

**SEGREGATION**

**PACKAGING AND STORAGE**

**GUIDELINES**

**FOR**

**HEALTHCARE RISK WASTE**

**3<sup>rd</sup> Edition, April 2004**



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## **Preface to Third Edition**

In this third edition the Guidelines have been revised to take account of a number of changes. These include the latest amendments to Annexes A and B, contained in the restructured ADR 2003, and the replacement of the 2001 Carriage of Dangerous Goods by Road Regulations (S.I. No. 492 of 2001) by the Carriage of Dangerous Goods by Road Regulations, 2004, (S.I. No. 029 of 2004).

# **SEGREGATION, PACKAGING AND STORAGE GUIDELINES FOR HEALTHCARE RISK WASTE**

## **1. Introduction**

This document offers guidance for a uniform system for the segregation and packaging of clinical/healthcare risk waste generated in the provision of patient care in the Republic of Ireland. It attempts to bring together good practice principles and the various regulatory requirements relating to waste generation and management. However, it does not purport to be a legal interpretation of such regulations.

The need for segregation and good packaging follows from the application of up-to-date waste management principles. These, in turn, are dictated by environmental, health and safety considerations and statutory requirements. The guidance is intended as an aid to the proper management and housekeeping of healthcare waste and as a reference for personnel involved in the education and training of healthcare staff. It has been prepared at a time of significant change in practices brought about by a move to different disposal methods and the application of new, more stringent, requirements for packaging and transportation.

The majority of clinical/healthcare risk waste generated throughout the island of Ireland is now processed using non-incineration disinfection technology. This entails shredding and disinfection of the waste at a small number of high-standard treatment plants followed by disposal of the treated waste by the municipal or commercial waste disposal route. Off-site treatment entails significantly more transportation than previously when waste was incinerated at each hospital site. For the majority of the waste concerned, wheeled bins are used as the basis of the collection and transportation together with a tagging and bar coding system to help with traceability.

The guideline puts forward a preferred packaging system. The move to a countrywide non-incineration technology treatment service, as opposed to the previous dispersed service, offers a good opportunity for the adoption of a uniform system of managing waste. This should result in improved contract operational and management efficiencies and the consistency brought about by a uniform packaging system and a reduction in the number of different packagings in use should contribute to improving safety in the workplace. In addition, the rationalisation in packaging gives rise to potential economies in the procurement of waste-related products and supplies.

The document has been prepared by engineering staff in the Hospital Planning Office of the Department of Health and Children in consultation with a committee representative of the Infection Control Nurses Association - Irish Regional Group, and the Irish Society of Clinical Microbiologists. Comments were also supplied by a number of individuals with expertise in the field of medical laboratory science. This invaluable assistance and the detailed advice of the Health and Safety Authority as well as the advice of a number of colleagues in the hospital services and in the Health Services in Northern Ireland is gratefully acknowledged.

## 1.1 Scope

This guideline is intended to encompass the vast majority of waste generated in the provision of patient care. Wastes contaminated with high risk biological agents – Risk Group 4 - are outside the scope of the guidelines. Expert advice should be sought from specialists in clinical microbiology and/or infection control in the rare event of having to deal with such material. (The risk groups are defined in **section 5.2** and **Appendix 2**.)

Practitioners and other personnel, such as medical scientists and laboratory staff, who have to deal with waste contaminated with Risk Group 3 infectious agents should satisfy themselves regarding the appropriateness of the packaging and disposal method to be employed, particularly, having regard to statutory requirements. Personnel involved in the management of isolation facilities or in diagnostic or research laboratories should have specific regard to the requirements of the Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994 (S.I. No. 146 of 1994) and subsequent amendment, S.I. No. 248 of 1998.

## 1.2 Background

The application of more stringent environmental standards together with the recognition of the importance of improved health and safety standards has placed renewed emphasis on the importance of proper management, handling, storage, transportation, treatment and disposal of healthcare waste. In an attempt to deal more effectively with this issue the Department of Health and Children, in consultation with the Health Boards and the acute Voluntary Hospitals, developed a policy and strategy for dealing with the management and disposal of healthcare waste generated in publicly funded hospitals. The approach adopted encourages good and safe waste management and disposal practices while, at the same time, taking proper account of environmental concerns.

A "Health Services Waste Policy" document was issued by the Department in 1994. It offered guidance to healthcare waste producers. This was followed by a detailed study of the options available for disposal of hospital waste which concluded that the best overall long-term option was for the treatment of healthcare risk waste by the use of shredding and disinfection at a small number of sites throughout the country. A similar study, in Northern Ireland, came to much the same conclusion. Both studies showed that a contractor-provided service would be the most beneficial.

Co-operation between the two health services, North and South, led to a joint approach to the market for a contractor-provided service for the collection, transportation, treatment and final disposal of healthcare risk waste throughout the island of Ireland which commenced in Spring 2000. The service deals with all healthcare risk waste, and the vast majority of the waste is now treated by non-incineration methods – sometimes referred to as alternative technology. A small fraction of the waste (less than 5%), unsuited to the alternative treatment technology, continues to be exported for incineration as there are no suitable treatment facilities available in Ireland.

### **1.3 Layout of the Document**

The guideline is laid out in 8 parts in the body of the document together with 5 appendices.

- Part 1 introduces the topic.
- Part 2 deals with definitions and the categorisation of healthcare waste.
- Parts 3, 4 and 5 set out the background and regulatory requirements relating to segregation, packaging and transportation.

These topics are intimately linked. Segregation is considered fundamental to the proper management of the various waste categories. Different packaging may be needed for each category or sub-category and packaging requirements are dictated by transport requirements and regulations. Therefore, segregation is largely governed by the transport requirements for packaging.

- Part 6 puts forward the preferred packaging system which is at the core of the document.
- Parts 7 and 8 respectively deal with storage/handling and health and safety.

## **2. Waste Management**

### **2.1 General**

Good practices in the generation and housekeeping of waste are the key to responsible and successful healthcare waste management. Principles of minimisation by reduction, reuse, recycling and product substitution are now accepted as being fundamental to any sustainable and economically viable waste management system. These principles were outlined in the 1994 Health Services Waste Policy.

The basic elements which are desirable in any up-to-date healthcare waste management system are:

- ◆ A proper understanding of the nature of the waste generated.
- ◆ The ability to identify and segregate hazardous waste.
- ◆ The ability to safely segregate different hazardous waste fractions into separate streams in accordance with the disposal method appropriate to each stream.
- ◆ The use of packaging which keeps any hazard confined so that personnel and the environment are protected during storage, handling and transportation.
- ◆ The use of appropriate vehicles for transportation of the waste to licensed treatment and disposal facilities.
- ◆ The use of a uniform tagging and tracking system which enables the waste to be identified and traced at all stages from generation to disposal.
- ◆ Accountability supported by well maintained and comprehensive records.

Inherent in such a system is the necessity to train all personnel involved in the management of the waste so that they are sufficiently knowledgeable to safely carry out any functions for which they have responsibility in accordance with best practice and in compliance with statutory requirements.

### **2.2 The Nature of Healthcare Waste**

Healthcare waste is the solid or liquid waste arising from healthcare. Specific definitions associated with healthcare waste are outlined below. A small proportion of healthcare waste is technically hazardous, or, risk waste. The emphasis in the approach adopted in the 1994 Policy is to manage hospital waste by segregating healthcare risk waste from the bulk of waste, which is domestic in nature.

Most commonly, healthcare risk waste is classified as hazardous or dangerous due to the risk of it being infectious or because it contains used sharp materials that could cause injury.

The infectious risk can be eliminated by either incineration or disinfection. Non-incineration disinfection methods (often referred to as “alternative technology”) include heat treatment, radiation or chemical disinfection. In such processes the risk from sharp objects is usually eliminated by pulverisation. With non-incineration methods, the waste, once rendered free of infection, is no longer a “dangerous substance” or “risk waste” for transport or disposal



purposes. A small fraction of healthcare risk waste may be unsuited for treatment by the principal method and this must be segregated and separately presented to the contractor for appropriate specialist disposal, usually by incineration. The waste may be unsuitable for treatment because it has hazardous properties which are not treatable by the process, or, because it contains material which, for aesthetic, cultural or religious reasons, makes it inappropriate for such disposal. The key to successful management of such waste is segregation at source. Clear definitions are crucial in the process of segregation.

## 2.3 Healthcare Waste Definitions

A number of different definitions impact on healthcare waste. Two of the definitions emanate from statutory requirements, viz. the Waste Management Act, 1996 and the Carriage of Dangerous Goods by Road Act 1998. The former legislation deals with environmental pollution while the latter relates to health and safety.

Under the Waste Management Act, 1996, anatomical, clinical or hospital waste is defined as hazardous if it has the properties of being toxic, carcinogenic or infectious. The Act places the primary responsibility for the waste and its proper disposal on the producer or holder of the waste.

"Infectious" substances are defined as substances containing viable micro-organisms or their toxins, which are known to cause disease. The latter definition follows the European Waste Catalogue. There has been considerable difficulty throughout Europe in the application of the definition, particularly, in relation to the practical application of the word "infectious". In the early 1990s the EC Council of Environment Ministers established a Priority Waste Stream (PWS) Project Group to examine and develop a strategy for dealing with healthcare waste. Clinical or healthcare risk waste was identified as one of a number of "problem" waste streams requiring deliberation on how best it should be managed. The Project Group formulated definitions for "Healthcare Waste" and "Healthcare Risk Waste". The definitions and related terms are set out overleaf.

In the absence of a detailed statutory Irish definition the definitions recommended by the EU Priority Waste Stream Project Group was informally adopted in the 1994 Health Services Waste Policy document and is reproduced in **Table 2.1**.

A similar, but not identical, definition applies as part of the classification of dangerous goods introduced in the Carriage of Dangerous Goods by Road Regulations, 2001, (S.I. 492 of 2001) made under the Carriage of Dangerous Goods by Road Act 1998. The classification and related terms are given in **section 5.2.1**.

In an effort to render the PWS definition of more practical use, a group representing the Infection Control Nurses Association - Irish Regional Group - and the Irish Society of Clinical Microbiologists, in 1998, prepared and agreed with the Department of Health and Children, a categorisation of the wastes which takes account of the Waste Catalogue and the PWS definition. This is reproduced in **Appendix 1** and is summarised in **Table 2.2** below.

### Table 2.1 Priority Waste Streams Definition

## **Priority Waste Stream Project Group Definitions**

(a) **Healthcare:** The medical activities such as diagnosis, monitoring, treatment, prevention of disease or alleviation of handicap in humans or animals, including related research (see note 1) performed under the supervision of a medical practitioner or veterinary surgeon (see note 2).

(b) **Healthcare Waste:** The solid or liquid waste arising from healthcare.

(c) **Healthcare Risk Waste:**

- Biological (recognisable anatomical waste)
- Infectious (see note 3)
- Chemical, toxic or pharmaceutical including cytotoxins
- Sharps (e.g., needles, scalpels, sharp broken materials)
- Radioactive (refer to Radioactive Waste Directive(s) )

Note 1: Wherever appropriate and applicable, waste from basic and fundamental biomedical and other research shall be managed in accordance with the principles set out for Healthcare Waste and Healthcare Risk Waste.

Note 2: The above mentioned supervision may also be carried out by any other person authorised by virtue of their professional qualifications to do so.

Note 3: **Infectious waste** is any Healthcare Waste known or clinically assessed to be at risk of being contaminated with

(a) any of the biological agents mentioned in Article 2(d) groups 3 and 4 or identified through the procedure set out in article 3 of the Council Directive (90/679/EEC) of 26 November 1990\* on the protection of workers from risks related to exposure to biological agents at work or

(b) with other viable biological agents artificially cultivated to significantly elevated numbers.

*Note: For an elaboration of the groups see **section 5.2** and **Appendix 1**. The biological agents in each group, as quoted in the Biological Agents Regulations, are also listed in **Appendix 4**.*

\* Council Directive 90/679/EEC has been amended since the formulation of the PWS definition by Directives 95/30/EC, 97/59/EC and 97/65/EC, each amending the list of biological agents to which the regulations apply.

**Table 2.2 Categories of Healthcare Waste**

<b>Healthcare Risk Waste</b>	
<b><u>Potentially Infectious Waste</u></b>	
<b>1. General</b>	<ul style="list-style-type: none"> <li>a) Blood and items visibly soiled with blood</li> <li>b) Contaminated waste from patients with transmissible infectious diseases</li> <li>c) Incontinence wear/nappies from patients with known or suspected enteric pathogens</li> <li>d) Items contaminated with body fluids other than faeces, urine or breast milk</li> <li>e) Other healthcare infectious waste</li> </ul>
<b>2. Laboratory Waste</b>	<ul style="list-style-type: none"> <li>f) Specimens and potentially infectious waste from pathology departments</li> <li>g) Microbiological cultures (liquid or solid media in which organisms have been artificially cultivated)</li> <li>h) Other laboratory waste</li> </ul>
<b>3. Biological</b>	<ul style="list-style-type: none"> <li>i) Anatomical waste and identifiable body parts</li> </ul>
<b>4. Sharps</b>	<ul style="list-style-type: none"> <li>j) 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</li> </ul>
<b>5. Radioactive Waste</b>	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)
<b>6. Toxic Waste</b>	Discarded hazardous chemicals, reagents and medicines
<b><u>Non-risk waste</u></b>	
<b>7. Domestic waste</b>	Includes normal household and catering waste, all non-infectious waste, non-toxic, non-radioactive waste and non-chemical waste
<b>8. Confidential material</b>	Includes shredded waste documents of a confidential nature
<b>9. Medical equipment</b>	Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. plastic bottles, plastic packaging, etc.
<b>10. Potentially offensive material</b>	Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. nappies/incontinence wear, stoma bags, etc.

### **3. Segregation**

#### **3.1 General**

Central to the approach in the 1994 Health Services Waste Policy is the management of the healthcare waste by segregation. Segregation at the point of origin, aided by suitable and consistent packaging, is vital in enabling different forms of waste to be handled, transported and disposed of in a manner which is safe and in keeping with the nature of the waste. The risk of waste spreading infection is very low if it is handled properly.

It is impractical and unnecessary to provide complete protection to personnel from the potential hazards to be found in healthcare waste. Full containment would be impossible to achieve. Instead, reliance has to be placed on the responsible classification, segregation and appropriate packaging of the waste at source in reducing the hazard and the risk of incident to a very low level.

The first level of segregation involves the division of healthcare waste into "risk" and "non-risk" waste. The second level is between some fractions within the risk-waste stream which have distinctly different properties. The latter segregation is necessary for ease of handling, treatment and disposal. Segregation, particularly within the risk-waste stream, should be at the point of generation where the nature of the waste is likely to be best understood.

Health and safety considerations are a primary concern in handling healthcare risk waste and packaging requirements have been developed with handling and transportation principally in mind. Segregation within healthcare risk waste, therefore, in the first instance, should be on the basis of packaging requirements appropriate to safe containment of the particular waste. Thereafter, the packaging can be distinguished by different means, e.g. colour coding, which ensures that the waste is readily streamed in accordance with the intended method of disposal.

#### **3.2 Non-Risk Waste**

The majority of healthcare waste - probably well in excess of 80% - is non-risk waste. Arrangements, outside the scope of this guideline, which conform to the requirements of the local waste authority, should be agreed for its disposal. Generally, there are no particular requirements for segregation within the non-risk waste stream but particular recycling schemes or special local packaging arrangements may involve a degree of further segregation. It should be noted that certain waste materials such as incontinence wear, urinary drainage bags etc. which is assessed as non-infectious, are not classified as healthcare risk waste.

#### **3.3 Healthcare Risk Waste**

Experience has shown that more than 95% of the healthcare risk fraction of waste from hospitals can be satisfactorily treated by non-incineration disinfection technology. Once properly packaged, the bulk of the waste can be presented for collection in a single stream and a distinction need only be made for the remaining 5%, or so. The latter fraction includes,

amongst other things, materials such as chemically hazardous waste, recognisable large anatomical waste or body parts, cytotoxic materials, blood or blood components assessed as likely to contain transmissible spongiform encephalopathy agents, and large metallic objects, such as prosthetic joints, which are incompatible with the shredding stage employed in most non-incineration technology processes.

## 4. Packaging

### 4.1 General

Apart from containment, the aim of good waste packaging is to ensure that little or no hazard is presented to personnel involved in handling, transporting or disposing of the waste. Packaging must also satisfy the requirements of various authorities with particular statutory concerns about aspects of waste generation, handling and disposal.

### 4.2 Packaging of Non-Risk Waste

The majority of non-risk waste is of a domestic nature and requires no specific packaging measures. It is disposed of as domestic or commercial waste, usually in black plastic sacks, bins, skips or containers. The further processing of domestic type waste, including the retrieval of recoverable fractions, compaction etc. is outside the scope of this document, which deals primarily with healthcare risk waste. Also included in this category are those wastes which, while assessed as non-infectious, may be regarded as potentially offensive. Such material, from an infection control perspective, does not need any special treatment or packaging prior to disposal. In some instances, arrangements for disposal may need to be agreed with the local waste authority. The packaging used for such waste should be appropriate and should take account of the potential offence to personnel involved in its transport and disposal.

