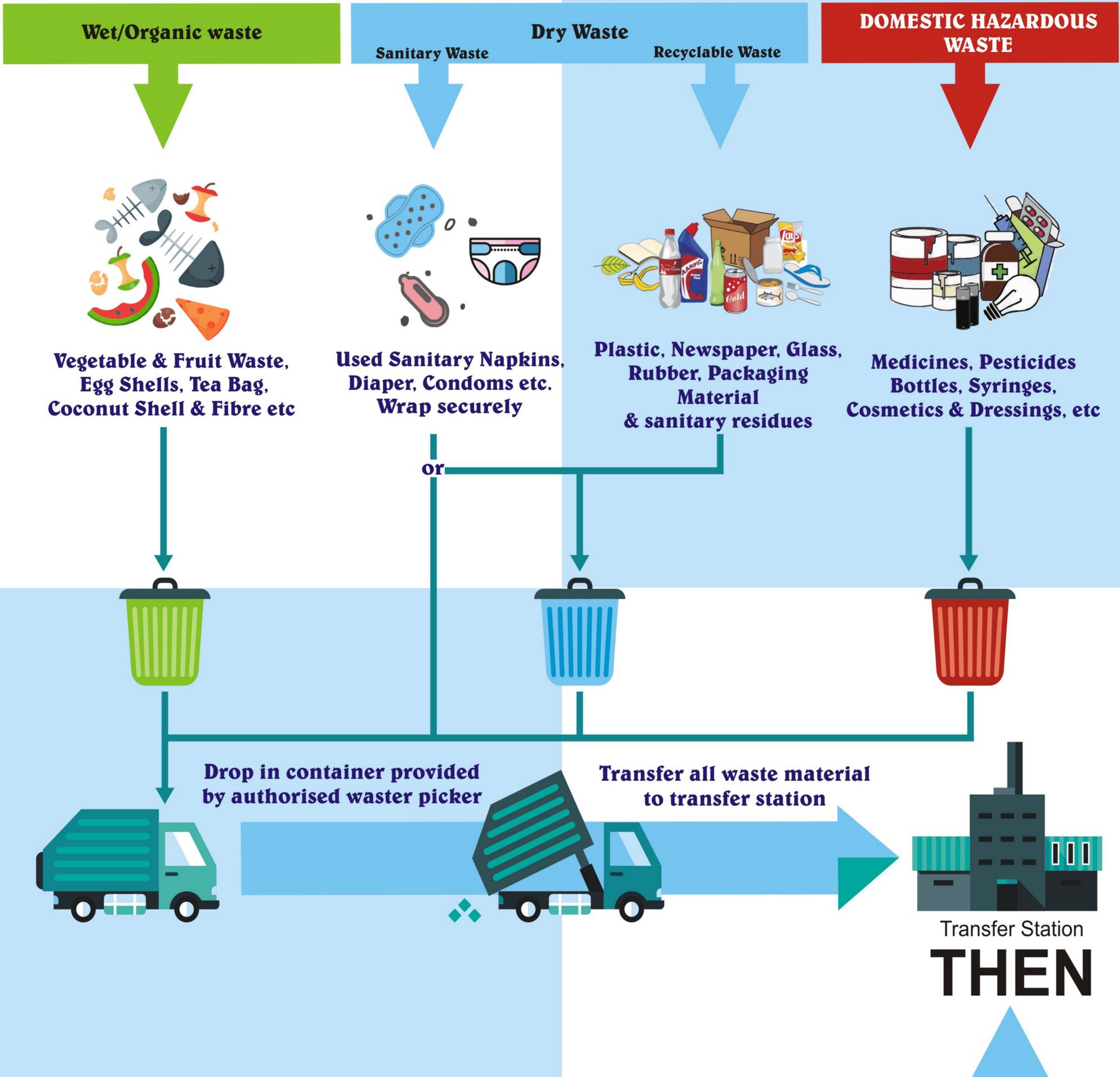


SEGREGATED SOLID WASTE COLLECTION AT DOORSTEP



Wet Waste

Composting / Bio-Methanation

Dry Waste

↓

MRF

↓

- Recyclable to authority recyclers
- Combustible to RDF/Plant
- Inert to landfill

Sanitary Waste

Common biomedical waste treatment Facility



Do's And Dont's Under Solid Waste Management Rules 2016

Do's



Handover the segregated solid waste Only to authorized waste pickers.



Always wrap securely the sanitary Waste before disposal



Avoid generation of solid waste as far as possible Reuse bottles, clothes, paper before disposing.



Segregate waste source into wet, dry, Sanitary and domestic hazardous waste.



