

# Training Health Workers in the Management of Sharps Waste

## Guide for Training of Waste Handlers

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## 1. Training Overview

### Objectives

- To raise awareness of public health and environmental hazards that may be associated with inappropriate segregation, storage, collection, transport, handling, and disposal of sharps waste.
- To provide information on proper practices for disposing of sharps waste.
- To identify roles and responsibilities of all staff involved with managing sharps waste.

### Handouts

None

### Slides

4 slides

### Notes for the Trainer

- *Review objectives with group.*
- *Ask if there are any objectives missing that the participants had hoped to achieve in the training.*
- *Add objectives to the list if feasible or determine alternate way to address participant objectives through additional training or information.*
- *Let participants know time expectations.*
- *Review modules listed below and determine which sessions will be included in your training:*
  1. *Training Overview*
  2. *Sharps Waste Overview*
  3. *Health Worker Safety*
  4. *Segregation of Waste*
  5. *Handling, Storage, and Transport of Safety Boxes*
  6. *Overview of Sharps Treatment, Destruction, and Disposal*
  7. *Treatment of Sharps: Liquid Disinfection*
  8. *Treatment of Sharps: Autoclave/Shredding*
  9. *Treatment of Sharps: Encapsulation*
  10. *Treatment and Destruction of Sharps: Incineration*
  11. *Disposal of Removed Needles: Protected Sharps Pit*
  12. *Disposal of Removed Needles: Protected Sharps Barrel*
  13. *Roles and Responsibilities for Waste Management*

# Management of Sharps Waste: Guide for Training Waste Handlers

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## 1. Training Overview

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Training Overview – WH.1

### Objectives of Training

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- Raise awareness of hazards of improper management of waste.
- Provide information on proper practices.
- Identify roles and responsibilities of all staff.

Training Overview – WH.1

### Topics to Be Covered

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- Training Objectives
- Sharps Waste Overview
- Health Worker Safety
- Segregation of Waste
- Handling and Transport of Safety Boxes
- Overview of Sharps Treatment and Disposal
- Destruction

Training Overview – WH.1

## 2. Sharps Waste Overview

### Problem

- 80% of waste from health facilities is “general” waste and not harmful.
- 20% of health care waste can be dangerous; only 1% is sharps waste.
- Poor waste disposal practices are dangerous to the community and health care workers.
- Waste management infrastructure may be limited in low-resource settings.
- There is no perfect solution. There are trade offs between costs, health risks to the community, and environmental pollution.

### Approximate percentage of waste type per total waste in facility:

Noninfectious waste	80%
Pathological waste and infectious waste	15%
Sharps waste	1%
Chemical or pharmaceutical waste	3%
Aerosol cans, pressurized cylinders, broken thermometers	<1%

### Key Steps in Sharps Waste Disposal

- Segregation
- Containment
- Handling and Storage
- Transport
- Treatment or Destruction
- Disposal

### Handouts

Key Steps in Sharps Waste Disposal

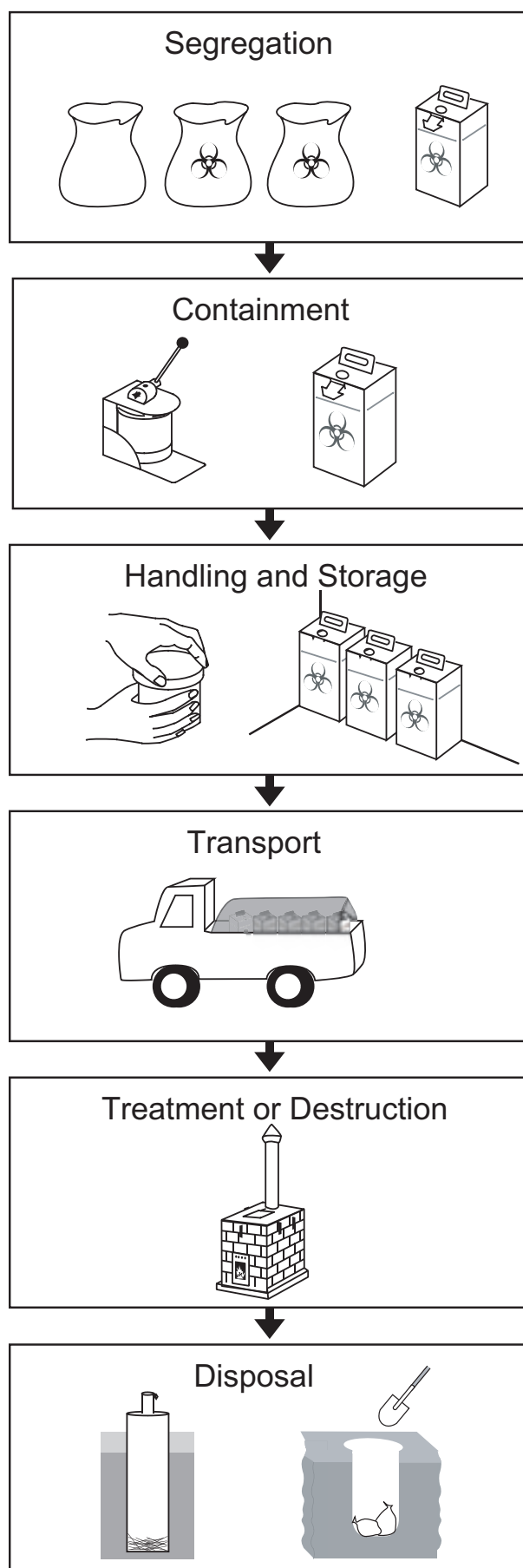
### Slides

4 slides

### Notes for the Trainer

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Distribute handout depicting steps in disposal process.*





## 2. Sharps Waste Overview



MW Overview – WH.2

### Problem

- Poor disposal practices are dangerous to the community and health workers.
- Waste management infrastructure may be limited.
- No perfect solution. Trade offs between costs, health risks to the community, and pollution.

MW Overview – WH.2

### Problem

- 80% of waste from health facilities is not harmful.
- 20% of health care waste can be dangerous.
- 1% is sharps waste.

MW Overview – WH.2

### Key Steps in Disposal Process

- Segregation
- Containment
- Handling and Storage
- Transport
- Treatment or Destruction
- Disposal



MW Overview – WH.2

### 3. Health Worker Safety

#### Disease Transmission

##### Diseases can be transmitted from:

- Health worker to patient via:
  - Unclean hands
  - Dirty needles, other sharps
- Patient to health worker via:
  - Dirty needles, other sharps
  - Blood or body fluids on broken skin
- Health worker to family or community via:
  - Unclean hands
  - Dirty clothes
  - Dirty shoes
- Facility to community
  - Improper disposal of medical and sharps waste.

##### Practices to reduce disease transmission:

- Wash hands after working with waste.
- Handle sharps with care.
- Do not sort through waste.
- Wear protective clothing.
- Keep facility clean inside and out.
- Know steps for treating injuries.
- Get fully immunized against tetanus and hepatitis B.