### 4.3 Packaging of Healthcare Risk Waste

Two different types of packagings are used for healthcare risk waste, bags or sacks, and rigid containers in the form of bins or boxes. The bags are made of plastic film or, sometimes, plastic or wax-coated paper. Rigid containers are generally made from plastic but corrugated cardboard is also used. The bags are used to hold soft materials **that do not contain sharp objects or liquids**. Rigid spill-proof containers are used for other forms of waste and for waste containing some free liquids. This category of waste also includes infectious substances and other wastes, such as used sharps, pharmaceuticals/ cytotoxic material etc. which may be inherently hazardous. Also included in this category is identifiable anatomical material such as organs, recognisable body parts, liquid wastes etc. which, because of its nature, needs more robust packaging to ensure prevention of perforation or leakage.

To meet the aim of protecting personnel the packaging should conform to an appropriate specification satisfying minimum requirements for leak resistance, strength, penetration and tear resistance. There may also be special demands on packaging which are dependent on the

treatment and disposal method used. Under no circumstances should healthcare risk waste be compacted, either manually or mechanically.

Packaging requirements depend on the specific materials contained. In the case of healthcare waste some of the materials contained are classified as “dangerous goods” and, for transport purposes, come within the scope of the ADR Agreement and the Carriage of Dangerous Goods by Road Regulations, 2004 (S.I. No. 029 of 2004). The Agreement and specific requirements for packaging are outlined in the **section 5** and also in **Appendix 3**. An outline of a preferred packaging system is given in **section 6**.

## **5. Transportation**

### **5.1 Regulations**

The transportation of healthcare risk waste is governed by several sets of regulations dealing with different concerns relating to the materials transported. The main regulations are:

- The Carriage of Dangerous Good by Road Regulations, 2004, (S.I. 029 of 2004)
- The European Communities (Safety Advisers for the Transport of Dangerous Goods by Road and Rail) Regulations, 2001 - S.I. No. 6 of 2001
- S.I. No. 147 of 1998 – Waste Management (Movement of Hazardous Waste) Regulations, 1998
- The Waste Management (Collection Permit) Regulations, 2001 (S.I. No. 402 of 2001)

#### **5.1.1 Carriage of Dangerous Goods by Road Regulations, 2004, (S.I. No. 029 of 2004)**

Rules aimed at improving safety in the transportation of all types of dangerous goods have been agreed internationally for different modes of transport. These set down very specific requirements for the classification, packaging, labelling and documentation of dangerous goods as well as the training of personnel involved in the transport of such dangerous goods. Some forms of healthcare waste are included in the dangerous substances classification.

The dominant rules are those deriving from the UN/ECE European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR). The ADR requirements are based on UN Model Regulations and have become the basis for regulating the transport of dangerous goods within EU Member States by means of the ADR Framework Directive, 94/55/EC (as amended by Directive 2001/7/EC).

Irish domestic legislation giving effect to the Framework Directive, as amended, was enacted in 1998 - the Carriage of Dangerous Goods by Road Act - (No. 43 of 1998). Detailed regulations, made under the 1998 Act, set out in The Carriage of Dangerous Good by Road Regulations, 2001, (S.I. 492 of 2001) came into force on 1 April 2002. These were updated and reformatted in the 2004 regulations – S.I. 029 of 2004, which places a greater emphasis on the responsibilities of participants.

Similar, but not identical, rules apply to the carriage of dangerous goods by other modes of transport. Where the waste is being shipped abroad, by sea, the transport must also comply

with the International Maritime Organization's International Maritime Dangerous Goods (IMDG) Code. Similarly, transport by rail must conform to RID regulations and transport by air, ICAO/IATA rules.

#### **5.1.1.1 S.I. No. 029 of 2004 Provisions**

The detailed Irish regulations implementing ADR are set out in S.I. No. 029 of 2004. The Regulations apply to the carriage, in tanks, in bulk and in packages, of dangerous goods by road; including the packing, loading, filling and unloading of the dangerous goods in relation to their carriage. They apply the provisions, contained in the technical Annexes to the 'European Agreement Concerning the International Carriage of Dangerous Goods by Road' (ADR) 2003.

The Regulations impose duties on the various participants associated with the carriage of the dangerous goods. They contain requirements for the vehicles, tanks, tank containers, receptacles and packages containing the dangerous goods during their carriage. They require that the drivers and others, involved in the carriage of the dangerous goods by road (including their packing/loading/filling/transport/unloading) be adequately trained and, in the case of drivers, hold certificates of such. The Regulations also contain provisions on an EC harmonised approach to the road checks aspect of their enforcement.

The requirements are given in eight parts as follows:

Part 1	Preliminary – outlining the application and scope
Part 2	Compliance with ADR
Part 3	Duties of participants
Part 4	Driver training certificate courses
Part 5	Vehicle technical inspections
Part 6	Road checks
Part 7	Exemptions
Part 8	Application of section 18 of Act

In addition, the Regulations include a number of schedules and forms.

Part 2 imposes the obligation to comply with the Annexes of ADR 2003.

These state that:

- The dangerous goods must be packed in accordance with the provisions and special conditions of packing, marking and danger labels specified for each ADR class in Annex A to the ADR;
- The packaging, including Intermediate Bulk Containers (IBC), Large Packagings (LP) etc. must be so closed as to preclude any loss of contents;
- The packaging must be unaffected by the contents or the conditions of transport;
- The packaging must conform to the provisions of ADR relating to design, construction, type approval, inspection, maintenance, operation, filling and use;
- The packaging must be marked and labelled in accordance with ADR



The packaging requirements make up a major part of ADR and are dealt with in **5.2** below and in **Appendix 3**.

Part 3 of S.I. 029, dealing with the duties of participants is the most relevant section to health establishments generating, managing and transporting healthcare risk waste. In Part 3, duties and responsibilities are described in detail for different participants most of which are relevant to healthcare risk waste. The participants listed include:

- consignor
- carrier
- consignee
- loader
- packer
- filler
- tank-container operator
- driver

Anyone with responsibility for any of the above activities or personnel involved in such activities should obtain a copy of and be familiar with the detailed requirements of the Regulations.

The other sections in the regulations deal with requirements which are largely the responsibility of the carrier. However, the consignor is responsible, under the regulations, for ensuring compliance with the mode of carriage stipulated in the ADR.

It should be noted that the consignor, under the Regulations, is required to complete a transport document which must accompany the load containing a specified list of information relating to the consignment. (A consignment note containing information about the goods to be conveyed is also required under other regulations - **see Section 5.1.3**. For transport within Ireland, it is acceptable to use a single form which satisfies the combined requirements. The information provided must be given in a format which meets the specific requirements contained in each set of regulations). The driver must also carry instructions in writing, sometimes referred to as a TREMc card, to be implemented in the event of an accident.

### **5.1.2 Dangerous Goods Safety Adviser (DGSA)**

Separate, but related, regulations, the European Communities (Safety Advisers for the Transport of Dangerous Goods by Road and Rail) Regulations, 2001 - S.I. No. 6 of 2001 were issued in January 2001.

These Regulations place an obligation on an “undertaking” to appoint a Dangerous Goods Safety Adviser. The Adviser is responsible for helping to prevent the risks inherent in such activities with regard to persons, property and the environment. An undertaking means a person who transports, loads or unloads dangerous goods. While healthcare risk waste generators principal involvement is as consignors, invariably, they are involved in filling the wheeled bins or large packaging and as such, are required to employ a Safety Adviser. The appointed Adviser must be qualified in accordance with the Regulations. The appointment



may be either on the basis of a consultancy arrangement or direct employment. In either case, the arrangement must be agreed by both parties, in writing. (For further information, see the Health and Safety Authority's Guidelines on the DGSA Regulations).

### **5.1.3 Consignment Notes – C1 Form**

S.I. No. 147 of 1998 – Waste Management (Movement of Hazardous Waste) Regulations, 1998 stipulates that the consignor (producer or holder) of any hazardous waste being transported off site has to complete a consignment note which must accompany the waste during carriage. The waste is also required to be transported in properly labelled packaging. The consignment note system is intended to enable the local authority to keep track of the movement of hazardous wastes at all stages from production to disposal.

The consignment note is issued by the local waste authority in whose functional area the waste originates. The consignment note is in three parts, A, B and C, and comprises 5 bound and numbered copies. The consignor is obliged to complete Part A and give the top four copies to the carrier. The carrier, in turn completes Part B before finally passing the consignment note to the consignee who must return the form to the local authority after completing Part C.

A Consignment Note must be raised for each shipment of infectious healthcare risk waste. The note must accompany the load at all stages of carriage.

**Note:** For transport by road, within Ireland, the information provided in the C1 Form should satisfy the obligation of the consignor to provide a transport document under the Carriage of Dangerous Goods by Road Regulations, provided all the information required in the latter Regulations is included and is stated in the format stipulated. Where the waste is being shipped abroad, separate documentation is necessary.

Two examples of C1 Forms completed in a manner which should satisfy the Carriage of Dangerous Goods by Road Regulations 2003 are given in **Appendix 5**.

### **5.1.4 Waste Management (Collection Permit) Regulations, 2001**

Most forms of waste collection on a commercial basis are now subject to Regional Waste Collection Permits. The permits are issued by the regional waste authorities under the Waste Management (Collection Permit) Regulations, 2001 (S.I. No. 402 of 2001). The regulations allow the waste authorities to monitor and control carriers and the movement of waste. The process of issuing permits allows for public consultation.

## 5.2 Detailed ADR Transport Provisions

### 5.2.1 Classification

The ADR Agreement sets out detailed provisions for the classification, packaging, labelling, documentation and transport of all classes of dangerous goods.

The basis of ADR is the classification of dangerous substances into 9 different classes according to the type of hazard involved. The ADR provisions are set out in two annexes, A and B, which are updated regularly.<sup>1</sup> Annex A contains general provisions and provisions concerning the 9 classes of dangerous substances and articles (e.g. classification, packaging, labelling and documentation). Annex B contains provisions concerning transport equipment and transport operations (e.g. requirements for vehicle crews, equipment, operation and requirements concerning the construction and approval of vehicles).

A detailed and extensive classification of dangerous substances is given in the “Dangerous Goods List” in Annex A. The list details substances in order of the 4-digit “UN Number” which is allocated to each dangerous substance followed by the Proper Shipping Name (PSN) for each substance. By consulting the Dangerous Goods List with the UN Number of the particular substance in question, the applicable transport requirements can be ascertained.

Two classes of substance are listed which are specifically relevant to the transportation of healthcare waste: Class 6.1 - toxic substances, and Class 6.2 – infectious substances.

#### 5.2.1.1 Class 6.1 Toxic substances

Class 6.1, toxic substances, covers a range of substances of varying degrees of toxicity which can cause damage to human health or death by inhalation, by cutaneous absorption or by ingestion. In the field of patient-care this class has a limited relevance, such as in chemotherapy where cytotoxic pharmaceutical preparations are used. Toxic chemicals and solvents may also be used in laboratories or in special processes carried out in some hospital departments.

#### 5.2.1.2 Class 6.2 Infectious substances

Class 6.2, infectious substances, comprises of those substances known or reasonably expected to contain pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsia, parasites, fungi) or recombinant micro-organisms (hybrid or mutant) that are known or reasonably expected to cause infectious disease in animals or humans.

***Under ADR infectious substances are subject to this class only if they are capable of spreading disease. They are not subject to this class if they are unlikely to cause disease.***

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<sup>1</sup> The most recent amendments are contained in the 1 January 2003 “restructured ADR”. The full text of ADR2003 is available at the United Nations Economic Commission for Europe website: <http://www.unece.org/trans/danger/danger.htm>.

Substances of Class 6.2 are split into four sub-divisions as follows:

- I1, UN No. 2814 – INFECTIOUS SUBSTANCE, AFFECTING HUMANS
  - I2, UN No. 2900 – INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only
  - I3, UN No. 3291 – CLINICAL WASTE, UNSPECIFIED, N.O.S.\*
  - I4, UN No. 3373 – DIAGNOSTIC SPECIMENS<sup>2</sup>
- \*N.O.S. = “not otherwise specified”

Articles contaminated with these substances are also considered as substances of this class.

ADR states that:

“Infectious substances shall be classified in Class 6.2 and assigned to UN Nos. 2814 or 2900, as appropriate, on the basis of their allocation to one of three risk groups based on criteria developed by the World Health Organization (WHO) and published in the WHO *"Laboratory Biosafety Manual"*, second edition (1993)". A risk group is characterised by the pathogenicity of the organism, the mode and relative ease of transmission, the degree of risk to both an individual and a community and the reversibility of the disease through the availability of known and effective preventative agents and treatment.

The three risk groups used in ADR are as follows:

- Risk Group 4: a pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individual to another, directly or indirectly and for which, effective treatment and preventative measures are usually not available (i.e. high individual and community risk).
- Risk Group 3: a pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another and for which, effective treatment and preventative measures are available (i.e. high individual risk and low community risk).
- Risk Group 2: a pathogen that can cause human or animal disease but is unlikely to be a serious hazard and, while capable of causing serious infection on exposure for which, effective treatment and preventative measures are available and the risk of spread of infection is limited (i.e. moderate individual risk and low community risk).

**NOTE:** *Risk group 1 includes micro-organisms that are unlikely to cause human or animal disease (i.e. no, or very low, individual or community risk). Substances containing only such micro-organisms are not considered infectious substances for the purposes of the provisions.*”

Wastes are defined in ADR as wastes derived from the medical treatment of animals or humans or from bio-research where there is a relatively low probability that infectious substances are present. They shall be assigned to UN No. 3291. Wastes containing infectious substances which can be specified shall be assigned to UN Nos. 2814 or 2900 according to their degree of danger. Decontaminated wastes which previously contained infectious substances are considered non-dangerous unless the criteria of another class are met. Clinical

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<sup>2</sup> I4 – UN No. 3373, Diagnostic Specimens is a new subdivision of Class 6.2 introduced in ADR 2003. Guidance is not offered here regarding diagnostic specimens as they are not classified as waste which is the subject of this document.

wastes assigned to UN No. 3291 are assigned to packing group II (see 5.2.2). For the carriage of substances of this Class, the maintenance of a specified temperature may be necessary.”

### **Comment on Risk Group 2 infectious material**

***Risk Group 2 infectious substances are subject to ADR only if they are capable of spreading disease. They are not subject to this class if they are unlikely to cause disease.***

Examples of where waste containing Risk Group 2 organisms should be treated as healthcare risk waste and are, therefore, subject to ADR, include waste which contains viable biological Risk Group 2 agents artificially cultivated to significantly elevated numbers or waste where it is assessed that the infectious agents present are capable of spreading disease and are likely to cause disease.

*See Appendix 3 for detailed extracts from ADR 2003 on Class 6.2.*

## **5.2.2 UN Approved Packaging**

UN approved packagings must be used for the transportation of the substances listed in the Dangerous Goods List. All packaging must be appropriate for the type of waste conveyed and must be designed to prevent leakage of the contents during normal conditions of transport. In addition, the packaging must be unaffected by the contents and must conform to provisions set down relating to design and construction. Each container intended for use as UN packaging must bear a permanent mark relevant to the container type. The mark is the manufacturer’s certification that the mass produced container corresponds to the approved design and test specified by ADR. ADR also sets down the materials that can be used and the test standard to be achieved.

Substances are divided into three Packing Groups, I, II & III, in accordance with the degree of danger they present. The packaging authorised to contain all dangerous goods reflects the degree of danger presented by the goods. Some substances, including higher risk infectious agents, are not assigned to a particular Packing Group but are subject to special packaging instructions.

Annex A of the ADR provisions also sets out the requirements for the construction and testing of “UN-type” packagings, intermediate bulk containers (IBCs), large packagings and tanks manufactured from a range of different materials and composites. The annex lists the test criteria and performance levels required for each packaging type. Manufacturers wishing to have containers ADR approved must submit specimens to accredited testing laboratories. Containers meeting the standard may then be stamped with a specific UN mark.

The mark shows, in code:

- the kind of packaging into which the container falls - e.g. drum (1), box (4) etc.,
- the material from which it is manufactured – e.g. steel (A), plastic (H)etc.,
- the packing group: X = I, II or III, Y = II or III, Z = III,
- “S” for solids or, test pressure, if hydraulically pressure tested,
- additional information relating to the year/month of manufacture, the state in which approval was issued, manufacturer etc.

e.g. 4H2/Y15/S/98/NL/Peters = a solid plastic box for Packing Groups II or III solid material with a gross mass of 15 kg., made in 1998, certified in the Netherlands and manufactured by the firm “Peters”.

