

3.9 Lecture 6

Handling, storage and transportation

Overheads

Overhead 6.1	Waste collection
Overhead 6.2	Waste storage facilities
Overhead 6.3	Waste storage periods
Overhead 6.4	Off-site transport
Overhead 6.5	Waste labelling
Overhead 6.6	Off-site vehicle design

Teacher's notes

Handouts

- 6.1 UN Dangerous Goods Transport Document
 - 6.2 Example of a consignment note used in the U.K.
 - 6.3 Route of the consignment note used in the U.K.
 - 6.4 Example of UN labelling
 - 6.5 Vehicle design for off-site transportation of hazardous health-care waste
- Reduced overheads

Waste Collection

- Establish a routine programme for collection
- Collect ward waste daily
- Waste bags should be sealed
- All containers and bags should be labeled
- Full containers should be immediately replaced with empty containers or bags



Waste storage facilities

- Impermeable, hard standing
- Good drainage
- Easy to clean surfaces
- Convenient water supply
- Readily accessible to staff
- Secure and lockable
- Good lighting and ventilation
- Proofed against rodents, insects and birds



Waste storage periods

Maximum Storage Times

Temperate Climate

- 72 Hours in winter
- 48 Hours in summer

Warm Climate

- 48 Hours in cool season
- 24 Hours in hot season



Off-site transport

- Waste Accompanied by a Consignment Note
- Transporter known to the Regulatory Authority
- Disposal facility permitted by Regulatory Authority



Waste labeling

- Date of production
- Place of production (e.g. ward/ establishment*)
- Waste quantity
- Waste category
- Waste destination*
- UN symbol, number and shipping name*

*for off-site transport



Off-site vehicle design

Dedicated Vehicle

- Suitable size body with height of 2.2 metres
- Bulkhead between driver and body
- System to secure the load
- Separate compartment for emergency equipment
- Internal finish to allow for steam cleaning
- International hazard sign displayed

or: **bulk container to be lifted on vehicle**

- Used for storage and replaced when full



Teacher's notes - Lecture 6

Overhead 6.1

Labeling bags enables the ward to be identified if the bags are mis-handled so that management can be improved. It also permits to determine the collection date of the waste. Furthermore it contains information on the content of the bag or container, and thus provides indications on its hazards.

Overhead 6.2

A storage location for health-care waste should be designated inside the health-care establishment or research facility. The waste should be stored in bags or containers in a confined place, either a separate area, room or building. It should be sized according to the generated waste quantities and frequency of collection. As the storage area is not accessible to unauthorized persons, it limits exposure of people trying to access the site and who would not be aware of the related hazards.

The storage facility should not be situated in proximity to food stores or food preparation areas. *Cytotoxic waste* should be stored in a secure place, separate from the storage room devoted to other health-care waste. (Cytotoxic means possessing a specific destructive action on certain cells; e.g. substances used for treatment of cancer patients)

Radioactive waste should be stored in containers preventing dispersion, behind lead shielding. Waste designated for storage to allow decay should be labelled with the type of radionuclide, date and required storage details.

Overhead 6.3

Refrigerated storage allows for longer storage periods than those recommended on the overhead. Cool Storage can be achieved by using a large refrigerated container.

Overhead 6.4

The waste producer is responsible for packaging, labeling and authorized transportation and destination of the waste. Healthcare waste should be packaged and labelled to comply with national regulations regarding the transport of hazardous wastes, and with international agreements if they are shipped abroad for treatment. In case there are no such national regulations, responsible authorities may refer to recommendations of the United Nations.

The document for transport of dangerous goods recommended by the United Nations is provided in Handout 6.1. Another example of consignment note, from the U.K., is reproduced on Handout 6.2, with the corresponding its corresponding route on Handout 6.3.

Overhead 6.5

For off-site transport: In case of liability problem, the origin of the waste may be traced back. In case of accident, content of the containers can be quickly identified and appropriate actions taken. The United Nations have developed a standard label, represented on Handout 6.4. This

label bears the 'International Infectious Substance Symbol', with which all bags and containers containing infectious waste, sharps and pathological waste should be marked. The UN has developed symbols, numbers and 'shipping names' for substance and waste types which are applied internationally.

