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GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

GLOBAL HEALTHCARE WASTE PROJECT

# MODULE 14: Off-site Transport and Storage of Healthcare Waste



# Module Overview

- Define external transport of healthcare waste
- Describe requirements for off-site transport of healthcare wastes including training requirements and PPE
- Describe transport vehicle requirements
- Describe routing
- Describe the consignment system
- Describe the requirements of a storage facility for different kinds of wastes

# Learning Objectives

- Explain the legal requirements for off-site transport and storage of healthcare waste
- Evaluate and improve transport equipment and vehicle designs
- Demonstrate the use of PPE
- Develop a routing plan for collection and transport
- Demonstrate cleaning and disinfection of off-site transport equipment and vehicles
- Demonstrate how to fill out a consignment note

# Off-site Waste Transport

- Also called external transport
- Refers to the transport of wastes from healthcare facilities to off-site storage areas and to off-site treatment facilities
- Entails the carriage of healthcare waste through public streets

# National and International Laws

- Off-site transport should comply with national regulations
- International agreements, such as the Basel Convention, deal with the transport across international boundaries
- If no national laws exist, UN recommendations on the transport of dangerous goods can be followed:

[http://www.unece.org/trans/danger/publi/unrec/rev16/16files\\_e.html](http://www.unece.org/trans/danger/publi/unrec/rev16/16files_e.html)

# Typical Requirements for Waste Transporters

- Registered under the country's regulations for healthcare waste transport
- Licensed to drive the type of vehicle used for off-site transport
- Declared medically fit to drive vehicles
- Certified to have been trained on healthcare waste transport
- Received vaccination against tetanus and hepatitis A+B

# Training of Waste Transporters

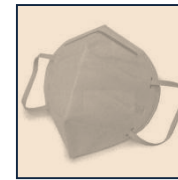
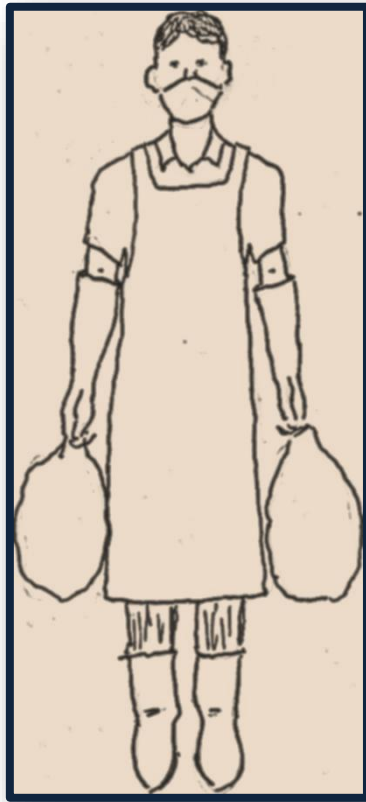
- Waste transport staff should be trained on the following:
  - Relevant legal regulations
  - Risks of hazardous healthcare waste
  - Waste classifications
  - Safe handling of healthcare waste
  - Labeling and documentation
  - Emergency and spillage procedures
  - Emergency contact numbers and details of emergency services

# National Requirements for Waste Transporters



# Waste Transport

- Requires the use of proper PPE

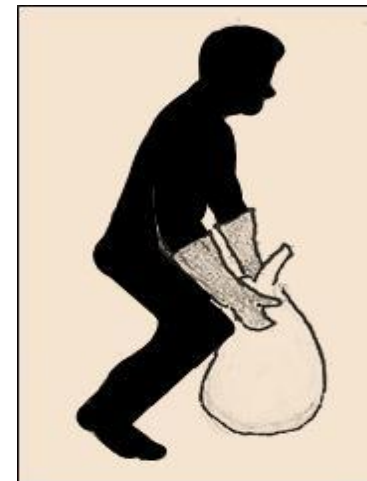


# Waste Transport

- Requires good body mechanics to protect the body from injury.
- Examples of bad and good body mechanics when lifting



**WRONG**



**RIGHT**

# Typical Infectious Waste Trolley



- Hard plastic container with a lid and push bar
- Durable and easy to clean
- Leak-proof
- Wheeled
- Color-coded, marked with the biohazard symbol and text
- Large capacity