### 5.2.2.1 Packaging Requirements for Class 6.2

Different packaging conditions apply to substances in Class 6.2 depending on the Risk Group into which the infectious agent falls. More stringent conditions apply to higher risk substances. All packaging is required to conform to minimum test criteria which are set out in ADR.

**Infectious material in the highest risk category, Risk Group 4, is outside the scope of this guideline document.** In the very rare instances of dealing with material from this Risk Group expert microbiological/ infection control guidance must be sought regarding the best way of handling, packaging, treating or disposing of any wastes generated and the measures necessary to ensure full adherence to the requirements of ADR.

Class 6.2 substances are assigned to Packing Group II or are subject to special provisions and “packing instructions”. The relevant instructions for any substance are obtainable by referring to the Dangerous Goods List. The requirements for the majority of healthcare risk waste are reproduced in summary form in **Appendix 3**.

### 5.2.3 Labelling

Each outer container intended for use as UN packaging must carry a specific diamond-shaped hazard label and a further label giving specific information about the contents. 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. In case of damage or leakage immediately notify Public Health Authority”*. The information label must contain the 4-digit UN number of the product contained, e.g. **UN 3291**, and should include the Proper Shipping Name (PSN) as listed in the ADR Dangerous Goods List. The PSN is essential where IMDG or other regulations apply such as when the goods are being shipped abroad.

### 5.2.4 Vehicles & Carriers

Under Part 3 – Duties of carrier - of the Carriage of Dangerous Goods by Road Regulations, 2004, (S.I. 029 of 2004) vehicles used for the carriage of dangerous goods must be certified as conforming to specified requirements regarding type, rear protection, fuel tank, braking and electrical equipment etc. laid down in ADR. A vehicle certificate of approval for the transport unit must be carried on the vehicle.

The carrier must ensure that the vehicle is properly equipped and that the driver is supplied with a valid certificate of approval for the transport unit. The vehicle driver must carry written instructions from the consignor relating to appropriate actions to be taken in the event of incidents or accidents involving the vehicle carrying the dangerous goods. The carrier must also ensure that there is no breach of any ADR mixed loading requirements and that the goods and containers are properly stowed and secure. Vehicles should be equipped with spillage cleaning kits and appropriate personal protective equipment for the driver’s use.

Any transport unit used for the carriage of dangerous goods must be marked, labelled and placarded etc. in accordance with the requirements of Annex B of ADR. This can include, hazard labels, warning notice, placards and plain orange plates, subject to the nature and quantity of dangerous goods carried. The latter rectangular plates to a specific size must be displayed, front and rear.

The carrier is responsible, under the regulations, for ensuring that drivers have received suitable and adequate training for the vehicle type and the class of goods carried. Subject to certain limits, only drivers who hold a valid driver training certificate may be employed in the transportation of dangerous goods.

### **5.2.5 Driver Training & Duties**

Driver training must relate to the class of goods being conveyed. Formal training must include the particular ADR requirements that have to be met during carriage of the goods concerned. In relation to healthcare risk waste, drivers should receive specific training on the nature of the materials being carried and on the actions to be taken in the event of spillages, damage or leakages involving containers and on the proper use of personal protective equipment and spillage kits.

Under the regulations a driver must carry a driver training certificate which is valid for the dangerous goods being transported. The driver must be capable of carrying out the written instructions received from the consignor indicating what to do in the event of an incident. Drivers must also ensure that the dangerous goods are stowed and secured in accordance with specific ADR requirements. They must specifically ensure that all labels, marks, signs, notices and placards required under ADR are kept clean and that the vehicle is secure and supervised, while parked, when loaded.

In the event of an accident or incident involving dangerous goods in transit the driver is required to notify the Gardai and fire authority and any other authority named in the written instructions to the driver. The driver must also notify and carry out the instructions of the carrier and consignor with regard to the goods.

## 6. Preferred Waste Management and Packaging System

### 6.1 General

The collection and transport method used traditionally involved two different types of packaging for healthcare risk waste, viz. bags or sacks, and rigid containers, bins or boxes. Practice now is, generally, to transport these items within wheeled bins. This system works well, when appropriately managed. Accordingly, the guidance put forward in this document promotes the continuation, as far as possible, of the system, with some modifications to ensure that the system can be operated in conformity with ADR. It is not permissible to compact healthcare risk waste, either manually or mechanically.

Any system of containment of healthcare risk waste for transportation must conform to the detailed requirements of ADR outlined in **section 5**. These requirements can be briefly summarised as follows:

- ◆ Toxic chemicals or pharmaceuticals, other than small amounts present as contaminants or residues in healthcare risk waste, must be separately classified (Class 6.1) and carried in UN approved containers bearing the appropriate UN number, hazard label and specified information about the contents.
- ◆ Lower-risk infectious material belonging to Class 6.2, as a minimum, must be packaged in a single rigid UN approved container (bin or box) bearing the classification number “6”, the appropriate UN number and the bio-hazard danger label with specified information about the contents. Absorbent material must be used if the material contains small amounts of liquids which could spill.
- ◆ High-risk specific infectious material belonging to Class 6.2 must be packaged in a double layer of inner packaging within an outer rigid container (bin or box). The combination package must be of a UN approved type and be marked accordingly. The outer container is required to bear the classification number “6”, the appropriate UN number and the bio-hazard danger label with specified information about the contents. Absorbent material must be used between the containers if the material is likely to contain liquids which could spill.

The use of Class 6.1 toxic substances should always be under professional supervision. Specialist advice and the advice of the Dangerous Goods Safety Adviser should be obtained on the packaging, labelling, and the preparation of transport documentation appropriate to the disposal of waste containing such substances. An informed judgement may have to be made in the case of healthcare waste, contaminated with, or containing traces, of such substances. Empty packagings with residues for many of the substances in this class are also subject to ADR. Again, the advice of the Dangerous Goods Safety Adviser should be obtained to determine if the packaging may be so treated.

The vast majority of clinical or healthcare risk waste falls into the lower risk containment category.

Due regard should be had to the consequences of using inadequate or inappropriate packaging. As well as being potentially damaging to personnel and the environment the use



of such packaging is in breach of statutory regulations. Such occurrences could result in prosecution of the consignor and may result in delays and the return, at the producer's expense, of the waste concerned.

UN approved plastic sacks or bags, used traditionally for low risk soft dry materials (i.e. excluding sharps), will now only conform to ADR requirements if they are contained in an outer packaging, such as a wheeled bin approved as a rigid IBC (Intermediate Bulk Container) or large packaging. In such cases the wheeled bin, rather than the bag, becomes the primary container and while the waste may be moved in bags internally within the hospital it must be contained within the wheeled bin for transport off site. For safety, on-site movement of bags should also be within wheeled bins where practicable.

All containers must be appropriate for the type of waste to be conveyed. Particular attention should be paid to wastes which may be difficult to convey, such as liquids. In general, most healthcare risk waste can be considered as solid waste. Small quantities of liquids or substances which have a high liquid content are acceptable within the waste if:

- a) The liquid is further contained in an inner packaging so that it is unlikely to spill or leak e.g. in bags, bottles or placenta boxes and a liner is employed within the rigid container.
- b) In the event of spillage there is sufficient absorbent material to soak up the liquid.
- c) The lid is properly fitted and makes the container leak-proof.

Where larger quantities of free healthcare risk waste liquids need to be transported for treatment leak-proof treble containment together with absorbent material is required. In such cases the advice of the Dangerous Goods Safety Adviser should be sought and the arrangements agreed in advance with the waste disposal contractor. Liquid waste **must not be placed in plastic bags** where it is likely to leak in handling.

## 6.2 General requirements for all packaging

All containers, including wheeled bins carrying bagged waste, should conform to basic requirements relating to:

- Manufacture
- Colour coding
- Labelling
- Filling
- Closure
- Trace

**Manufacture:** Annex A of the ADR sets out the requirements for the packing of dangerous goods. All packagings, including Intermediate Bulk Containers (IBCs) and large packagings (wheeled bins), used for the transport of dangerous goods must be manufactured and tested to approved UN standards and must pass the testing regime set out in the ADR specification.

**Colour Coding:** A system of colour coding is not a UN/ADR requirement but is highly desirable to assist in segregation and management of the waste. The basic colour put forward for the body of each type of container is yellow. This has become common usage in most



countries. For manufacturing reasons, wheeled bin bodies may, by agreement, be of a different colour.

Lids colours are used to indicate the disposal stream. Yellow should be used with containers for disposal by non-incineration, disinfection technology. (Red or blue lids are sometimes used by manufacturers to distinguish sharps containers and are also acceptable for alternative technology disposal). Purple or black lids are reserved for containers intended principally for disposal by incineration. Purple coloured lids are recommended for bins or boxes with healthcare risk waste contaminated with cytotoxic materials, discarded medicines or pharmaceuticals. Black lids are recommended for containers used for the disposal of recognisable large anatomical waste material or body parts. 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:** As well as the information required by ADR – hazard label, class number, 6, UN number etc. information should be included about the contents and recommended method of disposal, e.g. “HEALTHCARE RISK WASTE - FOR CONTROLLED DISPOSAL” or “CYTOTOXIC HEALTHCARE RISK WASTE – FOR DISPOSAL BY INCINERATION ONLY”.

**Filling:** Containers must not be over-filled. Containers with an excess of waste cannot be closed without risk to the personnel involved. The contents may also spill in handling or transportation. Improperly closed containers leave the waste exposed thus increasing the potential for security or vermin problems. To assist in this area some bins have manufacturer’s fill lines beyond which the container should not be filled. In general rigid boxes should not be more than three-quarters filled while bags should not be more than two-thirds filled. The latter is necessary to aid closure of the bags. 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. Their certification is on the basis of properly closed lids. 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. Where wheeled bins are employed it is essential that the lids are locked during storage and transportation. Only good quality locks should be used with minimal projections which could snag bags being placed in the bins.

**Trace:** All waste packages must be tagged with a unique reference number which is traceable to the point of production. Proprietary closure ties which incorporate a reference number system are now extensively used. 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.

## 6.3 Packaging Types

**Table 6.1** lists the different types of packagings approved under ADR for use with clinical/healthcare risk waste. In addition to the containers listed in Table 6.1, bags or rigid containers specifically suited for autoclaving should be used to contain laboratory slides and cultures or other materials prior to sterilisation.

**Table 6.1 – Recommended Packaging Types**

	<u>CONTAINER TYPE</u>	<u>UN MARK*</u>
(a)	Yellow bags (for disposal by non-incineration disinfection technology)	5H4
(b)	Yellow rigid bins or boxes (for disposal by non-incineration disinfection technology)	1H2 3H2 4H2
(c)	Yellow sharps bins or boxes (for disposal by non-incineration disinfection technology)	4H2Y
(d)	Yellow rigid bins or boxes with purple lids (for disposal by Incineration only)	1H2 3H2 4H2
(e)	Yellow rigid bins or boxes with black lids (for large anatomical waste - for disposal by Incineration)	1H2 3H2 4H2
(f)	Yellow <sup>+</sup> reusable eurocart-type wheeled bins approved as an IBC or large packaging <sup>+</sup> Colour may vary by agreement	11H2 or 50x for Large Packaging where 'x' designates the material of construction
(g)	ADR tanks or tank vehicles	S4AH or L4BH

**\*Note:** Containers manufactured to other UN marks may also comply with the ADR requirements for Class 6.1 and Class 6.2.

### **Note on the use of wheeled bins:**

The use of eurocart-type wheeled bins for the internal movement of healthcare risk waste is seen as the best way to avoid unnecessary secondary handling of primary containers. In addition, the wheeled bins act as an extra containment or outer packaging. As plastic sacks or bags are not permissible as primary containers under ADR the wheeled bin, rather than the bag, has to be considered the primary container for transport purposes. In such cases, the wheeled bin must display the required ADR marking and hazard labels appropriate to an IBC or Large Packaging i.e. on two opposite sides. Only wheeled bins that have been UN tested

specifically for the type of waste to be conveyed should be used.<sup>3</sup> They must not be used with loose waste inside.

As wheeled bins are in constant re-use and may be returned to an internal hospital environment it is imperative that they be maintained to a high standard of cleanliness. Bins, once emptied, must be fully washed and disinfected, internally and externally, prior to re-entering the distribution system. This will generally be the responsibility of the contractor. The cleaned bins should be kept segregated, in transport and storage, from bins containing waste for treatment. Contaminated empty wheeled bins constitute empty packaging under ADR and are subject to the provisions of ADR.

All wheeled bins must be identifiable by means of a unique number and, ideally, a bar-code to allow electronic monitoring of the bins.

**Note on the use of ADR tanks or tank vehicles:**

ADR tanks or tank vehicles consisting of approved liquid retaining steel or reinforced plastic tanks which can be hermetically sealed are now used to transport UN 3291 waste in bulk within the U.K. To date, there is no experience of using such tanks in Ireland.

## **6.4 Contents and Segregation**

**Figure 6.1** illustrates, in simple schematic form, the basic segregation and disposal path for a full range of containers designed to meet the packaging and streaming-for-disposal requirements of the vast majority of healthcare waste.

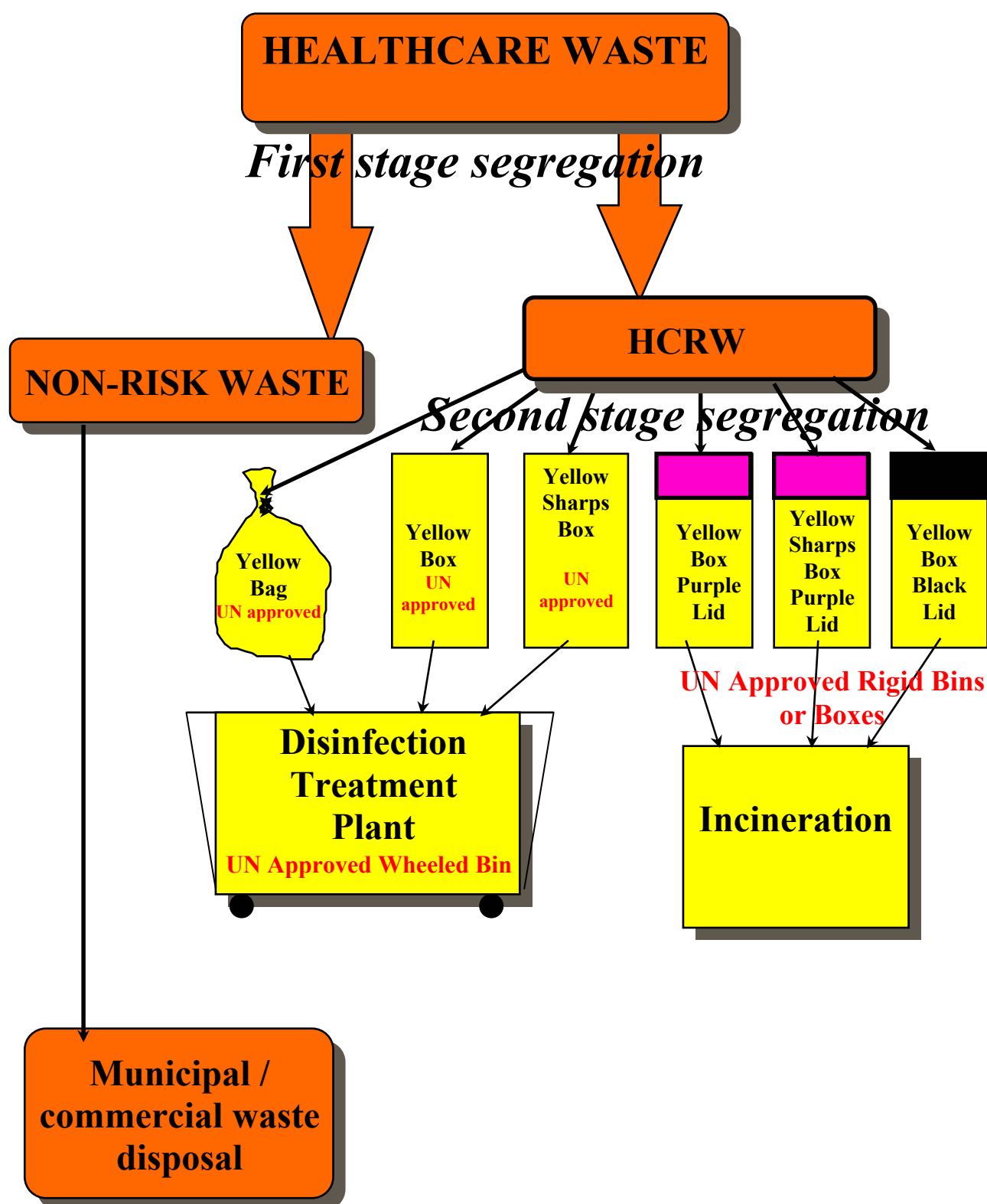
Details of the typical contents appropriate to each container type are set out in diagrammatic form in **Figure 6.2**. Figure 6.2 also illustrates some typical non-risk waste items under the heading “black bag waste”. The figure was developed in conjunction with the Infection Control Nurses Association, Irish regional Group.