Handout 6.1

Dangerous Goods Transport Document recommended by the United Nations

Shipper (Name & Address)		Reference number(s)	
(Reserved for text, instructions or other matter)		Name of carrier (or his agent)	
		(Reserved for text, instructions or other matter)	
Name/means of transport	Port/place of departure		
Port/place of destination			
Marks & number; Number & kind of packages; Description of goods* INDICATE: HAZARD CLASS/DIV.; UN NUMBER, PACKING GROUP, FLASH POINT (in °C c.c) (when required); CONTROL AND EMERGENCY TEMPERATURES (in °C) (when required)			Gross mass (kg) Net quantity (when required)
*PROPER SHIPPING NAME (proprietary names alone are not sufficient) which should be, when required and as appropriate: (1) preceded by the word "WASTE"; supplemented by the words "LIMITED QUANTITY" or "LTD QTY"; (3) supplemented by the technical name.			
Additional information Special information required for (1) Radioactive material (Class 7) and (2) certain self-reactive and related substances of Division 4.1 and certain organic peroxides of Division 5.2. In certain circumstances (3) a Weathering Certificate or (4) a Container/Vehicle Packing Certificate is required.			
DECLARATION		Name/status of signatory Place and date Signature on behalf of the shipper	

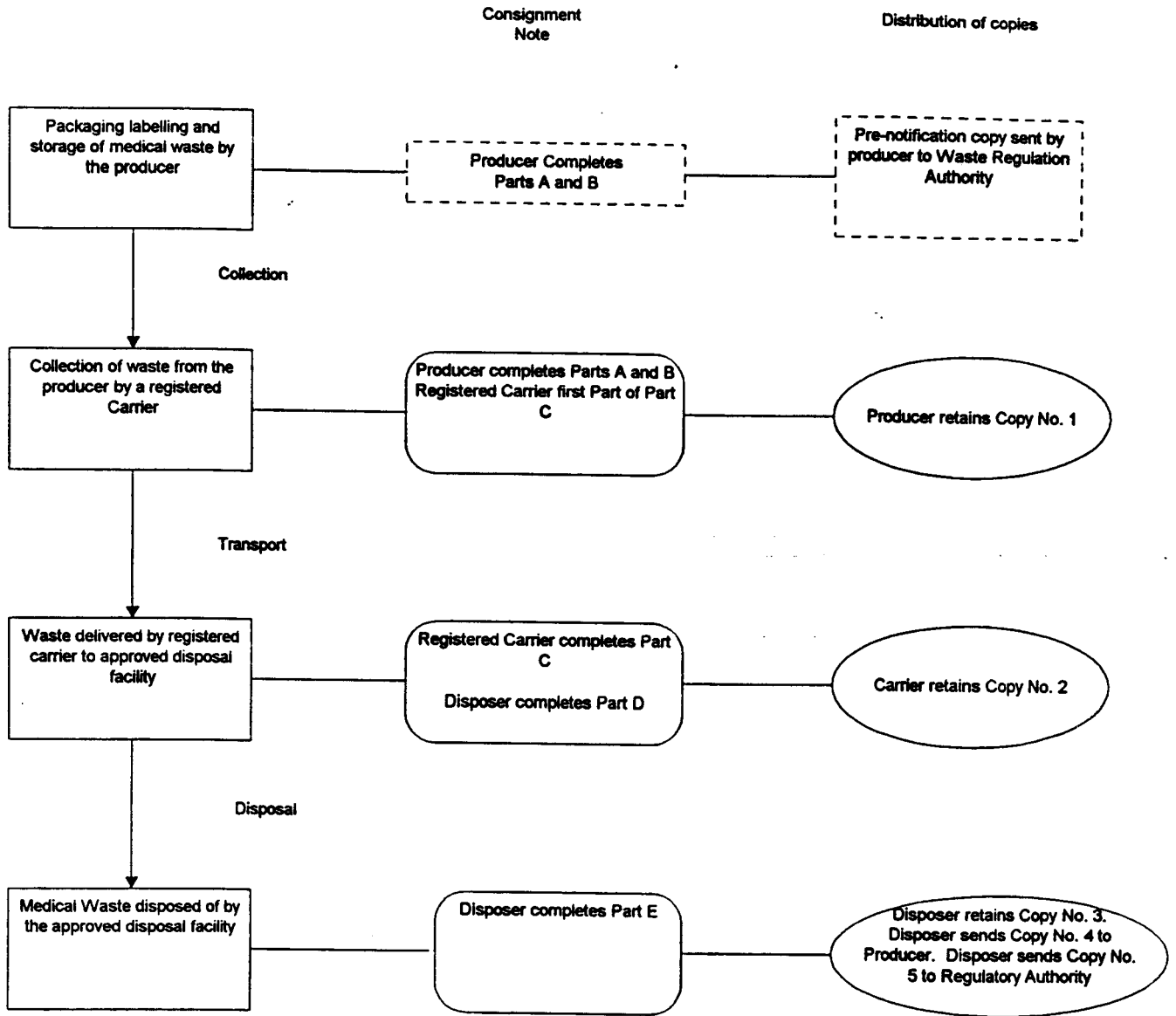
Page size: "A4" (210 x 297 mm or 8.27 x 11.69 inches); recommended by the United Nations

Handout 6.2: Example of a consignment note used in the U.K.