#### Reducing Risk

- If you handle waste, wear appropriate protective clothing, including a water-resistant apron, thick gloves, boots or closed-toe shoes, and eye protection.
- Do not sort or open waste containers to sort waste.
- Be aware of procedures for treatment of injuries, cleaning of contaminated areas, and reporting accidents.
- Report sharps injuries to the appropriate personnel.
- Injuries should be followed up by post-exposure prevention treatment.
- Managers should maintain a log of all accidents
- A full course of hepatitis B and tetanus vaccination will protect you from the hepatitis B virus and tetanus. Anyone handling sharps should be vaccinated.

##### Critical steps to take following a needlestick injury:

- Immediately bleed the wound.
- Wash the wound with soap and water.
- Report injury to supervisor.

Guide for Training Waste Handlers

Version 1

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- Talk to a doctor.

## **Protective Clothing**

### **What to wear:**

- Gloves: protects any cuts on hands and helps protect against needlesticks.
- Boots or closed-toe shoes: protects feet from sharps and accidental spills.
- Aprons (rubber or plastic): keeps germs off of clothes.
- Goggles (plastic): protect the eyes from accidental splashes.

### **When to wear it:**

- At all times when working with health care waste.

### **Keep it in good condition:**

- Clean clothing after each use.
- Leave at facility; do not take home.

## **Handouts**

None

## **Slides**

5 slides

## **Notes for the Trainer**

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Note the guidelines for reporting needlesticks and wearing protective clothing. It is important these be adapted to reflect the systems currently in place in your facilities.*

### 3. Health Worker Safety



HW Safety – WH.3

### Disease Transmission

Diseases can be transmitted from:

- Health worker to patient.
- Patient to health worker.
- Health worker to family and community.
- Health facility to community.

HW Safety – WH.3

### Reducing Risk

- Wash hands after working with waste.
- Handle sharps with care.
- Do not sort through waste.
- Wear protective clothing.
- Keep facility clean inside and out.
- Know steps for treating injuries.
- Get fully immunized against tetanus and hepatitis B.

HW Safety – WH.3

### Needlestick Injuries

- Immediately bleed the wound.
- Wash the wound with soap and water.
- Report injury to supervisor.
- Talk to a doctor.

HW Safety – WH.3

### Protective Clothing

- Gloves
- Boots or closed-toe shoes
- Aprons
- Goggles

HW Safety – WH.3

## 4. Segregation of Waste

### Types of Waste

- Injection providers should segregate health care waste immediately according to the type of waste. Types of waste include:
  - **Noninfectious waste.** This is waste that presents no risk to persons who handle it. Examples: paper, packaging materials, office supplies, drink containers, hand towels, boxes, glass, plastic bottles, and food.
  - **Infectious waste.** This is waste that has been in contact with human blood or bodily fluids and has the ability to cause disease. Examples: gauze, cotton, dressings, laboratory cultures, IV fluid lines, blood bags, gloves, anatomical waste, and pharmaceutical waste.
  - **Sharps waste.** This is waste that has the potential to puncture the skin and cause disease. Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.

### Segregating Waste

- Waste handlers should **NEVER** re-sort waste.
- Follow a color-coded waste container system for each of these waste types and segregate the waste into the appropriate container. (WHO Color Recommendations)
  - Noninfectious health care waste: Black.
  - Infectious health care waste: Yellow.
  - Sharps waste: needle remover, safety box, or other puncture-resistant and leak-resistant sharps containers.
- Fill bags only  $\frac{3}{4}$  full to allow proper closing. This will reduce risk of spilling or breaking.
- Seal all waste containers and label to describe contents.

### Handouts

Segregation and Disposal of Medical Waste

### Slides

8 slides

### Notes for the Trainer

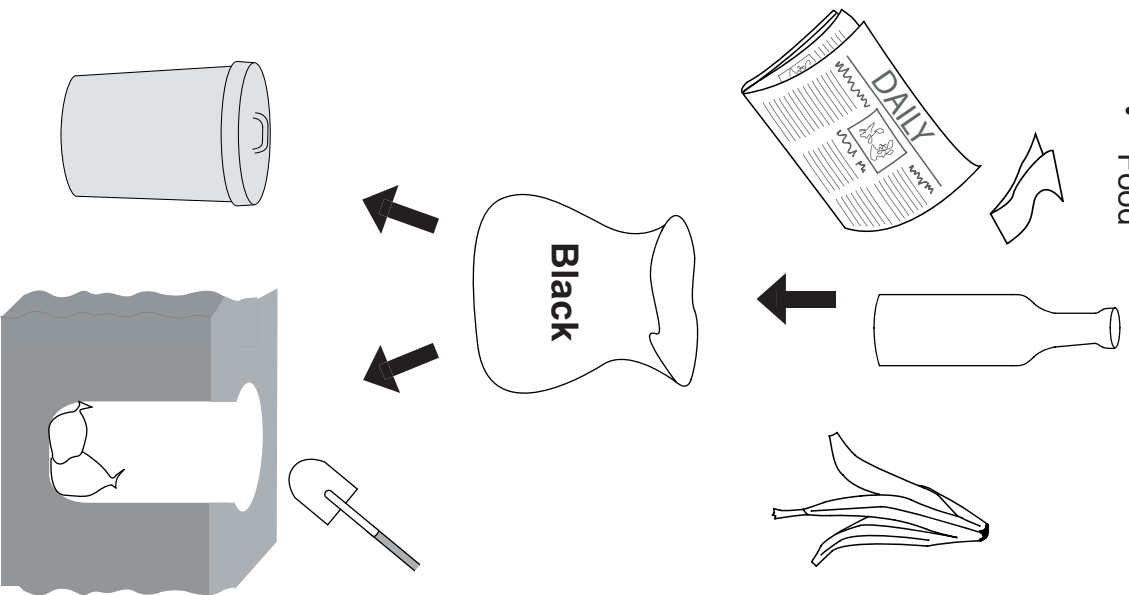
- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Distribute handout.*
- *Note the color-coded system and ensure the colors reflect your system.*
- *Stress the concept that waste handlers should **NEVER** re-sort waste.*

### Activity

Practice waste segregation using appropriate-colored bags and facility supplies if available. Alternatively, use paper cutouts of different types of waste and have participants separate them into the appropriate categories.

