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Shared Services Partnership
Specialist Estates Services

WHTM 07-01

Welsh Health Technical Memorandum

Safe and Sustainable Management of Healthcare Waste 2025

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Note: Health Building Notes (HBNs) and Health Technical Memoranda (HTMs) issued by the Department of Health in England are being superseded by specific Welsh editions which will be titled Welsh Health Building Notes (WHBN) and Welsh Health Technical Memoranda (WHTMs). Until this process is complete, where a HBN/WHBN or HTM/WHTM is referred to in the text but has not yet been published, refer to the relevant publications page on the NHS Wales Shared Services Partnership – Specialist Estates Services website for the latest approved document.

NHS Wales Shared Services Partnership – Specialist Estates Services acknowledges the input of the Department of Health.

This guidance is based on the Welsh Health Technical Memorandum 07-01: Safe Management of Healthcare Waste, originally published by NHS Wales in 2013 and is adapted from the English Health Technical Memorandum (HTM) 07-01 2022 edition. The WHTM 07-01 replaces the 2013 version to reflect current practices and policies relevant to Wales.

This publication can be accessed from the NHS Wales Shared Services Partnership Specialist Estates Services Website

Preface

About Welsh Health Technical Memoranda

Welsh Health Technical Memoranda (WHTMs) gives comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare.The focus of Welsh Health Technical Memorandum guidance remains on healthcare-specific elements of standards, policies and up-to- date established best practice. They are applicable to new and existing sites, and are for use at various stages during the whole building lifecycle.

Language usage in technical guidance

In WHTMs and WHBNs, modal verbs such as “must”, “should” and “may” are used to convey notions of obligation, recommendation or permission. The choice of modal verb will reflect the level of obligation needed to be compliant.

The following describes the implications and use of these modal verbs in WHTMs/WHBNs (readers should note that these meanings may differ from those of industry standards and legal documents):

- “Must” is used when indicating compliance with the law.
- “Should” is used to indicate a recommendation (not mandatory/ obligatory), i.e. among several possibilities or methods, one is recommended as being particularly suitable – without excluding other possibilities or methods.
- May” is used for permission, i.e. to indicate a course of action permissible within the limits of the WHBN or WHTM.

Typical usage examples

- “All publicly-funded organisations must ensure that all contracts established to collect and treat waste conform to the Public Contracts Regulations.” [obligation]
- “All low voltage (LV) distributions should be configured as TN systems.” [recommendation]
- “Alcohol hand gels that do not contain siloxanes may be rinsed out and the packaging recycled or placed into the municipal waste stream.” [permission]

“Shall”, in the obligatory sense of the word, is never used in current WHTMs/WHBNs.

This guidance is not mandatory (unless specifically stated). However, any departures/ derogations from this WHTM – including the measures implemented – should provide a degree of safety not less than that achieved by following the guidance set out in this WHTM.

Project derogations from the Technical Guidance

Healthcare facilities built for the NHS are expected to support the provision of high- quality healthcare and ensure the NHS Constitution right to a clean, safe and secure environment. It is therefore critical that they are designed and constructed to the highest and most appropriate technical standards and guidance.

Statutory standards plus technical standards and guidance specific to NHS facilities:

- Welsh Health Building Notes
- Welsh Health Technical Memoranda
- Complete list of NHS estates-related guidance

The need to demonstrate a robust process for agreeing any derogation from Technical Guidance is a core component of the business case assurance process.

The starting point for all NHS healthcare projects at Project Initiation Document (PID) and/or Strategic Outline Case (SOC) stage is one of full compliance.

Derogations to standards will potentially jeopardise business case approval and will only be considered in exceptional circumstances. A schedule of derogations will be required for any project requiring external business case approval and may be requested for those that have gone through an internal approvals process.

While it is recognised that derogation is required in some cases, this must be risk- assessed and documented in order that it may be considered within the appraisal and approval process.

Derogations must be properly authorised by the project's senior responsible owner and informed and supported by appropriate technical advice (irrespective of a project's internal or external approval processes).

Sustainability and "Net Zero Carbon" targets

In 2019, Wales became the first major economy to declare a climate emergency supported by Members of Senedd.

The NHS Wales Decarbonisation Strategic Delivery Plan published in 2021 demonstrates how NHS Wales can play its part in the commitment to the Wellbeing of Future Generations (Wales) Act 2015 and the Climate Emergency, which directs us to consider long-term persistent problems such as poverty, health inequalities, and climate change.

The Decarbonisation Strategic Delivery Plan sets out our plan for addressing the Climate Emergency. The targets are ambitious, and in some areas will require a fundamental shift to our approach to healthcare, but will contribute to reducing our impact on the Global Health Emergency. The Strategic Delivery Plan sets out 25 initiatives for the decarbonisation of NHS Wales, as of November 2025, this will be assessed and reviewed in 2030.

The NHS estate has a critical role to play in achieving net zero carbon emissions. It is vital that every opportunity is seized across the NHS to do so, and the NHS estate is an area where direct and costeffective action can be taken with a high degree of confidence.

Executive Summary

Welsh Health Technical Memorandum (WHTM) 07-01 provides a framework for best practice waste management across the Wales to help healthcare organisations and other healthcare waste producers meet legislative, technical and policy requirements, as well as plan for future challenges and opportunities. This guidance is applicable to all NHS Health Boards and Trusts and commissioned service providers including primary care providers, ambulance services and other community services. In addition, the guidance covers waste produced by laboratories and veterinary surgeries. For ease, throughout the document, this spectrum of organisations is referred to as “healthcare organisations”.

Where reference is made to “NHS organisations”, this relates to organisations including NHS Health Boards and Trusts and primary care providers that are subject to policies, strategies and plans that only apply to NHS commissioned services.

This document has been produced to replace the 2013 version of ‘Safe Management of Healthcare Waste’.

This guidance is a best practice guide not only to the safe management of healthcare waste, but also to the sustainable management of healthcare waste.

Since 2013 there have been many subsequent changes to environmental legislation and regulation that need to be reflected in the new guidance.

The revised document maintains the high level of technical robustness of previous versions but also integrates concepts related to sustainable waste management, the circular economy, and links to strategic objectives.

Key changes:

- The waste management system. Opportunities to reuse, repurpose and recycle wastes and materials are highlighted with reference to case studies with a focus on minimising and eliminating waste through green procurement
- This document also includes actions required to reduce the use of single-use plastics, in alignment with Government policy, and support the commitment to be Net Zero across the NHS by 2050
- Managing waste services effectively, the revised document addresses the key principles in effective contract management and provides a checklist of standardised activities that need to be undertaken to monitor contractors. It also considers the approach to contingency planning in the event of contractor failure
- There is a drive to develop in-house workforce knowledge and capability to support an improvement in waste management decisions
- Since the previous version there have been several pieces of new legislation and changes to existing legislation and technical instruments. This document reflects the latest technical practice, external guidance, and compliance requirements
- Innovation regarding waste management solutions has been included, along with a defined process for better embedding opportunities within the system
- Specific sectoral guidance has been removed from this version; previous versions containing sectoral guides were often repetitive and sometimes contradictory. By streamlining the flow of the document, the aim of removing repetition is achieved; the document summarises key sections for various health sectors and includes guidance where specific to a particular sector.

The safe and sustainable management of waste is everyone's responsibility, and it starts before goods and services have even been procured. This document is intended to be the foundation for creating a better understanding within all staff groups of their role in contributing to a safer, greener world. More detail is provided in Chapter 1 on how each staff group and sector should refer to this document and the training needed for them is discussed in Chapter 6.

Contents

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Chapter 1
Introduction to Welsh Health Memorandum 07-01

1.1 Welsh Health Technical Memorandum (WHTM) 07-01 'Safe and Sustainable Management of Healthcare Waste' provides a framework for best practice waste management across the UK to help healthcare organisations and other healthcare waste producers meet requirements, as well as plan for future challenges and opportunities.

1.2 This publication replaces the 2013 version of WHTM 07-01.

1.3 This guidance is intended to better reflect the key principles in sustainable healthcare waste management, and specifically that of the circular economy, environmental protection, improved social outcomes, and reduced carbon emissions.

Structure of the Document

1.4 This WHTM is split into two clear segments: one which provides context and background information in Chapters 2 to 4 and one which provides guidance on how to apply it, in Chapters 5 and 6.

1.5 This WHTM defines the following principal elements:

- Healthcare waste
- Clinical waste
- Offensive waste
- Hazardous waste and non-hazardous waste
- The waste hierarchy
- Clinical waste segregation targets.

1.6 This guidance has been developed based on the legislative, regulatory and sectoral environment within Wales. It should therefore not be relied upon by any devolved nation.

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1.7 Reference is made throughout to external documents, data sources and guidance; these are signposted or hyperlinked. This is to minimise prescriptive technical text where this is already provided externally, avoiding the likelihood of repetition, contradiction or duplication.

