

THE DIRTY DOZEN

HEALTHCARE WASTE
SHARPS
LAUNDRY



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PART 1: HEALTHCARE WASTE - IRISH GUIDELINES

HEALTHCARE RISK WASTE MANAGEMENT
SEGREGATION
PACKAGING AND STORAGE
GUIDELINES
FOR
HEALTHCARE RISK WASTE

November 2010





Waste Management
Requirements Handbook



Reducing Waste in
Irish Healthcare Facilities

GreenHealthcare

BASIC ELEMENTS OF AN UP-TO-DATE HEALTHCARE WASTE MANAGEMENT SYSTEM INCLUDE:

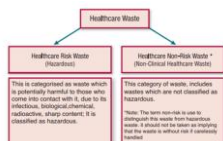
- o A proper **understanding** of waste generated.
- o The ability to **identify & segregate** waste.
- o The use of **packaging** which keeps any hazard confined.
- o Adherence to **statutory requirements** in relation to packaging, labelling & consignment of hazardous waste.
- o The use of **licensed carriers** and appropriate vehicles for treatment & transportation.
- o The use of a **tagging and tracking system**.
- o Appropriate and proper **final disposal** to suitably licensed facilities.
- o Maintenance of comprehensive **records**.
- o **Audit**, evaluation and improvement.
- o Accountability/monitoring and **performance measurement**.

Healthcare Waste Mgt. HSE 2010

DEFINITION OF HEALTHCARE WASTE

Solid or liquid waste arising from healthcare

Segregated at the point of origin



HEALTHCARE RISK WASTE

1. General infectious waste	2. Laboratory waste	3. Biological	4. Sharps	5. Radioactive waste	6. Other forms of hazardous waste
<ul style="list-style-type: none"> Blood & items visibly soiled with blood Contaminated waste from patients with transmissible infectious diseases Incontinence wear/nappies from patients with known or suspected enteric pathogens Items contaminated with body fluids other than faeces, urine or breast milk Other healthcare infectious waste 	<ul style="list-style-type: none"> Specimens and potentially infectious waste from pathology departments Microbiological cultures (liquid or solid media in which organisms have been artificially cultured) Other laboratory waste 	<ul style="list-style-type: none"> Anatomical waste and identifiable body parts 	<ul style="list-style-type: none"> Any object which has been used in the diagnosis, treatment or prevention of disease that is likely to cause a puncture wound or cut to the skin 	<ul style="list-style-type: none"> Includes materials in excess of authorised clearance levels, classified as radioactive under the General Control of Radioactive Substances Order, 1993 (S.I. No. 151 of 1993) 	<ul style="list-style-type: none"> Discarded hazardous chemicals, reagents and toxic or flammable medicines

HEALTHCARE NON-RISK WASTE

Domestic waste	Confidential material	Medical equipment	Potentially offensive material
<ul style="list-style-type: none"> Includes normal household and catering waste All non-infectious waste, non-toxic, non-radioactive waste and non-chemical waste 	<ul style="list-style-type: none"> Includes shredded waste documents of a confidential nature 	<ul style="list-style-type: none"> Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. plastic bottles plastic packaging, clear tubing, oxygen masks, enteric feeding bags 	<ul style="list-style-type: none"> Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. nappies/incontinence wear, stoma bags, etc.

PACKAGING

Ensure that little or no hazard is present

Packaging must satisfy the requirements of various authorities with particular statutory concerns:

- Colour coding
- Labelling
- Filling
- Closure
- Traceability



LID COLOURS

Lid colours are used to indicate the disposal stream.

- **Yellow** (yellow) lids should be used with containers for disposal by non-incineration, disinfection technology.
- **Red** (red) or **Blue** (blue) lids are sometimes used by manufacturers to distinguish sharps containers and are also acceptable for alternative technology disposal (but see note re containers for un-regulated medicinal wastes in 6.4.1.3).
- **Purple** (purple) or **Black** (black) lids are reserved for containers intended principally for disposal by incineration.
- **Purple** (purple) lids are recommended for bins or boxes with healthcare risk waste contaminated with cytotoxic materials discarded medicines or pharmaceuticals.
- **Black** (black) lids are recommended for containers used for the disposal of recognisable large anatomical waste material or body parts, including placentas. Such containers may also be used for other materials which are not suitable for disposal by alternative technology and for which the proper disposal method is deemed to be incineration.