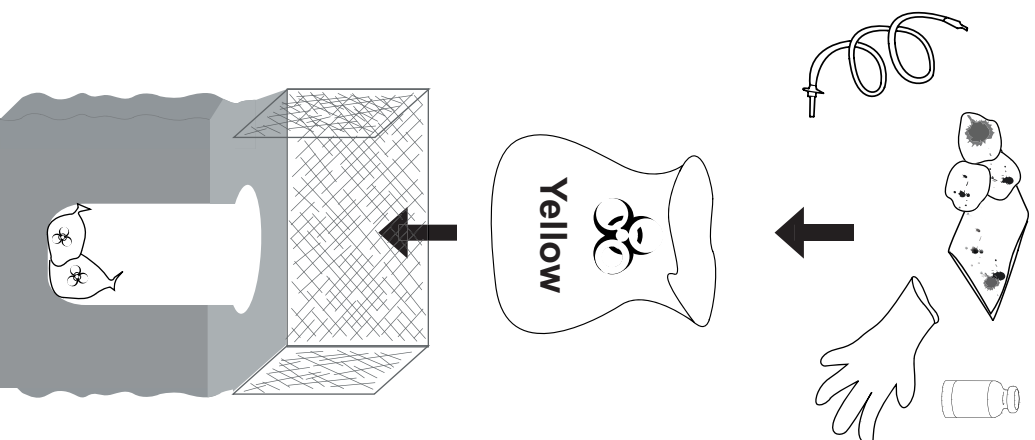
## Noninfectious Waste

- Paper/Packaging material
- Bottles/Cans
- Glass
- Food



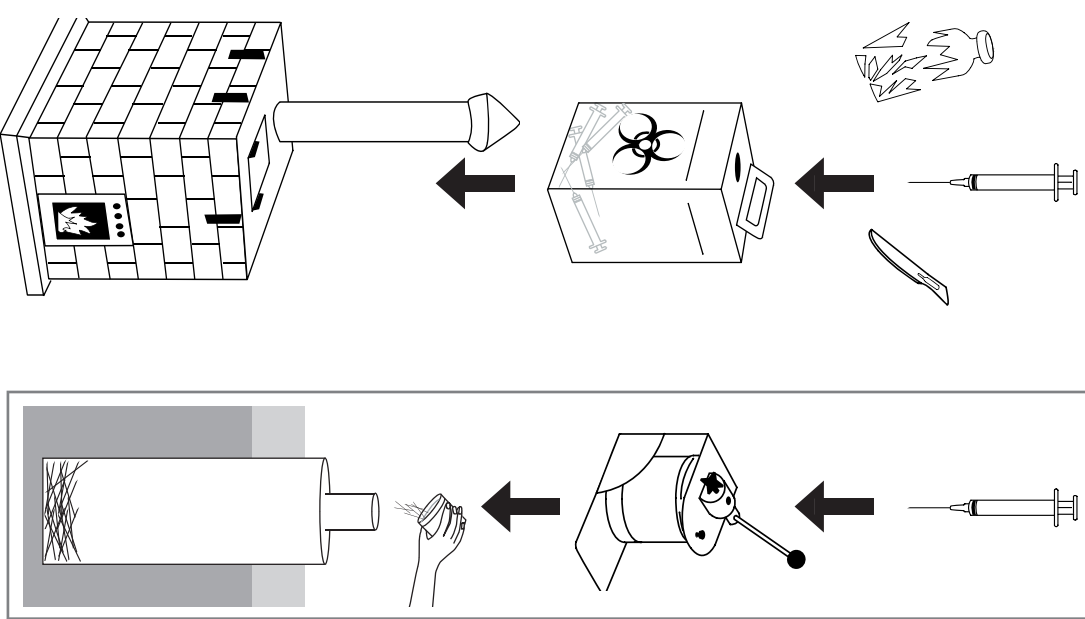
## Infectious Waste

- Gauze/Dressing
- Blood/IV fluid liner
- Gloves
- Anatomical waste
- Pharmaceutical waste



## Sharps Waste

- Needles
- Infusion sets
- Scalpels
- Blades
- Broken glass



## 4. Segregation of Waste



Segregation – WH.4

## Segregation of Waste

- Segregate waste immediately according to type.
- Types of waste include: Noninfectious, infectious, and sharps waste.

Segregation – WH.4

## Noninfectious Waste

- Presents no risk.
- Examples: paper, packaging materials, office supplies, drink containers, hand towels, boxes, glass, plastic bottles, and food.



Segregation – WH.4

## Infectious Waste

- Has been in contact with human blood and bodily fluids and has the ability to spread disease.
- Examples: gauze, cotton, dressings, laboratory cultures, IV fluid lines, blood bags, gloves, anatomical waste, and pharmaceutical waste.



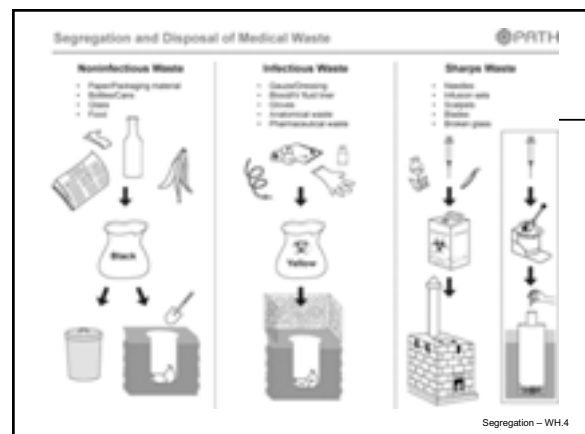
Segregation – WH.4

## Sharps Waste

- Has the potential to puncture the skin and cause disease.
- Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.



Segregation – WH.4



Segregation – WH.4

### Color Code Waste

- Noninfectious health care waste: Black.
- Infectious health care waste: Yellow.
- Sharps waste: Safety box, needle remover, or other puncture-proof and leak-proof sharps container.

Segregation – WH.4

### Proper Handling

- Waste handlers should **NEVER** resort waste.
- Fill bags only  $\frac{3}{4}$  full to allow proper closing.
- Seal all waste containers and label to describe contents.

Segregation – WH.4

## 5. Handling, Storage, and Transport of Safety Boxes

### Handling/Storage

**Sharps waste must be stored in a safe place.**

- Keep boxes in a secure location—away from medical supplies and out of reach (a locked room is best).
- Keep safety boxes dry.
- Keep written record of number of safety boxes received and disposed.
- Store safety boxes no more than one week (or according to facility guidelines).

### Burial or Transport

At facilities that do not have incinerators, safety boxes can be buried on site in a deep pit or transported to an incinerator. If transported to an incinerator:

- Keep boxes upright.
- Avoid direct contact of safety boxes with drugs, vaccine, and medical supplies that might be in the same vehicle.
- Keep safety boxes dry and protected from rain.
- Be sure you are aware of the schedule for pick up and delivery of safety boxes.
- After transport, clean vehicle surfaces with bleach solution.

### Handouts

None

### Slides

4 slides

### Notes for the Trainer

- *Review material and adapt based on your health system.*



## 5. Handling, Storage, and Transport of Safety Boxes



Handling and Transport of Safety Boxes-WH.5

### Handling/Storage

- Sharps waste must be stored in a safe place.
- Keep boxes in a secure location.
- Keep safety boxes dry.
- Keep written record of number of safety boxes received and disposed.
- Store safety boxes no more than one week (or according to facility guidelines).

Handling and Transport of Safety Boxes-WH.5

### Burial or Transport

- At facilities that do not have incinerators, safety boxes can be buried on site in a deep pit or transported to an incinerator.

Handling and Transport of Safety Boxes-WH.5

### Transporting to an Incinerator

- Keep boxes upright.
- Avoid direct contact of safety boxes with other waste or medical supplies in the same vehicle.
- Keep safety boxes dry.
- Be sure you are aware of the transport schedule.
- After transport, clean vehicle surfaces.

Handling and Transport of Safety Boxes-WH.5

## 6. Overview of Sharps Treatment, Destruction, and Disposal

Today there are no systems without disadvantages and the final choice of the best available alternative is dependent on local conditions rather than global policy.