Encourage community based composting plant for Waste management of wet/organic waste

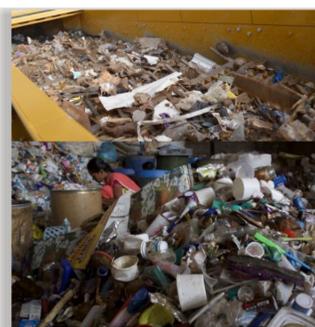


Store wet waste in covered containers

Don'ts



Don't litter or burn solid waste on road/ in surroundings.



Don't mix C&D waste with dry waste store separately and transfer it to designated location centers by the local body



Don't store wet waste to beyond 24 hours in home to avoid fermentation of waste.



Don't Discard commodities which can be reused multiple times/ways



BIOHAZARD

BIO MEDICAL WASTE CATEGORIES, THEIR SEGREGATION AND COLLECTION

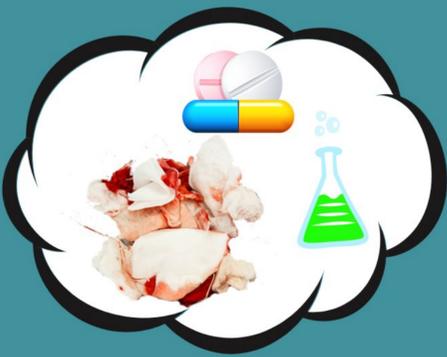


Human Anatomical waste, Animal Anatomical waste, Soiled waste, Expired or discarded medicines, Chemical waste, Chemical Liquid waste and laboratory waste.

Tubing, Bottles, Intravenous tubes, Catheters, Urine Bags, Syringes without needles, Vacutainers with their needles cut and used gloves.

Needles, Syringes with Fixed Needles, Needles from Needle tip Cutter/ Burner, Scelpels, Blade and other contaminated Sharp Object.

Broken or discarded & Contaminated glass, Medicine Vials, Ampules Except those contaminated with cytotoxic waste and Metallic Body implants.



Infected waste



Infected plastic



Sharp waste



Glassware

TECHNOLOGIES FOR PLASTIC WASTE DISPOSAL

Utilization of Plastic waste in road Construction:

Segregated plastic waste
(except chlorinated/brominated Plastic Waste)
from mixed municipal solid waste (MSW)



Co-processing of Plastic waste in Cement Kilns:

Plastic waste is used as Alternate Fuel and
Raw-material (AFR), subjected to higher temperature
around 1400°C-1500°C from mixed
Municipal Solid Waste (MSW)



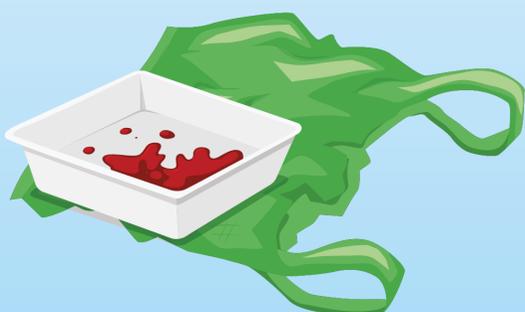
Conversion of Plastic Waste into Fuel-oil: Refused-derived Fuel (RDF)

HD, LD, PP and multilayer packaging except PVC



Disposal of plastic waste through Plasma Pyrolysis Technology (PPT)

Different types of Plastic waste Such as polyethyelene bags,
Solid Plastic, Metalized plastic, Multi-layered Plastic and PVC Plastic
can be disposed through PPT.



E-WASTE

CATEGORIES



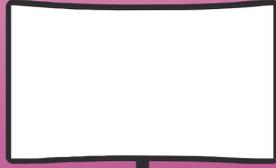
IT EQUIPMENT



**REFRIGERATION /
ACs**



PHONES / TELEX



TELEVISION



**PRINTER /
SCANNERS**



FLUORESCENT LAMPS



TYPE WRITERS



**PERSONAL ELECTRONIC
DEVICE**



**AUDIO VIDEO
EQUIPMENT**

MANAGEMENT OF HAZARDOUS AND OTHER WASTES

RESPONSIBILITIES OF OCCUPIER



Management of Hazardous and other waste:-
Prevention, Minimization, Reuse, recycling,
Recovery, utilisation including Co-processing,
safe disposal.



Safe and environmentally
sound management.



The Hazardous and other wastes
shall be sent or sold to an
authorised actual
user/authorised disposal facility.



Hazardous and other wastes shall be
Transported in accordance with the
provisions of these rules.



