Hospital Waste Management

Definition:

"Biomedical waste" means any waste generated during the

(1) Diagnosis (2) Treatment or (3) Immunization

(4) Animals in research activities or

(5) In the production or testing of biological or

(6) In health camps (vaccination camp, Blood donation camp, Surgical camp or any other health care acti

Source of Health care waste

- Government hospital
- Private hospital
- Nursing home
- Physician clinic
- Dental clinic
- Dispensaries
- Primary health care centre
- Medical research centre
- Mortuaries
- Blood bank and collection centre.
- Animal house
- Slaughter house
- Laboratories
- Research organization
- Vaccinating centre.
- Biotechnology institut

Health Care Waste Generation:

- Only 15-20% of the hc. waste in health care facility is BMW.
- Rest of 80% is usually general normal domestic waste from the administration and housekeeping which can be managed by Urban waste management system.

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Health Hazards of health care Waste:

- Main groups at risk are.
  - Doctors, Nurses, Paramedical workers.
  - Patient in health care establishments.
  - Visitors in health care establishments.
  - Workers in allied services (laundry, waste handling, transportation).
  - Workers in waste disposal facilities (Ragpickers, landfills, Incinerator).

1. Hazards from Infectious waste and sharps.
   - HIV, Hepatitis B & C, Antibiotic resistant bacteria
2. From chemical and pharmaceutical waste.
   - Corrosive, Burns, Explosives.
   - Depends upon quantity and duration.
3. Genotoxic waste.
   - Usually toxic manifestation depends upon substance toxicity, Amount exposed, Time period of exposure.
   - Transmitted by inhalation, absorption skin and ingestion of food.
4) From radioactive waste:
   - Headache, vomiting, dizziness after small exposure
   - Serious health problem if exposure is high.
5. Public sensitivity.
   - Public is very sensitive to visual impact of Health care waste particularly health care waste.

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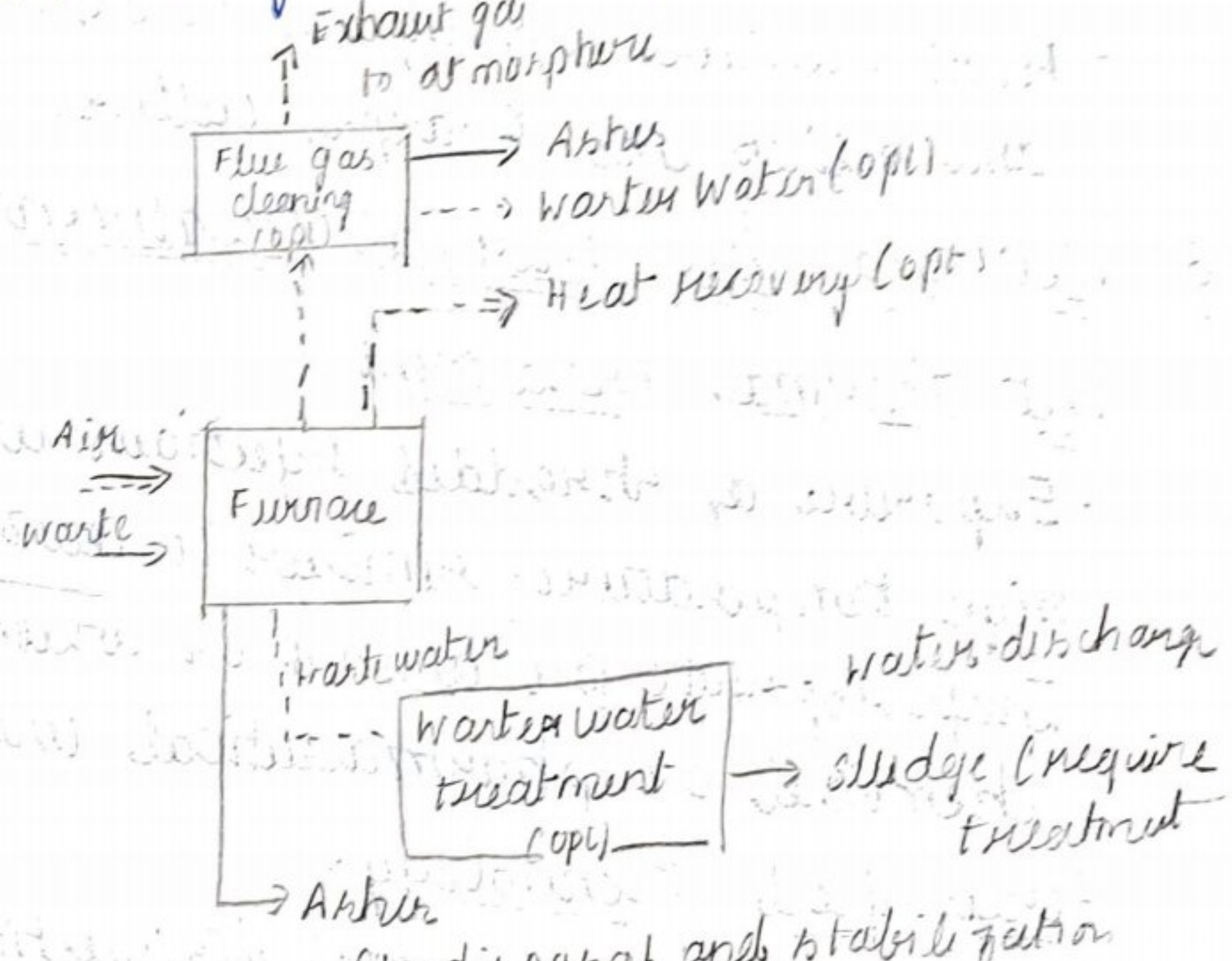
Treatment and disposal technologies for health care waste