LABELLING

Specific diamond-shaped hazard label (class 6.2 label example below)

For Class 6.2 the hazard label must include the biohazard symbol and the class number, 6

The hazard label may also include the text "Infectious material".

The diamond hazard label must have minimum side dimensions of 100mm x 100mm. A smaller label is permissible only where the container is not large enough

The information marking must contain the 4-digit UN number, including the letters UN, of the product contained, e.g. "UN 3291", and should include the Proper Shipping Name (PSN) as listed in the ADR Dangerous Goods List where IMDG (marine transport) or other regulations apply such as when the goods are being shipped abroad.



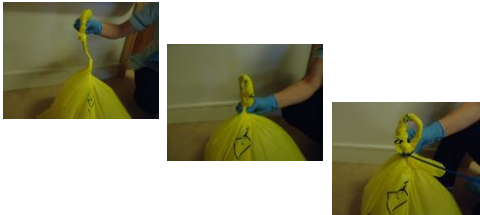
FILLING

- ❏ Containers must not be over-filled to avoid risk to the personnel involved
- ❏ Contents may also spill in handling or transportation, increasing the potential for security or vermin problems
- ❏ Manufacturer's fill lines beyond which the container should not be filled
- ❏ In general rigid boxes should not be more than three-quarters filled
- ❏ HCRW - solid waste. **Where liquid present, an inner liner or absorbent material must stabilise the liquid to prevent leakage – majority not properly sealed**
- ❏ Bags should not be more than two-thirds filled
- ❏ Wheeled bins must not be filled beyond the point where closure of the lid is obstructed or causes the contents to be squashed.

CLOSURE

- ❏ The integrity of any packaging during handling and transportation is critically dependent on the proper sealing or closure of the packaging
- ❏ It is essential that lids to UN containers are fitted and closed in accordance with the manufacturer's recommendations
- ❏ Plastic bags should be closed using one of a number of different methods. These include "swan-necking" and tying with either tape or a cable-tie or the straight use of a cable-tie or some other proprietary clip
- ❏ Wheeled bins - lids are locked during storage and transportation
- ❏ Locks - good quality, minimal projections which could snag bags being placed in the bins.

SWAN NECK CLOSURE FOR HCRW BAGS



Photographs Courtesy of LA Frost, PSC, Cork 2016

TRACEABILITY

- All waste packages must be tagged with a unique reference number
- Traceable to the point of production
- Closure ties which incorporate a reference number system
- Each healthcare waste generator should retain records of tags issued to particular locations for a recommended period of not less than three years. In case of incident this will allow each package to be traced to the actual producer.



USE OF WHEELED BINS

- Bins filled to top & never overfilled to ensure bins remain locked.
- No manual compaction should take place.
- Locks must be kept free of foreign objects to ensure integrity of locking mechanism.
- Place containers in bins, never throw them
- Must be kept secure awaiting collection



STORAGE & HANDLING OF HEALTHCARE WASTE ON SITE

- Waste sub-collection stations or areas dispersed throughout the hospital
- Central waste store or marshalling yard to which all streams of the hospital's waste are periodically brought.
- Healthcare risk waste (clinical waste UN3291) should generally be conveyed to the waste marshalling area in locked yellow wheeled bins for storage prior to collection.
- Under no circumstances should healthcare risk waste be compacted, either manually or mechanically.
- Domestic type waste may also be brought to the marshalling area for tipping and compaction into appropriate compactor containers/skids.
- It is imperative that, in such cases, that the two waste streams are not mixed or conveyed together.



STORING WHEELED BINS AT ON-SITE FACILITIES OR COLLECTION POINTS

The facilities for healthcare risk waste should include:

- 🔗 Well ventilated, covered storage area for filled healthcare risk waste wheeled bins
- 🔗 Separate covered storage area for clean healthcare risk waste bins prior to distribution
- 🔗 A secure ventilated room for the storage of hazardous and other sensitive waste.
- 🔗 This room may need to be equipped with a freezer cabinet for the storage of large anatomical items.