A more detailed segregation and packaging table and notes is given in **Appendix 2** and *should be consulted by health service personnel, particularly those involved in the more acute end of healthcare.*

***It is important for correct context that the figures and the text of this entire document are read together.***

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<sup>3</sup> Most tests carried out, to date, on wheeled bins, involve waste which is already contained within UN approved plastic bags. Consequently, the use of such wheeled bins will conform to UN container requirements only when the waste is contained in such bags. It should also be noted that a closed lid is an integral part of the wheeled bin during testing so, to ensure compliance, it is essential that the lid is properly locked at all times during transportation.



**Figure 6.1. Healthcare Waste - Basic Segregation and Packaging Schematic**

Note: UN requirements may require the use of inner liners or receptacles for some wastes.

**Figure 6.2**

## SEGREGATION OF HEALTHCARE WASTE<sup>+</sup> - typical contents

<p><b>YELLOW BAG</b></p> <ul style="list-style-type: none"> <li>♦ ALL BLOOD-STAINED OR CONTAMINATED ITEMS INCLUDING:- Dressings, swabs, bandages, personal protective equipment (gowns, aprons, gloves)</li> <li>♦ SUCTION CATHETERS, TUBING AND WOUND DRAINS</li> <li>♦ INCONTINENCE WASTE FROM KNOWN OR SUSPECTED ENTERIC INFECTIONS</li> </ul> <p><i>NB. BAGS MUST NOT BE USED FOR SHARP OR BREAKABLE ITEMS NOR FOR LIQUIDS</i></p> <p><b>DO NOT OVERFILL.</b></p> <p><u>BAG MUST BE SECURELY CLOSED WITH CABLE TIE OR TAPE WHEN 2/3 FULL MAXIMUM</u></p>	<p><b>YELLOW RIGID BIN OR BOX WITH YELLOW LID</b></p> <ul style="list-style-type: none"> <li>♦ BLOOD AND BLOOD ADMINISTRATION SETS</li> <li>♦ PLACENTAS (IN PLACENTA BINS)</li> <li>♦ BODY FLUIDS (<u>but not in bulk</u>)</li> <li>♦ DISPOSABLE SUCTION LINERS</li> <li>♦ REDIVAC DRAINS</li> <li>♦ HISTOLOGY WASTE</li> <li>♦ NON-CULTURED LABORATORY WASTE (<u>including autoclaved microbiological cultures</u>)</li> <li>♦ SPUTUM CONTAINERS FROM KNOWN OR SUSPECTED TB CASES</li> </ul> <p><b>DO NOT OVERFILL.</b></p> <p><u>BOX MUST BE SECURELY CLOSED WHEN AT MAXIMUM 3/4 FULL OR, AT MANUFACTURER'S FILL LINE</u></p>	<p><b>YELLOW SHARPS BIN OR BOX</b></p> <p>USED SHARP MATERIALS SUCH AS:</p> <ul style="list-style-type: none"> <li>♦ NEEDLES</li> <li>♦ SYRINGES</li> <li>♦ SCALPELS</li> <li>♦ SHARP TIPS OF I.V. SETS</li> <li>♦ CONTAMINATED SLIDES</li> <li>♦ BLOOD-STAINED OR CONTAMINATED GLASS</li> <li>♦ STITCH CUTTERS</li> <li>♦ GUIDE WIRES/TROCHARS</li> <li>♦ RAZORS</li> </ul> <p><b>DO NOT OVERFILL</b></p> <p><b>NOT FOR LIQUIDS</b></p> <p><u>BOX MUST BE SECURELY CLOSED WHEN AT MAXIMUM 3/4 FULL OR, AT MANUFACTURER'S FILL LINE</u></p> <p><b>Note:</b> Dangerous Goods Regulations require the use of inner liners or receptacles with UN packaging for higher risk wastes or free liquids. Refer to guidelines for more detail.</p>	<p><b>YELLOW RIGID BIN OR BOX WITH PURPLE LID</b></p> <ul style="list-style-type: none"> <li>♦ NON-SHARPS CYTOTOXIC WASTE</li> <li>♦ PHARMACEUTICAL WASTE AND DISCARDED CHEMICALS AND MEDICINES (ONLY SMALL QUANTITIES LEFT OVER AFTER ADMINISTRATION TO PATIENTS)</li> </ul> <p><b>DO NOT OVERFILL</b></p> <p><u>BOX MUST BE SECURELY CLOSED WHEN AT MAXIMUM 3/4 FULL OR, AT MANUFACTURER'S FILL LINE</u></p>	<p><b>YELLOW SHARPS BIN OR BOX WITH PURPLE LID</b></p> <ul style="list-style-type: none"> <li>♦ NEEDLES, SYRINGES, SHARP INSTRUMENTS AND BROKEN GLASS THAT HAVE BEEN USED FOR THE ADMINISTRATION OF CYTOTOXIC DRUGS</li> </ul> <p><b>DO NOT OVERFILL</b></p> <p><b>NOT FOR LIQUIDS</b></p> <p><u>BOX MUST BE SECURELY CLOSED WHEN AT MAXIMUM 3/4 FULL OR, AT MANUFACTURER'S FILL LINE</u></p>	<p><b>YELLOW RIGID BIN OR BOX WITH BLACK LID</b></p> <ul style="list-style-type: none"> <li>♦ NON-AUTOCCLAVED MICROBIOLOGICAL CULTURES (BUT ONLY IN CONJUNCTION WITH ADDITIONAL PACKAGING AND LINERS – SEE NOTES ON LABORATORY WASTE)</li> <li>♦ LARGE ANATOMICAL BODY PARTS</li> <li>♦ WASTE CONTAINING BSE/TSE RELATED BLOOD OR TISSUE</li> </ul> <p><b>DO NOT OVERFILL</b></p> <p><u>BOX MUST BE SECURELY CLOSED WHEN AT MAXIMUM 3/4 FULL OR, AT MANUFACTURER'S FILL LINE</u></p>
<p><b>BLACK BAG*</b></p> <p><b>FOR NON-RISK WASTE</b></p> <ul style="list-style-type: none"> <li>♦ INCONTINENCE WEAR (from non-infectious patients)</li> <li>♦ OXYGEN FACE MASKS</li> <li>♦ EMPTY URINARY DRAINAGE BAGS</li> <li>♦ CLEAR TUBING (e.g. oxygen, urinary catheters, ventilator, I.V., N.G.)</li> <li>♦ ENTERIC FEEDING BAGS</li> <li>♦ GIVING SETS WITH TIPS REMOVED</li> <li>♦ ALL OTHER HOUSEHOLD NON-RECYCLABLE WASTE</li> </ul> <p><b>DO NOT OVERFILL</b></p>					

**Note:** All bags and containers must have an individual tracing tag or label.

<sup>+</sup> Containers, marking and labels for healthcare risk waste must conform to ADR requirements.

<sup>\*</sup> Some Waste Authorities may require healthcare non-risk waste to be packaged in clear, or otherwise identified plastic bags.

## 6.4.1 Notes on specific requirements regarding some containers:

**6.4.1.1 Rigid Containers:** There are two types of container: *rigid plastic boxes* and *sharps bins*, each with distinctive lids to indicate the waste disposal stream to which they should be assigned.

**6.4.1.1.1 Rigid box with yellow lid:** *Permissible Contents* - material containing small quantities of free liquids (under 100 ml.), low-risk laboratory wastes and autoclaved cultures (but not sharps capable of puncturing the walls of the container), bagged blood, plasma, blood products, blood components, boxed placentas, histology specimens (drained of formaldehyde solution). They shall not contain cytotoxic waste, free liquids, pharmaceutical waste, large identifiable anatomical parts or waste containing blood or tissue from BSE/TSE infected patients.

**Note:** Where the material being disposed of involves contaminated wastes from isolation facilities used to treat Risk Group 3 infected patients such as *Mycobacterium tuberculosis*, HIV, viral hepatitis or other rare viral infections, or where the material is assessed as likely to contain viable forms of hepatitis or HIV virus, an inner receptacle and a liner should be used within the UN approved rigid box.

**6.4.1.1.2 Sharps Box:** Sharps bins must be constructed of materials which are impenetrable to glass or sharp edged objects. *Permissible Contents* – All sharp objects that have been in contact with body fluids etc. and which have not been autoclaved.

**Note 1:** Ordinary non-clinical glassware or other uncontaminated used glassware should not be disposed of as healthcare risk waste sharps.

**6.4.1.1.3 Rigid box with purple lid:** *Permissible Contents* - Non-sharps cytotoxic waste, discarded chemicals and medicines, pharmaceutical waste etc.

Where these materials are being disposed of in bulk they must be classified as 6.1. They must be labelled and packaged in accordance with the specific toxic hazard contained in the waste. Where the waste is infectious but is also contaminated with or includes these materials in small quantities the infectious hazard may be considered dominant and the waste should be classified as 6.2, UN 3291.

**Note 1:** Discarded chemicals and medicines from human healthcare which are neither ecotoxic nor occupationally hazardous may be disposed of as general healthcare risk waste.

**Note 2:** Any waste controlled drugs should be returned to the pharmacy under the same handling, accountability and security conditions that apply to the issuing of such substances.

**Method of disposal:-** The method of disposal shall be by incineration only at a temperature in accordance with recommendations (manufacturer's/statutory) for the disposal of the contents.

**6.4.1.1.4 Rigid box with black lid:** *Permissible Contents* - recognisable large anatomical waste or body parts, blood or blood components assessed as being likely to contain BSE/TSE agents. In all such cases the waste material should be contained in an inner receptacle and a liner or other packaging in conjunction with the outer UN approved rigid box.

**Method of disposal:-** For large amputations the disposal arrangements should be made having regard to the patient's wishes. For all other waste the method of disposal shall be by arrangement with the disposal contractor but generally shall be by incineration.

**6.4.1.2 Autoclave bags:** *Type:* Light blue or clear with appropriate blue lettering. *Permissible Contents* - autoclave bags shall be used for the containment of laboratory waste to be autoclaved. Some form of rigid container or holder may need to be used in combination with, or as an alternative, to the bags, where the autoclaved waste involves glassware.

**Method of disposal:-** The primary container, after autoclaving, shall be yellow bags, rigid boxes or sharps container, as appropriate.

## 6.5 The Management of Other Potentially Hazardous Wastes

Toxic chemical waste arising from specialist processes carried out in the hospital environment should be separated and controlled by the personnel responsible for the processes. The disposal of such wastes should be by arrangement with a hazardous waste contractor in consultation with the Dangerous Goods Safety Adviser and should conform to the requirements of hazardous waste regulations. Transportation and packaging must conform to ADR. Any such wastes must be pre-advised to the contractor and the packaging and disposal arrangements should be agreed between the consignor, carrier and consignee prior to collection.

Wastes which contain solvents, concentrated iodine or, mercury<sup>4</sup>, must be segregated, identified, quantified and separately marked as they may require different processing by the contractor. Specialist advice and the advice of the Dangerous Goods Safety Adviser should be obtained regarding the actual concentrations at which such measures are required.

The disposal of radioactive wastes must be in accordance with the terms and conditions of the licence issued to the hospital by the Radiological Protection Institute of Ireland (RPII). Packaging and transport must conform to the requirements of Class 7 of ADR for which the RPII is the competent authority. Wastes, for disposal, which contain low levels of radioactive materials must be segregated, identified and carry certification on the form and level of radioactivity present. This certification to be provided by a competent person.

Other forms of waste, not mentioned, should be identified and approved, individually, prior to collection.

## 6.6 Laboratory Waste

It is essential that good laboratory procedures apply to the management, packaging and handling of all wastes generated in laboratories. Comprehensive waste management procedures should form an important part of any laboratory operating procedures. These should be spelled out in detail in the Laboratory Safety Management Plan.

Where considered necessary for the prevention of disease laboratory waste should be autoclaved prior to disposal. In any event, laboratory waste in which Risk Group 3 or Risk Group 2 organisms

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<sup>4</sup> Due regard should be had to any recommendations in circulation for the elimination of mercury from use in clinical practice where there is a suitable alternative.



have been artificially cultivated to significantly elevated numbers e.g. culture plates in bacteriology, or specimens from patients known to have, or highly suspected of having infections with Risk Group 3 organisms, should be autoclaved prior to disposal<sup>5</sup>. Any such assessment must involve suitably qualified personnel who understand the nature of the infectious materials as well as the health and safety implications involved in the handling, packaging and treatment of the waste.

Laboratory waste where there has been no multiplication of organisms e.g. blood specimens in clinical chemistry or haematology laboratories which have not come from patients known or highly suspected of having an infection with Risk Group 3 organisms, do not need to be autoclaved and may be packaged untreated in a yellow box or sharps box.

Under no circumstances should glassware such as bottles, slides, pipettes etc. be placed in plastic bags even if autoclaved beforehand.

## **6.7 Transmissible Spongiform Encephalopathy Agents**

In cases where waste is likely to contain blood or tissue from a patient who is known or suspected to have CJD or a related disorder i.e. those with clinical symptoms, and those who are potentially at risk of developing the disease, the waste should be placed in the appropriate black-lidded container for disposal by incineration.

## **7. Storage & Handling of Healthcare Waste on Site**

### **7.1 General**

Storage on-site normally consists of waste sub-collection stations or areas dispersed throughout the hospital and a central waste store or marshalling yard to which all streams of the hospital's waste are periodically brought.

Healthcare risk waste 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.

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<sup>5</sup> Where suitable autoclave facilities are not available laboratory waste containing elevated numbers of Risk Group 2 or Risk Group 3 organisms must be contained within an inner receptacle, outer liner and outer rigid UN approved container following Packing Instruction P620 (Appendix 3) . It must be labelled accordingly. The outer container should consist of yellow rigid box with a black sealed lid and it must be disposed of by incineration. If the waste involves liquid an absorbent material, such as cotton wool, saw dust or peat, should be added, sufficient to absorb any accidental spillages. This method of disposal should not be seen as a substitute for on-site autoclaving.



After permanent sealing and tagging primary healthcare risk waste packaging should be stored in the designated sub-collection area at the point of origin (e.g. ward, clinic) until collection. Primary healthcare risk waste packages must not be stored loose in corridors or other locations accessible to unauthorised personnel. Wheeled bins should be parked with brakes on, in the designated healthcare risk waste storage area so that primary healthcare waste packages can be placed in them directly after sealing and tagging.

**Note:** *For fire safety reasons, care should be taken not to locate containers in corridors or escape routes.*

## **7.2 Storing Wheeled Bins at On-Site Facilities or Collection Points**

### **7.2.1 Central Waste Store/Waste Marshalling Yard**

A central waste store or depot and related facilities should be provided for waste pending final removal for disposal. It should not be accessible to the public. Appropriate warning signs indicating the presence of healthcare risk waste/bio-hazard, restricting access to the public, should be prominently displayed at all entrances to any storage area.

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.

The waste marshalling area should be equipped with spillage kits and washing/cleaning and disinfection facilities for dealing with spillages etc. as well as all necessary services including lighting. Drainage, gradients and surfaces shall be such as to facilitate washing and cleaning.

Storage areas should conform to the following:-

- a) well drained impervious hardstanding
- b) enclosed compound with lockable gates
- c) secure from interference by unauthorised persons, children or animals
- d) easily accessible to collection vehicles.

The storage area should have sufficient capacity for the frequency of collection including a margin for any interruption in the collection/disposal system or accumulations during public holidays or missed collections. Wheeled bins should be stored with the lids closed, when empty and locked when full.

The storage of healthcare waste should be for as short a time as practical. Specialist forms of storage, such as freezers or temperature-controlled stores are not normally necessary and should

only be considered where collection frequencies are such that the waste could give rise to offence and/or a nuisance.

### **7.2.2 Waste Collection Stations**

In larger hospitals it may be appropriate to use a number of sub-collection stations or areas as intermediate collection points. Where collection stations are provided, they should be in the form of dedicated rooms which serve, on a shared basis, the short-term waste storage requirements of a number of departments. They may be used for the storage of both domestic, or household waste, and healthcare risk waste, but where this is the case, the healthcare risk waste containers should be kept separated from the domestic waste. Waste brought to the collection stations in plastic bags, rigid boxes and other containers will normally be transferred into wheeled bins in the collection station.

The stations should have easy access to the outside for the purpose of transferring wheeled bins to the waste marshalling yard. Access should be limited to staff by means of a keypad or combination type lock. An appropriate bio-hazard warning notice should be prominently displayed at the entrance. The area should be well lit and have washable walls and floors which are resistant to detergents and disinfectants.

Wheeled bins containing waste must be locked when full or are stored in any location which is not under direct supervision or is accessible to the public.

## **7.3 Record Maintenance**

A record of the tags or tracers issued to each hospital department should be retained within the hospital, ideally, for a period of not less than three years. The record should include details of the date and ward or department where the container has been used.

