HEALTHCARE WASTE MANAGEMENT

PACWASTEPLUS

Capacity Building Series

WELCOME & INTRODUCTIONS

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Australia

Please introduce yourself, your role and your role in waste management.

MRA Consulting Group

Capacity Building Session Objectives

Skills and knowledge:

1. Understand healthcare waste, management, responsibilities and impacts.
2. Conduct a site assessment.
3. Develop (and/or review) the facility waste management plan.
4. Communicate and train waste management procedures to others in this and other healthcare facilities.

Session Structure

Part 1: Healthcare waste (2 hrs)

- A. What is Healthcare Waste (HCW)
- B. HCW Management – Process Flow
- C. HCW Risk, Infection Control and PPE/OHS
- D. Spills, compliance and costs
- E. HCW Planning

Part 2: Site assessment (2hrs)

Lunch (45 mins)

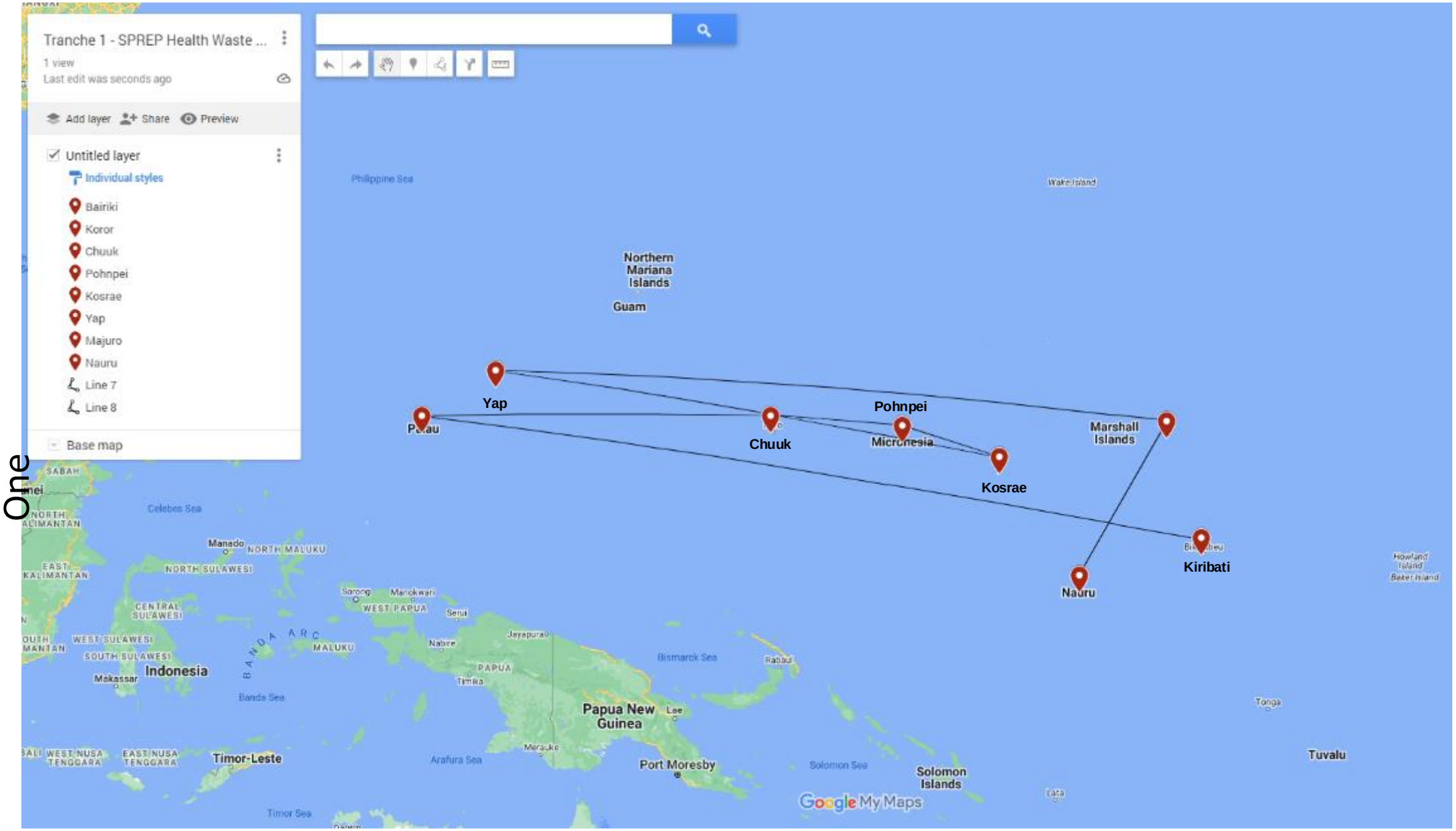
Part 3: Develop/review a draft HCW Plan (group work) (2 hrs)

Part 4: Training others in WMP (practical and planning) (1.5hrs)