WASTE PROVIDER

- Valid waste collection permit.
- Permit to carry the waste concerned from your Local Authority (EWC – European Waste Catalogue codes for healthcare risk waste and non risk waste should be stated on the waste collection permit).
- Check that the vehicle registration used to carry waste is filled on waste collection permit.
- Ensure that all appropriate documentation is completed before the hazardous or risk waste leaves site (CI Form has been replaced by the Waste Transfer Form (WTF)).
- Ensure your waste is being taken to an EPA licensed facility for processing i.e. processing/treatment facility or landfill.

TRANSPORTATION – REGULATIONS

The main regulations are:

- + The Carriage of Dangerous Good by Road Act 1998 (no. 43 of 1988)
- + The Carriage of Dangerous Good by Road Regulations, 2007 (S.I. No. 288/289 of 2007)
- + S.I. No. 147 of 1998 – Waste Management (Movement of Hazardous Waste) Regulations, 1998
- + The Waste Management (Collection Permit) Regulations, 2007 (S.I. No. 820 of 2007)
- + ADR The detailed Irish regulations implementing ADR are set out in S.I. No. 288 of 2007

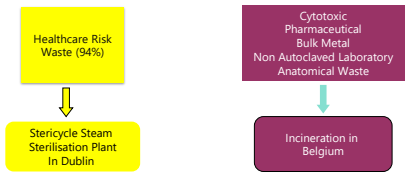
SAFETY ADVISER

- The Carriage of Dangerous Goods by Road Regulations S.I. 288 of 2007 place an obligation on an "undertaking" to appoint a Safety Adviser.
- The Adviser is responsible for helping to prevent the risks in relation to waste management.
- The appointed Adviser must be qualified in accordance with the Regulations.
- The appointment may be either on the basis of a specifically engaged outside consultant or of a suitably qualified employee.



HEALTHCARE WASTE

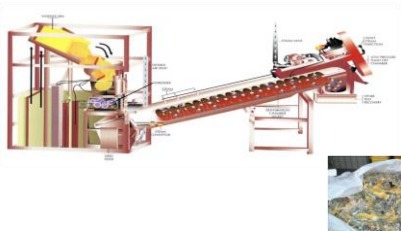
- 80% of HCW is non-risk
- 94% all healthcare Risk Waste generated treated by Stericycle process.
- Remaining 6% requires incineration abroad



Reference: Stericycle 2019



ALTERNATIVE TREATMENT SYSTEM – STERICYCLE (SRCL)



Image/Photograph Courtesy of Stericycle 2019



HEALTHCARE RISK WASTE – NEW INITIATIVES IN IRELAND

Reusable rigid containers

In 2016, SRCL diverted over 130,000 single use sharps containers from incineration!



- 30 litre Bio Systems**
- Blood bags
 - Suction liners
 - Chest drains
 - Dialysis sets
 - Giving sets



- 7.5 litre Bio Systems Sharps Container**
- Needles & syringes
 - Scalpels, sharp tips of IV sets, contaminated slides, razors, blood stained or contaminated glass
 - Any item likely to puncture a bag.

HEALTHCARE RISK WASTE – PATIENT TROLLEY



HEALTHCARE RISK WASTE – COSTS

- **Healthcare risk waste benchmark:** Acute hospital - 1.9 kg per in-patient bed day



How much does it cost to incorrectly dispose of non-risk waste in the healthcare risk waste stream?
The graph to the right shows that it costs nearly €700 more per tonne to dispose of waste as healthcare risk waste, rather than as landfill waste. It costs over €1,000 more to dispose of waste as special (incinerative) healthcare risk waste. Putting non-risk waste incorrectly into the healthcare risk waste stream can cost your facility a lot of money!



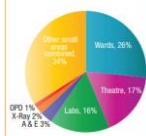
- In acute hospitals, average savings in the region of between €15,000 and €27,000 per annum in each hospital could be achieved by diverting 'non-risk' material from the healthcare risk waste stream.

HEALTHCARE RISK WASTE – COSTS

Nationally, savings of between €900,000 and €1,300,000 per annum could be made in acute hospitals, by ensuring that only healthcare risk waste is put into the healthcare risk waste stream.