### Treatment Options

- Incineration
- Autoclave/shredding
- Liquid disinfection
- Melting

### Disposal Options

- Infectious waste pit
- Protected sharps pit
- Sharps barrel
- Ash pit
- Municipal waste/landfill
- Encapsulation
- Recycling

### Handouts

None

### Slides

3 slides

### Notes for the Trainer

- *Review material and adapt based on your health system. Some treatment options may not be available at your facility; include only those that are.*

## 6. Overview of Sharps Treatment, Destruction, and Disposal

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Treatment and Disposal-WH.6

### Treatment Options

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- Incineration
- Autoclave/shredding
- Liquid disinfection
- Melting

Treatment and Disposal-WH.6

### Disposal Options

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- Infectious waste pit
- Protected sharps pit
- Sharps barrel
- Ash pit
- Municipal waste/landfill
- Encapsulation
- Recycling

Treatment and Disposal-WH.6

## 7. Treatment of Sharps: Liquid Disinfection

**Warning:** Disinfection does not render sharps safe for reuse and only serves to reduce the risk from accidental exposure to sharps prior to treatment or disposal.

### What is disinfection?

Chemical disinfection is generally achieved by adding bleach or other disinfectants to syringes.

### Why disinfect?

It reduces the pathogenic risk of infectious health care wastes.

### Guidelines for disinfection:

- Household bleach, at the appropriate concentrations (0.5% chlorine solution), can be used to disinfect sharps and other wastes.
- Disinfection procedures must be followed carefully to be effective.

### Handouts

None

### Slides

4 slides

### Notes for the Trainer

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Instructions for use will vary by method of disinfection.*
- *Specific details should be added based on method used in your health facilities.*

## 7. Treatment of Sharps: Liquid Disinfection



Treatment: Disinfection-WH.7

## Liquid Disinfection

### What is disinfection?

- Chemical disinfection is generally achieved by adding bleach or other disinfectants to syringes.

Treatment: Disinfection-WH.7

## Liquid Disinfection

### Why disinfect?

- It reduces the pathogenic risk of infectious health care waste.

Treatment: Disinfection-WH.7

## Liquid Disinfection

### Guidelines for Disinfection

- Household bleach can be used to disinfect sharps and other wastes.
- Disinfection procedures must be followed carefully to be effective.
- Disinfection does not render sharps safe for reuse.
- Disinfection reduces the risk of accidental exposure to sharps.

Treatment: Disinfection-WH.7

## 8. Treatment of Sharps: Autoclave/Shredding

### What is autoclaving?

- Autoclaving is a low-heat thermal process that is designed to bring steam into direct contact with waste for a sufficient duration to disinfect the waste.
- Autoclaving is environmentally safe.
- It requires electrical power in most cases and is not always suitable to treat waste at health centers.

### How it works:

- Hot pressurized steam kills microorganisms.

### Requirements:

- Proper pressure, heat, and time are required: 121° for 1 hour.
- Needle removal or shredding before autoclaving will make autoclaved waste safer.

### Inspection and Maintenance:

- Required to ensure gaskets, boiler, filters, etc. are working properly.

### Handling:

- Autoclaved waste is as safe for handling as regular garbage if it contains no sharps.

### Shredding:

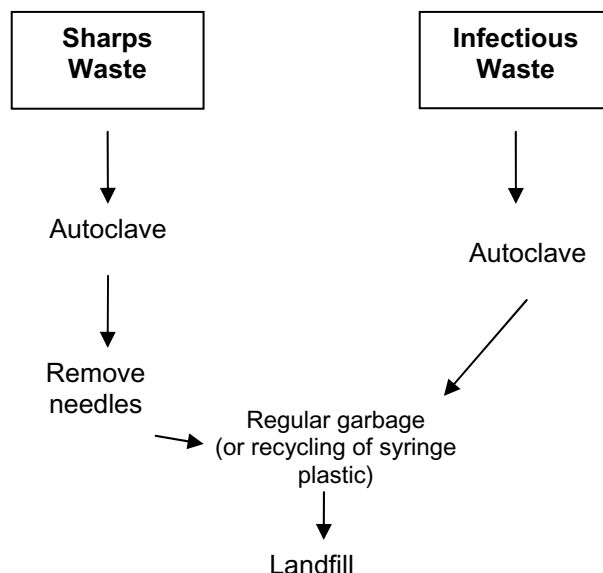
- Shredders cut sharps into small pieces.
- Requires a worker skilled in the operation and maintenance of sometimes heavy-duty, rotating equipment.
- Only disinfected needles and syringes should be shredded.

### Handouts

None

### Slides

9 slides



## Notes for the Trainer

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Instructions for use will vary by type of autoclave in use. Specific details should be added based on the autoclave in place in your health facilities.*
- *Stress that only trained staff should operate an autoclave.*
- *Stress the importance of maintenance.*
- *This section covers small-scale autoclaves. Large-scale autoclaves may be available in some urban settings. These require a qualified operator and have specific operating procedures that are not covered here.*

## 8. Treatment of Sharps: Autoclave/Shredding



Autoclave-WH.8

### Autoclave

#### What is autoclaving?

- Low-heat thermal process that brings steam into direct contact with waste to disinfect the waste.
- It requires electrical power in most cases and is not always suitable to treat waste at health centers.

Autoclave-WH.8

### Autoclave

#### Why autoclave?

- Autoclaving is environmentally safe.

Autoclave-WH.8

### Autoclave

#### How it works:

- Hot pressurized steam kills microorganisms.

Autoclave-WH.8

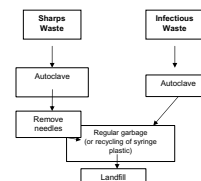
### Autoclave

#### Requirements:

- Proper pressure, heat, and time are required: 121° for 1 hour.
- Needle removal or shredding before autoclaving will make autoclaved waste safer.

Autoclave-WH.8

### Autoclave





## Autoclave

### Inspection and Maintenance:

- Required to ensure gaskets, boiler, filters, etc. are working properly.

Autoclave-WH.8

## Autoclave

### Handling:

- Autoclaved waste is as safe for handling as regular garbage if it contains no sharps.

Autoclave-WH.7

## Shredding

- Shredders cut sharps into small pieces.
- Requires a worker skilled in the operation and maintenance of equipment.
- Simple shredders can be made from a manually operated grain mill.
- Only disinfected needles and syringes should be shredded.

Autoclave-WH.8

## 9. Treatment of Sharps: Encapsulation

### What is encapsulation?

Encapsulation (or solidification) refers to the containment of a small number of hazardous or dangerous items or materials in a mass of inert material.

### Why encapsulate?

- Needles removed or cut from the syringes take up very little space. Large quantities of needles can therefore be collected in hard, puncture-proof containers.
- The purpose of the treatment is to isolate the dangerous items or materials from humans and the environment by encapsulating them in an impervious mass.
- The main advantage of the process is that it is very effective in reducing the risk of scavengers gaining access to the hazardous health care waste.

### How to encapsulate:

- Fill containers with waste  $\frac{3}{4}$  full.
- Add an immobilizing material (wet concrete, sand, or clay).
- Seal the container.
- Once the needles have been encapsulated, the block containing the needles can be disposed of in a burial pit or introduced into the municipal waste system.
- Encapsulation of used sharps is generally not practiced as a long-term solution.