Resources

1. Resource book / workbook
2. Course outline and slides
3. Surveys
4. Attendance sheet
5. Certificate template

Tranche One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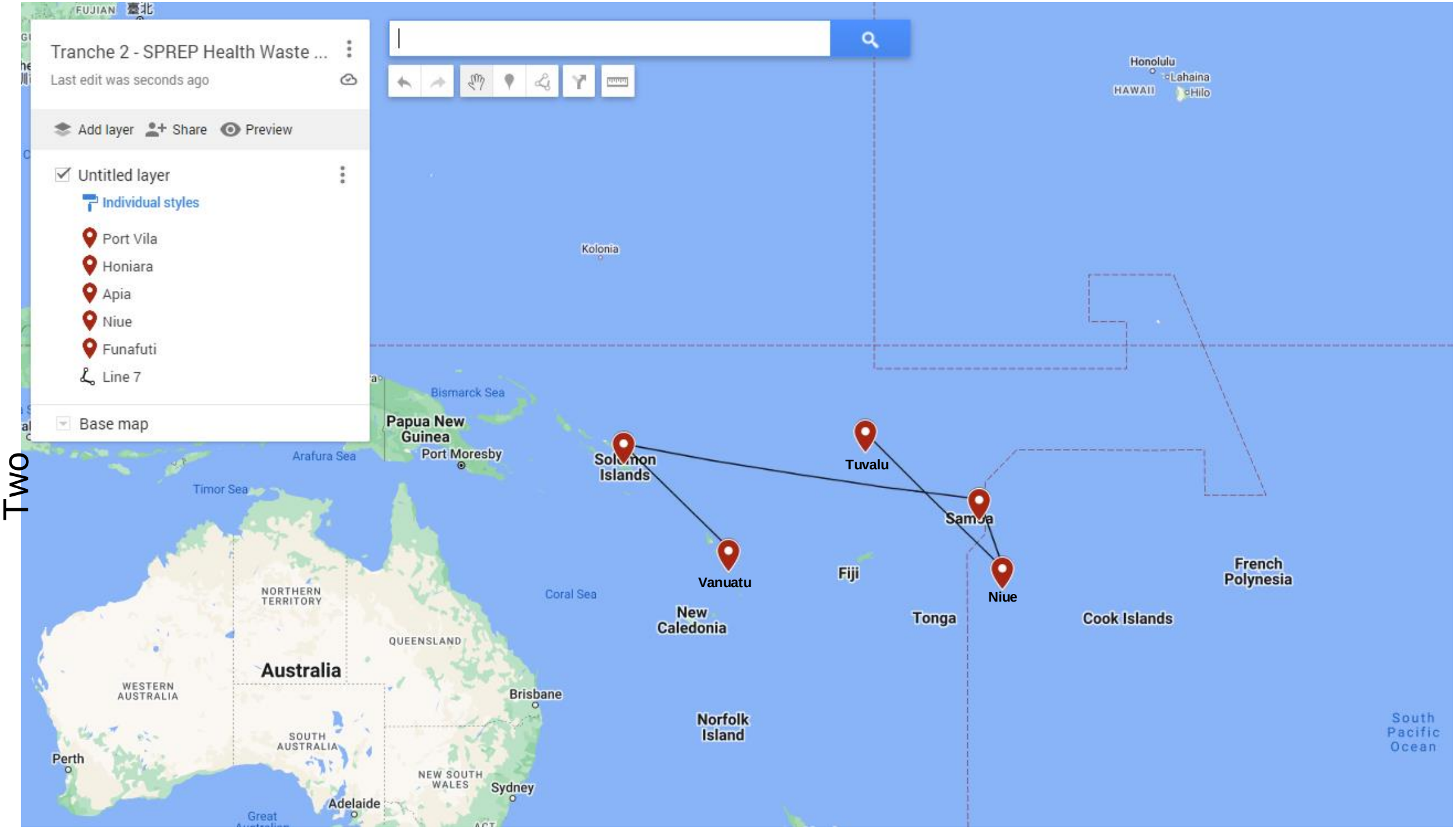
Tranche Two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Samoa
Vanuatu
Fiji
Niue
French Polynesia
Coral Sea
New Caledonia
Tonga
Cook Islands
NORTHERN TERRITORY
QUEENSLAND
Australia
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
Brisbane
Sydney
Perth
Adelaide
Norfolk Island
South Pacific Ocean