- Two types of healthcare risk waste is generated in Irish healthcare facilities:
- **Regular healthcare risk waste** (soft paper bags, sharps & rigid metal, sutures and disposables of Ireland (C01D 9,17) tonnes)
 - **Cytotoxic and anatomical healthcare risk waste** (carps & leg bags, used for excisional breast (C01D 712) tonnes)

Main sources of healthcare risk waste



Combined, the in-patient wards, theatre and labs account for 60% of the healthcare risk waste generated in acute healthcare facilities.

TIPS FOR GOOD WASTE DISPOSAL PRACTICE

- Proper location of waste bins i.e. HCRW bin position away from handwash basin
- Use smaller size bins
- Use different colour bins for each type of waste
- Education – Awareness days, labelling, posters



PART 2: SHARPS MANAGEMENT



EU Sharps Directive

In March 2010, the [European Council](#) and [Social Affairs Ministers](#) adopted a Directive to prevent injuries and [improve the safety of healthcare workers](#) from sharp objects, such as needles etc.

[Council Directive 2010/32/EU of 10th May 2010](#) is published in the Official Journal of the European Union, L 134 of 1 June 2010, pages 66 to 72. The [Directive](#) provides a legislative framework for the agreement on [Prevention of Sharps Injuries](#) and the healthcare sector signed in July 2009 by the [Social Partners](#) - the [European Hospital and Healthcare Employers' Association \(HOSPEEM\)](#) and the [European Federation of Public Service Unions \(EFPU\)](#).

[View the Directive from the Official Journal of the European Union at the \[EU-lex website\]\(#\).](#)

NEEDLES & SHARPS (NSI)

- Sharp instruments frequently cause injury to health care workers and are a major cause of transmission of blood-borne viruses such as HBV, HCV, HIV
- Sharps include needles, scalpels, broken glass or other items that may cause a laceration or puncture
- Exposure to blood or bodily fluid, from sharps injury, bite or from splashing to the eyes, mouth or broken skin, must be properly followed up because of the risk of infection from blood borne viruses:
 - Complete first Aid – encourage bleeding & wash area
 - Report to your manager/supervisor immediately
 - Refer to your local policy i.e. Occupational Health Department/ED in a timely manner – investigate risk & incident
 - Arrangements for post-exposure prophylaxis (PEP) may be necessary

PREVENTATIVE MEASURES IN PLACE FOR SHARPS DISPOSAL

Organise	Assemble	Training	Gloves	Risk assess	Disposal
<ul style="list-style-type: none"> • Equipment before procedure • Use safer devices (e.g. needles or prefilled syring) • Procedures may for transportation • Do not use disposable sharps full trays with sharps • Use temporary sharps container when carrying sharps bin 	<ul style="list-style-type: none"> • Sharps bin must be correctly assembled • Square bins & corners checked • Sign & date 	<ul style="list-style-type: none"> • Training must be provided on recruitment • Training at intervals • Assume all sharps safety mechanism • No deviation from training is permitted 	<ul style="list-style-type: none"> • Wear gloves when using sharps • Wear face shield/goggles if risk of body fluid splash 	<ul style="list-style-type: none"> • Procedure • Patient • Employee must remain alert especially during interferences so this is the time injuries can occur • First aid • Report sharps incident locally & State Claims Agency via the National Incident Management system (NIMS) • Voluntary reporting to Health Products Regulatory Authority (HPRA) 	<ul style="list-style-type: none"> • Dispose sharp with priority with care • Do Not recap needles • Staff of sharps is responsible for disposing • Point of use i.e. bedside for immediate disposal of the sharps device post procedure • Fill sharps bin to 75% line only • Seal, sign & log sharps containers when they are full • Clean and empty using procedure Bay & sharps bin

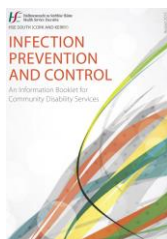


PART 3: LINEN

- Used hospital linen may become contaminated with micro-organisms from patients or when soiled by blood or other body fluids.
- If not segregated, microbial transfer will occur.
- Linen is decontaminated in the laundry process by a combination of heat, detergent, chemical/heat disinfection and mechanical action.

Segregation of linen

- Clean / Unused Linen
- Dirty / Used Linen
- Foul / Infected Linen / Contaminated Linen



CLEAN/UNUSED LINEN

This is any linen that has not been used since it was last laundered.