London Waste Regulation Authority Waste Control Division Hampton House, 20 Albert Embankment London SE1 7TJ Telephone 071-587 3066	Serial Number 50/155050	
CONSIGNMENT NOTE FOR THE CARRIAGE & DISPOSAL OF HAZARDOUS WASTE <small>(Dept. of the Environment/Welsh Office/Scottish Office)</small>		Originator's Reference
PRENOTIFICATION COPY		
Producer's Certificate A	(1) The material described in B is to be collected from and (2) taken to Signed Name On behalf of Position Address Telephone No. Date Estimated date of collection	
Description of the Waste B	(1) General description and physical nature of waste (2) Relevant chemical and biological components and maximum concentrations (3) Quantity of waste and size, type and number of containers (4) Process(es) from which waste originated	
Carrier's Collection Certificate C	I certify that I collected the consignment of waste and that the information given in A(1) & (2) and B(1) and (3) is correct, subject to any amendment listed in this space: I collected this consignment on at hours Signed Name Date On behalf of Vehicle Reg. No: Address Telephone No:	
Producer's Collection Certificate D	I certify the information given in B & C is correct and that the carrier was advised of appropriate precautionary measures. Signed Name Telephone Date	
Disposer's Certificate E	I certify that Waste Disposal Licence No., Issued by County/ District Council, authorises the treatment/disposal at this facility of the waste described in B (and as amended where necessary at C) Name and address of facility This waste was delivered in vehicle (Reg.No) at hours on (date) and the carrier gave his name as on behalf of Proper instructions were given that the waste should be taken to Signed Name Position Date on behalf of	
For use by Producer/ Carrier/ Disposer		


Handout 6.3

Route of the consignment note used in the U.K.



Handout 6.4

Example of UN Labelling


Class 6.2/97
(UN Class, year of waste packaging) 3291 CLINICAL WASTE UNSPECIFIED
(UN Number, Proper shipping Name) CH /Cantonal University Hospital Geneva
(Country by motor vehicle sign/name of manufacturer) Sharps / Collected 04.05.1997
(Waste class/Date of production) DANGER CONTAMINATED SHARPS
(Special remarks) 350kg- Municipal Incinerator Geneva
(Waste quantity - waste destination)

Vehicle design for off-site transportation of hazardous health-care waste

- 1) The body of the vehicle should be of a **suitable size**, with an internal body height of 2.2 metres.
 - 2) There should be a **bulkhead** between the driver's cabin and the body which is designed to retain the load if the vehicle is involved in a collision.
 - 3) A suitable system should **secure** the load during transport.
 - 4) A **separate compartment** on the vehicle should contain empty plastic bags, suitable protective clothing, cleaning equipment, tools and disinfectant, together with special kits for dealing with liquid spills.
 - 5) The **internal finish** of the vehicle should allow it to be steam-cleaned and the internal corners should be covered.
 - 6) **Name and address** of the waste carrier must be on the vehicle.
 - 7) The **international hazard sign** should be displayed on the vehicle or container, as well as an emergency telephone number.
 - 8) **Open-topped skips** or containers should never be used for transporting hazardous health-care waste.
 - 9) Vehicles or containers used for the transportation of hazardous health-care waste should **not be used for the transportation of any other material**. They should be sealed and kept locked at all times, except when loading and unloading.
 - 10) **Articulated or demountable trailers** (temperature controlled if required) are very suitable for health-care waste, as they can easily be left at the location of waste production.
 - 11) **Other systems** may be used, such as specially designed large containers or skips.
 - 12) Where the use of a specially dedicated vehicle cannot be justified, a **bulk container** which can be lifted on to the chassis may be considered. The container may be used for storage at the health-care establishment and replaced with an empty one when collected. **Refrigerated containers** may be used if the storage time exceeds the recommended period or if transportation times are long. The finish of these bulk containers should be smooth and impervious and permit easy cleansing or disinfection.
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Reduced overheads - Lecture 6

Overhead 6.1

Waste Collection

- Establish a routine programme for collection
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Overhead 6.2

Waste storage facilities

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- Proofed against rodents, insects and birds

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Overhead 6.3

Waste storage periods

Maximum Storage Times

Temperate Climate

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Warm Climate

- 48 Hours in cool season
- 24 Hours in hot season

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Overhead 6.4

Off-site transport

- Waste Accompanied by a Consignment Note
- Transporter known to the Regulatory Authority
- Disposal facility permitted by Regulatory Authority

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Overhead 6.5

Waste labeling

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- Waste quantity
- Waste category
- Waste destination*
- UN symbol, number and shipping name*

*for off-site transport

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Overhead 6.6

Off-site vehicle design

Dedicated Vehicle

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