PART 1

WHAT IS HEALTHCARE WASTE

Detailed information can be found in Module 1 Handouts

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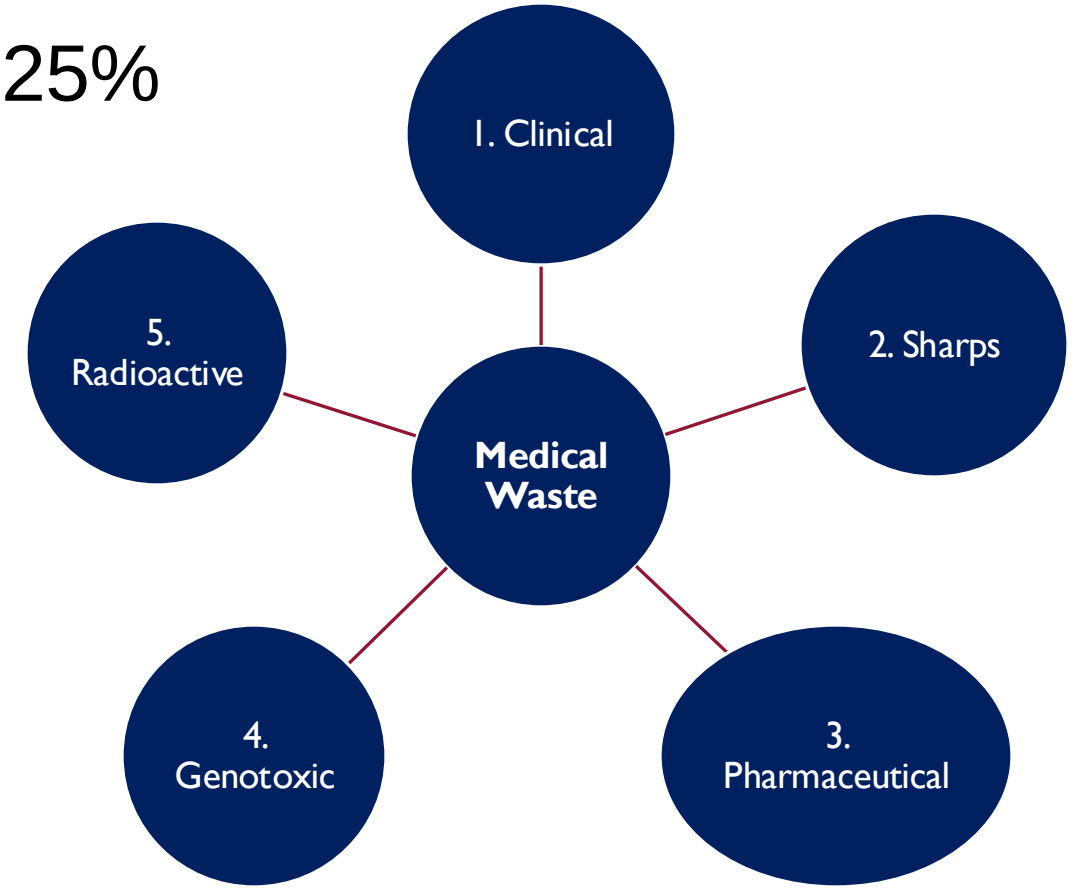
What is healthcare waste?

HCW = Medical waste + General waste

Types of medical waste

25%



Types of general waste

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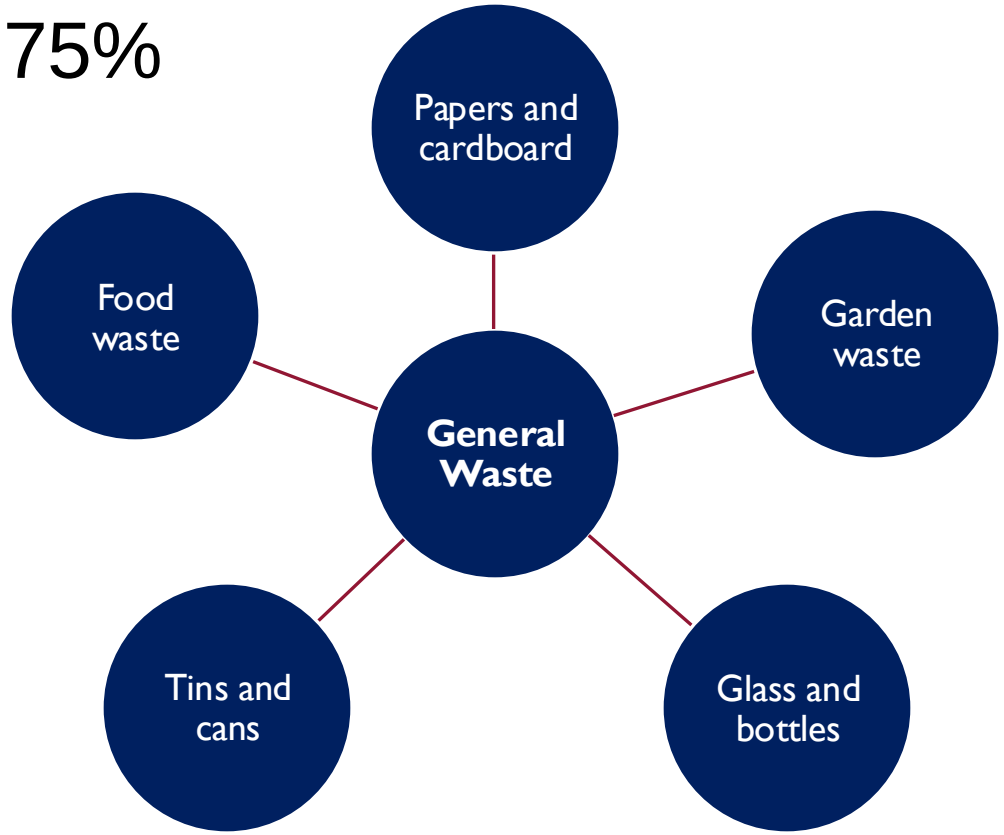


Medical Categories

1. Clinical -Infectious & Pathological Waste

- Laboratory cultures
- Tissues (swabs)
- Waste from isolation wards
- Materials or equipment that have been in contact with infected persons, excreta, body parts, blood, and other body fluids.