Labeling of waste



Contain contaminants and
prevent accidents and limit
their consequences on human
beings and the Environment

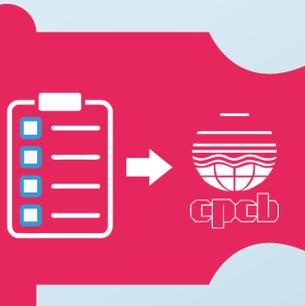


Appropriate training, provision of
equipment and the information etc., to
ensure safety of personnel.



PROCEDURE FOR EXTENDED PRODUCER RESPONSIBILITY OF E-WASTE UNDER WASTE MANAGEMENT RULES, 2016

E-WASTE

- 

1 An application for Extended Producer Responsibility shall be made by every producer of electrical and electronic equipment Listed in the Schedule I to CPCB
- 

2 Detailed evaluation of the Extended Producer Responsibility Plan by CPCB to get satisfied with the effectiveness of the system of the Producer to manage Extended Producer Responsibility. After the Successful and Positive evaluation of the plan, CPCB shall grant Extended Producer Responsibility Authorization within a Period of 120 days.
- 

3 **VALID FOR 5 YEARS** The Extended Producer Responsibility - Authorization Shall be valid for a period of five years.
- 

4 Estimated Quantity of e-waste generated during the current year will be indicated by the producer and the quantity expected to be collected with the collection scheme proposed to be implemented will be indicated in the Extended Producer Responsibility Plan.
- 

5 In the Event of refusal of Extended Producer Responsibility - Authorization by the Central Pollution Control Board, the Producer will forfeit his right to put any Electrical and Electronic Equipment in the market till such time the Extended Producer Responsibility Authorization is granted.
- 

6 **RENEWAL** The Application of the renewal of Extended Producer Responsibility Authorization shall be made in Form-1 on or before 120 days of its expiry to Central Pollution Control Board.
- 

7 The concerned State Pollution Control Board shall monitor the compliance of Extended Producer Responsibility Authorization, take cognizance of any non-compliance and inform CPCB for taking necessary actions.



PLASTIC WASTE MANAGEMENT

Collection From Unorganized sector/authorized waste pickers

Collection of Segregated waste (Household/Commercial sector)



Dry Solid Waste

Wet Solid Waste

Utilizable Plastic

Recyclable Plastic

Material Recovery

Composting

Fuel Oil

Co-Processing

Road Construction

- Paper
- Glass
- Metal
- Packaging Material

Non-Recyclable / Disposable Plastic

Recyclable/Utilizable Plastic

Part of RDF (Refused Derived Fuel)

Plasma Pyrolysis/ Incineration (Residue to Landfill)

Waste to Energy (Residue to Landfill)

Co-Processing

Fuel Oil

Road Construction

Recycled Plastic

RECYCLING STRENGTHENS CIRCULAR ECONOMY !!!

TREATMENT, STORAGE AND DISPOSAL FACILITY (FOR HAZARDOUS AND OTHER WASTE)



1. Approval of design and layout by State Pollution Control Board (SPCB) followed by setting up the treatment, storage and disposal facility by operator of facility as per technical guidelines of Central Pollution Control Board (CPCB).

2. Monitoring the setting up and operation of the facility by SPCB.



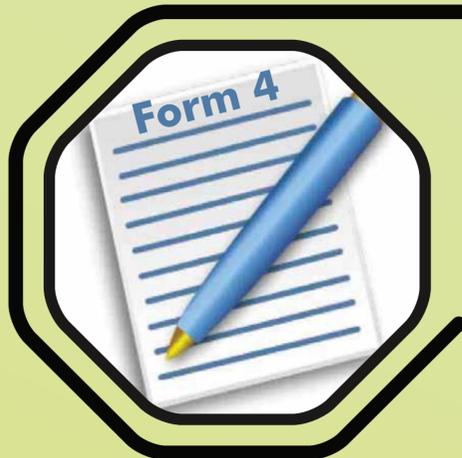
3. Safe and environmentally sound operations of the facility by the operator of the facility and addressing its closure and post closure phase.



4. Maintenance of records of hazardous and other wastes by the operator.

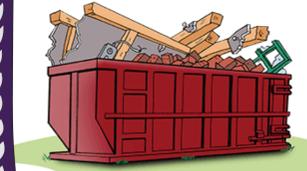


5. Submission of annual returns by the operator on or before the 30th day of June to SPCB.



Duties of Waste Generator, Under “The Construction & Demolition Waste Management Rules, 2016”

Responsible for Collection, Segregation of Concrete, Soil & others and Storage as directed or as notified by the concerned local authority.