1.8 Case studies and practical examples of sustainable healthcare waste management are summarised in shaded boxes. Flow charts, tables and illustrations have been used to summarise information where appropriate, with the intention of avoiding extensive, prescriptive or duplicative text.

Who should Use This Guidance?

1.9 The guidance has been developed to a level of technical detail to facilitate the compliant and safe management of healthcare waste. It is primarily targeted at individuals involved in or having specific responsibility for managing waste for an organisation providing NHS services. However, certain chapters and sections are applicable to a wider audience, as summarised in Table 1.

Table 1: Relevant chapters and sections of NHS roles

Typical NHS organisation role	Relevant sections	
Waste handling staff	• Technical approach	
Clinicians and other practitioners, including nurses, doctors, dentists and optometrists	• Strategic objectives • Principles in sustainable waste management	• Legislative framework
Procurement managers	• Strategic objectives • Principles in sustainable waste management	• Management approach
Healthcare organisation chairperson	• Strategic objectives • Principles in sustainable waste management	• Management approach • Legislative framework
Estates and facilities director	• Technical approach • Management approach	• Legislative framework
Waste manager and/or identified accountable individual	• Strategic objective • Principles in sustainable waste management	• Technical approach • Management approach • Legislative framework
Dangerous Goods Safety Advisor	• Transport and Packaging	• Legislative Framework
NHS commissioners and NWSSP	• Strategic objectives • Principles in sustainable waste management technical approach • Management approach	• Legislative framework • Non-clinical waste and resources • Primary care
General Practice (contract holder)/Primary Care Networks (PCNs) and their staff (clinical and non- clinical)	• Strategic objectives • Principles in sustainable waste management • Technical approach	• Management approach • Legislative framework • Non-clinical waste and resources • Primary care
Pharmacists/pharmacy staff	• Strategic objectives • Principles in sustainable waste management • Technical approach	• Management approach • Legislative framework • Non-clinical waste and resources • Primary care
Health and Safety staff	• Technical approach	• Management approach
Primary care dentistry (contract holder) and their staff (clinical and non-clinical)	• Strategic objectives • Principles in sustainable waste management • Technical approach	• Management approach • Legislative framework • Non-clinical waste and resources • Primary care

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1.10 Specific sectoral guidance has not been included in this publication. Key sectoral considerations (where there is a material deviation from standard guidance) have instead been flagged within the main body of the document, where applicable. Specific sections have been included for radioactive waste, dental waste, community healthcare, ambulance services and primary care.

1.11 Table 2 is a reference guide for the chapters and sections of WHTM 07-01 which are particularly relevant to each sector noted. Clinicians and other practitioners from each respective sector should read the applicable chapters and sections in full to familiarise themselves with what is required of them.

Table 2: Relevant chapters and sections for NHS roles

Chapter	Subsection	Ambulance Services	Research and Laboratory	Community Healthcare	Sector Community Pharmacies	General Practices and Health Centres	Dental Practices
1	All	✔	✔	✔	✔	✔	✔
2	All	✔		✔	✔	✔	✔
3	All	✔	✔	✔	✔	✔	✔
4	Environment and waste legislation	✔	✔	✔	✔	✔	✔
	Duty of care and controlled waste	✔	✔	✔	✔	✔	✔
	Environmental permitting	✔	✔	✔	✔	✔	✔
	Producer responsibility	✔	✔	✔	✔	✔	✔
	Hazardous waste	✔	✔	✔	✔	✔	✔
	Consignment notes	✔	✔	✔	✔	✔	✔
	European waste catalogue	✔	✔	✔	✔	✔	✔
	Controlled drugs	✔	✔	✔	✔	✔	✔
	Infection prevention and control	✔	✔	✔	✔	✔	✔
	Transport and carriage legislation	✔	X	✔	X	X	X
	Health and safety regulation	✔	✔	✔	✔	✔	✔
	Importance of effective regulation	✔	✔	✔	✔	✔	✔
	How to keep up to date	✔	✔	✔	✔	✔	✔
	Non-clinical waste and resources	✔	✔	✔	✔	✔	✔
	Definitions and waste types	✔	✔	✔	✔	✔	✔
	Classification and segregation	✔	✔	✔	✔	✔	✔
5	Colour coding and storage	✔	✔	✔	✔	✔	✔
	Transport and packaging	✔	✔	✔	✔	✔	✔
	Treatment, recovery and disposal	✔	✔	✔	✔	✔	✔

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Chapter	Subsection	Ambulance Services	Research and Laboratory	Community Healthcare	Sector\ Community Pharmacies	General Practices and Health Centres	Dental Practices
5	Radioactive waste	X	✔	X	X	X	✔
	Dental waste	X	X	X	X	X	✔
	Introduction	X	X	X	X	X	X
	Contract management	✔	✔	✔	✔	✔	✔
	Governance arrangements	X	X	X	X	✔	X
	Data recording, monitoring and reporting	✔	✔	✔	✔	✔	✔
6	Community healthcare	✔	✔	✔	X	X	X
	Primary care	✔	X	✔	X	✔	✔
	Ambulance services	✔	X	X	X	X	X
	Managing risk	✔	✔	✔	✔	✔	✔
	Training	✔	✔	✔	✔	✔	✔
	Compliance	✔	✔	✔	✔	✔	✔
	Emergency preparedness	✔	✔	✔	✔	✔	✔

1.12 Failure to implement the practices set out within this guidance may lead to noncompliance with the legislative framework, which could result in potential enforcement action. Individuals with responsibility for managing waste should ensure that they have systems in place to adhere to the guidance, including arrangements for training staff who handle waste. Where localised procedures and training materials are used, these should be consistent with this guidance.

Changes Since the Previous Guidance

1.13 This document includes updated requirements of legislative and regulatory information. See Chapter 4, which sets out the legislative framework, in particular key legislation in paragraphs 4.1–4.44.

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1.14 These themes are outlined at the start of this guidance in Chapter 2, which sets out the strategic objectives, and Chapter 3, which explains the principles of sustainable waste management. The intention of this is to set the scene and provide context for the practical application of technical guidance as set out in Chapter 5, emphasising the importance of waste minimisation through resource efficiency and green procurement.

1.15 In addition, a new Chapter 6 focuses on best practice in the management approach and has been included to help establish key principles associated within the management of healthcare waste services.

1.16 Chapter 6 includes content on emergency preparedness (paragraphs 6.143–6.158) which is intended to reflect on key lessons from the response to the COVID-19 pandemic. Whilst this is in part a response to a particular pathogen, the outflowing key principles are pertinent to future business continuity planning.

1.17 Since the publication of the predecessor of this document, WHTM 07-01 (2013), there have been several changes to legislation. A consolidated summary of all legislation relevant to the sustainable management of healthcare waste is provided in Chapter 4 and reflects on pertinent requirements for the consideration and planning of:

- Transport and packaging of dangerous goods
- Hazardous waste management
- Producer responsibility for batteries, waste electricals and packaging
- The control of drugs
- The control of substances hazardous to health (COSHH)
- Persistent organic pollutants (POPs)
- International waste shipments
- Management of radioactive waste and materials

1.18 Similarly, since the publication of the previous guidance, best practice standards have also been introduced which affect the delivery of healthcare waste services. These include:

1.19 Chapter 12 "Immunisation of healthcare and laboratory staff" in the UK Health Security Agency and Department of Health & Social Care's (2021) 'Immunisation against infectious disease' (commonly referred to as the "Green Book").

Chartered Institution of Wastes Management (2014) 'Pre-acceptance waste audits'

Defra's 'Statutory guidance: Waste duty of care code of practice' (2018)

Cabinet Office's Policy paper 'Procurement Policy Note 06/20 – taking account of social value in the award of central government contracts' (2020)

The Environment Agency's 'Waste storage, segregation and handling appropriate measures – Healthcare waste: appropriate measures for permitted facilities' (2021b)

Guidance documents and best practice standards are updated regularly. Make sure to check that the most current and up-to-date version is being used.

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Sustainability and “Net Zero Carbon” targets

1.20 WHTM 07-01 has been updated to support UK legislation to bring all greenhouse gas emissions to net zero carbon, it promotes sustainable methods of waste management in healthcare facilities.

1.21 Healthcare provision is a significant contributor to the UK’s carbon footprint. In 2019, this was estimated to be almost 5% of UK carbon emissions. Accordingly, all NHS organisations have their part to play in meeting net zero carbon targets alongside other sustainability measures.

1.22 Chapter 2 of this document focuses on strategic objectives at play, and the key agendas of a safe and sustainable waste management system, including:

- Waste prevention and avoidance
- Implementing a circular economy
- Planning for sustainable disposal

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Chapter 2
Strategic objectives

2.1 The purpose of this chapter is to introduce a set of strategic themes, policy documents and other initiatives upon which healthcare waste should be sustainably managed.