2. Sharps

- Needles,
- infusion sets,
- scalpels,
- Blades and knives,
- broken glass and broken plastic.

3. Pharmaceutical Waste

Pharmaceuticals that have expired or that are no longer needed, and bottles or boxes contaminated by or containing pharmaceuticals.

4. Genotoxic & Chemical Waste

- Waste containing cytotoxic drugs often used in cancer therapy, and
- Waste containing genotoxic chemicals.

5. Radioactive Waste

- Waste materials containing radioactive substances generated from medical procedures or
- material that come in contact with radioactive substances

Sources of Healthcare Waste

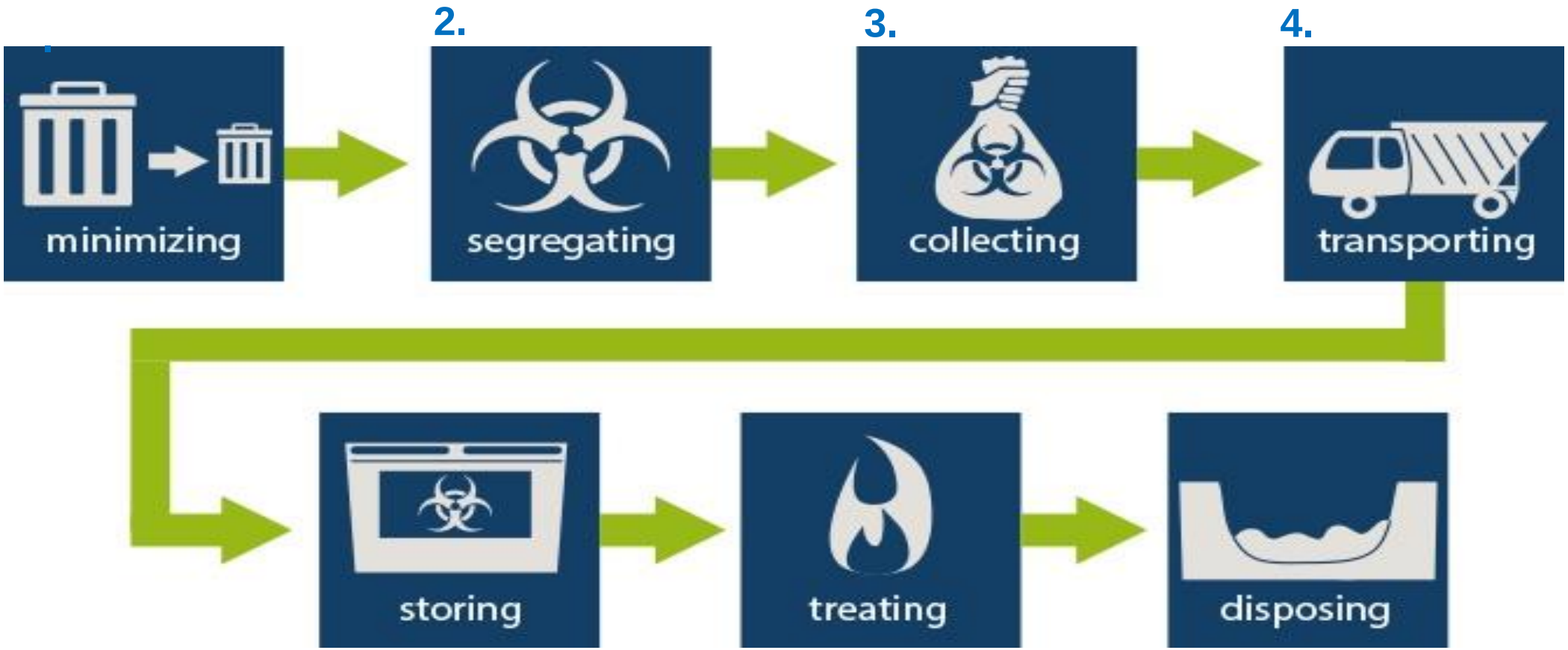
1. Hospitals
2. Clinics
3. Laboratories
4. Health centres
5. Nursing homes
6. Paramedic
7. Animal research
8. Blood banks
9. Dental clinics
10. Tattoo parlours
11. Funeral services
12. Home healthcare

Why Does Medical Waste have a Higher Risk?