### Handouts

None

### Slides

4 slides

### Notes for the Trainer

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Instructions will vary by method of encapsulation.*

## 9. Treatment of Sharps: Encapsulation

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Treatment: Encapsulation-WH.9

## Encapsulation

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### What is encapsulation?

- Encapsulation refers to the containment of a small number of hazardous materials in a mass of solid material.

Treatment: Encapsulation-WH.9

## Encapsulation

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### Why encapsulate?

- Needles removed or cut from the syringes take up little space. Large quantities of needles can be collected in puncture-proof containers.
- Isolates the dangerous items or materials from humans and the environment.
- Effective in reducing the risk of scavengers gaining access to the hazardous health care waste.

Treatment: Encapsulation-WH.9

## Encapsulation

---

### How to encapsulate:

- Fill containers with waste to  $\frac{3}{4}$  full.
- Add immobilizing material.
- Seal the container.
- Once encapsulated, the block can be disposed of in a burial pit or municipal waste.
- Encapsulation is not a long-term solution.

Treatment: Encapsulation-WH.9

## 10. Treatment and Destruction of Sharps: Incineration

### What is incineration?

Incineration is high temperature burning.

### Why incinerate sharps waste?

- Incineration reduces volume and eliminates pathogens.
- Note that syringes do not contain PVC plastic and can be safely incinerated without releasing toxic emissions.

### Using an Incinerator

#### Operation:

- Keep incinerator clean. Remove ash from ash chamber and grate, and do not store waste in incinerator.
- Some incinerators (i.e., De Montfort) need to be preheated by burning nonmedical waste (firewood, coconut shells, etc, and supplemented with kerosene or diesel fuel as may be necessary). The temperature of the stovepipe thermometer should be approximately 600°C (it may take 20-30 minutes to reach this temperature) before medical waste is added.
- Safety boxes should be loaded at a rate that maintains a constant and good, but not fierce, fire in the grate (approximately 6 kg/hr of safety boxes).
- If the incinerator does not need to be preheated:
  - Load 4 to 6 safety boxes.
  - Sprinkle with ½ to 1 liter of kerosene.
  - Light fire through inspection door.
  - Close doors when fire burns hot.
  - Reload additional safety boxes when fire is finished and loading door is cool to touch.

#### Key components needed to properly incinerate

- Clear operation procedures—posted near the incinerator.
- Trained operator.
- Reliable segregation system so only infectious and nonpolluting materials are incinerated.
- Reliable transport system to get waste to the incinerator.
- Ash pit to safely dump the incinerator ash.
- Maintenance schedule.
- Adequate supply of fuel.

#### Things that MUST NOT be incinerated:

- PVC plastics (Important! Syringe bodies are not PVC plastics)
- Mercury thermometers.
- Batteries.

- X-ray/photographic materials.
- Aerosol cans/gas containers.
- Glass vials (they can explode or if uncapped they melt and could block the incinerator grate).  
Reminder: broken glass goes in the safety box.

### **Critical Maintenance Steps**

A qualified official must inspect the incinerator every six months.

- Masonry inspection and repair
  - Check for loose bricks and cracks in mortar—interior and exterior.
  - Repair or replace damaged bricks.
- Metal inspection and repair
  - Check doors, hinges, grate, chimney cap.
  - Replace if bent or damaged.
- Chimney
  - Clean soot from inside of chimney.
- Site maintenance
  - Clear brush from area around incinerator.
- Ash pit
  - If ash pit is full, cover and dig new pit.

### **Handouts**

Incinerator Operation and Maintenance

### **Slides**

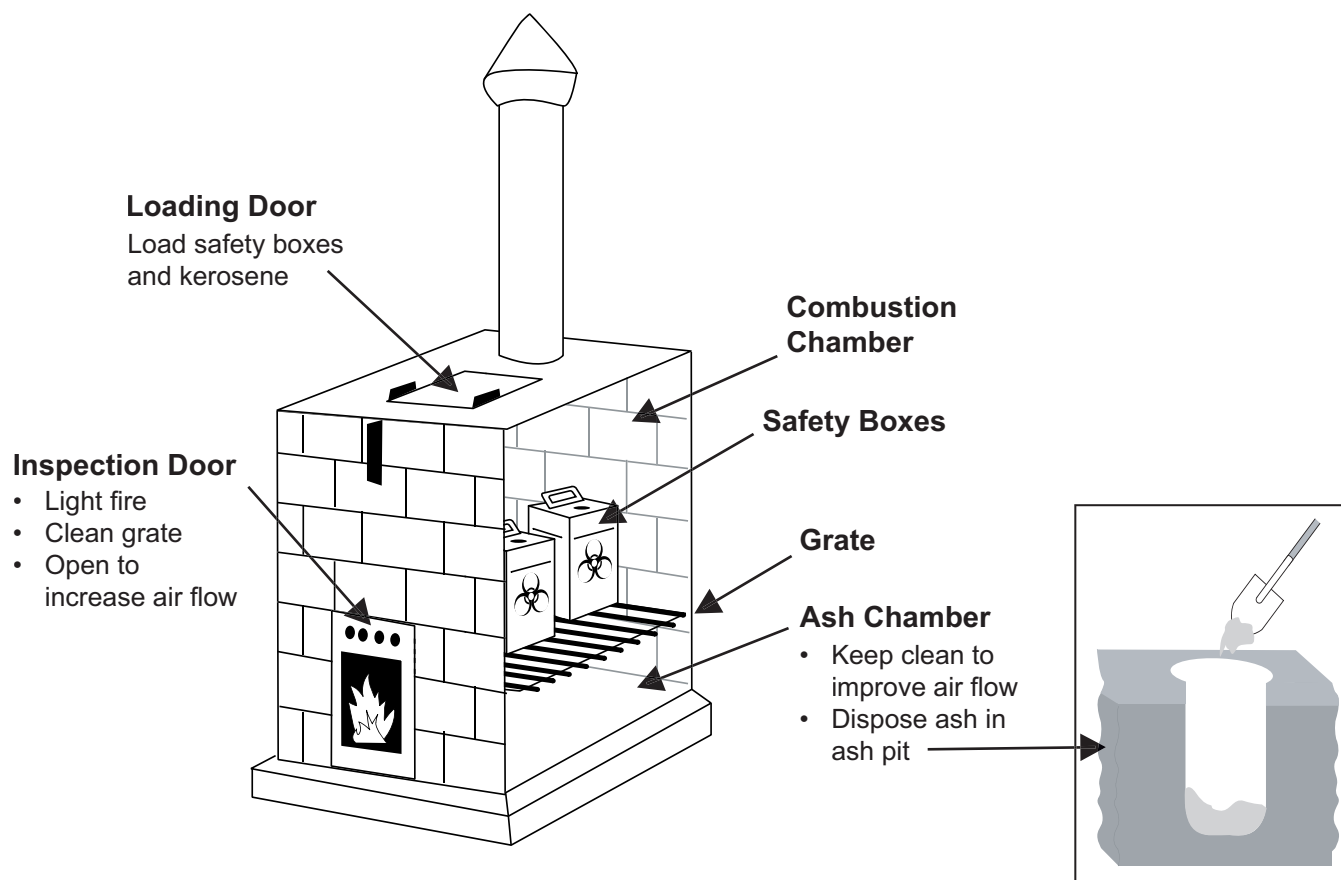
7 slides

### **Notes for the Trainer**

- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Distribute handout.*
- *Instructions for use will vary by type of incinerator in use.*
- *Stress that only trained staff should operate an incinerator.*  
*Stress the importance of maintenance.*

## Operation

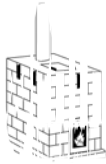
1. Remove ash from ash chamber and grate.
2. Load 4 to 8 safety boxes.
3. Pour  $\frac{1}{2}$  to 1 liter of kerosene on safety boxes.
4. Light fire through inspection door.
5. Close doors when fire burns hot.
6. Reload additional safety boxes when fire is finished and loading door is cool to touch.