2.2 Each of the documents, strategic initiatives and policies referred to in the sections that follow have clear links to safe and sustainable healthcare waste management. The effective use and application of WHTM 07-01 will therefore help to support their implementation and reinforce their relevance.

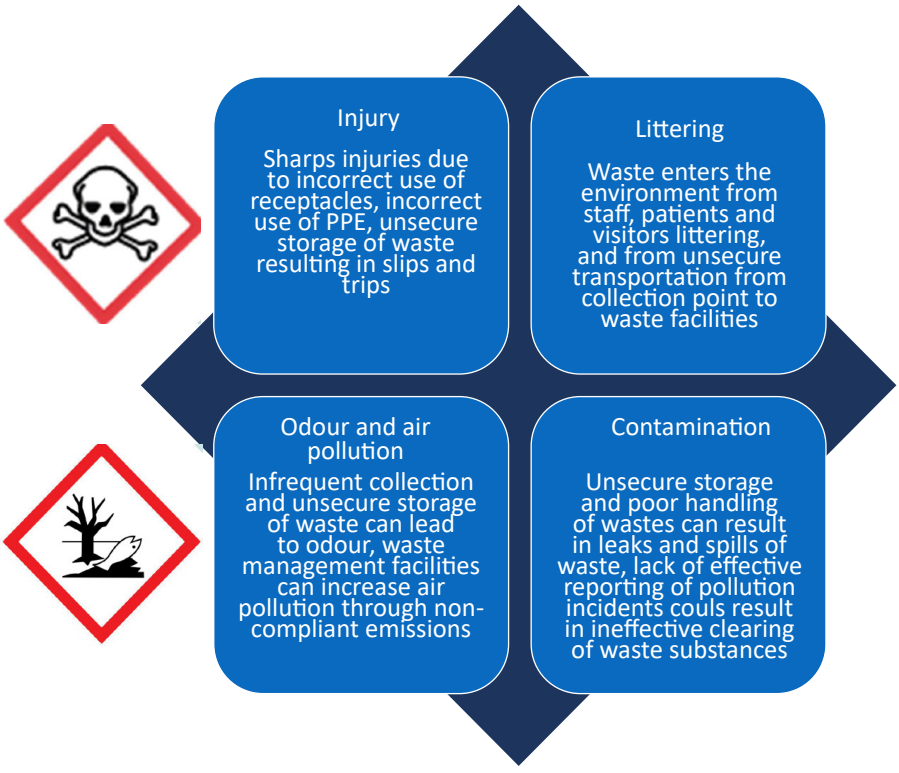
Environmental impact and social outcomes

Preventing environmental impacts

2.3 Healthcare organisations must comply with relevant legislation to prevent or reduce environmental harm. Incorrect storage, handling and treatment/disposal of healthcare waste could lead to environmental pollution which could expose non-compliant Health Boards and Trusts, organisations or individuals to breaches in key legislation.

Harmful substances can enter the environment through improper waste management, as illustrated in Figure 7.

Figure 2: Potential environmental impacts from improper waste management



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2.4 Eliminating and minimising the use of harmful substances in products used in healthcare facilities is an effective measure in minimising the environmental impact of healthcare waste, also helping to implement the circular economy.

2.5 Where the use of products with harmful substances cannot be avoided, their use, storage, handling, decontamination/ cleaning (if applicable) and waste management must be undertaken in accordance with manufacturer's instructions, legislation and relevant technical guidance to prevent exposure to the environment and people.

2.6 Where waste cannot be avoided it should be managed in a manner that minimises environmental harm. It is of particular significance for healthcare waste given the fundamental environmental and health risks associated with managing (and needing to control) potentially hazardous substances and infectious wastes.

2.7 The potential environmental hazards posed by healthcare products can remain present when the products become waste. Hazards may range from those that pose little to no environmental risk, to those that may cause significant environmental damage (such as high levels of toxicity, environmental persistence and bioaccumulation potential).

2.8 Environmental hazards should be indicated on product packaging, and on relevant safety data sheets (SDSs).

When procuring or purchasing healthcare products, consider the following approaches to help minimise potential environmental harm and improve environmental performance during a procurement and in the contract management phase:

- Delivery optimisation and use of low/ zero carbon vehicles (also applicable for waste management logistics)
- Sourcing materials from and manufacture products within the UK (or relevant region) to reduce carbon emissions and improve supply chain transparency
- Reduction of single-use plastics and packaging and increase recyclability of products
- Initiatives to reduce environmental impact with the redesign of the product or service
- Selection of products with no harmful substances (including in the packaging)
- Selection of products with smaller quantities of harmful substances
- Applying an effective stock control system to limit the number of products with harmful substances stored on site.

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2.9 A common and significant hazard is persistent organic pollutants (POPs). These are chemical substances that are harmful because they break down slowly and are able to remain in the environment, meaning they can enter food chains.

2.10 The manufacture, sale and use of products containing POPs is now banned in the UK (although already purchased products may be used). Commonly known POPs include DDT (insecticide), polychlorinated biphenyls and dioxins. Plastic components of WEEE may also contain POPs. See the Environment Agency's webpage "Classify different types of waste" on how to classify WEEE.

2.11 Wastes containing POPs, or any other hazardous substance, must be completely destroyed or irreversibly transformed at an authorised disposal or recovery site. For further guidance, see relevant NRW guidance notes.

Exceptions to the ban include POPs used for laboratory-scale research and use of products where POPs occur as an unintentional trace contaminant.

Social Outcomes

2.12 Sustainable waste management programmes contribute to the overall health and wellbeing of communities. The waste management decisions made have a societal impact and therefore it is important to consider not only onward waste management methods and destinations, but the suppliers, contractors and reprocessors engaged in the whole supply chain.

2.13 The Public Services (Social Value) Act 2012 requires people who commission public services to think about how wider social, economic and environmental benefits can be secured. PPN 06/20: 'Taking account of social value in the award of central government contracts' (Cabinet Office, 2020) is an addition to the Public Services (Social Value) Act, which provides a model to enable the evaluation of net zero and social value when awarding contracts, as summarised in Table 4.

2.14 The NHS has adopted the Social Value Model, which requires a minimum weighting of 10% of the total score in tendering evaluation to be dedicated to net zero and social value; this is applicable to all procurements, regardless of size. See 'Applying net zero and social value in the procurement of NHS goods and services' on the GreenerNHS website. Additional resources are available to NHS staff via the NHS Central Commercial Function Hub on the FutureNHS website.

2.15 Defra's 25-year Environment Plan ('A Green Future: Our 25 Year Plan to Improve the Environment', 2018a) embodies the UK Government's aspirations for protecting and enhancing the natural environment with the intention to "leave our environment in a better state than we found it". The goals set have far-reaching implications for the NHS, covering areas of environmental concern from waste reduction, to minimising single-use plastics, to implementation of the 5 R's for sustainable procurement.

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2.16 The NHS has its own separate targets, outlined in Strategic Objectives, which if achieved, help attain the goals of Defra's Environment Plan.

Relevant Environment Plan targets:

- Zero avoidable waste by 2050
- Eliminate avoidable plastic waste by end of 2042
- Meeting all existing waste targets set by Defra
- Substantially reducing and, where possible, preventing all kinds of marine plastic pollution – especially material that came originally from land.

Theme	Policy outcome
Fighting climate change	Effective stewardship of the environment
Tackling economic inequality	Create new business, new jobs and new skills Increase supply chain resilience and capacity
Equal opportunity	Reduce the disability employment gap Tackle workforce inequality
Wellbeing	Improve health and wellbeing Improve community integration

2.17 Defra's 'Our waste, our resources: a strategy for England' (2018b) sets out guidance on minimising waste, promoting resource efficiency and moving towards a circular economy. The strategy helps direct the NHS in taking actions towards a longerterm view on eliminating avoidable plastic waste, doubling resource productivity, and eliminating all avoidable waste by 2050.

This is to be supported by research and innovation along with improved data monitoring and evaluation.

2.18 The NHS Long Term Plan (2019b) requires the NHS to lead by example in sustainable development and reduce use of natural resources. Key to this will be delivering improvements, including reductions in single-use plastics, throughout the entire NHS supply chain, reducing waste by sharing best practices across various disciplines, and increasing reuse and recycling through better classification and segregation.

2.19 The 'Health Infrastructure Plan' (Department of Health & Social Care, 2019) requires the NHS to better understand the cost of its estate, with comprehensive, accurate and comparable information that underpins decision making. This necessitates improvement in waste data collection (see paragraphs 6.1–6.50) to support development of appropriate strategies that reduce carbon emission from storage, transport and treatment of waste.

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Chapter 3
Principles of Sustainable Waste Management

3.1 There are several key principles associated with well-defined and sustainable waste management. They form the foundation of short-, medium-, and long-term waste management decisions and should be used as the basis upon which healthcare waste is managed, and good practice applied.