- Infection risk
- Physical injury risk e.g. needle stick injury
- Poison risk from chemicals or pharmaceuticals

Healthcare Waste Flow

Detailed information can be found in Module 3 Handouts



1. Minimising and 2. Segregating

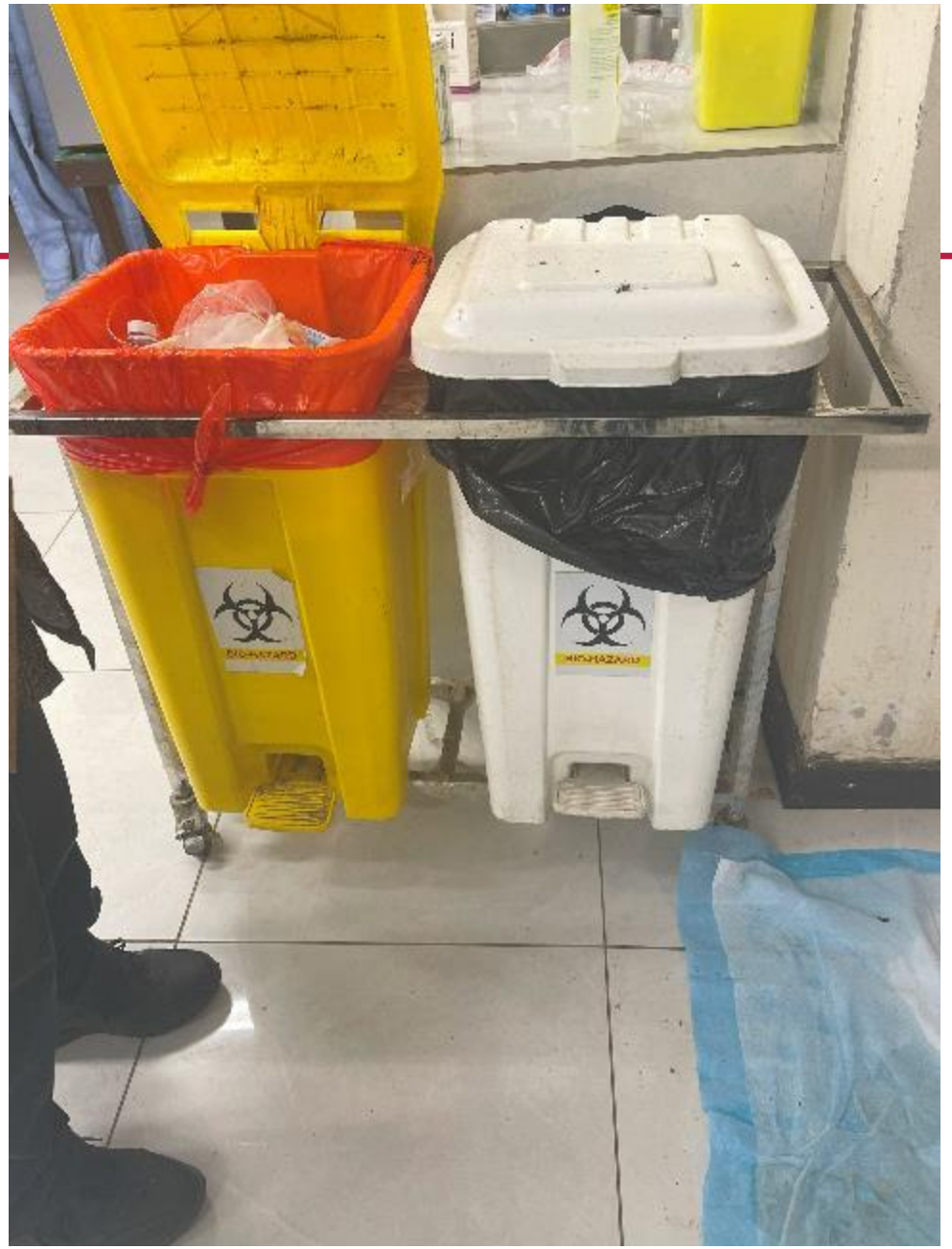
This is the practice of classifying waste and placing it into the appropriate container immediately:

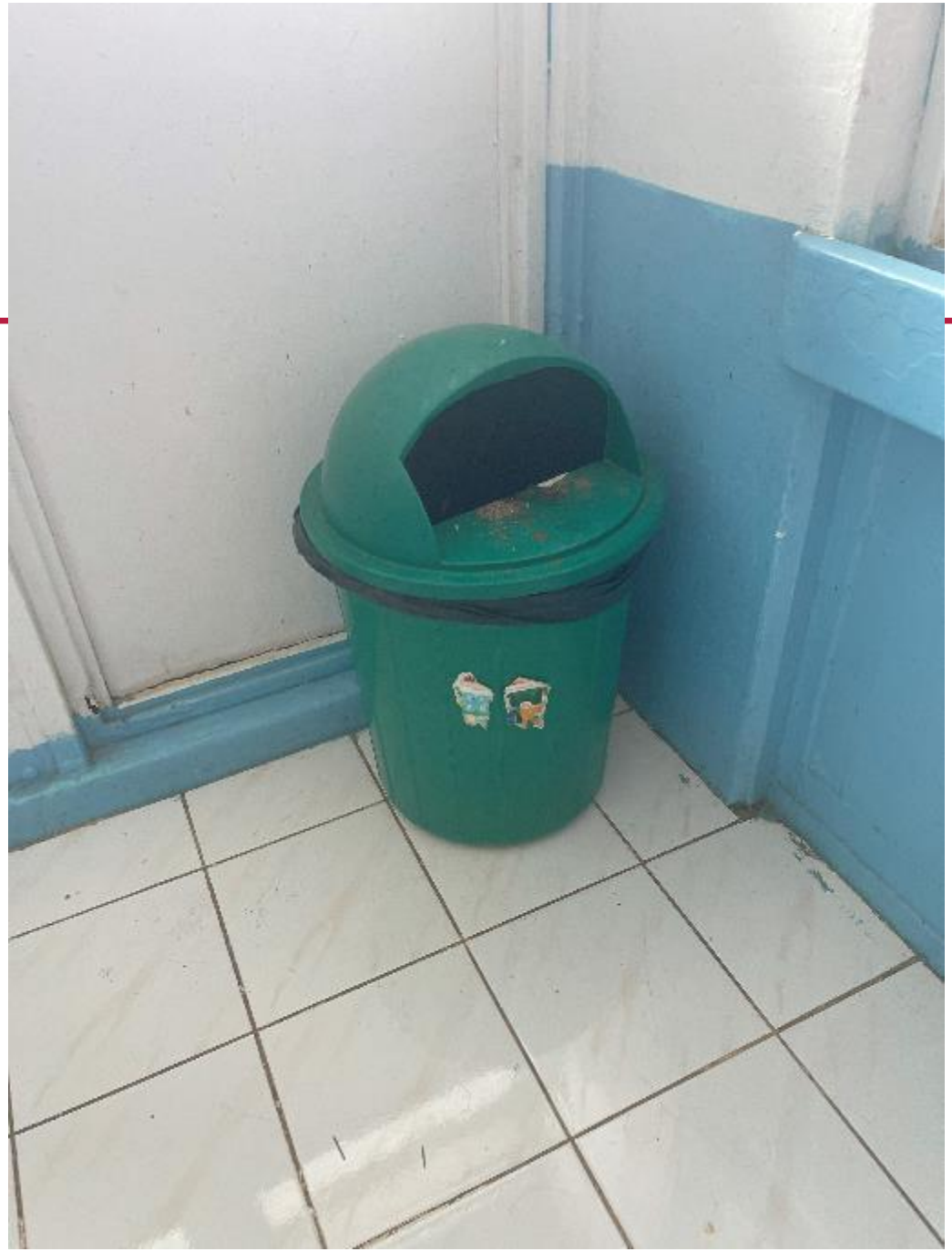
1. To reduce the amount of waste that must be treated as hazardous waste
2. To reduce the risks of exposure for workers
3. To lower the cost of treatment and disposal
4. To maximise the recycling of general waste (non-hazardous)

3. Collecting

Containers:

a) Colours and symbols
b) Design
c) Placement
d) Signage





a) Colours & Symbols

Waste Classification	Colour	Symbol
Infectious/Pharmaceutical	**Yellow**	
Sharps	**Yellow**	
Cytotoxic	**Purple**	
Radioactive	**Red**	
General	**Black**	**None**

b) Design

Sharps

- Wide opening to allow sharps to be dropped single handed
- Never over fill
- When ¾ full – seal and check for protrusions
- Seal with a lid

Infectious

- Pedal-operated to open the lids
- Lids must remain closed - except when being used
- Color-coded bags inside the containers

c) Placement

- Place near to where waste is generated
- Ensure children cannot access
- Bins should be kept clean

d) Signage


CLINICAL
WASTE
NO SHARPS


to throw
it in!
YELLOW BAG or BIN
is only for
"CLINICAL WASTE"
Waste Segregation is up to you, so before you throw, Know which bin to throw it in!
THANK YOU
AUTOKA HOSPITAL
Black Bag
Disposable food
Unstained glass
Flowers
Plastic bottles
Personal Items

4. Transfer

- Dedicated trolleys
  - Not used for other purposes
  - Contain spills
- Minimize transport when staff, patients are present
- Use correct PPE