The despatch note used for contract and invoicing purposes must also show the details of each bin, by number/bar-code for each collection. This record must be maintained, not only for invoicing and account purposes, but also as a record for the purpose of traceability and accountability.

On despatch of healthcare risk waste, the hospital, as consignor of Dangerous Goods, must complete the transport document required under the Carriage of Dangerous Goods Regulation as well as the C1 Form required by the Waste Management (Movement of hazardous Waste) Regulations. For transport within Ireland the use of a combined single form is preferable. If a single combined form is used the details inserted in the C1 Form should comply with **section 5.1.3** and **Appendix 5**. Copies of the document/s must be retained by the hospital in accordance with the requirements of the regulations for a period of 5 years.

## **7.4 Frequency of Collection**

The frequency of collection of healthcare waste should be arranged as necessary to ensure that:

- a) waste is stored no longer than necessary or appropriate at the point of origin
- b) sub-collection storage areas are always cleared before becoming over-filled

- c) good control is exercised over healthcare risk waste in storage and that a “first-in-first out” system of bin rotation is applied.

## **8. Health & Safety**

Healthcare employers have responsibilities to employees in relation to the management and handling of healthcare waste under general Health & Safety legislation and under ADR. Under the Safety, Health & Welfare at Work Act there is a requirement to identify and assess risks in the workplace and to make every effort to reduce and eliminate such risks. Employers are obliged to equip and train personnel to deal properly with hazards. In the hospital or healthcare environment different staff will require different levels of training. It is important that this training is function specific.

The Safety Statement drawn up in accordance with Safety, Health and Welfare at Work regulations must include an identification of potential hazards and a proper risk assessment. It should also include a comprehensive Health & Safety Policy which deals with:

- responsibilities of named persons
- safety control measures
- written safety procedures
- health and safety training
- auditing of procedures
- consultation between all concerned personnel, management and employees
- accident, ill-health and incident recording and reports

Clearly, there are risks associated with the handling of healthcare risk waste and it is incumbent on healthcare employers to include detailed provisions in the Safety Statement relating to the health and safety aspects of healthcare risk waste.

The Statement should include details relating to:

- training and information
- the provision of personal protective equipment (PPE)
- training in the use of PPE
- personal hygiene
- hygiene facilities
- accident, ill-health and incident procedures & records

Personnel working within hospitals, involved in healthcare waste handling and movement, should be under the control of properly trained supervisors. They should receive sufficient training on the nature of healthcare risk waste and on its handling, segregation and packaging to enable them to meet the aims of proper waste management and to safely carry out their work. They should also be trained in the use of personal protective equipment and spillage kits. A record should be maintained and kept up to date of the training received.

Sufficient and appropriate training, information and instructions should be given to personnel involved in the handling of healthcare risk waste. Specifically this should address:

- potential risks to health
- precautions to be taken
- hygiene requirements
- the use of personal protective equipment and clothing
- steps to be taken in the case of incidents and to prevent incidents

The training should be given at the beginning of work and should be repeated periodically, e.g. annually, and adapted to take account of new or changed procedures or circumstances. In addition appropriate training in manual handling procedures should be provided to personnel placing healthcare risk waste containers into wheeled bins. It is important, in the choice of containers to be used that due regard should be had to the density of the waste and any recommended weight/height lift limits.

The precise personal protective equipment to be provided is dependent on the risk assessment. Where manual handling is involved heavy duty or even armoured gloves may be necessary if needlestick injuries are likely to occur.

The safety procedures and training for staff whose principal duties involve waste handling and movement should include instruction on the cleaning of spillages and the proper and safe use of equipment, bleaches and disinfectants. The handling of toxic chemicals should be restricted to personnel whose training qualifies them to deal with any incidents that could occur.

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## APPENDIX 1.

### **Guidelines for the Categorisation of Healthcare Waste.**

Drawn up by the Infection Control Nurses Association, Irish regional Group, and the Irish Society of Clinical Microbiologists

#### **Healthcare Waste**

<sup>1</sup> This is defined as solid or liquid waste arising from healthcare or health related facilities.

#### ***Categories of Healthcare Waste***

**A. Healthcare Risk Waste**

**B. Healthcare Non-Risk Waste**

#### **A:Healthcare Risk Waste**

This is categorised as risk waste, which is potentially hazardous to those who come in contact with it, by nature of its infectious, biological, chemical or radioactive content, or by being categorised as a sharp.

##### *1. Infectious Waste*

Two overlapping definitions apply:

(a) <sup>2</sup>Any Healthcare waste known or clinically assessed to be at risk of being contaminated with any of the biological agents, mentioned in article 2(d) group 3 and 4 of Council Directive 90/679/EEC on the protection of workers from risks related to exposure to biological agents at work. \*

(b) <sup>3</sup>Any waste arising from healthcare containing "substances contaminated with viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms". \*\*

##### *1.1 General:*

- a) Blood, and any items visibly soiled with blood, e.g. blood giving sets and bags, wound dressings, wound drains, swabs, disposable aprons, gloves and gowns that are blood stained.
- b) Contaminated waste from patients with transmissible infectious diseases e.g. suction catheters, tissues or sputum containers from patients with Tuberculosis.
- c) Incontinence wear/nappies from patients with known or suspected enteric pathogens e.g. rotavirus or salmonella.
- d) Items contaminated with body fluids other than faeces, urine or breast milk, i.e. pus, sputum, or peritoneal fluid. Examples include suction containers, suction tubing and other suction related equipment, and thoraseal drains.
- e) Other healthcare infectious waste from treatment areas as covered by definition of Infectious Waste.

**1.2 Microbiological cultures**, specimens and potentially infectious waste from **Pathology departments** (laboratory, post mortem rooms, or research laboratories).

## **2. Biological**

Anatomical Waste i.e. all human tissue, organs, body parts, carcasses and animals used for medical tests or research, it includes leeches and worms.

## **3. Sharps**

Categorised as any object that has been used in the diagnosis, treatment or prevention of disease and that is likely to cause a puncture wound or cut to the skin. Examples include used needles, scalpels, razors, lancets, contaminated broken glass, guidewires, sharp tips of clear intravenous giving sets, stitch cutters or any other contaminated disposable sharp instrument or item.

## **4. Radioactive waste**

Waste which includes materials, in excess of authorized clearance levels, classified as radioactive under the General Control of Radioactive Substances Order, 1993, (S.I. No. 151 of 1993).

## **5. Chemical Waste**

Discarded chemicals and medicines.

# **B: Healthcare Non-Risk Waste**

This is categorised as non-risk waste, which is not hazardous to those who come in contact with it. Its contents are non infectious, non radioactive or non chemical.

## **1. Domestic Waste**

This includes normal household and catering waste, all non-infectious waste, non-toxic, non-radioactive waste, and non-chemical waste. Examples include flowers, office waste, paper hand towels, wrapping paper, cardboard, newspapers, aerosol canisters and cans.

## **2. Confidential Material**

This includes shredded waste documents of a confidential nature. Examples include patient notes and laboratory results.

## **3. Medical Equipment**

Which is assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids or as described in Section 1. Examples include plastic items, plastic bottles, plastic packaging, IV solution fluid bags and sets excluding sharp tips, ventilator and oxygen tubing, oxygen facemasks, enteral feeding bags and administration sets.

#### 4. Potentially Offensive Material

Which is assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids or as described in Section 1. Examples include nappies/incontinence wear, stoma bags, urinary drainage bags and tubing, urinary catheters, naso-gastric tubes, unless visibly contaminated with blood.

**NOTE:** *The above categories of waste (B 1 - 4) do not present as an infectious risk to those who handle them and are suitable for land fill, provided they are secured appropriately.*

<b><u>Disposal</u></b>		
<b>Category A Waste:</b>	<b>1-3</b>	<b>must be rendered non-infectious or non-hazardous prior to their final disposal. These items need to be examined on a case by case basis.</b>
	<b>4 -5</b>	<b>as per relevant regulations and licence conditions, where appropriate</b>
<b>Category B Waste:</b>	<b>Suitable for landfill</b>	

#### References

- 1 Analysis of Priority Waste Streams, Healthcare Waste Commission of the European Communities, May 1995
- 2 Health Services Waste Policy June 1994, Department of Health
- 3 Waste Management Act 1996 and Waste Catalogue and Hazardous Waste List, Environmental Protection Agency, pg. 5, 23, 27

#### \* Council Directive of 26<sup>th</sup> November 1990 on Protection of Workers (90/679/E.E.C.)

Infectious waste is defined as being any healthcare waste known or clinically accessed to be at risk with any of the biological agents mentioned in Article 2(d) groups 3 and 4 of the council directive (90/679/E.E.C.)<sup>1</sup> of the 26<sup>th</sup> November 1990 on the protection of workers from risks related to exposure to biological agents at work of article 16(1) of Directive 89/391 EEC or with any other **viable** biological agents artificially cultivated to significantly elevated numbers.

Council Directive 90/679/E.E.C.<sup>2</sup> defines a group 3 biological agent as meaning: -

“one that can cause severe human disease and present a serious hazard to workers; it may present a risk of spreading to the community, but there is usually an effective prophylaxis or treatment available.”

A group 4 biological agent means: -

“one that causes severe human disease and is a serious hazard to workers; it may present a high risk of spreading to the community; there is usually no effective prophylaxis or treatment”

The biological agents that are excluded from the definition as infectious waste are groups 1 and 2 biological agents. Group 1 being: -

“one that is unlikely to cause human disease”

While group 2 is defined as

“one that can cause human disease and might be a hazard to workers, it is unlikely to spread to the community; there is usually an effective prophylaxis or treatment available.”

**Note:** Council Directive 90/679/EEC has been amended by Directives 95/30/EC, 97/59/EC and 97/65/EC, each amending the list of biological agents.

**\*\* Council Directive of 12<sup>th</sup> December 1991 on Hazardous Waste (91/689 EEC).**

**Annex I:**

Categories of generic types of hazardous waste listed according to their nature or the activity, which generated them. (Waste may be liquid sludge or solid in form).

e.g. Annex I.A

Waste displaying any of the properties listed in Annex III and which consist of:

- a) Anatomical substances, hospital and other clinical wastes.
- b) Pharmaceutical, medicines and veterinary components and chemical substances arising from research and development or teaching activities which are not identified and/or new and those whose effects on man and/or the environment are not known (e.g. laboratory residues etc.)

**Annex II:**

Constituents of the wastes in Annex I.B which render them hazardous when they have the properties described in Annex III, e.g. C33 pharmaceutical or veterinary compounds, C35 Infectious Substances.

Examples of Annex I.B of Annex I: Materials resulting from selective waste collections from households and which exhibit any of the characteristics listed in Annex III.

**Annex III:**

Properties of wastes which render them hazardous, H.9 “Infectious”.

## **Relevant reading material**

**Council Decision** (94/904 EEC) Established a list of hazardous waste pursuant to article 1(4) of Council Directive 91/689 EEC on hazardous waste.

**Relevant References for Department of Health Definition:** Adopted from the Priority Waste Stream Project Group’s definition.

Council Directive 93/88 EEC of 12<sup>th</sup> December 1993.

Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994 (S.I. No. 146 of 1994) and subsequent amendment, S.I. No. 248 of 1998.

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## **APPENDIX 2**

### **Detailed Segregation and Packaging Table**

Designated containers which are appropriate should be provided for the disposal of different waste types. Details of these and typical contents appropriate to each container are set out in tabular form in **Table A1**.

*It is important that the text of the entire document and the table are read together.*

**Table A1, page 1      HEALTHCARE RISK WASTE - PREFERRED PACKAGING**

<b><i>Container</i></b>	<b><u>1. Yellow Bags</u></b>	<b><u>2. Yellow Rigid Bins or Boxes with Yellow Lids</u></b>	<b><u>3. Yellow Sharps Bins or Boxes</u></b>
<b><i>Container type and Colour</i></b>	Yellow, non-halogenated plastic, +400 gauge minimum, conforming to UN mark 5H4.	Yellow rigid spill-proof box/bin with yellow sealable lids. Conforming to UN approved box/bin, type 1H2, 3H2 or 4H2 and marked accordingly.	Yellow rigid puncture-resistant box/bin. Conforming to UN approved box/bin, type 1H2, 3H2 or 4H2 and marked accordingly.
<b><i>Usage</i></b>	Single use. Suspended in a rigid holder, while filling, or as an inner liner to a rigid box. Suitable on its own only for low-risk dry soft waste. When so used, transportation must be in conjunction with UN approved wheeled bin.	Single use. Low-risk infectious: As a single container. High-risk infectious: In conjunction with a double barrier liner bag/inner receptacle or a single liner contained within a UN approved wheeled bin.	Single use. Low-risk infectious: As a single container. High-risk infectious: In conjunction with a double barrier liner bag/inner receptacle or an inner puncture-proof receptacle contained within a UN approved wheeled bin.
<b><i>Filling and Closure</i></b>	Bags to be securely closed when, at maximum, 2/3 full using proprietary cable tie or tape. <b><i>Do not overfill.</i></b>	Securable yellow lid - ¾ filled maximum or to manufacturer's fill line, if one is present. <b><i>Do not overfill.</i></b>	Securable lid - ¾ filled maximum or to manufacturer's fill line, if one is present. <b><i>Do not overfill.</i></b>
<b><i>Labelling</i></b>	UN number (UN3291 or UN2814), diamond shaped risk label with class number "6" and biohazard symbol. Additional labelling should read: "HEALTHCARE RISK WASTE - FOR CONTROLLED DISPOSAL"	UN number (UN3291 or UN2814), diamond shaped risk label with class number "6" and biohazard symbol. Additional labelling should read: "HEALTHCARE RISK WASTE - FOR CONTROLLED DISPOSAL"	UN number (UN3291 or UN2814), diamond shaped risk label with class number "6" and biohazard symbol. Additional labelling should read: "HEALTHCARE RISK WASTE - FOR CONTROLLED DISPOSAL"
<b><i>Proper Shipping Name</i></b>	Clinical waste unspecified, N.O.S. or specific name if UN 2814.	Clinical waste unspecified, N.O.S. or specific name if UN 2814.	Clinical waste unspecified, N.O.S. or specific name if UN 2814.
<b><i>ADR Packing Instructions</i></b>	P621 or P620 <b><u>N.B.</u></b> Yellow bags must be contained within UN approved wheeled bins when transported off-site.	P621 for UN3291 or P620 for UN2814.	P621 for UN3291 or P620 for UN2814.
<b><i>Trace</i></b>	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.
<b><i>Typical Contents - categories</i></b>	Blood-stained or contaminated items including dressings, swabs, bandages, gowns, gloves, tissues, soft disposables etc.	Material containing small volumes of free liquids, laboratory wastes, bagged blood, plasma, or histology waste, boxed placentas, Risk Group III isolation facilities waste (subject to further containment), covered protected sharps etc. <b><u>Note:</u></b> Laboratory waste in which Risk Group 2 or 3 organisms have multiplied should be autoclaved at source prior to disposal.	Used sharps including all needles and syringes, blood-stained or contaminated glass etc.
<b><i>Excluded Items</i></b>	Free liquids, any sharp items capable of puncturing the walls of the container, cytotoxic waste, large anatomical waste, chemicals/pharmaceuticals, blood and blood components, large metallic objects such as prosthetic joints etc.	Sharps capable of puncturing the walls of the container, cytotoxic waste, large anatomical waste, chemicals/pharmaceuticals, blood or blood components assessed as likely to contain TSE agents, large metallic objects such as prosthetic joints etc.	Cytotoxic waste, free liquids, large anatomical waste, chemicals/pharmaceuticals, blood or blood components assessed as likely to contain TSE agents, large metallic objects such as prosthetic joints etc.
<b><i>Disposal</i></b>	Alternative Technology	Alternative Technology	Alternative Technology

**Note 1:** Laboratory waste which has been autoclaved should be streamed for final disposal in yellow bags, rigid boxes or sharps container, as appropriate.