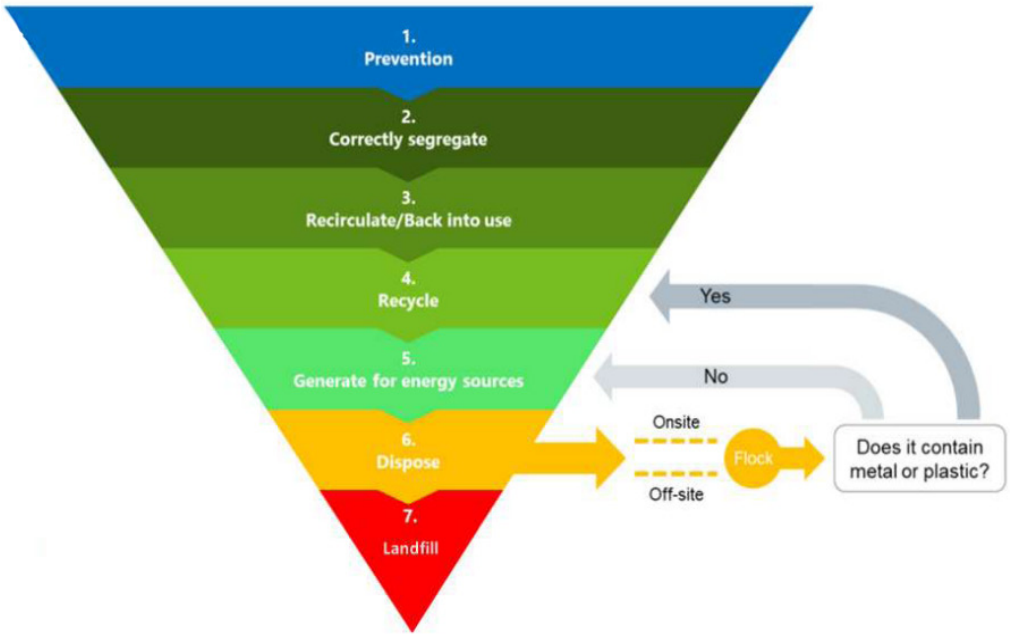
Waste Hierarchy

3.2 Sustainable waste management means using resources more efficiently, reducing the amount of waste produced and, where waste is generated, dealing with it in a way that will help achieve circularity and sustainable development.

3.3 Waste management in the NHS should be driven by and assessed against compliance with the waste hierarchy.

3.4 The waste hierachy prioritises the different steps that should be taken to manage waste, with step 1 being the optimal solution and step 7 the last resort.

Figure 3: Waste management hierarchy



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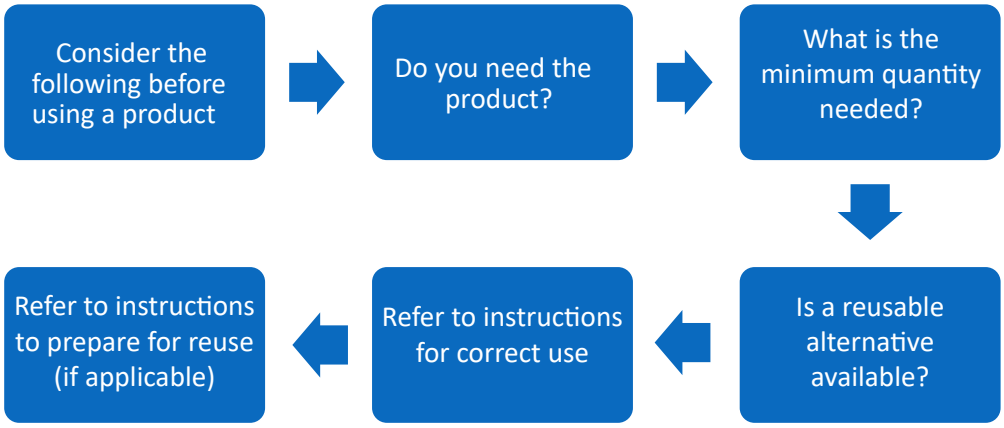
3.5 Avoidance and prevention mean limiting the demand for products and material resources, thereby preventing the generation of waste. It is the best way of implementing a circular economy. There are a number of examples of good practice:

- Good storage and stock rotation to use products prior to expiration going digital and changing practices to reduce the use of materials, such as replacing the need for film for X-rays by converting to digital imagery, or implementing community hubs to minimise unnecessary in-person patient visits and interactions, thus reducing waste generation
- Purchasing goods as a service can provide more robust, durable items, encouraging repair, remanufacture and disassembly for recycling at the end of life
- Purchasing safer alternative products with no or fewer hazardous substances
- Designing out waste by using effective dispensers that prevent taking more than required, for example for gloves and wipes
- Sourcing products derived from recycled materials, including packaging
- Inventory controls to reduce purchase of surplus products
- Prioritising use of reusable products vs single-use products, such as swapping disposable cleaning wipes with use of handcloths
- Procuring products and equipment with less packaging
- Procuring alternatives to single-use items, where safe to do so
- Use of equipment or processes that require fewer resources
- Extending the life of equipment, through regular maintenance and care
- Educating healthcare staff in the efficient use of products and materials, such as medical equipment, paper, food etc to prevent generating avoidable waste.

3.6 NHS staff and contractors must take steps to prevent waste generation and minimise situations where waste cannot be avoided. Staff must keep up to date with current waste prevention programmes at organisational level and across the NHS; in turn identifying whether a product is needed and used appropriately.

3.7 Figure 4 sets out the steps to follow to help minimise unnecessary product use and maximise resource efficiency. For PPE and medical products, an evidence-based approach should be applied for the use of a product, such as the 'Gloves are off' campaign by Cardiff and Vale University Health Board.

Figure 4: Step process to minimise product use



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3.8 Where product use is necessary, the NHS is currently exploring opportunities for safe, sustainable and cost-effective reuse of PPE, such as masks. The NHS is collaborating with industry, academic partners, healthcare providers and government bodies such as DHSC to couple innovation with evidence-based IPC best practice.

3.9 Correct segregation of waste helps to maximise opportunities for reuse, recycling and recovery, and helps to enable effective and safe management of waste. Further detail on classification and segregation is available in Chapter 5.

3.10 "Recirculate" is when waste cannot be prevented and products can be considered for reuse, where suitable. The steps listed above can be followed to ensure effective preparation for reuse, which plays an important role in preventing the generation of avoidable waste.

RECIRCULATE: Preparing for reuse checklist:

1. Refer to the Medicines and Healthcare Products Regulatory Agency's (2021) guidance 'Managing medical devices'.
2. Operate an effective return scheme for patients' medical equipment, such as crutches and wheelchairs.
3. Follow the 5 R's of Sustainable Procurement when procuring items (see paragraph 2.35).
4. Follow decontamination and reprocessing procedures, and ensure products are cleaned after use.
5. Make routine checks to identify need for maintenance or repair.
6. Carry out maintenance and repair products as soon as possible when damaged/not working.
7. Train maintenance staff to repair on site, or utilise third-party services.
8. Arrange for reuse as soon as practicable, to avoid demands on storage.
9. Provide a suitable storage area for temporarily storing items pending preparation for reuse onsite or collection.
10. Procure products or equipment from suppliers who provide rental schemes and/or offer cleaning/sterilizing and repair services.
11. Procure products and equipment that is easily disassembled for repair or refurbishment.
12. Assess whether reuse is suitable on site before redistributing elsewhere.
13. Refurbish items or equipment. For textiles: Ensure efficient logistics to collect and deliver to laundry services, and check the services have capacity. Laundry services must be in line with WHTM 01-04 – 'Decontamination of Linen For Health and Social Care'

3

3.11 "Recycling" is turning waste into a new substance or product. Recycling should be the last resort for recovering material from waste, because it usually entails using resources and energy in generating a new product.

3.12 When planning to reuse a material that could be a waste, make sure to check whether End of Waste (EoW) status applies. Quality protocols are available for a selection of waste types that have been agreed as meeting the Natural Resources Wales (NRW)'s EoW status. For all other waste types, refer to the end of waste test guidance to confirm whether the waste can meet EoW status.

Recycling good practice:

- Procure products made of recyclable material, in recyclable packaging, and ensure the waste can be collected onsite
- Place separate bins for dry recyclables to collect waste such as glass, cardboard, plastic.
- Reusable healthcare textiles at the end of their working life may be suitable for recycling for use in a nonhealthcare setting
- Some clinical wastes are suitable for recycling following treatment. Note: Always check waste contractor restrictions on collecting potentially recyclable clinical waste from healthcare settings. Many cannot accept wastes from a healthcare setting, such as disposable face masks.

3.13 "Generate for energy sources" (see Step 5 in Figure 3) is the processing of wastes for the generation of energy and/or recovery of other resources (water, heat, material, nutrients) and should be considered if reuse and recycling are not feasible.