5. Storing

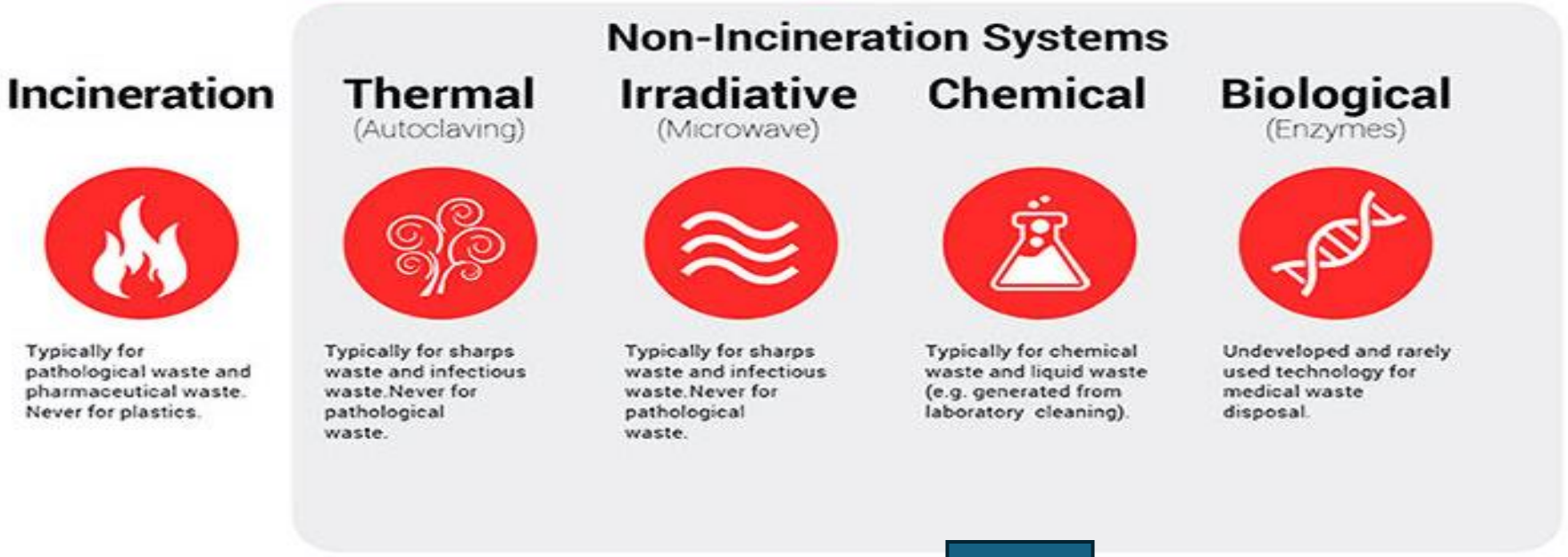
- Ensure storage facility is separated from other areas (e.g. kitchens)
- Hard floor with good drainage
- Easy to clean
- Secure and lockable
- Good lighting and ventilation
- Proofed against rodents, insects and birds
- Recommended storage times :
  - 24 hours in hot season
  - 48 hours in cool season

storing

6. Treating and 7. Disposing

Detailed information can be found in Module 5 Handouts

5 Ways of Treating Medical Waste



Landfill disposal

6. Treating - Incineration

- High temperature (200°C - 1400°C)
- Reduces waste to inorganic matter

7. Disposal to Landfill

- Not recommended for untreated HCW waste

7. Disposal – Landfill + Encapsulation

- Fill metal or plastic containers to 3/4 with waste and fill up with:
  - cement mortar
  - clay material

- When dry, seal containers and landfill
- May be used for sharps, chemicals, drugs etc.
- Low cost

Infection Control and OH&S

Does your hospital have an infection control officer?

Infection Control Officers are responsible for the management of Healthcare waste, in particular infectious and pathological wastes

Their job is to ensure:

- Worker safety
- Environmental protection
- Safe work practices
- Proper use of PPE.

What PPE ?

- General infection control and hygiene , handling clinical waste
- Potential exposure infectious agents, pharmaceutical wastes
- High risk infectious materials, hazardous materials, genotoxic and radioactive wastes



Decreasing risk

Spills

Small spills

- You can clean up small spills if:
  - You have the proper PPE; **and**
  - You are familiar with the properties of the spilled material; **and**
  - You are trained; **and**

Large spills

- You should not attempt to clean it up
- Make SAFE
- Report it
- Trained first responders should clean it up

Compliance

- HCW is subject to regulations to ensure proper handling and disposal.
- Non-compliance can result in penalties

HCW planning

The aim of this module is to provide an overview of the requirements for effective healthcare waste management.

- Systems
- Responsibilities
- Waste management plan

Detailed information can be found in Module 2 Handouts

For effective, safe waste management, a hospital needs to have:

1. A Plan
2. Waste management officer
3. Waste management committee

Waste management Team

Waste Management Officer

- Internal management of:
  - Collection
  - Storage
  - Disposal
  - Monitoring
  - Reporting
  - Contracts and costs
  - Safety

Waste Management Committee

- Has core responsibility for:
  - Assessment
  - Segregation
  - Operational adequacy
  - Prepare the Plan
  - Reporting
  - Costs
  - Training

Table ES1: HEALTHCARE WASTE – KEY ISSUES FOR FSM								
Scale	**Category**	**Item**	**Minimum Standard Criterion**	**YAP**	**CHUUK**	**POHNPEI**	**KOSRAE**	**FSM - Overall**
Health care Facility	Responsible Person		An officer has been appointed to assume responsibility for waste management within the hospital, and has been allocated sufficient time and resources - this person could have waste management as part of other duties					
Health care Facility	Policy	Waste Management Plan	Has been developed by the hospital and is based on a review of healthcare waste management and is current (within 5 years)					
Health care Facility	Signage		Signs are located in all wards/department areas where waste bins are located indicating the correct container for the various waste types					
Health care Facility	Segregation		Waste are correctly segregated in all wards/departments with use of containers that are colour coded for the different waste types					
Health care Facility	Containers		All areas have dedicated waste containers are suitable for the types of waste generated. All waste containers are colour coded and have correct wording on them. Sharps are deposited into containers that reduce potential for needle-stick injury					
Health care Facility	Storage	Storage before treatment	Meets the stated standards					
Health care Facility	Training	Planning and implementation	A structured waste management education program has been developed with a clear delivery structure					
Health care Facility	Waste Audits		A program has been implemented to ensure waste audits are conducted of all waste materials/systems in all wards/departments on an annual basis and reports are provided to the waste management committee. Effective systems are in place to ensure that any non-conformances (with the hospital waste management strategy) are remedied.					
Health care Facility	Treatment	Suitability of treatment for healthcare waste	The method for treating healthcare waste is in accord with required standards - this includes operating parameters and location of the treatment unit.					
Health care Facility	Occupational Health and Safety	PPE	All waste handlers are provided with and use appropriate PPE including overalls/protective clothing, gloves and eye protection. Incinerator staff are provided with additional PPE such as face masks and noise protection. A system is in place to monitor correct use of PPE.					
Health care Facility	Healthcare waste management emergencies	Spill Prevention and Control	Spill kits are provided or all types of healthcare waste in all wards/departments, storage areas and on trolleys and vehicles. Staff are trained on the use of spill kits. All incidents of spills of healthcare waste are investigated and where appropriate remedial actions implemented.					