Waste generators generating more than 20 tons or more in one day or 300 tons per project in a month shall segregate the waste into streams such as concrete, soil, steel, wood and plastics, bricks & mortar.



All waste generators shall handover C&D waste to the authorised processing facilities of construction and demolition waste.



Every waste generator shall pay relevant charge for collection, transportation, processing and disposal as notified by the concerned authorities.



Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall have to pay for the processing and disposal of construction and demolition waste generated by them, apart from the payment for storage, collection and transportation. The rate shall be fixed by the concerned local authority or any other authority designated by the state government.



C & D waste should not be mixed with other wastes.



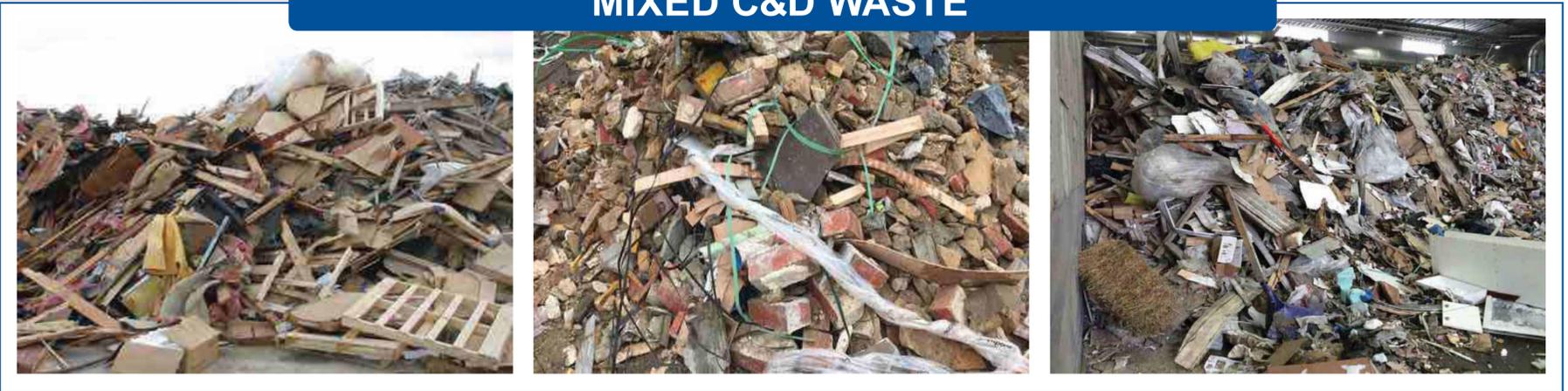
No littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.



Waste Is not Waste until it's Wasted..!!

C&D WASTE MANAGEMENT

MIXED C&D WASTE



**Wood, Bricks,
Concrete and Other Masonry Products,
Metals (Ferrous and Non-Ferrous),
Roofing Shingles, Cardboard, Plastic, soil etc.**

C&D WASTE PROCESSING PLANT



VARIOUS TYPES OF RECOVERED AGGREGATES



PRODUCTS MANUFACTURED



Kerb Stone

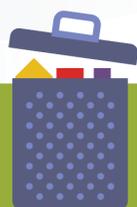
Pavement Block

Drain Covers

Hollow Blocks

DO'S & DON'TS FOR BIO MEDICAL WASTE GENERATORS

DO'S



1. Segregate the biomedical waste as per color stipulated under BMWM Rules, 2016;
2. Carry /Transport the waste in closed trolleys provided with biohazard symbol;
3. Dispose body parts in yellow bin;
4. Dispose the human anatomical, animal anatomical, solid and biotechnological waste within 48 hrs;
5. Waste sharps to be kept in white translucent bin;
6. Ensure that plastic bag/container has bio-hazard symbol and barcode level;
7. Wear personal protective gear like gloves, gum-boots, face-mask, head cap, aprons, etc., while handling wastes.
8. Waste should not be filled beyond 3/4th capacity of collections bags so that it can be handled properly.
9. Liquid Chemical wastes should be pre-treated before mixing with other waste water;
10. Broken/discarded contaminated glass should be kept in the leak proof boxes or containers with blue color marking to avoid the pilferage in vehicle as well as site.
11. Pre-treat the waste generated from microbiology, biotechnology and other clinical laboratories before handing over the same to CBWTF



DON'TS

1. Do not generate waste unnecessarily
2. Never mix general waste with biomedical waste.
3. Don't use chlorinated plastic bags and gloves;
4. Never store human anatomical, animal anatomical and biotechnological waste beyond 48 hours;
5. Avoid transport of waste through crowded areas.
6. Do not give contaminated plastic waste to authorized recyclers;
7. Never store / collect plastic waste in yellow colored bags/containers;
8. Do not use chlorinated plastic bags for storage of biomedical waste.
9. Don't dispose used linen / bed sheets without disinfection;
10. Do not keep the lid of containers opened.