3.14 Energy from Waste (EfW) facilities produce energy (and sometimes heat), and also recover metals from bottom ash. Bottom ash can also be recycled into aggregate, for use in construction. EfW should be the most commonly used option for offensive waste and non-recyclable domestic waste because it provides an opportunity to recover energy and resources.

3.15 Reducing food waste and disposing of it in a more environmentally friendly manner not only reduces carbon emissions but has also resulted in large cost savings. When opportunities for reduction of food waste have been exhausted, food waste from healthcare facilities should be collected for recovery, to avoid biodegradable waste entering landfills. It can be treated using two main methods:

- Anaerobic digestion (AD; decomposition in the absence of oxygen), which generates biogas to produce heat and electricity, and produces solid and liquid digestate (fertiliser)
- Composting (decomposition in the presence of oxygen) to produce compost.

3.16 Appendix 2 sets out further details on other treatment and recovery options that are available.

3.17 Management options for the treatment, recovery and disposal of clinical waste are discussed in Chapter 5.

3

3.18 Landfill is the last option for management of healthcare waste. Landfilling secures waste in one location; however, there is finite capacity, and it contributes to GHG emissions from decomposing of biodegradable waste. Moving waste away from landfill will also help achieve net zero carbon targets.

Other key principles

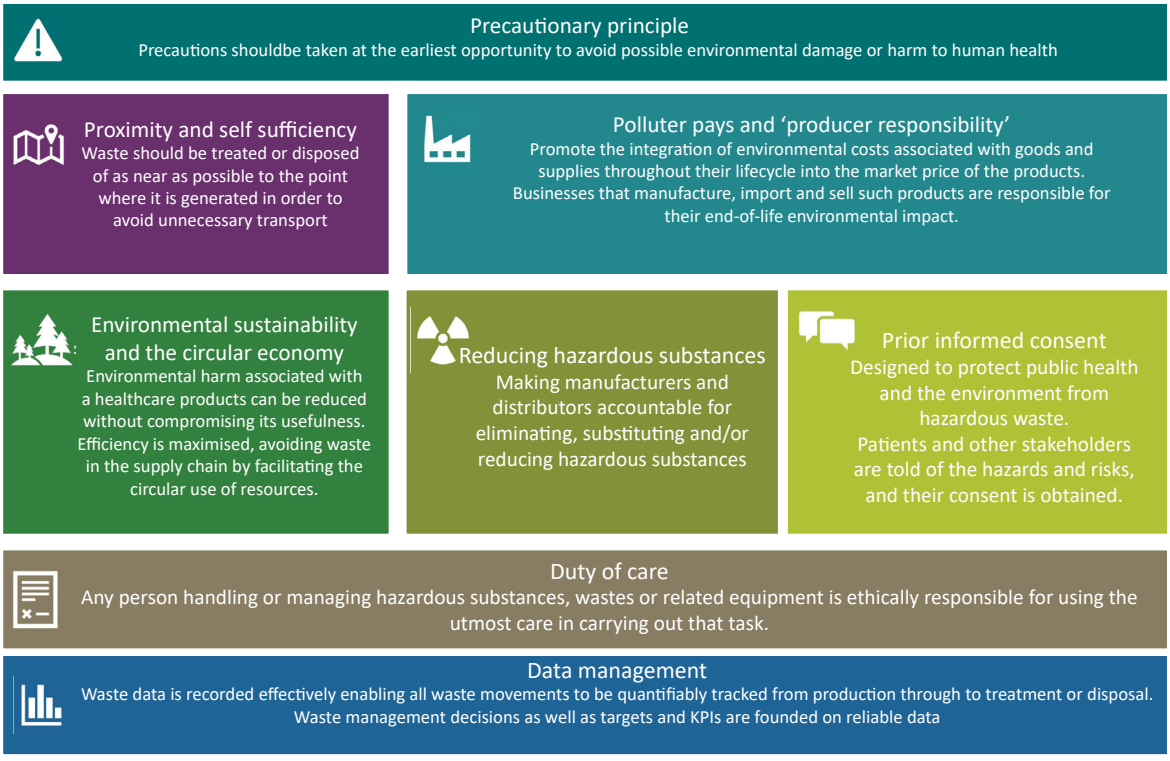
3.19 There are a number of other key principles that underpin sustainable waste management and circular economy thinking. Figure 5 summarises these principles.

3.20 By managing healthcare waste in a safe and sustainable manner now, precautions are actively being taken against potential environmental damage or harm to human health in the future.

3.21 Correct application of the proximity principle can enhance the ability of the NHS to achieve its net zero carbon targets by improving on-site resilience and reducing transport emissions.

3.22 Those involved in making decisions about how waste is collected and where it is managed should therefore seek to ensure that it is treated or disposed of at the closest compliant and economically viable location.

Figure 5: Key principles in sustainable waste management



3

3.23 Those responsible for the procurement of healthcare products should seek to engage with responsible producers and suppliers to purchase products that minimise environmental harm, promote resource efficiency and encourage greater circularity in the use of products.

3.24 Environmental sustainability can be demonstrated when demands placed on the environment can be met without reducing its capacity to allow people to live well, now and in the future. This includes dramatically reducing carbon emissions to reduce the impact on climate change and ozone depletion.

3.25 Mechanisms can be introduced that make manufacturers and distributors more accountable for the level of hazardous substances contained within healthcare products.

3.26 Waste "duty of care" places legal responsibility on all organisations that handle waste. This is an important overriding principle and can be used to govern waste regulation by ensuring that appropriate licensing and permitting controls are in place to avoid unnecessary harm to the environment. Information on how to comply with duty of care requirements is set out in paragraphs 6.83–6.89.

3.27 Prior informed consent is a principle designed to protect public health and protect the environment from hazardous waste. Stakeholders (patients and the local community) are told of the associated hazards and risks, and their consent is obtained.

3.28 Good data management is fundamental in effective waste management. It can help to keep track of how much is produced, where it is sent, how it is treated and how much it costs to do so. It is also essential in complying with duty of care requirements. Having a robust waste database helps to inform decisions about how healthcare waste should be managed in the future, as it can be used to help set performance targets and monitor KPIs. Further information on the approach to data management is included in paragraphs 6.2–6.47.

4

Chapter 4
Legislative Framework

Key legislation

4.1 Wales and England, Scotland, and Northern Ireland each have their own sets of laws and regulations, which may differ from each other. The name of the regulatory instrument is often very similar or the same, although the date when it came into force may vary. It is for this reason that wherever a regulatory instrument is cited in this guidance, the date has been omitted.

4.2 The term "dangerous goods" signifies substances with intrinsic hazards posing a potential risk to persons or the environment while in the transport chain.

4.3 Local authorities have specific duties in relation to healthcare waste as specified in Section 45 of the Environmental Protection Act.

4.4 Schedule 1 of the Controlled Waste Regulations identifies where a charge can be made for the collection of household waste. This includes clinical and offensive waste from a domestic property. This schedule also identifies where clinical waste is "industrial" (not household) waste.

4.5 The legislative framework for the healthcare sector is summarised in Figure 6.

Figure 6: Healthcare legislative framework

4

Environment and waste legislation

4.6 The relevant environment and waste legislation is listed in Table 3. The table includes both primary legislation, noted as Acts, and secondary legislation, noted as Regulations or Approved Codes of Practice (ACoP).

4.7 A statute is an Act of Parliament, is law made by the UK Parliament, and is known as primary legislation. Often, Acts of Parliament allow the creation of secondary (or delegated legislation) known as Statutory Instruments (SI's). Compliance with primary and secondary legislation is mandatory, and the requirements set out within such must be followed.

4.8 Approved Codes of Practice (ACoP) issued by the Health and Safety (HSE) Executive is approved by the Health and Safety Executive with the consent of the Secretary of State. ACoPs have a special legal status, and the HSE state: "if you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the ACoP, you will need to show that you have complied with the law in some other way, or a Court will find you at fault".

