

# Health Care Waste Overview

## Definitions of Waste

### Health care waste

- All types of waste from all health care activities

### Hazardous health care waste

- Waste that presents a health hazard of some kind
- Note: Most health care waste is no more hazardous than household waste

## Types of Hazards to Consider

- Flammable
- Toxic - mutagenic, cytotoxic, teratogenic, etc
- Reactive
- Allergen, contact sensitiser
- Explosive

- Infectious
- Radioactive
- Corrosive
- Caustic
  
- Alcohol
- Cancer chemotherapy, tar-based products
- Sulphuric acid, chlorine powder
- Glutaraldehyde
- Picric acid, fertiliser, ammonia
- TB cultures
- Barium enema, X-rays
- Bleach
- Lye

## Hazardous Health Care Waste

Infectious hazard:

- Anatomic waste
- Laboratory cultures
- Sharps
- Live viruses

Corrosive, teratogenic, reproductive hazard:



- Heavy metals
- Pesticides
- Cleaning products
- Pressurised containers
- Mercury
- Cancer therapy

## Is Health Care Waste an Important Source of Infectious Disease?

**Yes!**

- IF needles and syringes are scavenged and re-used, then many diseases can be spread
- Keep used sharps and syringes out of public access

## Types of Waste

- General waste – non



hazardous, poses no risk of injury or infection : papers

,boxes ,

- Medical waste – material generated in a diagnosis, treatment, and/or immunization, including: needles , blood , gloves , face mask
- Hazardous chemical waste – chemicals that are potentially toxic or poisonous

## The purpose of waste disposal is:

- To prevent the spread of infection to health service providers
- To prevent the spread of infections to the local community

- To protect those who handle wastes from accidental injury

## Importance of proper waste disposal

- Minimizes spread of infection to health workers, patients and the local community
- Reduced risk of accidental injury to those who handle the waste
- Reduced likelihood of contamination of soil, ground water, etc
- Reduces attraction of insects and rodents
- Reduced odours

Health Care Institutions  
Generate about 3.5 kg of  
Waste per Bed per Day

## Health care waste may:

- Contain infectious organisms, including drug resistant ones
- Place cancer causing agents into air or ground water
- Cause radiation-related illnesses
- Contribute to global warming harm atmosphere (CFC containing refrigerant gas)
- Cause injury (sharps, explosion)
- Cause congenital defects or stillbirth, prematurity, infertility

## Which Waste to Address First?

- IC Committees should START with infectious waste, especially used sharps and microbiological culture waste

## How to Safely Dispose

# of Infectious Sharps

- Do not recap sharps before disposal
- Dispose of sharps at the point of use in a leak proof puncture proof container
- Avoid handling, emptying or transferring used sharps between containers
- Autoclave highly infectious waste before disposal
- Control public access to syringes and medical equipment
- Shred, encapsulate and bury according to national legislation

## Who is at Risk?

- Doctors - anesthesiologists, pathologists
- Nurses - oncology nurses, OT, ER
- Hospital support staff - X-ray

- assistants, pharmacy, morgue,  
and lab staff
- Cleaning staff - those cleaning sewage lines
  - General public - those using sharps found in the waste

## Common Hazards

- Anesthetic gases
  - Glutaraldehyde
  - Formaldehyde/formalin
  - Cancer therapeutic agents
  - Ethylene Oxide
  - Radiation
  - Asbestos
  - Blood contaminated sharps
- 
- Bleach
  - Solvents (xylene, toluene, acetone, ethanol)
  - Pesticides, fungicides
  - Heavy metals (mercury, chromium, cobalt, cadmium, arsenic, lead)
  - Latex
  - Strychnine and cyanide



# 12 Steps to Manage Hazardous Wastes before Disposal

1. Know what hazards you have
2. Purchase smallest quantity needed, and don't purchase hazardous materials if safe alternative exists

# 12 Steps to Manage Hazardous Wastes (cont'd)

3. Limit use and access to trained persons with personal protective gear

# 4. Use Engineering Controls such as

# Ventilation, Hoods for Select Hazards

## 5. Get Rid of Unnecessary Stuff

- Don't accumulate unneeded products
- Don't let peroxides and oxidising agents turn into bombs