Incineration is the method of choice however alternative treatment is becoming popular.

1) Incineration:

* High temperature oxidation process that reduces organic and combustible waste to inorganic incombustible matter which results in a very significant reduction in volume and weight.
* This process is used when the waste cannot be reused, or recycled or disposed off in landfill site.



Wastes not to be incinerated are.

a) Pressurized gas containers.
b) PVC c) Radiographic waste d) Waste with high mercury or cadmium like thermometer, batteries.
e) Sealed heavy metals.

Types of Incinerators

- It varies from basic combustion unit with operates at low temperatures to very high sophoricated incinerators at high temperatures.

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a) Double chamber Pyrolytic incinerator.
- To Burn infectious health care waste

b) Single chamber furnaces:
- only used when pyrolytic incinerator is not affordable.

c) Rotary Kilns:
- At high temperature causing decomposition of genotoxic substance and heat resistant chemical

2) Chemical disinfections:
- chemicals are added to kill or inactivate bacteria.
- Most suitable for liquid blood, urine, stools, and solids like sharps, cultures.

3) Wet and dry thermal treatment:

Wet thermal treatment
- Exposure of shredded infectious waste to high temperature. similar to autoclave.
- Inappropriate for animal or anatomical, chemical or pharmaceutical waste.

Screw feed technology:
- Non Burn, Dry thermal disinfection process.
- Waste is shredded and heated in rotating auger.
- Waste is reduced by 80 percent is volume and by 20-35% in weight.
- Used for infectious waste and sharps not for pathological, cytotoxic, radio active wastes.

4) Microwave irradiation:
- The water contained within waste is rapidly heated by microwave and the

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injectious compounds are destroyed.
- The efficacy of microwave should be checked by bacteriological and virological test.

5) Land Disposal
- Municipal disposal sites
- Two types — Land open dumps → People and animal get affected.
  Sanitary land fills.
- In sanitary landfills the advantages are. Isolation of waste, appropriate engineering preparation of waste, staff present on site to control and organized deposit and daily coverage

6) Inertization:
- Mixing of waste with cement and other substance before disposal in order to minimize the toxic substance present in the waste migrating into surface or ground water.
- 65% of pharmaceutical waste +
  15% of lime +
  15% of Cement +
  05% of water.
- A homogenous mass is formed like cubes or pellets which is stored.
- It is inexpensive but not useful in injectious waste.

Biomedical Waste Management in India
- This applies to who generate, collect, recieve, store, dispose, treate or handle BMW.
- started in 2016.

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Yellow

Type of waste:

1) Human Anatomical waste
2) Animal Anatomical waste
3) Solid waste
4) Chemical waste
5) Chemical Liquid waste
6) Discarded linen, bleedings, contaminated with blood, fluid
7) Microbiology and Biotechnology, Pathological waste

Type of Bag.

Yellow colours Non chlorinated Plastic Bags

→ Separate collection system to effluent treatment Syrten

Y - Yellow non-chlorinated Autoclave safety Bags.

Red

Contaminated (Recyclable).
IV tubes, bags, gloves

- Red, non chlorinated. Plastic Bags or Containers.

White Transcluent

Sharps including metals.

- Puncture proofs, leak proof, tamper proof containers.

Blue

a) Glassware:
b) Metallic Body.

Bio hazard

Y cardboard boxes with blue colored containers.

Cytotoxic

Handle with Care.

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