4

Table 3: Summary of waste and environmental legislation

Legislation	Summary
The Misuse of Drugs (Safe Custody) Regulations	Requires controlled drugs other than those specified in Schedule one generally to be kept either in a locked safe or room or in a locked receptacle.
The Environmental Protection Act	Defines that everyone who handles waste has a responsibility for its management and is required to fully comply with their own "duty of care", including those who import, produce, hold or carry waste.
The Environmental Protection (Duty of Care) Regulations	These regulations define the terms Waste Producer, Waste Manager, Waste Broker and Waste Carrier, and set out the duties required of each relating to controlled wastes. Not to be confused with the Waste duty of care code of practice.
Radioactive Substances Act	Defines "radioactive material" and "radioactive waste", and governs the accumulation and disposal of radioactive substances, and the inspection of premises generating, storing or disposing of them.
The Carriage of `Dangerous Goods Regulations	For further details, see guidance on the Transport and Carriage Regulations in paragraphs 4.37–4.42, and the transport and packaging section in paragraphs 5.78– 5.142.
The Misuse of Drugs Regulations	The regulations set out the regime of control that governs the various legitimate clinical activities associated with controlled drugs, for example: • Which professionals are allowed to prescribe, order, supply or administer the drugs • Sestruction and/or disposal procedures • Associated record-keeping requirements.
Clean Neighbourhoods and Environment Act	The operator must take reasonable steps to prevent nuisances from litter, noise, pests and artificial lighting outside of the site boundary. This needs to be considered if the site is to operate during antisocial hours.
The Hazardous Waste (England and Wales) Regulations	Defines and regulates the segregation and movement of hazardous waste in England and Wales from the point of production to the final point of disposal or recovery. The regulations cover any waste with properties that pose a threat to human health or the environment.
Waste Framework Directive	Provides additional labelling, record keeping, monitoring and control obligations from the "cradle to the grave", in other words from the waste production to the final disposal or recovery. It also bans the mixing of hazardous waste with other categories of hazardous waste, and with non-hazardous waste.
Regulation (EC) No 1272/2008 of the European Parliament and of the Council	Regulation and standards on the classification, labelling and packaging of substances and mixtures. This includes definitions for classification of dangerous substances.
The Waste (England and Wales) Regulations	Producers must confirm that the waste management hierarchy has been applied when transferring waste and include a declaration to this effect on the waste transfer note or consignment note.
The Controlled Waste (England and Wales) Regulations	Gives legal definitions of "clinical waste" and "offensive waste". Such wastes are regulated due to their toxicity, hazardous nature, and capacity to do harm to human health or the environment. This regulation gives a statutory obligation to ensure the waste is managed correctly to prevent harm.
The Animal By-Products Regulations	Designed to prevent animal by-products from presenting a risk to animal or public health through the transmission of disease. Animal by-products from healthcare (for example research facilities) have specific legislative requirements for disposal and treatment.
The Ionising Radiations Regulations (IRR)	Medical ionising radiation is used widely in hospitals, dental care, clinics and in medical research to help diagnose and treat conditions. Examples are X-rays and nuclear scans, and treatments such as radiotherapy. The regulations aim to make sure that it is used safely to protect patients from the risk of harm when being exposed to ionising radiation.
The Ionising Radiation (Medical Exposure) Regulations (IR[ME]R)	Legislation which provides a framework intended to protect healthcare patients from the hazards associated with ionising radiation.
The Environmental Permitting (England and Wales) Regulations	Requires the environmental permitting of any establishment or undertaking that recovers or disposes of waste. This regulation is also applicable to sites and activities that pose a pollution risk from waste storage.
The Waste (Circular Economy) Regulations	Aims to make sure fewer resources are sent to landfill if they can be reused or recycled. This will make steps towards a circular economy and resource optimisation by increasing a product's lifespan. It focuses on bringing resources back into circulation once a product has reached its end of life, so that parts can be reused or repurposed for new products.

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The Producer Responsibility Obligation (Packaging Waste) Regulations	These further develop the principle of "extended producer responsibility", whereby producers, usually brand owners or suppliers, are required to take responsibility for the environmental impact of their products, especially when they become waste. This includes regulations governing: • Waste electrical and electronic equipment (WEEE) • Waste batteries • Waste packaging • End-of-life vehicles.
The Environment Act Wales 2016	Sets out environmental targets, including for air quality, water, biodiversity and waste reduction. Adds legal responsibility to segregate waste streams (including food waste). Establishes the Office for Environmental Protection (OEP), with the responsibility to hold the government and other public bodies to account, and to ensure environmental regulations are obeyed.

Duty of care and controlled waste

4.9 The statutory requirements covering duty of care in waste management across the home nations are contained in:

- Section 34 of the Environmental Protection Act
- Section 5 of the Waste and Contaminated Land (Northern Ireland) Act
- The Controlled Waste and Duty of Care Regulations (Northern Ireland)
- The Environmental Protection (Duty of Care) Regulations (Scotland)
- The Environmental Protection (Duty of Care) Regulations (Wales)

4.10 It is the producer's responsibility to ensure the transport and destination are correctly authorised when waste is transferred.

4.11 The statutory duty of care applies to everyone in the waste management chain. It requires producers and others who are involved in the management of waste to prevent its escape, and to take all reasonable measures to ensure that the waste is dealt with appropriately and in compliance with legislation.

4.12 A written description providing an accurate description of the type and quantity of waste, is provided for transfer of the waste as it is moved from point of production to point of final disposal. Where an annual waste transfer note is used, the written description will only be required for the initial transfer if the original note meets Defra's 'Waste duty of care code of practice' (2018).

4.13 Anyone wishing to carry controlled waste must be registered as a carrier of controlled wastes, as required by the Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations (1991). Waste carrier registrations can also be checked online at the NRW's website/Environment Agency's website. Waste can only be handed to such authorised persons as registered carriers, permit/licence holders or someone who is exempt.

4.14 Information on how to comply with duty of care requirements is set out in paragraphs 6.83–6.89.

4

Environmental permitting

4.15 Permits and licences are required for the management of many different types of waste. Generally, a permit/licence is not required for the storage of waste on the site where it was produced, as this is covered by an exemption to the regulations (see the Environment Agency's (2010) non-waste framework directive exemptions). Further information on compliance is found in paragraphs 6.91–6.147.

4.16 Permitted healthcare waste management sites in Wales and England are required to obtain preacceptance audits from producers of healthcare waste before they can accept the waste from that producer. The pre-acceptance audit requirements are detailed in paragraphs 6.100-6.104.

4.17 Environmental permits and waste management licences (and related exemptions) are regulated by:

- The Environment Agency in England (as well as local authorities for small waste incineration plants)
- The Northern Ireland Environment Agency (NIEA) in Northern Ireland
- The Scottish Environment Protection Agency (SEPA) in Scotland
- Natural Resources Wales (NRW) in Wales.

Producer responsibility

4.18 For redundant electronic items, healthcare waste producers will likely fall within the "business-to business" element and will need to take responsibility for their electronic and electrical equipment waste either by returning the waste to the producer from whom it was purchased (or their compliance scheme) or by disposing of it directly. The principle of producer responsibility extends beyond the non-exhaustive key items covered above.

For further information refer to the UK.Gov page on Producer Responsibility Regulations for signposting to individual regulations across the home nations

4.19 For waste batteries, healthcare waste producers will also need to take responsibility by returning the waste to the producer (or their compliance scheme) or by disposing of it directly.

4.20 Healthcare facilities are unlikely to fall under the packaging producer responsibility obligations. However, consumers play a vital role, and therefore waste packaging should be disposed of appropriately through recycling when reuse is not an option.

4

Hazardous waste

4.21 The term "hazardous waste" is used in Wales, England and Northern Ireland to describe waste with hazardous properties. These characteristics were transposed into domestic legislation through the List of Waste Regulations and provide European Waste Catalogue (EWC) codes for all wastes.

4.22 Hazardous waste is governed by the Hazardous Waste Regulations, for which each home nation has its own requirements. These regulations set out the requirements for the management, transport and transfer of hazardous wastes. A full list of hazardous properties [and classification codes] is included in the Environment Agency's (2021a) Technical Guidance WM3: 'Guidance on the classification and assessment of waste', with further guidance on defining hazardous and non-hazardous waste in paragraphs 5.8–5.10.

WALES:

NRW is the regulatory authority for waste management in Wales. Where references are made to the Environment Agency, please consult NRW to determine whether they are applicable to your circumstances. In Wales, these regulations require that most premises producing hazardous waste be registered with NRW. Premises are exempt from the requirement to register if they produce less than 500kg of hazardous waste in any period of 12 months. Premises registration is not required in England, Scotland or Northern Ireland.

4.23 Hazardous waste consignment notes must be completed when waste is collected by a carrier or transferred between premises.

4.24 Where premises are shared, each occupant retains their own responsibility for waste under duty of care. For further details, see the section on duty of care in paragraphs 6.83–6.89.

Further details on hazardous waste are available in:

- UK government guidance at https:// www.gov.uk/dispose-hazardous- waste
- Paragraphs 6.119–6.122.

Consignment Notes

4.25 Consignment notes are required when transporting hazardous waste. These are the responsibility of the waste producer. For further information, see the UK government page on Hazardous Waste Consignment Notes.

4.26 The producer is legally responsible for ensuring the accuracy of a consignment note; in some instances it may be appropriate to seek advice from the waste contractor.

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European Waste Catalogue

4.27 Producers must adequately describe their waste using both a written description and the use of the appropriate EWC code(s) on both waste transfer and consignment notes.

4.28 The NRW, the Environment Agency and SEPA produced a joint guidance document on the interpretation, definition and classification of hazardous waste. A new edition was published after exiting the EU (1st Edition v1.2.GB) entitled Technical Guidance WM3: 'Guidance on the classification and assessment of waste' (2021a).