**Note 2:** This table must be read in conjunction with the Guideline text.

**Table A1, page 2 HEALTHCARE RISK WASTE - PREFERRED PACKAGING**

<b>Container</b>	<b><u>4.Yellow Rigid Bins or Boxes with Purple Lids</u></b>	<b><u>5.Yellow Sharps Bins or Boxes with Purple Lids</u></b>	<b><u>6. Yellow Rigid Bins or Boxes with Black Lids</u></b>	<b><u>7. Wheeled Bin</u></b>
<b>Container type and Colour</b>	Yellow rigid spill-proof box with purple sealable lids. Conforming to UN approved box/bin, type 1H2, 3H2 or 4H2 and marked accordingly.	Yellow rigid puncture-resistant bin/box. Conforming to UN approved box/bin, type 1H2, 3H2 or 4H2 and marked accordingly.	Yellow rigid leak-proof box with black sealable lid. Conforming to UN approved box/bin, type 1H2, 3H2 or 4H2 and marked accordingly.	Yellow UN approved “eurocart” type wheeled bins
<b>Usage</b>	Single use. Low-risk infectious: As a single container. High-risk infectious: In conjunction with a double barrier liner bag/inner receptacle or a single liner contained within a UN approved wheeled bin.	Single use. Low-risk infectious: As a single container. High-risk infectious: In conjunction with a double barrier liner bag/inner receptacle or an inner puncture-proof receptacle contained within a UN approved wheeled bin.	Single use. Low-risk infectious: As a single container. High-risk infectious: In conjunction with a double barrier liner bag/inner receptacle or a single liner contained within a UN approved wheeled bin.	Reusable. For holding and transporting closed yellow bags and containers. <b><i>N.B. Lid to be locked during storage and transportation.</i></b> <b><i>Clean bins to be kept separate from filled bins.</i></b>
<b>Filling and Closure</b>	Securable purple lid - ¾ filled maximum or to manufacturer’s fill line, if one is present. <b><i>Do not overfill.</i></b>	Securable purple lid - ¾ filled maximum or to manufacturer’s fill line, if one is present. <b><i>Do not overfill.</i></b>	Securable black lid - ¾ filled maximum or to manufacturer’s fill line, if one is present. <b><i>Do not overfill.</i></b>	Lockable yellow lid. <b><i>Do not overfill.</i></b>
<b>Labelling</b>	UN number (UN3291 or UN2814), diamond shaped risk label with class number “6” and biohazard symbol. Additional labelling should read: "CYTOTOXIC/HEALTHCARE RISK WASTE - FOR DISPOSAL BY INCINERATION ONLY"	UN number (UN3291 or UN2814), diamond shaped risk label with class number “6” and biohazard symbol. Additional labelling should read: "CYTOTOXIC/HEALTHCARE RISK WASTE - FOR DISPOSAL BY INCINERATION ONLY"	UN number (UN3291 or UN2814), diamond shaped risk label with class number “6” and biohazard symbol. Additional labelling should read: "HEALTHCARE RISK WASTE - FOR DISPOSAL BY INCINERATION ONLY "	UN number (UN3291), diamond shaped risk label with class number “6” and biohazard symbol on 2 opposite sides. Additional labelling should read: "HEALTHCARE RISK WASTE "
<b>PSN</b>	Clinical waste unspecified, N.O.S. or specific name if UN 2814.	Clinical waste unspecified, N.O.S. or specific name if UN 2814.	Clinical waste unspecified, N.O.S. or specific name if UN 2814.	Clinical waste unspecified, N.O.S.
<b>Packing Instruction</b>	P621 for UN3291 or P620 for UN2814.	P621 for UN3291 or P620 for UN2814.	P621 for UN3291 or P620 for UN2814.	IBC620 or LP621
<b>Trace</b>	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.	Cable tie, bar code or other marking tag to enable identification of hospital, ward/centre, and date of filling.	Unique identification number and bar code.
<b>Typical Contents - categories</b>	Non-sharps (including cover protected sharps or sharps tips) cytotoxic contaminated healthcare waste. Also small quantities of pharmaceutical preparations or medicines left over after administration to patients.	Needles, Syringes, Sharp Instruments, Cartridges and Broken Glass which have been used for the administration of Cytotoxic Drugs.	Recognisable large anatomical waste or body parts, blood, blood components or tissue suspected of being contaminated with CJD, non-autoclaved Risk Group 2 & 3 laboratory cultures and associated waste where autoclaving facilities are not available.	
<b>Excluded Items</b>	Sharps, pharmaceuticals or medicines in bulk.	Free liquids		
<b>Disposal</b>	Incineration.	Incineration.	By arrangement with contractor but, generally, by incineration.	N.B. must be cleaned and disinfected after use.

**Note 1:** Laboratory waste which has been autoclaved should be streamed for final disposal in yellow bags, rigid boxes or sharps container, as appropriate.

**Note 2:** This table must be read in conjunction with the Guideline text.

## Note regarding UN No. 3291

Waste under classification code I3, i.e. Clinical Waste, Unspecified, N.O.S. - UN No. 3291, makes up the vast majority of healthcare risk waste. Such waste is generally low-risk. The designation should be used only when one cannot be more specific about the type of infectious agent present.

While it is possible that Risk Group 3 infectious material could be classified as “Clinical Waste, unspecified”, generally, in such cases, an assessment will have been made of the nature of the infectious agent and it should be possible to classify the material under classification codes I1 or I2 i.e. UN No. 2814 or UN No. 2900, rather than UN No. 3291.

Waste in this category:

- must be carried in UN approved packaging/containers (see Packing Instructions P621, IBC620 & LP621 in **Appendix 3**)
- the container must conform to Packing Group II and bear the appropriate UN mark demonstrating that it has been manufactured to this standard
- the container must be leak-proof under normal conditions of carriage if it contains liquid
- the container must display a specific diamond-shaped hazard label showing the internationally recognised biohazard symbol as well as the appropriate dangerous substance class number: **6**. The label may also carry the wording “Infectious material. In case of accident or leakage contact the local Health Authority”
- the label must contain the specified UN number, **UN 3291**.
- the consignment documentation must include details of the waste by name e.g. “3291 Clinical waste, Unspecified, N.O.S. 6.2, II, ADR”

## Note regarding UN No. 2814 & UN No. 2900

If the waste is known to contain material contaminated with identifiable Risk Groups 2 or 3 infectious organisms special conditions apply - see Packing Instructions P620 in **Appendix 3**. These are summarised as follows:

- the waste must be contained in an inner packaging consisting of (i) a leakproof primary receptacle and (ii) leakproof secondary packaging. These must be contained within an outer strong packaging.
- Other than for solid infectious waste an absorbent material, sufficient to soak up any leaks, must be used between containers
- the inner containers is required to be leak-proof and capable of withstanding a degree of differential pressure
- the containers must be UN approved i.e. manufactured to a specified standard and have a UN mark showing, inter alia, the class number 6.
- the outer container must display a specific diamond-shaped hazard label showing the internationally recognised biohazard symbol as well as the appropriate dangerous substance class number, 6. It may also contain the words ***“Infectious substance. In case of damage or leakage immediately notify Public Health Authority”***
- the label must contain the specified UN number, **UN 2814**, for infectious waste affecting humans, or **UN 2900** for infectious waste affecting animals.

- transport documentation must accompany the waste in transit and include details of the waste by name e.g. “Waste 2814, Infectious substance, affecting humans, (Yellow Fever virus, 6.2, II, ADR”. (See example of completed C1 Form in **Appendix 5**.)

## Appendix 3 - ADR 2003 & Packing Instructions

The main ADR provisions are set out in two annexes, A and B. Annex A relates to the goods in question while Annex B relates to the vehicles carrying the goods. The annexes are updated regularly.<sup>6</sup>

A detailed classification of dangerous substances is given as a “Dangerous Goods List” in Annex A. The list is given in order of assigned “UN Numbers”. This is further subdivided in the case of some substances. There are two classes of substance listed which may be relevant to the transportation of healthcare waste: Class 6.1 - toxic substances and Class 6.2 – infectious substances.

Outlined hereunder are some extracts on classification and packing instructions, reproduced from ADR 2003, relevant to different packagings for healthcare risk waste. *Users requiring detailed knowledge must refer to the full text* – see footnote.

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### 2.2.62 Class 6.2 Infectious substances

#### 2.2.62.1 Criteria

2.2.62.1.1 The heading of Class 6.2 covers infectious substances. Infectious substances are those substances known or reasonably expected to contain pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsia, parasites, fungi) or recombinant micro-organisms (hybrid or mutant), that are known or reasonably expected to cause infectious disease in animals or humans.

For the purposes of this Class, viruses, micro-organisms as well as articles contaminated with these shall be considered as substances of this Class.

***NOTE 1:** Substances referred to above are not subject to the requirements applicable to this Class if they are unlikely to cause human or animal disease.*

***NOTE 2:** Infectious substances are subject to the requirements applicable to this Class only if they are capable of spreading disease to humans or animals when exposure to them occurs.*

***NOTE 3:** Genetically modified micro-organisms and organisms, biological products, diagnostic specimens and infected live animals shall be assigned to this Class if they meet the conditions for this Class.*

***NOTE 4:** Toxins from plant, animal or bacterial sources which do not contain any infectious substances or organisms or which are not contained in them are substances of Class 6.1, UN No. 3172.*

2.2.62.1.2 Substances of Class 6.2 are subdivided as follows:

- |    |                                               |
|----|-----------------------------------------------|
| I1 | Infectious substances affecting humans;       |
| I2 | Infectious substances affecting animals only; |
| I3 | Clinical waste;                               |
| I4 | Diagnostic specimens.                         |

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<sup>6</sup> The most recent amendments are contained in the 1 January 2003 “restructured ADR”. The full text of ADR2003 is available at the United Nations Economic Commission for Europe website: <http://www.unece.org/trans/danger/danger.htm>.

## ***Definitions and classification***

2.2.62.1.3 Infectious substances shall be classified in Class 6.2 and assigned to UN Nos. 2814 or 2900, as appropriate, on the basis of their allocation to one of three risk groups based on criteria developed by the World Health Organization (WHO) and published in the WHO "*Laboratory Biosafety Manual*, second edition (1993)". A risk group is characterized by the pathogenicity of the organism, the mode and relative ease of transmission, the degree of risk to both an individual and a community, and the reversibility of the disease through the availability of known and effective preventive agents and treatment.

The criteria for each risk group according to the level of risk are as follows:

- (a) Risk group 4: a pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individual to another, directly or indirectly, and for which effective treatment and preventive measures are not usually available (i.e., high individual and community risk).
- (b) Risk group 3: a pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another, and for which effective treatment and preventive measures are available (i.e. high individual risk and low community risk).
- (c) Risk group 2: a pathogen that can cause human or animal disease but is unlikely to be a serious hazard, and, while capable of causing serious infection on exposure, for which effective treatment and preventive measures are available and the risk of spread of infection is limited (i.e. moderate individual risk and low community risk).

***NOTE:*** Risk group 1 includes micro-organisms that are unlikely to cause human or animal disease (i.e. no, or very low, individual or community risk). Substances containing only such micro-organisms are not considered infectious substances for the purposes of these provisions.

2.2.62.1.4 Infectious substances affecting animals only (group I2 in 2.2.62.1.2) and of risk group 2 are assigned to packing group II.

2.2.62.1.5 Biological products are those products derived from living organisms, that are manufactured and distributed in accordance with the requirements of national governmental authorities which may have special licensing requirements, and are used either for prevention, treatment, or diagnosis of disease in humans or animals, or for development, experimental or investigational purposes related thereto. They include, but are not limited to, finished or unfinished products such as vaccines and diagnostic products.

For the purposes of ADR, biological products are divided into the following groups:

- (a) Those which contain pathogens in risk group 1; those which contain pathogens under such conditions that their ability to produce disease is very low to none; and those known not to contain pathogens. Substances in this group are not considered infectious substances for the purposes of ADR;
- (b) Those manufactured and packaged in accordance with the requirements of national governmental health authorities and carried for the purposes of final packaging or distribution, and use for personal health care by medical professionals or individuals. Substances in this group are not subject to the regulations applicable to Class 6.2;

(c) Those known or reasonably expected to contain pathogens in risk groups 2, 3, or 4 and which do not meet the criteria of (b) above. Substances in this group shall be classified in Class 6.2 under UN Nos. 2814 or 2900, as appropriate.

**NOTE:** *Some licensed biological products may present a biohazard in certain parts of the world only. In that case competent authorities may require these biological products to comply with the requirements for infectious substances or may impose other restrictions.*

2.2.62.1.6 *Diagnostic specimens* are any human or animal material, including, but not limited to, excreta, secret, blood and its components, tissue and tissue fluids being carried for diagnostic or investigation purposes, but excluding live infected animals. Diagnostic specimens shall be assigned to UN No. 3373 unless the source patient or animal has or may have a serious human or animal disease which can be readily transmitted from one individual to another, directly or indirectly, and for which effective treatment and preventive measures are not usually available, in which case they shall be assigned to UN No. 2814 or UN No. 2900.

**NOTE 1:** *Blood which has been collected for the purpose of blood transfusion or for the preparation of blood products, and blood products and any tissues or organs intended for use in transplants are not subject to the provisions of ADR.*

**NOTE 2:** *Assignment to UN No. 2814 or UN No. 2900 shall be based on known medical history of the patient or animal, endemic local conditions, symptoms of the patient or animal, or professional judgement concerning individual circumstances of the patient or animal.*

2.2.62.1.7 *Genetically modified micro-organisms and organisms* are micro-organisms and organisms in which the genetic material has been deliberately altered by technical methods or by means that cannot occur naturally in nature.

For the purposes of ADR, genetically modified micro-organisms and organisms are divided into the following groups:

- (a) Genetically modified micro-organisms which meet the definition of an infectious substance given in 2.2.62.1.1 shall be classified in Class 6.2 and assigned to UN Nos. 2814 or 2900;
- (b) Genetically modified organisms, which are known or suspected to be dangerous to humans, animals or the environment, shall be carried in accordance with conditions specified by the competent authority of the country of origin;
- (c) Animals which contain or are contaminated with genetically modified microorganisms and organisms that meet the definition of an infectious substance shall be carried in accordance with conditions specified by the competent authority of the country of origin;
- (d) Except when authorized for unconditional use by the Governments of the countries of origin, transit and destination, genetically modified micro-organisms which do not meet the definition of infectious substances but which are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction shall be classified in Class 9 and assigned to UN No. 3245.

**NOTE:** *Genetically modified micro-organisms which are infectious within the meaning of this Class shall not be assigned to UN No. 3291.*

2.2.62.1.8 *Wastes* are wastes derived from the medical treatment of animals or humans or from bioresearch where there is a relatively low probability that infectious substances are present. They shall be assigned to UN No. 3291. Wastes containing infectious substances which can be specified shall be assigned to UN Nos. 2814 or 2900 according to their degree of danger (see 2.2.62.1.3). Decontaminated wastes which previously contained infectious substances are considered non-dangerous unless the criteria of another class are met.

2.2.62.1.9 Clinical wastes assigned to UN No. 3291 are assigned to packing group II.



2.2.62.1.10 For the carriage of substances of this Class, the maintenance of a specified temperature may be necessary.

[<sup>6</sup> See also Directive 90/219/EEC, Official Journal of the European Communities No. L 117 of 8 May 1990, page 1.]

### 2.2.62.2 Substances not accepted for carriage

Live vertebrate or invertebrate animals shall not be used to carry an infectious agent unless the agent cannot be carried by any other means. Such animals shall be packed, marked, indicated, and carried in accordance with the relevant regulations governing the carriage of animals <sup>7</sup>.

### 2.2.62.3 List of collective entries

Effects on humans _____	I1	2814 INFECTIOUS SUBSTANCE, AFFECTING HUMANS
Effects on animals only _____	I2	2900 INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only
Clinical waste _____	I3	3291 CLINICAL WASTE, UNSPECIFIED, N.O.S.
<i>NOTE: The names (BIO) MEDICAL WASTE, N.O.S. or REGULATED MEDICAL WASTE, N.O.S. may be used as alternative designations for CLINICAL WASTE, UNSPECIFIED, N.O.S. for carriage prior to or following maritime or air carriage.</i>		
Diagnostic specimens _____	I4	3373 DIAGNOSTIC SPECIMENS

[<sup>7</sup> Such regulations are contained in, e.g. Directive 91/628/EEC (Official Journal of the European Communities No. L 340 of 11 December 1991, p. 17) and in the Recommendations of the Council of Europe (Ministerial Committee) on the carriage of certain animal species.]

## Dangerous Goods List -data relating to healthcare waste extracted from ADR2003

	UN No.	2814	2814	2900	2900	3291
	Name & Description:	Infectious substance, affecting humans (risk groups 3 & 4)	Infectious substance, affecting humans (risk group 2)	Infectious substance, affecting animals only (risk groups 3 & 4)	Infectious substance, affecting animals only (risk group 2)	Clinical waste, unspecified, N.O.S. or regulated medical waste, N.O.S.
	Class	6.2	6.2	6.2	6.2	6.2
	Classification	II	II	I2	I2	I3
	Packing Group					II
	Labels	6.2	6.2	6.2	6.2	6.2
	Special provisions*	274, 634	274, 634	274, 634	274, 634	565, 634
	Limited quantities	LQ0	LQ0	LQ0	LQ0	LQ0
Packing	Packing instructions**	P620	P620	P620	P620	P621, IBC620, LP621
	Special packing provisions					
	Mixed packing provisions	MP5	MP5	MP5	MP5	MP6
UN portable tank	Instructions					
	Special provisions					
ADR tank	Tank code		L4BH		L4BH	L4BH, S4AH
	Special provisions		TU15, TE1, TE15, TE19		TU15, TE1, TE15, TE19	TU15, TE1, TE15, TE19
	Vehicle for tank carriage		AT		AT	AT
	Transport Category	0	2	0	2	2
Special provisions for carriage	Packages					
	Bulk					VV11
	Loading, unloading & handling	CV13, CV25, CV26, CV28	CV13, CV25, CV26, CV28	CV13, CV25, CV26, CV28	CV13, CV25, CV26, CV28	CV13, CV25, CV28
	Operation	S3, S9, S15	S3	S3, S9, S15	S3	S3
	Hazard Identification No.		606		606	606

See following pages for explanation of terms highlighted thus - \*, \*\*.