## 6-Month Maintenance

1. Masonry inspection and repair
  - Check for loose bricks and cracks in mortar—interior and exterior—and repair or replace damaged bricks.
2. Metal inspection and repair
  - Check doors, hinges, grate, chimney cap—replace if bent or damaged.
3. Chimney
  - Clean soot from inside of chimney.
4. Site maintenance
  - Clear brush from area around incinerator.
5. Ash pit
  - If ash pit is full, cover and dig new pit.

## 10. Treatment and Destruction of Sharps: Incineration



Incineration-WH.10

### Incineration

#### What is incineration?

- Incineration is high-temperature burning.
- High temperature=cleaner burning.

Incineration-WH.10

### Incineration

#### Why incinerate sharps waste?

- Incineration reduces volume and eliminates pathogens.
- Syringes do not contain PVC plastic and can be safely incinerated without releasing toxic emissions.

Incineration-WH.10

### Operating an Incinerator

- Keep incinerator clean.
- Some incinerators need to be preheated by burning nonmedical waste.
- Safety boxes should be loaded at a rate that maintains a constant and good fire.

Incineration-WH.10

### Components for Proper Incineration

- Clear operation procedures.
- Trained operator.
- Reliable segregation system.
- Reliable transport system.
- Ash pit.
- Maintenance schedule.
- Adequate supply of fuel.

Incineration-WH.10

### Do NOT Incinerate:

- PVC plastics
- Mercury thermometers
- Batteries
- X-ray/photographic materials
- Aerosol cans/gas containers
- Glass vials

Incineration-WH.10

### **Critical Maintenance Steps**

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- Inspect the incinerator every 6 months
- Metal inspection and repair
- Chimney
- Site maintenance
- Ash pit

Incineration-WHL10



## 11. Disposal of Removed Needles: Protected Sharps Pit

### What is a protected sharps pit?

- A sharps pit is a deep, covered hole where needles or small sharps are placed after being cut with a needle remover. The needle pit should have a small opening so no one can reach into it.

### Why use a protected sharps pit?

- Confines hazardous sharps waste at facility without requiring transport.
- Proper use may prevent needlestick injuries to health care workers and the community.
- When the sharps pit is correctly used, a one cubic meter pit will safely contain over 1 million used needles.

### Building a protected sharps pit

- Identify the appropriate location. Locate the protected sharps pit away from ground water sources.
- Identify a builder and purchase the necessary materials. Follow the design drawings provided in the handout.
- Build the protected sharps pit above the water table. If the pit must be built below the water table, line the pit with concrete or consider installing a sharps barrel.
- Include drainage holes. Leave drainage holes in the sides of the pit to facilitate drainage.
- Build a fence around the sharps pit. The sharps pit must be fenced and protected to prevent unauthorized access.
- Lid should be kept on the needle chute when not in use. This will prevent water from entering the pit.

### Using a protected sharps pit

- Dispose of removed needles carefully in secure sharps pits.
- When transporting the filled container to the sharps pit, keep the lid on the container.
- Empty the needles into the opening in the top of the sharps pit.
- Wearing plastic gloves, clean the needle container with bleach and hot water before reuse.

### Handout

Building a Protected Sharps Pit

Using a Protected Sharps Pit

### Slides

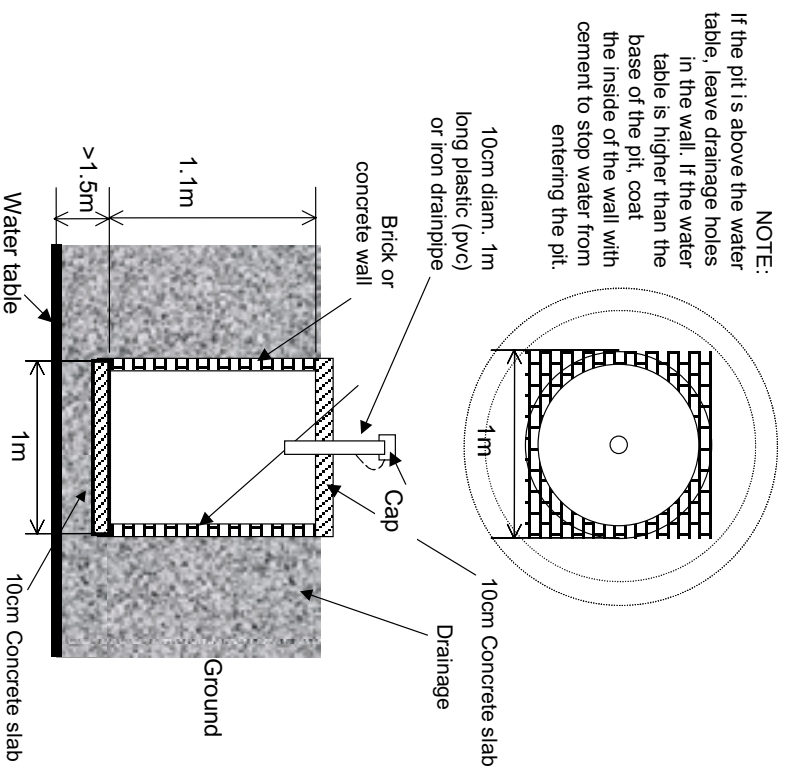
5 slides

### **Notes for the Trainer**

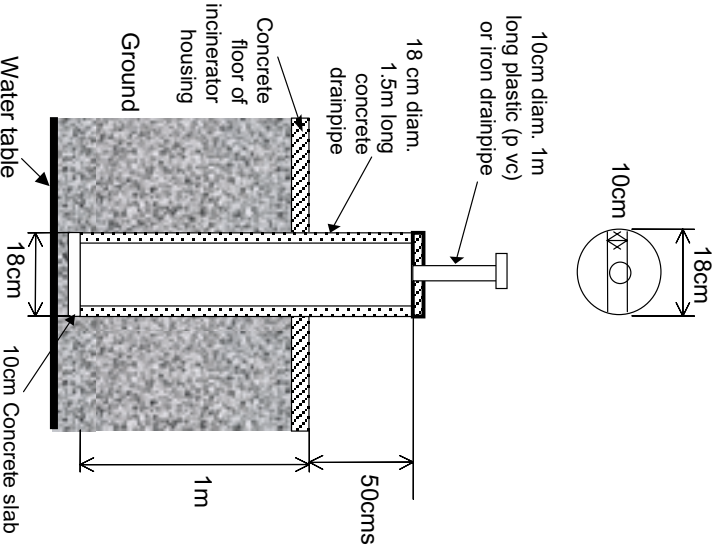
- *Review material and adapt based on your health system.*
- *Adjust the level of technical detail and language so that it is appropriate for the staff you are training.*
- *Distribute handouts.*

1. **Identify the appropriate location.** Locate protected sharps pit away from ground water sources.
2. **Identify a builder and purchase the necessary materials.** Follow the design drawings below.
3. **Build the protected sharps pit above the water table.** Consider installing a sharps barrel if the water table is an issue.
4. **Include drainage holes.** Leave drainage holes in the sides of the pit to facilitate drainage.
5. **Build a fence around the sharps pit.** The sharps pit must be fenced and protected to prevent unauthorized access.
6. **Lid should be kept on the needle chute when not in use.** This will prevent water from entering the pit.