4.29 The EWC categorises waste into 20 chapters. Each chapter is defined by either the source of the waste or the waste type. Within each chapter, each type of waste is described using a six-digit numerical code.

4.30 The list should be used in accordance with the rules set out in Appendix 1.3: WM3. Chapter 18 of the European Waste Catalogue (EWC) provides a list of codes specifically for the healthcare sector. These codes cannot be recycled under a waste exemption; the activity must be listed on the environmental permit.

Controlled drugs

4.31 Controlled drugs are subject to special legislative controls, as they are potentially harmful. The Misuse of Drugs Regulations list the medicines that are classified as controlled drugs. There are five schedules that dictate the level of control to be applied to each medicine – Schedule 1 having the most controls and Schedule 5 the fewest.

4.32 The Misuse of Drugs (Safe Custody) Regulations list additional requirements in terms of safe storage, for example lockable cupboards of sufficient strength.

4.33 Schedules 1 and 2 stock-controlled drugs can only be destroyed in the presence of a person authorised under those regulations to witness destruction, unless a T28 waste exemption is employed.

4.34 The NRW's Regulatory Decision 094 guidance 'T28 waste exemption: sort and denature controlled drugs for disposal' allows pharmacies and similar places to denature controlled drugs to comply with the Misuse of Drugs Regulations. This exemption means that the following cannot be treated:

- Any waste drugs that are hazardous waste
- Controlled drugs that are waste at any other place than where the waste was produced.

4.35 Healthcare organisations should be aware of who within their organisation is authorised to witness destruction (witnesses must be authorised by the Controlled Drugs Accountable Officer). Further guidance and details of the categories of people currently authorised are available in the Care Quality Commission's 'Controlled drugs accountable officers' (2021).

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4.36 When a stock-controlled drug is destroyed, details of the drug must be entered into the controlled drugs register. This should include:

- The name of the drug
- Its form
- Its strength and quantity
- The date it was destroyed
- The signature of the authorised person who witnessed the destruction, and the person witnessing it (that is, two signatures)

Infection prevention and control

4.36 Effective prevention and control of infection must be part of everyday practice and be applied consistently by everyone. Good management and organisational processes are crucial to prevent cross-contamination of otherwise non-infected materials, thus preventing unnecessary infectious waste generation.

Transport and carriage legislation

4.37 Relevant transport and carriage legislation is listed in Table 4.

4.38 The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations implement the requirements of the 'Agreement concerning the International Carriage of Dangerous Goods by Road' (commonly known as ADR) (United Nations Economic Commission for Europe, 2020).

4.39 The Carriage of Dangerous Goods Regulations make direct reference to ADR and RID (the Regulation concerning the International Carriage of Dangerous Goods by Rail) (Intergovernmental Organisation for International Carriage by Rail (OTIF), 2021). Both documents are revised every two years, and the updated versions are incorporated into the UK by the Carriage of Dangerous Goods Regulations. Note that the transportation of clinical wastes via rail is uncommon in the UK. If moving waste by sea (for instance from an island to the mainland), the International Maritime Dangerous Goods code (International Maritime Organisation, 2019) must be obeyed.

Table 4: Summary of transport and carriage legislation

Legislation	Summary
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations	Intended to reduce, to reasonable levels, the risk of harm or damage to people, property and the environment posed by the carriage of dangerous goods throughout the UK.
International Waste Shipments (Amendment of Regulation (EC) No 1013/2006 and 1418/2007) Regulations	Applies to international shipments of waste from the point of loading until it has been fully recovered or disposed of. Wherever waste is shipped, the relevant regulations and import controls must be complied with.
International Waste Shipments (Amendment) (EU Exit) Regulations	This instrument amends Regulation (EC) No 1013/2006 Trans frontier Shipment of Waste Regulations 2007, and related direct EU legislation to enable their continued operability as retained EU law under the European Union following the UK's withdrawal from the European Union.

4

4.40 Other international regulations apply to the movement of dangerous goods by air, sea and inland waterway. Specialist advice should be sought if healthcare waste is to be transported by means other than road transport. In the UK, the vast majority of dangerous goods are carried by road.

4.41 The Carriage of Dangerous Goods Regulations apply to all dangerous goods regardless of whether a substance is waste or not. Goods are assessed on their hazardous properties and, if applicable, are categorised based on nine classes of dangerous goods (items may be put into multiple classes). Once goods have been classified, the information is used to identify appropriate packaging, labelling and transport requirements. The nine classes and the packaging, labelling and transport requirements are shown, along with examples, in paragraphs 5.78–5.142.

4.42 The Health and Safety Executive (HSE) is the regulatory body responsible for enforcing transport legislation in Great Britain (the HSENI in Northern Ireland). Police officers and the Driver and Vehicle Standards Agency (in England, Wales and Scotland only) carry out "on the road" enforcement under an agency agreement with the HSE.

Further information on the Carriage Regulations can be found on the Government website and on the HSE website:

- https://www.gov.uk/government/ collections/transporting-dangerous- goods
- https://www.hse.gov.uk/cdg/regs.htm

Health and safety legislation

The Health and Safety Executive (HSE) is the regulatory body with responsibility for enforcing health and safety in the workplace legislation in Great Britain.

4.43 Arrangements for managing healthcare waste should be part of an overall health and safety management system. Guidance documents, produced by the HSE, are available in relation to the management of inadvertent exposure to infectious waste, including:

- 'Safe working and the prevention of infection in clinical laboratories and similar facilities' (HSE Books, 2003)
- 'HSG283: Managing infection risks when handling the deceased: Guidance for the mortuary, post- mortem room and funeral premises, and during exhumation' (2018).

The importance of effective regulation

4.44 Legislation describes the legal expectations and the consequences of wilful or unintended breaches of these regulations; they are intended to provide a deterrent effect, which in turn improves the standards of environment protection across a range of industries including waste management in the healthcare sector.

4.45 Healthcare waste should be managed in accordance with regulations to prevent a risk to human health through spread of infection or disease, fire and other hazards, in turn keeping individuals and the environment safe from harm.

4

Table 5: Summary of health and safety legislation

Legislation	Summary
Health and Safety (Sharp Instruments in Healthcare) Regulations	Provides practical advice on: • safe use and disposal of sharps • training requirements • procedures for responding to sharps injuries.
Health and Social Care Act: Code of practice on the prevention and control of infections and related guidance	The Care Quality Commission, who regulate and inspect all healthcare providers, use this document to measure compliance and quality of an organisation's safety profile.
The Control of Substances Hazardous to Health (COSHH) Regulations	Measures to protect employees and other persons from the hazards of substances used at work by risk assessment, control of exposure, health surveillance and incident planning.
Health and Safety at Work etc. Act	The primary piece of legislation covering occupational health and safety in Great Britain. The operator and staff must take all reasonable steps to ensure the health and safety of everyone on site. This will include health and safety policies, training and procedures in addition to stringent equipment inspections and maintenance programmes.
Health and Safety (Consultation with Employees) Regulations	Employers must consult employees and their representatives about aspects of their health and safety at work.
The Safety Representatives and Safety Committees Regulations	States the cases in which recognised trade unions may: appoint health and safety representatives; specify the functions of such health and safety representatives; and set out the obligations of employers towards them.
The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)	RIDDOR puts duties on employers, the self-employed and people in control of work premises (Responsible Persons) to report certain serious workplace accidents, occupational diseases and specified dangerous occurrences (near misses).
The Management of Health and Safety at Work Regulations	Explicitly outline what employers are required to do to manage health and safety, and apply to every work activity. The regulations place a set of duties on employers and employees to maintain a safe and healthy workplace.
The Public Services (Social Value) Act	An Act to require public authorities to have regard to economic, social and environmental wellbeing in connection with public services contracts; and for connected purposes.

4.46 Without legislation and regulation, there would be no minimum standards to enforce, to ensure that risks are mitigated and appropriate measures are taken to safeguard all individuals involved in the management of waste.

4.47 The regulators listed in Table 6 may intervene when a material breach to the law has been found. For major breaches the consequences can be large fines or criminal prosecution.

4.48 In the situation of a minor breach, regulators will often issue improvement conditions or notices which have a deadline for completion.

How to keep up to date

4.49 Changes to legislation can be searched for manually by date or title on the gov.uk website. Any legislative amendments will be available on the site within two weeks of the new legislation being published. Specialist legal advice may need to be taken regarding the interpretation of specific clauses to ensure legal compliance.

4.50 The HSE offer a free email update service on a wide range of topics, including legislation, COSHH, health and social care services and carriage of dangerous goods. The subscription topics and further information can be found on the HSE's website.