# Examples of Wheeled Bins to Transport Larger Amounts of Infectious Waste



# Cleaning Transport Equipment

- Transport equipment should be cleaned and disinfected daily with an appropriate disinfectant

# Example of a Cart Cleaning Station



# Transport Vehicle Requirements

The waste transport vehicle should:

- be roadworthy
- have a maximum allowable loading greater than the expected payload
- have markings in keeping with national or international laws, including the name and address of the waste carrier
- have an international hazard sign including emergency phone number on the vehicle
- should have a design appropriate for the transport of healthcare waste

# Transport Vehicle Requirements

- Design criteria for waste transport vehicles
  - ❑ The body of the vehicle should be of a suitable size and designed to retain the load in the event of an accident.
  - ❑ There should be a bulkhead between the driver's cabin and the vehicle body.
  - ❑ There should be a suitable system for securing the load during transport.
  - ❑ The internal finish of the vehicle should allow it to be steam-cleaned and internal angles should be rounded to eliminate sharp edges to permit more thorough cleaning and prevent damage to waste containers;
  - ❑ A separate compartment in the vehicle should have empty plastic bags, suitable personal protective equipment, cleaning equipment, tools and disinfectant, together with special kits for dealing with liquid spills



# Transport Vehicle Requirements

- Vehicle for transporting healthcare waste should not be used for transporting other material.
- Vehicles should be kept locked except when loading and unloading
- Vehicles should be properly maintained and kept clean
- Refrigerated containers could be used if the storage time exceeds the recommended limits or transportation times are long

## **Temperate climate:**

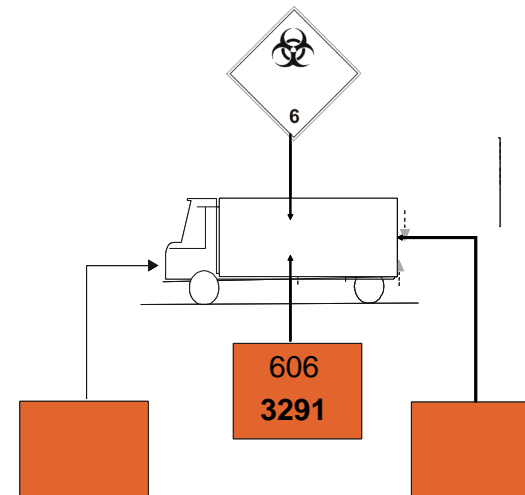
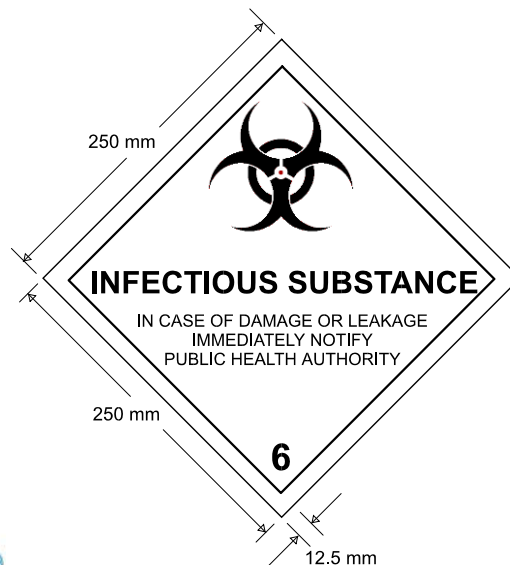
- 72 hours in winter
- 48 hours in summer

## **Warm climate:**

- 48 hours during the cool season
- 24 hours during the hot season

# Labeling of Transport Vehicles

- Under UN 3291
  - No specific vehicle labeling is needed if less than 333 kg of infectious waste is transported although labeling is recommended
  - If more than 333 kg of infectious waste is transported, the vehicle must have warning plates or placards (> 250 mm x 250 mm) located as shown below



# National Requirements for Transport Vehicles

# Examples of Healthcare Waste Transport Vehicles



# Routing

- The waste transporter's service territory can be divided into geographical-based collection zones or groupings.
- Collection frequency is determined by each healthcare facility's waste generation rates and storage limitations.
- Routing and scheduling can be figured out by trial-and-error or by heuristic routing approaches which take into account traffic patterns at different times of day, street configurations, on which side of the road the majority of facilities are situated, ground elevations, etc.
- Once the collection routes have been established, a pick-up schedule can be provided to the healthcare facilities.
- There should be agreement with each facility on the vehicle route inside the premise, access to the storage area, temporary parking permit, contact information for the responsible person, consignment procedure, etc.