## 6. Label with Agent, Concentration and Hazard Warnings

- Examples of hazard labels:

## 7. Communicate about Workplace Hazards

- Job description
- Posters on doors
- Labels on hazards
- Give feedback on use of PPE and disposal in evaluation
- Role model safe use and disposal
- Contact point who is responsible

## 8. Recycle Products When Possible

## 9. Segregate Hazards at the Source

- Separate sharps and infectious waste where they are used  
This prevents injuries that can occur when people sort the trash after it is disposed
- Janitors can reinforce separation of sharps waste

disposal by reporting sharps  
in garbage to Hospital  
Infection Control Committee  
members

## 10. Have Written Policies on Waste Disposal

- Sharps and infectious waste
- Chemotherapy (cancer)
- Heavy metals (batteries)
- Chemicals

Post brief, colorful instructions on  
walls to remind workers

## 11. Minimise the Handling of Wastes

- Try to eliminate steps that  
require hazardous wastes to

be touched, sorted, transferred from containers, or handled directly

## 12. Conduct Walk-Around Interviews

- Ask about the hazardous substances staff work with, how they dispose of them, and what they need to be able to dispose of them properly
- Have a no-blame philosophy that strives to solve problems, NOT to assign blame

## Part II: Waste Management Methods Waste Disposal Options

# Include

- Disinfection – Autoclaving/  
Microwaving, treatment, shredding
- Land Disposal
- Burial
- Encapsulation
- Incineration
- Inertisation
- Managed Land-fill
- On-site disposal

## Infectious Waste: Autoclaving

- Pressure and temperature
- Holding time
- Sterility indicators
- Type of waste
- Followed by shredding /  
burial / recycled

## Incineration

Combustible waste turned to ash at

- temps >800 C
- Reduces volume and weight
  - Residues are transferred to final disposal site
  - Treatment efficiency depends on incineration temperature and type of incinerator
  - Not all wastes can be incinerated
  - Costs vary greatly according to type of incinerator
  - Produces combustion gases

## Advantages of Incineration of HC Waste:

- Good disinfection efficiency
- Drastic reduction of weight and volume
- Good for chemical + pharmaceutical waste

# Hospital waste management programme

- 
- Identification of waste types
- Segregation of waste
- Transport & storage of waste
- Proper disposal of waste
- Implementation of contingency plans
- Identify the need for use of personal protective equipment

## Segregation by color coding



# system

- Six categories
- Infectious waste - Red bags
- Clinical waste – yellow bags
- General waste – black bags
- Food –white paper
- Cytotoxic –purple bag
- Sharps - Needle cutters / Puncture proof containers ,safety boxes.
- Segregation at Source ( ward, operation theater, laboratory, labour room, other places)

# Transportation

- Containers: puncture proof, leak proof,
- Bags: sturdy, properly tied
- Transport trolleys: designated & timely
- Staff protection: provided with protective clothing and other

items

- Never put hands in a bag

# Waste storage

- Closed covered area
- Away from the normal passages
- Easily accessible for transportation
- Radioactive waste special containers/ special treatment and disposal

# Proper disposal of waste



- All infectious waste and sharps containers :Incineration
  - All Domestic waste : Landfill
  - All hazardous waste : Chemical treatment before disposal
  - Implementation of contingency plans
  - Contingency plans have to be in place to be implemented whenever any of the steps in the chain breaks and everyone should be aware of their responsibilities in case of breakdown.
- 
- Special clothing, gloves, masks and eye protection should be identified and provided to the healthcare workers responsible for waste transportation and disposal

## For More Information:

- Safe Management of wastes from health-care activities.  
Edited by A Prüss, E Giroult, P Rushbrook. Geneva World Health Organisation. 1999. 228 p. Available online. Includes a teachers guide
- [www.healthcarewaste.org](http://www.healthcarewaste.org). A website managed by the working group on waste

## More Free References

- <http://www.healthcarewaste.org>, Health Care Waste Management at a Glance
- “First, do no harm.”  
WHO/V&B/02.26  
Available at  
[www.healthcarewaste.org/linked](http://www.healthcarewaste.org/linked)

[/onlinedocs/4-bd-704.pdf](#).

Contains information about the disposal options for sharps

**Thank You!**