Duties of Health Care Facility under BIO MEDICAL WASTE MANAGEMENT RULES, 2016

Management



- Take necessary measures to handle Bio-medical waste
- Segregation of bio-medical waste in coded bags or containers as per BMW Management Rules, 2016
- Phase out use of chlorinated plastic bags, excluding blood bags and gloves by 27th March 2019
- Review and monitor the activities related to bio-medical waste management
- Report major accidents

Storage of Waste



Provision within the premises for a safe, ventilated and secured location for temporary storage of biomedical wastes;

Safety of Healthcare workers



- Immunize everyone, involved in handling of bio-medical waste, for protection against diseases including Hepatitis B and Tetanus
- Ensure occupational safety of all its health care workers and provide requisite personal protective equipment;
- Conduct health check up at the time of induction

Training



Provide training to all its health care workers and others, involved in handling of biomedical waste at the time of induction and there after at least once every year.

Bar Coding



Establish a Bar-Code System for bags or containers containing bio-medical waste to be sent out of the premises for the further treatment & disposal in accordance with guidelines issued by CPCB by 27th march 2019.

Wastewater Management



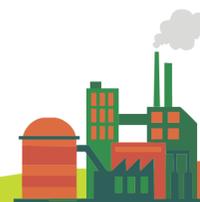
- Ensure segregation of liquid chemical waste at source and ensure pre-treatment by neutralization or precipitation prior to mixing with other effluent generated from health care facilities; in case city sewage network doesn't have terminal STP
- Treatment of generated liquid effluent in accordance with the Water (Prevention and Control of Pollution) Act, 1974

Monitoring & Reporting

- All Bedded healthcare facilities make available the annual report on its website by March 2020
- Inform the authority immediately in case the operator of a facility does not collect the waste within the intended time
- Develop a system to review, monitor and maintain the record
- Handover of segregated and pre-treated yellow category waste to CBMWF located within 75 Kms distance for safe treatment and disposal.



Authorization



- Obtain authorization from SPCBs/PCCs; Non-bedded health care facilities (HCFs) like clinics
- laboratories research institutes, dispensaries, blood bank, etc, obtain one time authorization from SPCBs/PCCs;

CHARACTERISTICS OF

HAZARDOUS WASTE

Flammability



- can create fire under certain condition
- flash point $<60^{\circ}\text{C}$
eg- Waste solvent

- substances that are unstable under normal condition
- can cause explosion, produce toxic fumes, vapours
eg- cyanide/sulphide, batteries etc.



Reactivity

Corrosivity



- strong acids or bases
- $\text{pH} < 2$ or $\text{pH} > 2.5$
- Corrode steel at temperature of 55°C
e.g. spent acid bath

- harmful when inhaled/ ingested/ absorbed
- also if leached from waste pollutes ground water
e.g. - lead, mercury etc.



Toxicity

Explosivity



- capable of producing gas by chemical reaction
- along with tremendous amount of energy
e.g. - waste of explosive manufacturing industry

- themselves not necessarily combustible
- yields oxygen
- cause, or contribute to, the combustion of other materials



Oxidising

Infectious substance



- containing viable micro-organisms or their toxins
- that can cause disease in animals or human

- Immediate or delayed adverse impacts to environment through bio-accumulation
- toxic effects upon biotic systems



Eco-toxic

CATEGORIES OF PLASTICS, SYMBOL OF IDENTIFICATION AND USAGE



PET



POLYETHYLENE TEREPHTHALATE

Soft drink bottles, packaged water bottles, cooking oil container etc.

HIGH-DENSITY POLYETHYLENE

Shampoo bottles, recycling bins, agricultural pipe, base cups, playground equipment etc.



HDPE



PVC



POLYVINYL CHLORIDE

Pipe, Window profile, fencing, flooring, shower curtains, lawn chairs, non-food bottles and children's toys etc.

LOW-DENSITY POLYETHYLENE

Plastic carry bags, most of the wrappings, plastic shopping bags etc.



LDPE



PP



POLYPROPYLENE

Auto parts, industrial fibers, food containers, dishware etc

POLYSTYRENE

Cafeteria trays, plastic utensils, toys, video cassettes and cases, clamshell containers, insulation board etc.



PS



OTHER



OTHER

Thermoset Plastics, Multilayer and Laminates, Bakelite, Polycarbonate, Nylon SMC, FRP etc.