## Sharps pit (MSF style)



## Sharps pit (Indonesian style)

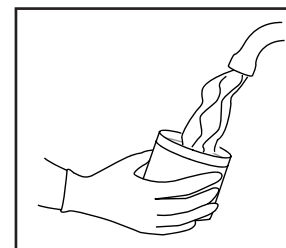
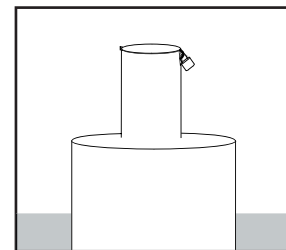
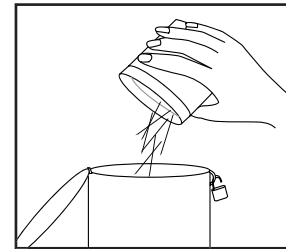
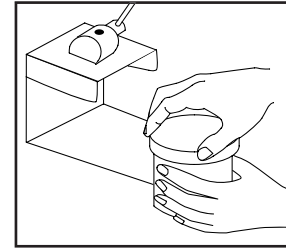


## General use for disposal of needles

1. Remove the filled needle container from needle remover and immediately secure lid.
2. Keep the lid on the container when transporting the filled container to the sharps pit.
3. Unlock and lift pit lid.
4. Empty needle containers into pit with care to avoid spilling.

Do not use the sharps pit for any other type of waste.

5. Keep lid closed and locked when not in use.
6. Wearing plastic gloves, clean the container with bleach and hot water before reuse.



## Cleaning needle spills

1. Put on protective gloves.
2. Pour bleach solution over needles and allow to sit for 15 minutes.
3. Using a dustpan and broom, carefully brush the needles off the ground and empty them into the sharps pit. Do not allow fingers or hands to come in contact with needles. Take special care to ensure that no needle fragments remain embedded in the broom.
4. After the needles have been removed, cover the area with a bleach solution.

## Final disposal

It may take many years to fill the protected sharps pit. The fill level of the pit can be examined by looking directly down into the pit through the pipe. When it is full, the following steps should be followed:

1. Remove the pipe.
2. Fill the pit with cement to safely encapsulate the loose needles.

## 11. Disposal of Removed Needles: Protected Sharps Pit



Sharps Pit-WH.11

## Protected Sharps Pit

### What is a sharps pit?

- A sharps pit is a deep, covered hole where needles or small sharps are placed after being cut with a needle remover.

Sharps Pit-WH.11

## Protected Sharps Pit

### Why use a protected sharps pit?

- Confines hazardous sharps waste at facility.
- Proper use may prevent needlestick injuries.
- A one cubic meter pit will safely contain over 1 million used needles.

Sharps Pit-WH.11

## Building a Protected Sharps Pit

- Identify the appropriate location.
- Identify a builder and purchase the necessary materials.
- Build the protected sharps pit above the water table.
- Include drainage holes.
- Build a fence around the sharps pit.
- Lid should be kept on the needle chute when not in use.

Sharps Pit-WH.11

## Using a Protected Sharps Pit

- Dispose of removed needles carefully in secure sharps pit.
- When transporting the filled needle container to the sharps pit, keep the lid on the container.
- Empty the needles into the opening in the top.
- Wearing plastic gloves, clean the needle container with bleach and hot water before reuse.



Sharps Pit-WH.11

## 12. Disposal of Removed Needles: Protected Sharps Barrel

### What is a protected sharps barrel?

A sharps barrel is a plastic, covered barrel where needles or small sharps are placed after being cut with a needle remover.

### Why use a protected sharps barrel?

- Confines hazardous sharps waste at facility without requiring transport.
- Proper use may prevent needlestick injuries to health care workers and the community.
- When the sharps barrel is correctly used, a barrel will safely contain over 150,000 used needles.

### Building a protected sharps barrel:

- Manufacture a funnel: identify a manufacturer to make the funnel and provide the design drawings.
- Select a barrel and identify an appropriate location: barrels should be plastic, as metal barrels could rust over time. Health facility supervisors and waste handlers should decide together on a site for the barrel. It should be dry, secure, and convenient.
- Attach the funnel to the sharps barrel: screw the metal funnel into the hole on top of barrel. Rubber cement or other sealant may be used to help secure connection if needed.
- Occasionally the barrel may be gently rocked to settle the contents evenly inside: needles will tend to stack directly underneath the funnel opening, rocking helps to ensure that the entire barrel volume is being used.
- Funnel lid should be kept closed and locked when not in use.

### Using a protected sharps barrel:

- Dispose of removed needles carefully in secure sharps barrel.
- When transporting the filled needle container to the sharps barrel, keep the lid on the container.
- Empty the needles into the opening in the top of the sharps barrel.
- Wearing plastic gloves, clean the needle container with bleach and hot water before reuse.

### Handouts

Building a Protected Sharps Barrel

Using a Protected Sharps Barrel

### Slides

5 slides

**Notes for the Trainer**

- *Review material and adapt based on your health system.*
- *If barrel is being newly implemented, ensure funnel design drawings are followed closely.*
- *Adjust the level of technical detail and language appropriately.*
- *Distribute handouts.*

## 1. Manufacture a funnel.

Identify a sheet metal manufacturer to make the funnel according to the design drawings below.

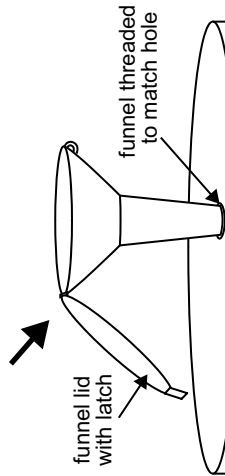
## 2. Select a barrel and identify an appropriate location.

Barrels should be plastic, as metal barrels could rust over time. Health facility supervisors and waste handlers should decide together on a site for the barrel. It should be dry, secure, and convenient.