All clean linen must be stored off the floor in a clean, dry, closed cupboard (shelving raised at least 6 inches above the floor level). Where a trolley is used to store clean linen it should be designated for this purpose. The trolley should be impervious to fluids, capable of being closed and easily cleaned. Must be segregated from dirty/used linen. It must not be stored in the sluice or bathroom. Linen cupboard doors must be kept closed to prevent airborne contamination.

Clean / unused linen should be delivered to wards in clean containers. These containers should not then be used to collect used linen. If taken into an isolation room and not used, linen must be laundered before use.

Transport trolleys must be on the cleaning schedule.

FOUL/INFECTED LINEN

This is any used linen which is soiled with blood or any other body fluid, or any linen used by a patient with a known infection (whether soiled or not).

Must be placed in a soluble alginate bag which is secured by the neck using an alginate tie or swan neck tie and placed in a red laundry bag. The alginate bag signifies that the laundry is foul or infected. The bag must be placed directly into the washing machine to minimise contact and prevent transmission of infection to laundry staff or contamination of the environment.

If at any time an item of laundry is so heavily contaminated with blood or other body fluids that it is deemed unsalvageable it should be risk assessed and either placed in a healthcare risk-waste bag or leak-proof container if there is risk of leakage.

DIRTY/LINEN

This is all used linen that is not foul, infected or contaminated. This includes coloured items and scrubs and theatre linen. Such linen is transported in colour-coded laundry bags.

Blue laundry bags are used for scrub suits non theatre, personal clothing including underclothing, day and night wear, and woollen articles from patients. These need to be segregated from white linen as part of the laundry process.

Green laundry bags are for dirty used theatre linen, usually green, and should be placed in a water soluble or alginate bag.

White laundry bags are for all other used dirty linen. This linen must be placed into a plain clear plastic bag identifying it as dirty/used linen and in turn put into the white laundry bag.

TRANSPORTING LINEN

- o Do not over fill laundry bags - may prevent closure, increase the risk of rupture of the bags in transit and thus increase the risk of injury to handlers.
- o Securely close all bags before being sent to the laundry.
- o Transport laundry bags in a trolley or container that will minimize the potential for contamination to the person transporting the laundry.
- o Store laundry in a designated safe area, away from food preparation areas and those parts of the facility frequented by residents and their visitors. Laundry must not be carried through the kitchen, dining room or food storage areas.
- o If laundry is being sent to an off-site laundry:
 - segregation of laundry and colour coding guidelines must be followed
 - store in a designated secure location prior to collection
 - where holding receptacles are used, they should be stored in an area which has good access routes for uplift by the contractor.
 - receptacles should be washable and free from interference from pests.



LAUNDRY FACILITIES

- o Protection of Laundry Workers and Staff Handling Laundry to minimise the risk of infection to staff handling laundry it is important:
 - Hepatitis B immunisation
 - Trained to carry out the necessary procedures involved in handling laundry
 - Cover any skin lesions with a waterproof dressing
 - Have access to conveniently located hand hygiene facilities
 - Have access to and wear appropriate PPE
 - Eating is not permitted in the laundry setting
 - Have access to showers in the event of a spillage, accident or contamination.



COMMUNITY SETTING

The following good practice points are recommended to reduce the risk of infection from laundry

- Care should be taken when **handling** all laundry, use a laundry basket
- Do not **shake** used linen, place on the floor or on any clean surface
- Wear **PPE** when handling laundry soiled with blood or body fluids
- **Hands** must be washed after handling all laundry
- Thorough washing and rinsing at **temperatures** of 40°C with laundry detergent followed by drying will remove most germs and is sufficient where there is no increased risk
- If increased risk of infection wash items at or above 60°C
- Do not **manually** **skince** or hand wash items soiled with blood or body fluids i.e. do not rinse or spray soiled items under running water.
- Do not **overload** the washing machine as this may compromise the washing process
- Used and soiled laundry should be washed **separately**
- Cloths and towels used in the **kitchen** and during food preparation should be washed in a hot wash separately from clothes and linen
- **Dry** laundry as soon as possible after washing. Do not leave laundry in the washing machine overnight