# Consignment or Manifest System

- Off-site transport of healthcare waste requires a **waste tracking system** as part of a cradle-to-grave approach to waste management and in keeping with the “duty of care” principle
- Waste tracking is done through transport documentation known as **consignment notes or manifests**

# Consignment or Manifest System

- A typical consignment note or manifest has the following information
  - Waste class
  - Waste source
  - Pick-up date
  - Destination
  - Driver's name
  - Number of containers or volume
  - Receipt of load received from responsible person at a pick-up area

# Consignment or Manifest System

- A typical consignment or manifest system requires four copies of the consignment note or manifest
- Upon completion of the journey, the transporter keeps a copy of the completed consignment and sends the other copies to the following:
  - The generator of the waste
  - The transporter
  - The treatment or disposal facility
  - The relevant regulatory authority



# Example of a Consignment Note

## Hazardous Waste Consignment Note

PART A Notification Details					
1. Consignment note code: ABC123AB001		3. Premises Code: ABC123			
2. The waste described below is to be removed from: (name, address, postcode, telephone, e-mail & fax) The Veterinary Practice, High Street, New Town, The Shire, XX12 3YY Tel 0123 456789, aninrosp@hotmail.com		4. The waste will be taken to: (address and postcode) The Pet Crematorium, Low Street, Old Town, The Shire YY12 4XX			
5. The waste producer was (if different from 1) (name, address, postcode, telephone, e-mail & fax)					
PART B Description of waste					
1. The process giving rise to the waste(s) was: <b>Veterinary activities</b>		2. SIC for the process giving rise to the waste: <b>85.20</b>			
3. WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified).					
Description of Waste	EWC code	Qty (kg)	The chemical / biological components of the waste, their concentrations and physical form:	Hazard code(s)	Container type, number & size
Clinical waste: Cytotoxic and Cytostatic waste, including sharps, for incineration only.	18 02 07* 18 02 02*	10kg 10kg	Dressings, sharps, PPE, waste medication contaminated or containing cytotoxic and cytostatic medicines.	H8, H7, H9, H10, H11.	1 x 20 litre purple lidded Cyto Bin
Clinical waste: Mixed sharps and pharmaceutical waste for incineration only	18 02 02* 18 02 08	30kg	Sharps, syringe bodies, medicine vials and ampoules (not cytotoxic and cytostatic)	H3, H4, H5, H9, H14	5 x 14 litre yellow lidded sharps box
Clinical waste: Infectious, containing anatomical waste and diagnostic chemicals, for incineration only.	18 02 02* 18 02 05*	50kg 5kg	Formaldehyde (4%) preserved tissue samples, animal organs, diagnostic test kits	H8,H7,H9	6 yellow bags 3 yellow bins
Clinical waste: Infectious, suitable for alternative treatment.	18 02 02*	20kg	Dressings, PPE and swabs, not contaminated with chemicals or medicines.	H9	4 orange bags
X-ray Fixer Solution	09 01 01*	10kg	Acetic Acid 1-5% Silver 1-2%	H4	1 x 15 litre drum
X-Ray Developer Solution	09 01 04*	10kg	Hydroquinone 5-10% Diethylene Glycol 1-5% Sodium Carbonate 1-5%	H4,H7,H11	1 x 15 litre drum
ADR information for each EWC identified above:					
EWC code	Description for Carriage	Special Handling requirements			
18 02 02*	UN3291 Clinical Waste, unspecified, n.o.s. 6.2 II	No persons in handling chain to have direct contact. Waste to be disposed of at authorised site.			
etc	etc	etc			
PART C Carrier's certificate			PART D Consignor / Holders certificate		
(If more than one carrier is used, please attach a schedule for subsequent carriers. If a schedule of carriers is attached tick here) <input type="checkbox"/>  I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct & have been advised of any specific handling requirements: 1. Carrier driver name (please PRINT) <b>Tony Driver</b> 2. On behalf of (name, address, postcode, telephone, e-mail & fax) The Pet Crematorium, Low Street, Old Town, The Shire, YY12 4XX Tel : 0687 854321 e-mail: dogash@hotmail.com 3. Carriers registration no/ exemption reason: ABC01 2345 4. Vehicle registration no: A807 DOG Signature <b>J. Driver</b> Time <b>18.00</b> Date <b>29/02/2008</b>			I certify that the information in A, B & C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly & the carrier has been advised of any special handling requirements. 1. Consignor / Holder name (please PRINT) <b>Mr Arnold Vet</b> on behalf of (name, address, postcode, telephone, e-mail & fax) The Veterinary Practice, High Street / New Town, The Shire, XX12 3YY Tel 0123 456789, aninrosp@hotmail.com Signature <b>A. Vet</b> Time <b>18.00</b> Date <b>29/02/2008</b>		
PART E Consignee's Certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)					
Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted / rejected	Waste Management operation (R or D code)		
1. I received this waste at the address given in A4 on		Name: (please PRINT)			
2. Vehicle registration no (or mode of transport if not by road):		On behalf of (name, address, postcode, tel, e-mail & fax):			
3. Where waste is rejected please provide details:					
I certify that the waste management licence / permit / authorised exemption no(s).			Signature:		
<input type="text"/>			<input type="text"/>		
authorises the management of the waste described in B at the address given at A4			Date:		
			Time:		

