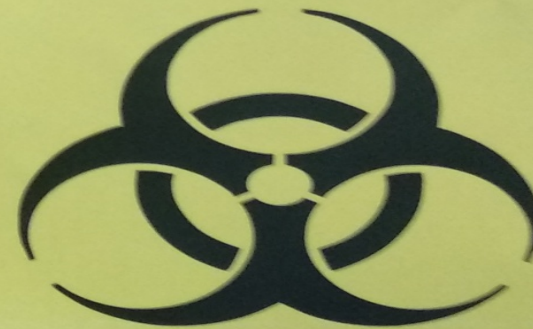
SHARPS WASTE

**CAUTION
BIOHAZARD**



GLASS WASTE

**CAUTION
BIOHAZARD**



METAL WASTE

Disposal of blood bags

- All the Blood bags at Blood transfusion facilities, Blood banks and or any other location in the health care institution must be contained in yellow colour coded containers lined with yellow bags
- These blood bags must be autoclaved before being handed over to the common treatment facility.

Disposal of chemical liquid waste

- Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, silver X Ray film developing liquid, discarded formalin, infected secretions, aspirated body fluids, liquid from laboratories and disinfecting activities
- Leftover, unused, residual or date expired liquid chemicals shall not be discharged as chemical liquid waste
- Disposed in yellow bins and Equal amount of 1% hypochlorite solution as an disinfectant.

General waste management

Guidelines for managing non-infective waste

General waste

- ▶ General waste consists of all the waste other than bio-medical waste and which has not been in contact with any hazardous or infectious, chemical or biological secretions and does not include any waste sharps

- ▶ Health care facilities must ensure that the general solid waste generated from the facility is segregated and collected in a separate bins filled in with non-chlorinated bags and shall not be mixed up with the BMW generated in the facility

General waste

- ▶ Collect segregate waste in two separate streams namely
 - ▶ Wet waste (Bio-degradable waste)
 - ▶ Dry waste
- ▶ Green bins shall be provided for bio-degradable wastes and black bin for dry wastes
- ▶ Plastic sheets provided inside the bins shall be of minimum 50mm thick. In case of bio-degradable waste collection bins, it is recommended to use compostable plastic bags of any thickness.



Wet waste

- ▶ Organic / Bio-degradable waste - mostly food waste
- ▶ Leftover foods, vegetable, fruits,
- ▶ Egg shell

Dry waste

- ▶ News paper, paper and card boxes
- ▶ Plastic water bottles
- ▶ Packaging materials
- ▶ Aluminium cans of soft drinks
- ▶ Food Containers after emptying residual food
- ▶ Badam/juice glass bottle, tetra packs, milk/curd packets, coffee cups drinking bottles, Aluminum foil food parcels, Parcel paper /plastics, etc.



General paper waste

- ▶ These include
 - ▶ Syrup box, glove box, individual packaging of injection / vial box. Aluminium foil without drugs, CSSD wrappers, syringe cover, gloves wrapper
- ▶ Disposed in white container with white liner
- ▶ Administrative papers, news papers, unused request forms, carbon papers. patient sticker are disposed in a leak proof sack with container



Key messages

1. The minimum standard to segregating health-care wastes is the “colour coded bin system”, where separate containers are provided for infectious waste, used sharps and general waste
2. Wastes are segregated at their place of production to reduce the health risk from the smaller potentially infectious fractions. Waste containers and storage areas are cleaned regularly
3. Infectious waste, general waste and used sharps waste are stored in separate colour-coded containers and locations within medical areas, and subsequently at a central storage site at a health-care facility
4. Staff should be trained in bio-medical waste management- segregation and safe handling and storage
5. Staff need to be aware of how to protect themselves from injuries and infection from bio-medical waste

thank you

