**THE DIRTY DOZEN**

HEALTHCARE WASTE

SHARPS

LAUNDRY

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**PART 1: HEALTHCARE WASTE - IRISH GUIDELINES**

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

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

2. Laboratory waste
- Specimens and potentially infectious waste from pathology departments
- Microbiological cultures (liquid or solid media in which organisms have been artificially cultivated)
- Other laboratory waste

3. Biological
- Anatomical waste and identifiable body parts

4. Sharps
- 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

5. Radioactive waste
- 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)

6. Other forms of hazardous healthcare waste
- Discarded hazardous chemicals, reagents and toxic or flammable medicines

HEALTHCARE NON-RISK WASTE

- Domestic waste
  - Includes normal household and catering waste
  - All non-infectious waste, non-toxic, non-radioactive waste and non-chemical waste

- Confidential material
  - Includes all medical waste documents of a confidential nature

- Medical equipment
  - Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. plastic bottles
  - Assessed as non-toxic, e.g. clear tubing
  - Assessed as non-radioactive, e.g. plastic packaging
  - Assessed as non-chemical, e.g. non-toxic, non-radioactive, non-chemical waste

- Potentially offensive material
  - Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. medical waste, dressings, 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 amount.

- Yellow (ethylene) lids should be used with containers for disposal by incineration, incineration-technology.
- Green (poly) lids are sometimes used by manufacturers to distinguish sharply contaminated waste and are also acceptable for alternative technologies disposed but are not to containers for unregulated medicinal wastes (i.e. class 6.2).
- Black (polyethylene) lids are reserved for containers intended principally for disposal by non-incineration.
- Red (poly) lids are recommended for less or small waste with healthcare risk waste contaminated with cytotoxic materials described medicines or pharmaceuticals.
- White (polyethylene) lids are recommended for containers used for the disposal of hazardous EG (endogenous) waste or waste material or body parts, including elements. Such containers may also be used for other materials which are not suitable for disposal by incineration 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 IPCN, 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/skips.
- 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:

a) Well ventilated, covered storage area for filled healthcare risk waste wheeled bins
b) Separate covered storage area for clean healthcare risk waste bins prior to distribution
c) A secure ventilated room for the storage of hazardous and other sensitive waste.
d) 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 collected from your local waste management company/authority.
- Waste type stated on the permit and room to dispose of waste should match the type of waste on the permit.
- Check that the waste is being carried to the correct waste disposal facility.
- Vehicle registration number stated on waste collection permit.

Ensure that all appropriate documentation is completed before the hazardous or risk waste leaves site (C1 Form has been replaced by the Waste Transfer Form (WTF)).

Ensure your waste is being taken to an EPA licensed facility for processing/treatment or landfill.

TRANSPORTATION – REGULATIONS

The main regulations are:

+ The Carriage of Dangerous Goods by Road Act 1998 (No. 43 of 1988)
+ 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

**ALTERNATIVE TREATMENT SYSTEM – STERICYCLE (SRCL)**
Healthcare risk waste – new initiatives in Ireland

Reusable rigid containers

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

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
- 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

- Naturally, savings of between 10% and 20% can be made when bins are placed in a central location.
- Correct placing of sharps waste is crucial in reducing the risk of injury to staff and patients.
- Two types of healthcare risk waste are generated in healthcare facilities:
  - Sharps (needles, syringes, etc.)
  - Other hazardous waste (biohazardous materials)

EDUCATION – Awareness days, labelling, posters

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
- Policy on the Prevention of Sharps Injuries
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 e.g. Occupational Health Department/ED in a timely manner — investigate risk & incident
  - Arrangements for post-exposure prophylaxis (PEP) may be necessary.

- Organise:
  - Equipment before procedure
  - Use safer devices i.e. needleless or needle safety products
  - Procedure tray for transportation
  - Do not use disposable silver foil trays with sharps
  - Use temporary closure mechanism when carrying sharps bin

- Assemble:
  - Sharps bin must be correctly assembled
  - Square bins 4 corners clicked
  - Sign & date

- Training:
  - Training must be provided on recruitment
  - Training at intervals
  - Active or Passive safety mechanism
  - No deviation from training is permitted

- Gloves:
  - Wear gloves when using sharps
  - Wear face shield/googles if risk of body fluid splash

- Risk assess:
  - Procedure
  - Patient
  - Employee must remain vigilant especially during emergencies as this is the time injuries can occur

- First aid
  - Report adverse incident locally & State Claims Agency via the National Incident Management System (NIMS)
  - Voluntary reporting to Health Products Regulatory Authority (HPRA)

- Disposal:
  - Dispose sharp with prompt care
  - Do Not recap needles
  - User of sharps is responsible for disposing
  - Point of use i.e. bedside for immediate disposal of the sharp device post procedure
  - Fill sharps bin to “fill” line only
  - Seal, sign & tag sharps containers when they are ¾ full
  - Clean and empty yellow procedure tray & sharps bin

PREVENTATIVE MEASURES IN PLACE FOR SHARPS DISPOSAL

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 used linen should be stored in a linen cupboard or in a closed laundry bag. Clean linen should not be mixed with dirty or foul linen. Clean linen should not be stored in the sluice or bathroom. Linen cupboards 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. Dirty or unclean linen should be laundered before use.

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 used to facilitate ease of transportation 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 woolen 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**

- 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.
- Securely close all bags before being sent to the laundry.
- Transport laundry bags in a trolley or container that will minimize the potential for contamination to the person transporting the laundry.
- 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.
- 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**

- 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**

- Care should be taken when handling all laundry, use a laundry basket
- Do not shake or take used linen, place on the floor or on any clean surface
- Wear PPE when handling laundry soiled with blood or body fluids
- Blood or body fluids must be washed after handling all laundry
- Through washing and drying at a temperature of 40°C with laundry detergent to reduce the risk of transmission of pathogenic microorganisms and a sufficient level of residual surface activity
- If increased risk of infection wash items at or above 60°C
- Do not manually wash or hand wash items soiled with blood or body fluids but do not use 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 setting.

The following good practice points are recommended to reduce the risk of infection from laundry:
- 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 setting.
RECAP

REFERENCES

- Waste Management Services. Available at: https://www.stericycle.com/