

# BMW - Definition



- **Any Waste generated during**
  - **Diagnosis of Human Beings/ Animals**
  - **Immunisation of Human Beings/ Animals**
  - **Treatment of Human Beings/ Animals**
  - **Research of Biologicals/ Animal Research**
  - **Or otherwise infected wastes**

## Basic Information on HCWM

- HCW – by-product of healthcare establishments that include sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices & radioactive materials
- 75% - 90% of waste similar to Domestic
- 10% - 25% is infectious waste require special treatment
- Exposure to infectious waste can result in disease or injury as contains infectious agents, sharps, hazardous chemicals, genotoxic or radioactive.

# Basic Information on HCWM

- Generators of HCW
  - Major sources: Hospitals, laboratories, blood banks and mortuaries
  - Minor sources: Physician clinics, Dental clinics, Pharmacies, etc.
- Actors in HCWM
  - HCFs who generate wastes
  - Service providers who collect & transfer to HCWM facilities
  - HCWM facilities who process, treat & dispose of.

# Collection of BMW

- Source Collection
  - Segregation of Wastes
- Collection within the Wards
  - Nursing Stations/ Others
- Collection within the Premises
  - Common Collection Point for on-ward transportation of wastes
- Source Segregation

## Recommended color-coding for BMW

Type of Waste	Color of Container and Markings	Type of Container
Highly infectious waste	Yellow, marked "HIGHLY INFECTIOUS"	Strong, leak-proof plastic bag, or container capable of being autoclaved
Other infectious waste, pathological & anatomical waste	Yellow	Leak-proof plastic bag or container
Sharps	Yellow, marked "SHARPS"	Puncture-proof container
Chemical & pharmaceutical waste	Brown	Plastic bag or container
Radioactive waste (only in major hospitals)	--	Lead box, labelled with the radioactive symbol
General BM Waste	Black	Plastic bag

# Categories of BMW

- Cat. -1: Human Anatomical Waste - **Incineration**
- Cat. -2: **Animal Waste - Incineration**
- Cat. -3: Microbiology and Biotechnology Waste - **Incineration/ Disinfection**
- Cat. -4: **Waste Sharps - Disinfection - Shredding**
- Cat. -5: Discarded medicines & Cytotoxic Drugs - **Incineration - Landfill**
- Cat. -6: **Soiled Wastes - Incineration/ Disinfection**
- Cat. -7: Solid Wastes - Disinfection - **Shredding**
- Cat. -8: **Liquid Wastes - Chemical Disinfection - Drains**
- Cat. -9: Incineration Ash - **Landfill**
- Cat. -10: **Chemical Wastes - Chemical Treatment - Drains/ Landfill**

# Segregation - BMW

<b>Colour Coding</b>	<b>Type of Container</b>	<b>Waste Category</b>	<b>Treatment Options</b>
Yellow	Plastic Bag – Non Chlorinated	Cat -1, Cat -2, Cat -3, Cat-6	Incineration/ Deep Burial
Red	Disinfected Container/ Plastic bag	Cat-3, Cat-6, Cat-7	Autoclaving/ Microwaving/ Chemical Treatment
Blue/ White Translucent	Plastic bag/ Puncture Proof Container	Cat-4, Cat-7	Autoclaving/ Microwaving/ Chemical Treatment...
Black	Plastic Bag	Cat-5, Cat9 and Cat 10	Disposal into Secure Landfill

# Treatment and Disposal

- **Incinerator**
  - Thermal Oxidation
  - **Semi-Pyrolysis**
  - Dual Chambered
  - **Primary - Combustion - 850°C**
  - **Secondary - Flue Gas Destruction - 1050°C**
  - **Gas Cleaning**
    - Ventury Scrubber
    - **Packed-bed, Counter Current Wet Alkaline Scrubber**
    - 30-m High Venting through stack

# Treatment Systems

- **Destruction**
  - High Temperature
    - Incineration
    - Plasma Arc and Other High Temperature
- **Dis-Infection**
  - Autoclaving
  - Microwaving
  - Hydroclaving
  - Chemical Disinfection
- **Disposal**
  - Secure Landfill