Criteria	Standard	2014 assessment	2024 assessment	Comments
Responsible person	A person has been appointed with overall responsibility		BA	
Policy	There is a Waste Management Plan			
Signage	Bins and systems are appropriately signed		Clinical Waste ONLY General Waste Only	
Segregation	Wastes are properly segregated			
Containers	Containers are supplied and properly scoped			
Storage	Storage area is safe and secure			
Training	Training has been provided to relevant staff			
Waste audits	Waste types are known and documented			
Treatment	Treatment is in accordance with standards for that waste type			
Occupational health and safety	PPE is provided and used			

What is in a HCW Plan?

1. Where are we now?

a) Waste assessment – waste types and quantities

b) Site assessment - state of bins, signage, storage, OHS, etc.

c) Risk assessment - today?

2. Where do we want to get to?

a) Meet the 11 criteria – all green lights

3. How are we going to get there?

a) Waste Flow - what waste do we have?

b) Facility – Bins, signage and storage

c) Process – how is it moved in the site

d) External - transported, disposed

e) Education and Training

f) Reporting

g) Risks and contingency

h) Monitor and revise - Who is responsible?

PART 2

SITE ASSESSMENT

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Part 2 Site Assessment

Detailed information can be found in Module 6 Handouts

Tasks for this session:

1. Break into teams and collect a WMP checklist and worksheet

2. Visit one section of the hospital and using the checklist observe the following (and more):
   - What wastes and how much?
   - Bins, signage, storage, OHS, transport?
   - Any issues? What could go wrong?
   - Where does the waste go next?

3. Record observations on the worksheet

PART 3

PREPARING A HEALTHCARE WASTE MANAGEMENT PLAN

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Preparing a HCW Plan?

1. Where are we now?

- Waste assessment – waste types and quantities
- Site assessment - state of bins, signage, storage, OHS etc
- Risk assessment – what could go wrong today?

2. Where do we want to be?

- Goals and objectives
- Zero OH+S injuries - safe work environment
- Responsible disposal - maximum safe recycling
- Cost effective systems

3. How are we going to get there?

- Waste Flow plan- what waste should go where
- Facility Plan - best positions for bins, signage and waste storage rooms
- Process flow – how will waste move around the site
- External arrangements - where it will go, how is it transported, how is it disposed/recycled
- Who needs to know? - Education and Training of staff and visitors
- Reporting plan - Who needs to Report it ? – how and when
- Risk and contingency planning
- who is responsible – waste officer, waste team, infectious control officer, management.

Draft Your Plan

Tasks for this session:

1. In your team use the WMP template to write a plan for your section of the hospital

2. Swap your plan with another team and review theirs

3. Each team presents their plan to the group

4. The group revises the whole plan together

PART 4

TRAINING OTHERS TO DEVELOP A HEALTHCARE WASTE MANAGEMENT PLAN

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6. Treating - Summary

Table 2. Comparison of interim waste treatment technologies used in low-resource settings

Type of technology	Capacity (kg/h)	Environmental impact	Capital costs	Operating costs
Automated pressure pulsing autoclave	5–50	●	●	●
Dual chamber incinerator	5–500	●●	●●	●●
Single chamber incinerator	5–500	●●●	●	●
Open burning	N/A	●●●●	N/A	N/A

(● = low, ●● =medium, ●●● = high, ●●●● = very high)

6. Other Treating – Summary

Comparison of Treatment Technologies (World Health Organization, 2019)

Table 1. Comparison of infectious and sharp waste treatment technologies which comply with the Stockholm and Basel Conventions

Type of technology	Capacity (kg/h)	Environmental impact	Capital costs	Operating costs
Vacuum autoclave	5–3000	●	●	●
Autoclave with integrated shredding	5–3000	●	●●	●●
Batch wise microwave	1–210	●	●	●●
Continuous microwave	100–600	●	●●	●●
Frictional heat treatment	10–500	●	●●	●●
Sodium hypochlorite treatment	600–3000	●●	●●●	●●
Ozone treatment	45–1000	●	●●●	●
Incineration including flue gas treatment	50–3000+	●●	●●●●	●●●●

Risk Management

Detailed information can be found in Module 4 Handouts

- **What are the hazards and risks from Healthcare Waste ?**

Risks:

- Public health
- Environmental pollution

Issues:

- Regulatory compliance
- Financial cost
- Resource wastage