**The special provisions and packing instructions referred to in the table are reproduced below. The list is incomplete. All references are to ADR 2003. For fuller details refer to ADR 2003- see footnote at start of appendix.**

**\* Special Provisions extracted from ADR 2003:**

**274** – Provisions of 3.1.2.8 apply – as follows:

*3.1.2.8 - the provisions referred to, amongst other things, requires the use of the technical name of the goods, in brackets, where the generic or “not otherwise specified” (N.O.S.) proper shipping name is used.*

**565** - Unspecified wastes resulting from medical/veterinary treatment of humans/animals or from biological research, and which are unlikely to contain substances of Class 6.2 shall be assigned to this entry. Decontaminated clinical wastes or wastes resulting from biological research which previously contained infectious substances are not subject to the requirements of Class 6.2.

**634** - Packages containing substances carried in refrigerated liquid nitrogen shall, in addition, bear a label conforming to model No. 2.2.

**\*\* Packing Instructions extracted from ADR 2003:**

<b>P620</b>	<b>PACKING INSTRUCTION</b>	<b>P620</b>
	This instruction applies to UN Nos. 2814 and 2900.	
	The following packagings are authorized provided the special packing provisions of <b>4.1.8</b> are met:	
	Packagings meeting the requirements of Chapter 6.3 and approved accordingly consisting of:	
	<p>(a) Inner packagings comprising:</p> <ul style="list-style-type: none"> <li>(i) leakproof primary receptacle(s);</li> <li>(ii) a leakproof secondary packaging;</li> <li>(iii) other than for solid infectious substances, an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple primary receptacles are placed in a single secondary packaging, they shall be individually wrapped so as to prevent contact between them;</li> </ul> <p>(b) An outer packaging of adequate strength for its capacity, mass and intended use. The smallest external dimension shall be at least 100 mm.</p>	
	<hr/> <p><b>Additional requirements:</b></p> <p>1. Inner packagings containing infectious substances shall not be consolidated with inner packagings containing unrelated types of goods. Complete packages may be overpacked in accordance with the provisions of 1.2.1 and 5.1.2; such an overpack may contain dry ice.</p> <p>2. Other than for exceptional consignments, e.g. whole organs which require special packaging, the following additional requirements shall apply:</p> <p>(a) Lyophilized substances: Primary receptacles shall be flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals;</p> <p>(b) Liquid or solid substances:</p> <ul style="list-style-type: none"> <li>(i) Substances consigned at ambient temperatures or at a higher temperature. Primary receptacles shall be of glass, metal or plastics. Positive means of ensuring a leakproof seal shall be provided, e.g. a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they shall be reinforced with adhesive tape;</li> <li>(ii) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant shall be placed around the secondary packaging(s) or alternatively in an overpack with one or more complete packages marked in accordance with 6.3.1.1. Interior supports shall be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack shall be leakproof. If dry ice is used, the outer packaging or overpack shall permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used;</li> <li>(iii) Substances consigned in liquid nitrogen. Plastics primary receptacles capable of withstanding very low temperature shall be used. The secondary packaging shall also be capable of withstanding very low temperatures, and in most cases will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen shall also be fulfilled in accordance with the requirements of P200. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.</li> </ul> <p>3. Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa and temperatures in the range -40 °C to +55 °C.</p>	

<b>P621</b>	<b>PACKING INSTRUCTION</b>	<b>P621</b>
This instruction applies to UN No. 3291.		
The following packagings are authorized provided the general provisions of <b>4.1.1</b> and <b>4.1.3</b> and the special provisions of <b>4.1.8</b> are met:		
<p>(1) Rigid, leakproof packagings meeting the requirements of Chapter 6.1 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids;</p> <p>(2) For packages containing larger quantities of liquid, rigid packagings meeting the requirements of Chapter 6.1 at the packing group II performance level for liquids.</p>		
<hr/> <p><b>Additional requirement:</b> Packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.1.</p>		

<b>IBC620</b>	<b>PACKING INSTRUCTION</b>	<b>IBC620</b>
This instruction applies to UN No. 3291.		
The following IBCs are authorized, provided the general provisions of <b>4.1.1</b> , <b>4.1.2</b> and <b>4.1.3</b> and the special provisions of <b>4.1.8</b> are met:		
Rigid, leakproof IBCs conforming to the packing group II performance level.		
<p><b>Additional requirements:</b></p> <ol style="list-style-type: none"> <li>1. There shall be sufficient absorbent material to absorb the entire amount of liquid present in the IBC.</li> <li>2. IBCs shall be capable of retaining liquids.</li> <li>3. IBCs intended to contain sharp objects such as broken glass and needles shall be resistant to puncture.</li> </ol>		

<b>LP621</b>	<b>PACKING INSTRUCTION</b>	<b>LP621</b>
This instruction applies to UN No. 3291.		
The following large packagings are authorized, provided the general provisions of <b>4.1.1</b> and <b>4.1.3</b> and the special provisions of <b>4.1.8</b> are met:		
<p>(1) For clinical waste placed in inner packagings: Rigid, leakproof large packagings conforming to the requirements of Chapter 6.6 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the large packaging is capable of retaining liquids;</p> <p>(2) For packages containing larger quantities of liquid: Large rigid packagings conforming to the requirements of Chapter 6.6, at the packing group II performance level, for liquids.</p>		
<hr/> <p><b>Additional requirement:</b> Large packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.6.</p>		

**Mixed Packing Provisions:**

**MP5:** UN No. 2814 and UN No. 2900 may be packed together in a combination packaging in conformity with P620. They shall not be packed together with other goods; this does not apply to UN No. 3373 diagnostic specimens packed in accordance with P650 or to substances added as coolants, e.g. ice, dry ice or deeply refrigerated liquid nitrogen.

**MP6:** Shall not be packed together with other goods. This does not apply to substances added as coolants, e.g. ice, dry ice or deeply refrigerated liquid nitrogen.

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## Appendix 4 - Biological Agents List

Reproduced from S.I. No. 248 of 1998: SAFETY, HEALTH, AND WELFARE AT WORK (BIOLOGICAL AGENTS) (AMENDMENT) REGULATIONS, 1998 - FOURTH SCHEDULE

**(No responsibility is taken for the accuracy of the reproduction. Reference should be made to the S.I.)**

### Classification of Biological Agents

Regulation 4 (e) (i) 6 (2) (b)

1. Certain biological agents classified in group 3 which are indicated in the list by an asterisk (\*), may present a limited risk of infection for workers because they are not normally infectious by the, airborne route.
2. This list also gives a separate indication in cases where the biological agents are likely to cause allergic or toxic reactions, where an effective vaccine is available, or where it is advisable to keep a list of exposed employees for more than ten years.

These indications are shown by the following letters:

A: Possible allergic effects.

D: List of workers exposed to this biological agent to be kept for more than ten years after the end of last known exposure.

T: Toxin production.

V: Effective vaccine available.

N.B. For biological agents appearing on this list, "spp" refers to other species which are known pathogens in humans.

Key to notes:

(\*) See 1 above.

(a) Tick-borne encephalitis.

(b) Hepatitis D virus is pathogenic in workers only in the presence of simultaneous or secondary infection caused by hepatitis B virus.

Vaccination against hepatitis B virus will therefore protect workers who are not affected by hepatitis B virus against hepatitis D virus (Delta).

(c) Only for types A and B.

(d) Recommended for work involving direct contact with these agents.

(e) Two viruses are identified: one a Buffalopox type and the other a variant of the Vaccinia virus-

(f) Variant of cowpox virus.

(g) Variant of Vaccinia.

(h) At present there is no evidence of disease in humans caused by retroviruses of simian origin.

As a precaution containment level 3 is recommended for work with them.

(i) There is no evidence in humans of infections caused by the agents responsible for bovine other animal TSEs.

Nevertheless, the containment measures for agents categorised in risk group 3 (\*) are recommended as a precaution for laboratory work, except for laboratory work relating to an identified agent of scrapie where containment level 2 is sufficient.

**Biological Agent** (No.= Risk Group, other letters/marks relate to notes.)

**BACTERIA and similar organisms**

Actinobacillus actinomycetemcornitans 2

Actinornadura madurae 2

Actinornadura pelletieri 2

Actinomyces gerencseriae 2

Actinomyces israelii 2

Actinomyces pyogenes 2

Actinomyces spp. 2

Arcanobacterium haemolyticum (corynebacterium haemolyticum) 2

Bacillus anthracis 3

Bacteroides fragilis 2

Bartonella bacilliformis 2

Bordetella brochiseptica 2

Bordetella parapertussis 2

Bordetella pertussis 2 V

Borrelia burgdorferi 2

Borrelia duttonii 2

Borrelia recurrentis 2

Borrelia spp. 2

Brucella abortus 3

Brucella canis 3

Brucella melitensis 3

Brucella suis 3

Campylobacter fetus 2

Campylobacter jejuni 2

Campylobacter spp. 2

Cardiobacterium hominis 2

Chlamydia pneumoniae 2

Chlamydia trachomatis 2

Chlamydia psittaci (avian strains) 3

Chlamydia psittaci (other strains) 2

Clostridium botulinum 2 T

Clostridium perfringens 2

Clostridium tetani 2 T, V

Clostridium spp. 2

Corynebacterium diphtheriae 2 T, V

Corynebacterium minutissimum 2

Corynebacterium pseudotuberculosis 2

Corynebacterium spp. 2

Coxiella burnetii 3

Edwardsiella tarda 2

Ehrlichia sennetsu (Rickettsia sennetsu) 2

Ehrlichia spp. 2

Eikenella corrodens 2

Enterobacter aerogenes/cloacae 2

Enterobacter spp. 2

Enterococcus spp. 2

Erysipelothrix rhusiopaethiae 2

Escherichia coli (with the exception of nonpathogenic strains) 2

Escherichia coli, verocytotoxigenic strains (e.g. O1 57:H7 or O103) 3(\*) T

Flavobacterium meningosepticum 2

Fluoribacter bozemanii (Legionella) 2

Francisella tularensis (Type A) 3

Francisella tularensis (Type B) 2

Fusobacterium necrophorum 2

Gardnerella vaginalis 2

Haemophilus ducreyi 2

Haemophilus influenzae 2

Haemophilus spp. 2

Helicobacter pylori 2

Klebsiella oxytoca 2

Klebsiella pneumoniae 2

Klebsiella spp. 2

Legionella pneumophila 2

Legionella spp. 2

Leptospira interrogans (all serovars) 2

Listeria monocytogenes 2

Listeria ivanovii 2

Morganella morganii 2

Mycobacterium africanum 3 V

Mycobacterium aviumintracellulare 2

Mycobacterium bovis (except BCG strain) 3 V

Mycobacterium chelonae 2

Mycobacterium fortuitum 2

Mycobacterium kansasii 2

Mycobacterium leprae 3

Mycobacterium mageritense 2

Mycobacterium marinum 2

Mycobacterium microti 3(\*)

Mycobacterium paratuberculosis 2

Mycobacterium scrofulaceum 2

Mycobacterium simiae 2

Mycobacterium szulgai 2

Mycobacterium tuberculosis 3 V

Mycobacterium ulcerans 3(\*)

Mycobacterium xenopi 2

Mycobacterium pneumoniae 2

Mycoplasma hominis 2

Mycoplasma cavie 2

Neisseria gonorrhoeae 2

Neisseria meningitidis 2 V

Nocardia asteroides 2

Nocardia brasiliensis 2

Nocardia farcinica 2

Nocardia nova 2

Nocardia otitidiscaviarum 2

Pasteurella multocida 2

Pasteurella spp. 2

Peptostreptococcus anaerobius 2

Plesiomonas shigelloides 2

Porphyromonas spp. 2

Prevotella spp. 2

Proteus mirabilis 2

Proteus penneri 2

Proteus vulgaris 2

Providencia alcalifaciens 2

Providencia rettgeri 2

Providencia spp. 2

Pseudomonas aeruginosa 2

Burkholderia mallei (Pseudomonas mallei) 3

Burkholderia pseudomallei (Pseudomonas pseudomallei) 3

Rhodococcus equi 2

Rickettsia akari 3(\*)

Rickettsia canada 3(\*)

Rickettsia conorii 3

Rickettsia montana 3(\*)

Rickettsia typhi (Rickettsia mooseri) 3



Rickettsia prowazeki 3  
 Rickettsia Rickettsii 3  
 Rickettsia tsutsugamushi 3  
 Rickettsia spp. 2  
 Bartonella quintana (Rochalimaea quintana) 2  
 Salmonella Arizonae 2  
 Salmonella Enteritidis 2  
 Salmonella Typhimurium 2  
 Salmonella Paratyphi A, B, C 2 V  
 Salmonella Typhi 3(\*) V  
 Salmonella (other serovars) 2  
 Serpulina spp. 2  
 rShigella boydii 2  
 Shigella dysenteriae (Type 1) 3(\*) T  
 Shigella dysenteriae other than Type 1 2  
 Shigella flexneri 2  
 Shigella sonnei 2  
 Staphylococcus aureus 2  
 Streptobacillus moniliformis 2  
 Streptococcus pneumoniae 2  
 Streptococcus pyogenes 2  
 Streptococcus suis 2  
 Streptococcus spp. 2  
 Treponema carateum 2  
 Treponema pallidum 2  
 Treponema pertenu 2  
 Treponema spp. 2  
 Vibrio cholerae (including El Tor) 2  
 Vibrio parahaemolyticus 2  
 Vibrio spp. 2  
 Yersinia enterocolitica 2  
 Yersinia pestis 3 V  
 Yersinia pseudotuberculosis 2  
 Yersinia spp. 2

## **VIRUS**

Adenoviridae 2  
 Arenaviridae  
 LCM-Lassa-Virus Complex (Old World arena viruses)

Lassa virus 4  
 Lymphocytic choriomeningitis virus  
 (neurotropic strains) 3  
 Lymphocytic choriomeningitis virus (other  
 strains) 2  
 Mopeia virus 2  
 Other LCM-Lassa complex viruses 2  
 Tacaribe-Virus-Complex (New World arena  
 viruses)  
 Guanarito virus 4  
 Junin virus 4  
 Sabia virus 4  
 Machupo virus 4  
 Flexal virus 3  
 Other Tacaribe complex viruses 2  
 Astroviridae 2  
 Bunyaviridae  
 Germiston 2  
 Sin Nombre (formerly Muerto Canyon) 3  
 Belgrade (also known as Dobrava) 3  
 Bhanja 2  
 Bunyamwera virus 2  
 Oropouche virus 3  
 California encephalitis virus 2  
 Hantaviruses:  
 Hantaan (Korean haemorrhagic fever) 3  
 Seoul virus 3  
 Puumala virus 2  
 Prospect Hill virus 2  
 Other hantaviruses 2  
 Nairoviruses:  
 Crimean-Congo haemorrhagic fever 4  
 Hazara virus 2  
 Phleboviruses:  
 Rift Valley fever 3 V  
 Sandfly fever 2  
 Toscana virus 2  
 Other bunyaviridae known to be pathogenic 2  
 Caliciviridae  
 Hepatitis E virus 3(\*)  
 Norwalk virus 2

Other Caliciviridae 2  
 Coronaviridae 2  
 Filoviridae  
 Ebola virus 4  
 Marburg virus 4  
 Flaviviridae  
 Hepatitis G 3(\*) D  
 Australia encephalitis (Murray Valley encephalitis) 3  
 Central European tick-borne encephalitis virus 3(\*) V  
 Absettarov 3  
 Hanzalova 3  
 Hypr 3  
 Kumlinge 3  
 Dengue virus type 1-4 3  
 Hepatitis C virus 3(\*) D  
 Japanese B encephalitis 3 V  
 Kyasanur Forest 3 V  
 Louping ill 3(\*)  
 Omsk (a) 3 V  
 Powassan 3  
 Rocio 3  
 Russian spring-summer encephalitis (TBE)(a) 3 V  
 St Louis encephalitis 3  
 Wesselsbron virus 3(\*)  
 West Nile fever virus 3  
 Yellow fever 3 V  
 Other flaviviruses known to be pathogenic 2  
 Hepadnaviridae  
 Hepatitis B virus 3(\*) V,D  
 Hepatitis D Virus (Delta)(b) 3(\*) V,D  
 Herpesviridae  
 Human herpes virus 7 2  
 Human herpes virus 8 2 D  
 Cytomegalovirus 2  
 Epstein-Barr virus 2  
 Herpesvirus simiae (B virus) 3  
 Herpes simplex virus types 1 and 2 2  
 Herpesvirus varicella-zoster 2  
 Human B-Lymphotropic virus  
 (HBL V-HHV6) 2  
 Orthomyxoviridae