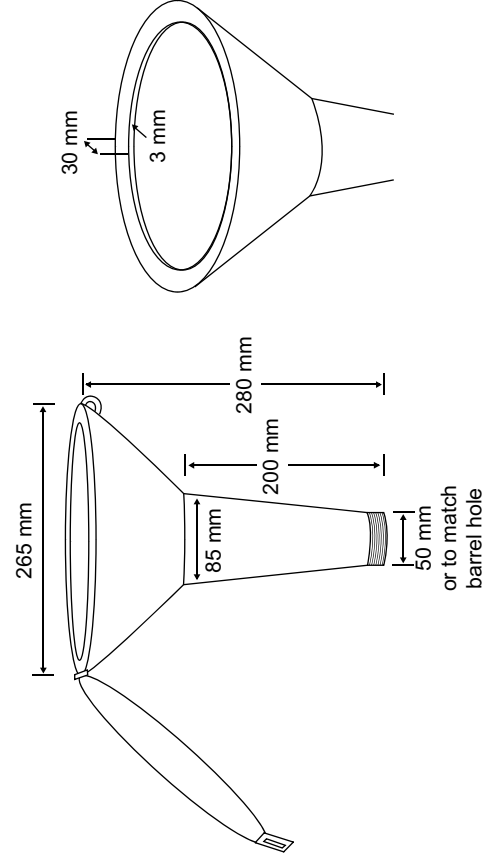
## 3. Attach the funnel to the sharps barrel.

Screw the metal funnel into the hole on top of the barrel. Rubber cement or other sealant may be used to help secure connection if needed.

### Metal funnel



### Funnel details





## General use for disposal of needles

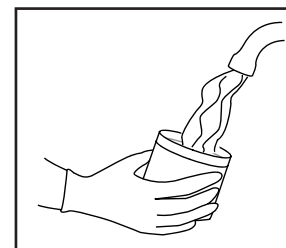
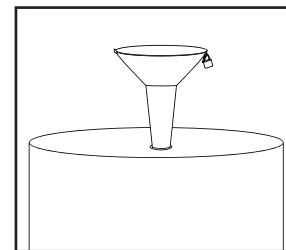
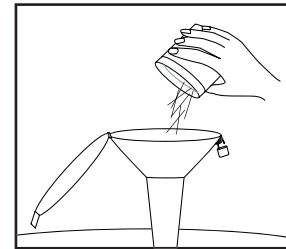
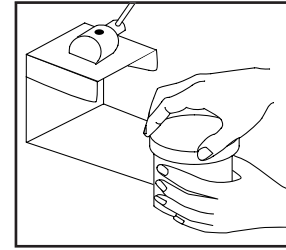
1. Remove the filled needle container from needle remover and immediately secure lid.
2. Keep the lid on the container when transporting the filled container to the sharps barrel.
3. Unlock and lift funnel lid.
4. Empty needle container into funnel with care to avoid spilling.

Do not use the barrel for any other type of waste.

5. Keep funnel lid closed and locked when not in use.
6. Occasionally the barrel may be rocked gently to settle the contents evenly inside.

Needles will tend to stack directly underneath the funnel opening; rocking helps to ensure that the entire barrel volume will be used.

7. Wearing plastic gloves, clean the container with bleach and hot water before reuse.



## Cleaning needle spills

1. Put on protective gloves.
2. Pour bleach solution over needles and allow to sit for 15 minutes.
3. Using a dustpan and broom, carefully brush the needles off the ground and empty them into the sharps barrel through the funnel. Do not allow fingers or hands to come in contact with needles. Take special care to ensure that no needle fragments remain embedded in the broom.
4. After the needles have been removed, mop the area with a bleach solution.

## Final disposal of barrel

The barrel is expected to hold approximately 150,000 needles before it is full. The fill level of the barrel can be examined by looking directly down into the barrel through the funnel. When it is full, the following steps should be followed:

1. Remove funnel. The funnel can be saved and used again for another barrel.
2. Fill the barrel with cement to safely encapsulate the loose needles.
3. Cap the hole and transfer the cemented barrel to landfill disposal.

## 12. Disposal of Removed Needles: Protected Sharps Barrel



Sharps Barrel-WH.12

## Protected Sharps Barrel

### What is a sharps barrel?

- A sharps barrel is a plastic, covered barrel where needles or small sharps are placed after being cut with a needle remover.

Sharps Barrel-WH.12

## Protected Sharps Barrel

### Why use a protected sharps barrel?

- Confines hazardous sharps waste at facility.
- Proper use may prevent needlestick injuries.
- A barrel will safely contain over 150,000 used needles.

Sharps Barrel-WH.12

## Building a Sharps Barrel

- Manufacture a funnel.
- Select a barrel and identify an appropriate location.
- Attach the funnel to the sharps barrel.
- Occasionally the barrel may be gently rocked to settle the contents evenly inside.
- Funnel lid should be kept closed and locked when not in use.

Sharps Barrel-WH.12

## Using a Sharps Barrel

- Dispose of removed needles carefully in secure sharps barrel.
- When transporting the filled needle container to the sharps barrel, keep the lid on the container.
- Empty the needles into the opening in the top.
- Wearing gloves, clean the needle container with bleach and hot water before reuse.



Sharps Barrel-WH.12

### **13. Roles and Responsibilities for Waste Management**

Be sure you know what your and other staff's responsibilities are with regard to management and disposal of sharps waste. Here are some common responsibilities:

#### **Managers**

- Obtain and be familiar with national waste management policies.
- Develop facility waste management plan (goal, budget, personnel, roles, supervision, training, reporting).
- Ensure supply of safety boxes, needle removers, or other sharps containers; designate appropriate and secure storage for used sharps.
- Identify and budget for final disposal method including transport and fees.
- Create climate of support for needlestick injury reporting.
- Develop protocol for management of needlestick injury.
- Advocate for health worker safety.

#### **Injection Providers**

- Follow waste management policies.
- Follow color-coded waste segregation system.
- Place sharps containers properly.
- Immediately dispose of sharps in closed container.
- Record keeping—record number of filled sharps containers, identify supply needs, report stock outs.
- Store sharps waste in secure location.

#### **Waste Handlers**

- Know color-coding system.
- Collect filled sharps containers.
- Ensure waste is securely stored until disposal.
- Use protective equipment when handling sharps.
- Provide waste to waste collection vehicle or service.

#### **Waste Carriers**

- Maintain segregation.
- Remove waste from facility.
- Ensure a clean environment at the facility.
- Safely transport waste to final disposal site.
- Dispose of waste in safe and acceptable manner.

**Incinerator or autoclave operators:**

- Follow incinerator/autoclave operations procedure.
- Use protective equipment when handling waste.
- Ensure supply of fuel.
- Record weight and type of waste received.
- Ensure payments received, as appropriate.
- Follow regular maintenance schedule for incinerator.
- Ensure regular transport of ash to landfill.

**Handouts**

None

**Slides**

3 slides

**Notes for the Trainer**

- *Review roles and responsibilities and adapt based on your health system. For example, does the waste handler transport the waste? Is he/she also the incinerator operator?*

### 13. Roles and Responsibilities of Sharps Waste Management

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Roles and Responsibilities– WH.13

#### Roles and Responsibilities

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- Know what your and other staff's responsibilities are with regard to management and disposal of sharps waste.

Roles and Responsibilities– WH.13

#### Roles and Responsibilities

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- Managers
- Injection Providers
- Waste Handlers
- Waste Carriers
- Incinerator or Autoclave Operators

Roles and Responsibilities– WH.13