# General Requirements for Storage Areas

The storage area should:




- have an impermeable, hard-standing floor with good drainage
- be easy to clean and disinfect (a tiled floor and walls are recommended)
- have facility to keep general waste separated from infectious and other hazardous waste
- have a water supply for cleaning purposes
- have easy access for staff in charge of handling the waste
- have a lock to prevent access by unauthorized persons
- have easy access for waste-collection vehicles
- be protected from the sun, rain or snow
- be inaccessible to animals, insects, and birds



# General Requirements for Central Storage Areas

The storage area should:

- have good lighting and at least passive ventilation
- not be situated near fresh food stores and food preparation areas
- have a supply of cleaning equipment, protective clothing, and waste bags or containers
- have a washing basin with running tap water and soap for the staff
- be cleaned regularly at least once a week
- have a capacity appropriate to the volumes of waste generated
- be labelled in accordance with the hazardous level of the stored waste

# Labels for Central Storage Areas

		
<p>No entry for unauthorized persons for all storage areas</p>	<p>Biohazard sign for infectious and sharps waste</p>	<p>Toxic sign for chemical and hazardous pharmaceutical waste</p>

	
<p>No eating or drinking</p>	<p>No smoking</p>

# Storage of Infectious Waste and Sharps

- The storage area should have a biohazard sign
- Regular inspection and cleanup (at least weekly) of storage areas should be part of HCWM plans
- Workers should be trained in site spillage procedures
- Sharps can be stored without problems, but other infectious wastes must be kept cool if storage times are exceeded, or refrigerated at a temperature of 3°C to 8°C if stored for more than a week

# Storage Times for Infectious Waste

- Storage times for infectious waste (e.g. the time gap between generation and treatment) should not exceed the following if the storage area is *not* cooled:

## **Temperate climate:**

- 72 hours in winter
- 48 hours in summer

## **Warm climate:**

- 48 hours during the cool season
- 24 hours during the hot season

# Pathological Wastes Storage

- Considered as biologically active waste
  - Expect gas formation and pathogen growth
- Storage should be air-conditioned or refrigerated (e.g. in the morgue) and should be stored at a temperature of 3°C to 8°C
- In some cultures, body parts are given to the family for ritual procedures or are buried in designated places

# Discussion

- How does your facility store and transport wastes externally? Are there written guidelines for external transport of wastes? Are different types of wastes kept separate during transport and storage?
- What are some alternative methods for dealing with these wastes that may or may not be practiced in your facility? Are safety procedures or practices in place to ensure that staff members and the public are not exposed during the processes?
- Do you know about your country's or region's regulations regarding waste transport and storage?
- What are the advantages and disadvantages of different healthcare waste transport systems? Do some seem to be safer and more effective than others? What about storage procedures?
- How does the storage setup in your facility compare with some of the general requirements given in this presentation?
- Any weaknesses or barriers?