Influenza viruses types A, B and C 2 V(c)  
 Tick-borne orthomyxoviridae: Dhori and Thogoto viruses 2  
 Papovaviridae  
   BK and JC viruses 2 D(d)  
   Human papillomaviruses 2 D(d)  
 Paramyxoviridae  
   Measles virus 2 V  
   Mumps virus 2 V  
   Newcastle disease virus 2  
   Parainfluenza viruses types 1 to 4 2  
   Respiratory syncytial virus 2  
 Parvoviridae  
   Human parvovirus (B 19) 2  
 Picornaviridae  
   Acute haemorrhagic conjunctivitis virus (AHC) 2  
   Coxsackie viruses 2  
   Echo viruses 2  
 Hepatitis A virus (human enterovirus type 72) 2 V  
   Polioviruses 2 V  
   Rhinoviruses 2  
 Poxviridae  
   Buffalopox virus (e) 2  
   Cowpox virus 2  
   Elephantpox virus (f) 2  
   Milkers' node virus 2  
   Molluscum contagiosum virus 2  
   Monkeypox virus 3 V  
   Orf virus 2  
   Rabbitpox virus (g) 2  
   Vaccinia virus 2  
   Variola (major minor) virus 4 V  
   Whitepox virus ("Variola virus") 4 V  
   Yatapox virus (Tana & Yaba) 2  
 Reoviridae  
   Coltivirus 2  
   Human rotaviruses 2  
   Orbiviruses 2  
   Reoviruses 2  
 Retroviridae

SIV virus (h) 3(")  
 Human immunodeficiency viruses 3(\*) D  
 Human T -celllymphotropic viruses (HTL V) types 1 and 2 3(\*) D  
 Rhabdoviridae  
   Rabies virus 3(\*) V  
   Visicular stomatitis virus 2  
 Togaviridae  
   Alfaviruses.  
     Eastern equine encephalomyelitis 3 V  
     Bebaru virus 2  
     Chickangunya virus 3(\*)  
     Everglades virus 3(\*)  
     Mayaro virus 3  
     Mucambo virus 3(\*)  
     Ndumu virus 3  
     O'nyong-nyong virus 2  
     Ross Rivar virus 2  
     Semliki Forest virus 2  
     Sindbis virus 2  
     Tonate virus 3(\*)  
 Venezuelan equine encephalomyelitis 3 V  
   Western equine encephalomyelitis 3 V  
   Other known alphaviruses 2  
   Rubivirus (rubella) 2 V  
 Toroviridae 2  
 Unclassified viruses  
   Equine morbillivirus 4  
   Hepatitis viruses not yet identified 3(\*) D  
 Unconventional agents associated with the transmissible spongiform encephalopathies (TSEs)  
   Creutzfeldt-Jacob disease 3(\*) D(d)  
   Variant Creutzfeldt-Jakob disease 3(\*) D(d)  
   Bovine spongiform encephalopathy (BSE) and other related animal TSEs (i) 3(\*) D(d)  
   Gerstmann-Straussler-Scheinker syndrome 3(\*) D(d)  
   Kuru 3(\*) D(d)

## PARASITES

Acanthamoeba castellani 2  
 Ancylostoma duodenale 2  
 Angiostrongylus cantonensis 2  
 Angiostrongylus Costaricensis 2  
 Ascaris lumbricoides 2 A  
 Ascaris suum 2 A  
 Babesia divergens 2  
 Babesia microti 2  
 Balantidium coli 2  
 Brugia malayi 2  
 Brugia pahangi 2  
 Capillaria philippinensis 2  
 Capillaria spp. 2  
 Clonorchis sinensis 2  
 Clonorchis viverrini 2  
 Cryptosporidium parvum 2  
 Cryptosporidium spp. 2  
 Cyclospora cayetanensis 2  
 Dipetalonema streptocerca 2  
 Diphylllobothrium latum 2  
 Dracunculus medinensis 2  
 Echinococcus granulosus 3  
 Echinococcus multilocularis 3  
 Echinococcus vogeli 3  
 Entamoeba histolytica 2  
 Fasciola gigantica 2  
 Fasciola hepatica 2  
 Fasciolopsis buski 2  
 Giardia lamblia (Giardia intestinalis) 2  
 Hymenolepis diminuta 2  
 Hymenolepis nana 2  
 Leishmania brasiliensis 3  
 Leishmania donovani 3  
 Leishmania ethiopica 2  
 Leishmania mexicana 2  
 Leishmania peruviana 2  
 Leishmania tropica 2  
 Leishmania major 2  
 Leishmania spp. 2

Loa Loa 2  
 Mansonella ozzardi 2  
 Mansonella perstans 2  
 Naegleria fowleri 3  
 Necator americanus 2  
 Onchocerca volvulus 2  
 Opisthorchis felinus 2  
 Opisthorchis spp. 2  
 Paragonimus westermani. 2  
 Plasmodium falciparum 3  
 Plasmodium spp (human and simian) 2  
 Sarcocystis suis hominis 2  
 Schistosoma haematobium 2  
 Schistosoma intercalatum 2  
 Schistosoma japonicum 2  
 Schistosoma mansoni 2  
 Schistosoma mekongi 2  
 Strongyloides stercoralis 2  
 Strongyloides spp. 2  
 Taenia saginata 2  
 Taenia solium 3  
 Toxocara canis 2  
 Toxoplasma gondii 2  
 Trichinella spiralis 2  
 Trichuris trichiura 2  
 Trypanosoma brucei brucei 2  
 Trypanosoma brucei gambiense 2  
 Trypanosoma brucei rhodesiense 3(\*)  
 Trypanosoma cruzi 3  
 Wuchereria bancrofti 2

## **FUNGI**

Aspergillus fumigatus 2 A  
 Blastomyces dermatitidis (Ajellomyces dermatitidis) 3  
 Candida albicans 2 A  
 Candida tropicalis 2  
 Cladophialophora bantania (formerly: Xylophypa bantiana, Cladosporium bantianum or trichoides) 3  
 Coccidioides immitis 3 A  
 Cryptococcus neoformans var. neoformans  
 (Filobasidiella neoformans var. Neoformans) 2 A

Cryptococcus neoformans var. gattii (Filobasidiella bacillispora) 2 A  
 Emmonsia parva var. parva 2  
 Emmonsia parva var. crescens 2  
 Epidermophyton floccosum 2 A  
 Fonsecaea compacta 2  
 Fonsecaea pedrosoi 2  
 Histoplasma Capsulatum var. Capsulatum (Ajelomyces Capsulatus) 3  
 Histoplasma capsulatum duboisii 3  
 Madurella grisea 2  
 Madurella mycetomatis 2  
 Microsporum spp. 2 1  
 Neotestudina rosatii 2  
 Paracoccidioides brasiliensis 3  
 Penicillium mameffei 2 A  
 Scedosporium apiospermum (Pseudallescheria boydii) 2  
 Scedosporium proliferans (inflatum) 2  
 Sporothrix schenckii 2  
 Trichophyton rubrum 2  
 Trichophyton spp. 2

## Appendix 5 - Examples of Completed Consignment Documentation

For transport by road, within Ireland, the information provided in the C1 Form required under the Waste Management (Movement of Hazardous waste) Regulations, 1998 should be sufficient to satisfy the obligation of the consignor to provide a transport document under the Carriage of Dangerous Goods by Road Regulations provided, all the information required in the latter Regulations is included and is stated in the format stipulated. Where the waste is being shipped abroad, separate documentation is necessary.

Two examples of C1 Forms completed in a manner which should satisfy both sets of regulations are given below. The first example relates to healthcare risk waste where a specific pathogen has not been identified. The second example relates to waste where the healthcare risk waste has been assessed as containing a specific pathogen. i.e. in the example: Yellow Fever virus. The entries in the numbered paragraphs which must be completed to satisfy ADR are paragraphs 1, 2, 6, 7 & 11. The information in entry No. 2 must include the full Proper Shipping Name (PSN), the class, packing group (if applicable) and the initials "ADR". The information given in entry no. 7 must include the number and type of packages.

The examples relate to healthcare risk waste as follows:

- 1) Clinical Waste, Unspecified, N.O.S. 6.2, II, ADR.\*
- 2) Waste 2814, Infectious substance,  
affecting humans, (Yellow Fever virus), 6.2, II, ADR

\*N.O.S. = "not otherwise specified", 6.2 = Class, II = Packing Group.

The relevant EWC code can be obtained from the European Waste catalogue as published by the EPA, an extract of which is given below. Entries marked with an asterisk are regarded as hazardous.

*European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002*

### **18 WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)**

#### **18 01 wastes from natal care, diagnosis, treatment or prevention of disease in humans**

18 01 01 sharps (except 18 01 03)

18 01 02 body parts and organs including blood bags and blood preserves (except 18 01 03)

18 01 03\* wastes whose collection and disposal is subject to special requirements in order to prevent infection

18 01 04 wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)

18 01 06\* chemicals consisting of or containing dangerous substances

18 01 07 chemicals other than those mentioned in 18 01 06

18 01 08\* cytotoxic and cytostatic medicines

18 01 09 medicines other than those mentioned in 18 01 08

18 01 10\* amalgam waste from dental care

**18 02 wastes from research, diagnosis, treatment or prevention of disease involving animals**

18 02 01 sharps except (18 02 02)

18 02 02\* wastes whose collection and disposal is subject to special requirements in order to prevent infection

18 02 03 wastes whose collection and disposal is not subject to special requirements in order to prevent infection

18 02 05\* chemicals consisting of or containing dangerous substances

18 02 06 chemicals other than those mentioned in 18 02 05

18 02 07\* cytotoxic and cytostatic medicines

18 02 08 medicines other than those mentioned in 18 02 07

**WASTE MANAGEMENT (MOVEMENT of HAZARDOUS WASTE) REGULATIONS 1998**

**Form C.I. Consignment Note for consignments of hazardous waste transported within the State**

(NOT to be used for transshipment into or out of the State)

**PART A (to be completed by the consignor)**

B (serial no.) -----

1. Name and address of consignor<sup>1</sup>: ..... **Another Hospital, Sandy Lane, Cross Roads, Dundrum, Dublin 16**  
..... Tel: **01 - 987 6543** ..... Fax: **01 - 9876544** .....
2. Name and chemical composition of waste\* ..... **3291 Clinical Waste, Unspecified, N.O.S. 6.2, II, ADR** .....
3. European Waste Catalogue/Hazardous Waste list Description(s) and Code(s)<sup>2</sup>: .... **Wastes whose collection and disposal is subject to special requirements in order to prevent infection - 18 01 03**
4. Origin of waste (name and address of producer, if different from 1.) .....
5. Process(es) that waste originates from:..... **Healthcare treatment for Humans** .....
6. Quantity (indicate kg or litres):..... **511 kg** .....
7. Size, type<sup>3</sup> and number of containers: ... **10 no. 770 litre wheeled bins** .....
8. Physical characteristics<sup>4</sup>:..... **solids and liquids** .....
9. Components which are hazardous (giving concentrations in each case): ... **Possible infection risk - cannot be quantified** ...
10. Hazardous properties<sup>5</sup> and special handling instruction (if any): ..... **May contain sharps and be infectious; wear gloves and overalls.** .....
11. Name and address of consignee<sup>6</sup>:... **Healthcare Waste Treatment Ltd., Unit 1, Industrial Estate, Dublin 12**
12. I, the consignor, certify that the information given in Part A above is complete and correct to the best of my knowledge.

Signed ..... Date .....

Name (block letters) ..... on behalf of **Another Hospital** .....

Position held by person signing.....

**PART B (to be completed by the carrier)**

13. I, the carrier,<sup>7</sup> certify that I collected the waste described in Part A in vehicle (reg. no.) ..... at (time) ..... on (date) .....  
and that I have been informed of the hazardous nature of the waste, as set out in that Part.

Signed..... on behalf of ... **Healthcare Waste Treatment Plant plc**

Name (block letters) ..... Signature of consignor as witness .....

**PART C (to be completed by the consignee)**

14. Name and address of consignee:.....  
..... Tel: ..... Fax: .....

15. Waste licence number (if applicable)<sup>8</sup> ..... Waste permit number (if applicable)<sup>9</sup> ..... Certificate of registration (if applicable)<sup>10</sup> .....

16. The waste described in Part A was delivered to me by (carrier) ..... in vehicle (reg. No.) .....  
at (time) ..... on (date) ..... On behalf of (consignor) .....

17. (a) The consignment was accepted:..... (b) The consignment was rejected .....

18. If the consignment was rejected, state the reason(s).....

19. If the consignment of waste was accepted, state the recovery/disposal activity(ies) to which it will be subject and provide code number and description of the technology involved<sup>11</sup> .....

20. I, the consignee, certify that the information given in Part C above is complete and correct to the best of my knowledge.

Signed ..... Date .....

Name (block letters) ..... on behalf of .....

Position held by person signing.....

\* full description may be attached on separate page

Footnotes <sup>1</sup> to <sup>11</sup> see relevant definitions and lists in the "Instructions for completion of Consignment notes for Hazardous Waste".

**CARRIER'S COPY - to be given to the carrier of the waste, after completion of PART C by the consignee, and retained by the carrier.**

**WASTE MANAGEMENT (MOVEMENT of HAZARDOUS WASTE) REGULATIONS 1998**  
**Form C.I. Consignment Note for consignments of hazardous waste transported within the State**  
**(NOT to be used for transhipment into or out of the State)**

**PART A (to be completed by the consignor)**

B (serial no.) -----

1. Name and address of consignor<sup>1</sup>: ..... **Another Hospital, Sandy Lane, Cross Roads, Dundrum, Dublin 16**  
..... Tel: **01 - 987 6543** ..... Fax: **01 - 9876544** .....
2. Name and chemical composition of waste\* ..... **Waste 2814, Infectious substance, affecting humans, (Yellow Fever virus), 6.2, 11, ADR** .....
3. European Waste Catalogue/Hazardous Waste list Description(s) and Code(s)<sup>2</sup>: ..... **Wastes whose collection and disposal is subject to special requirements in order to prevent infection - 18 01 03**
4. Origin of waste (name and address of producer, if different from 1.) .....
5. Process(es) that waste originates from:..... **Healthcare treatment for Humans** .....
6. Quantity (indicate kg or litres):..... **52 kg** .....
7. Size, type<sup>3</sup> and number of containers: ... **1 No. 770 litre wheeled bin** .....
8. Physical characteristics<sup>4</sup>:..... **solids and liquids** .....
9. Components which are hazardous (giving concentrations in each case): ... **Possible infection risk - cannot be quantified** ...
11. Hazardous properties<sup>5</sup> and special handling instruction (if any): ..... **May contain sharps and be infectious; wear gloves and overalls.** .....
11. Name and address of consignee<sup>6</sup>:... **Healthcare Waste Treatment Ltd., Unit 1, Industrial Estate, Dublin 12**
12. I, the consignor, certify that the information given in Part A above is complete and correct to the best of my knowledge.

Signed ..... Date .....

Name (block letters) ..... on behalf of **Another Hospital** .....

Position held by person signing.....

**PART B (to be completed by the carrier)**

13. I, the carrier,<sup>7</sup> certify that I collected the waste described in Part A in vehicle (reg. no.) ..... at (time) ..... on (date) ..... and that I have been informed of the hazardous nature of the waste, as set out in that Part.

Signed..... on behalf of ... **Healthcare Waste Treatment Plant plc**

Name (block letters) ..... Signature of consignor as witness .....

**PART C (to be completed by the consignee)**

14. Name and address of consignee:..... Tel: ..... Fax: .....
15. Waste licence number (if applicable)<sup>8</sup> ..... Waste permit number (if applicable)<sup>9</sup> ..... Certificate of registration (if applicable)<sup>10</sup> .....
16. The waste described in Part A was delivered to me by (carrier) ..... in vehicle (reg. No.) ..... at (time) ..... on (date) ..... On behalf of (consignor) .....
17. (a) The consignment was accepted:..... (b) The consignment was rejected .....
18. If the consignment was rejected, state the reason(s).....
19. If the consignment of waste was accepted, state the recovery/disposal activity(ies) to which it will be subject and provide code number and description of the technology involved<sup>11</sup> .....
21. I, the consignee, certify that the information given in Part C above is complete and correct to the best of my knowledge.

Signed ..... Date .....

Name (block letters) ..... on behalf of .....

Position held by person signing.....

\* full description may be attached on separate page

Footnotes <sup>1</sup> to <sup>11</sup> see relevant definitions and lists in the "Instructions for completion of Consignment notes for Hazardous Waste".

**CARRIER'S COPY - to be given to the carrier of the waste, after completion of PART C by the consignee, and retained by the carrier.**