4

Table 6 Summary of healthcare regulators

Regulator	Frequency of Inspections	Details	Enforcement Actions
Care Quality Comission	6 months following an inadequate visit 12 months following a visit which requires improvement 5 years following an outstanding visit	Visits are announced unless acting on a complaint	Refer to the CQC's (2015) Enforcement Policy and the CQC's (2017) Enforcement Decision Tree
Health and Safety Executive	Varied	Notice in writing typically provided when a formal inspection is intended to be carried out and HSE have not inspected in the previous three months. Unannounced visits may however be carried out	See HSE's (2015) Enforcement Policy Statement, and the HSE's (2013a) Enforcemnt Managament Model
Natural Resources Wales/ Environment Agency	Varied	Visits can be announced or unannouced	See the NRW's and Environment Agency's (2022a) enforcement and sanctions policy
NWSSP	N/A		
Office for Nuclear Regulation	Varied	Responsible for the regulation, licensing and inspection of sites handling nuclear material	See ONR's guidance page and the ONR's (2020) Enforcement Policy Statement
Land Transport Security Inspectorate	Varied	Responsibility for the transport of high consequence dangerous goods (Cat A waste)	Land Transport Security page

4.51 The NRW/Environment Agency has detailed guidance on the government website relating to the management of waste.

5

Chapter 5
Technical Approach

5.1 The purpose of this chapter is to set out how healthcare waste must be managed to comply with the key legislation set out in Chapter 4. Failure to follow this guidance will result in non-compliance, environmental damage, harm to human health and potential enforcement action.

5.2 Healthcare waste is waste produced during human or animal healthcare, or related research activities. All wastes produced in a healthcare setting are healthcare wastes, including clinical waste, offensive waste and other non-clinical waste and resources.

5.3 Waste produced by healthcare in the community, and similar types of waste produced by nonhealthcare activities are included, such as:

- Cosmetic body piercing and body art
- Non-medicinal procedures in the hair and beauty sector
- Substance misuse/abuse
- Crime scene clean-up.

5.4 Healthcare waste is a broad classification which includes clinical waste and items which may not pose a risk of infection or may not have hazardous properties.

5.5 This chapter outlines the technical approach to the management of the waste streams summarised in Figure 7. Specific guidance for each is set out in the sections that follow.

Non-Clinical Waste and Resources

5.6 The Venn diagram demonstrating the relationship between waste types in Figure 7 does not include non-clinical wastes and resources, which might be produced in a healthcare setting, and may include:

- Fluorescent tubes
- Food waste
- Batteries
- Furniture
- Cleaning chemicals
- Construction and demolition waste
- Oils (hazardous and edible)
- Asbestos
- Grounds waste (garden waste etc.)
- Paints
- Domestic waste streams
- Paper, glass, cans and bottles
- Waste electrical and electronic equipment (WEEE).

5.7 The approach to the management of some of these waste types, including consideration towards waste prevention and circular economy implementation, principles in segregation, storage, handling, collection and appropriate forms of treatment, recovery and disposal is summarised in Appendix 2, ‘Nonclinical waste and resource management principles’.

5

Defining Hazardous and Non-Hazardous Waste

5.8 Certain types of healthcare waste may be hazardous. All wastes which do not fit the legal definition of hazardous are non- hazardous. Examples of how hazardous healthcare wastes may harm the environment are summarised in paragraphs 2.3-2.11.

5.9 Hazardous waste is defined in the Hazardous Waste Regulations, with the specific hazards defined and detailed in the Environment Agency's (2021a) Technical Guidance WM3: 'Guidance on the classification and assessment of waste'.

5.10 A list of properties which make a waste hazardous is included in schedule A.3 WM3 hazards; this schedule is included in Appendix 1.3.

Some waste types are known as **mirror hazardous.** This means that they are only considered **hazardous under certain conditions** (for instance, a drug which is only dangerous is large concentrations, or a substance which is only flammable in certain conditions). In a healthcare setting, mirror hazards are typically chemical.

In WM3, these wastes have a hazardous waste entry (or entries) marked with an asterisk (*), and an alternative non- hazardous waste entry (or entries) not marked with an asterisk.

These differ from absolute hazardous entries, where the item must be considered hazardous in all situations. There are exceptions where 'absolute hazardous' entries are linked to other entries, and additional consideration may be needed.

5.11 It is illegal to mix hazardous or POPs waste with non-hazardous or other types of hazardous waste (unless specifically authorised by an environmental permit). Doing so may result in fines and/or a prison sentence if convicted. For further details refer to the NRW 'Identify, classify and manage waste containing persistent organic pollutants (POPs)'/Environment Agency's (2014a) guidance 'Hazardous waste: segregation and mixing'.

Domestic households are exempt from the ban on mixing and may sometimes return mixed waste medicines to pharmacies and healthcare facilities. Staff should attempt to segregate these medicines (and identify controlled substances) where safe to do so. Examining the contents of containers through opening them or emptying onto a tray for examination will minimise the safety risk.

5

The Importance of Accurate Waste Segregation

5.12 To support the long-term delivery of a more sustainable waste management system, waste must be accurately identitfied and correctly segregated to ensure it is managed appropriately.

5.13 Misclassification of waste, where waste is classified incorrectly, can lead to injury or cause ill health, for instance from hazardous wastes being handled as though they are non-hazardous, and can result in environmental damage, for instance from hazardous wastes being disposed of improperly.

5.14 Over-classification of waste, where wastes are classified as more hazardous than they actually are, is a major issue for the NHS and often results in wastes being disposed of using hazardous or clinical waste incineration or alternative treatment, rather than more cost-effective or sustainable methods.

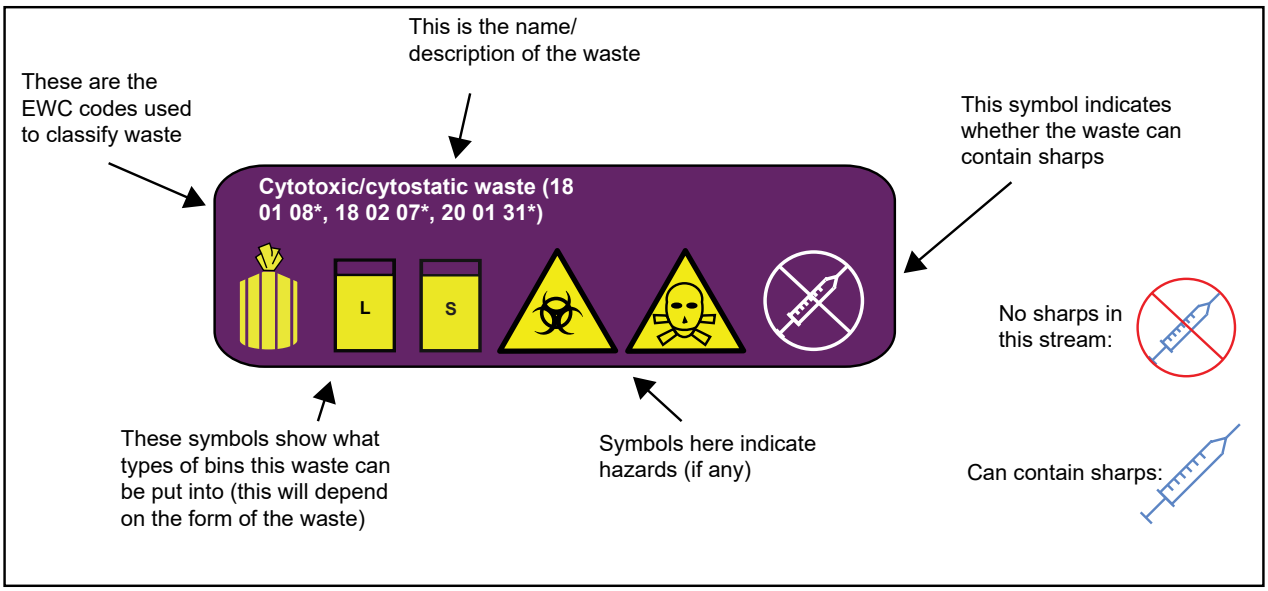
5.15 The previous version of this WHTM included a detailed risk assessment for offensive waste; however, this is no longer needed and has been removed, as offensive waste is now defined in legislation and summarised in Technical Guidance WM3.

5.16 Figure 7 illustrates the relationship between hazardous, non-hazardous, clinical and dental wastes. It also includes information on the hazards, appropriate bins/bags, EWC codes, and whether each stream contains sharps. It is intended to serve as a quick reference guide to help inform the broad approach to classification and segregation.

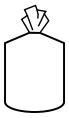
5.17 The legend and icons contained in Figure 7, which demonstrates the relationship between waste types, are explained on the next page:

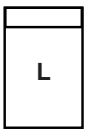
5

LEGEND:



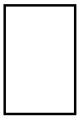

Hazardous


Bag



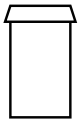
Medicines bin (liquids)


Bioazard


Rigid bin

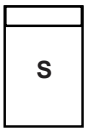

No sharps in this stream


Radiation


Sharps bin


Can contain sharps


Toxic



Medicines bin (solids)

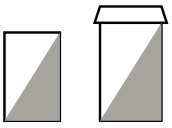
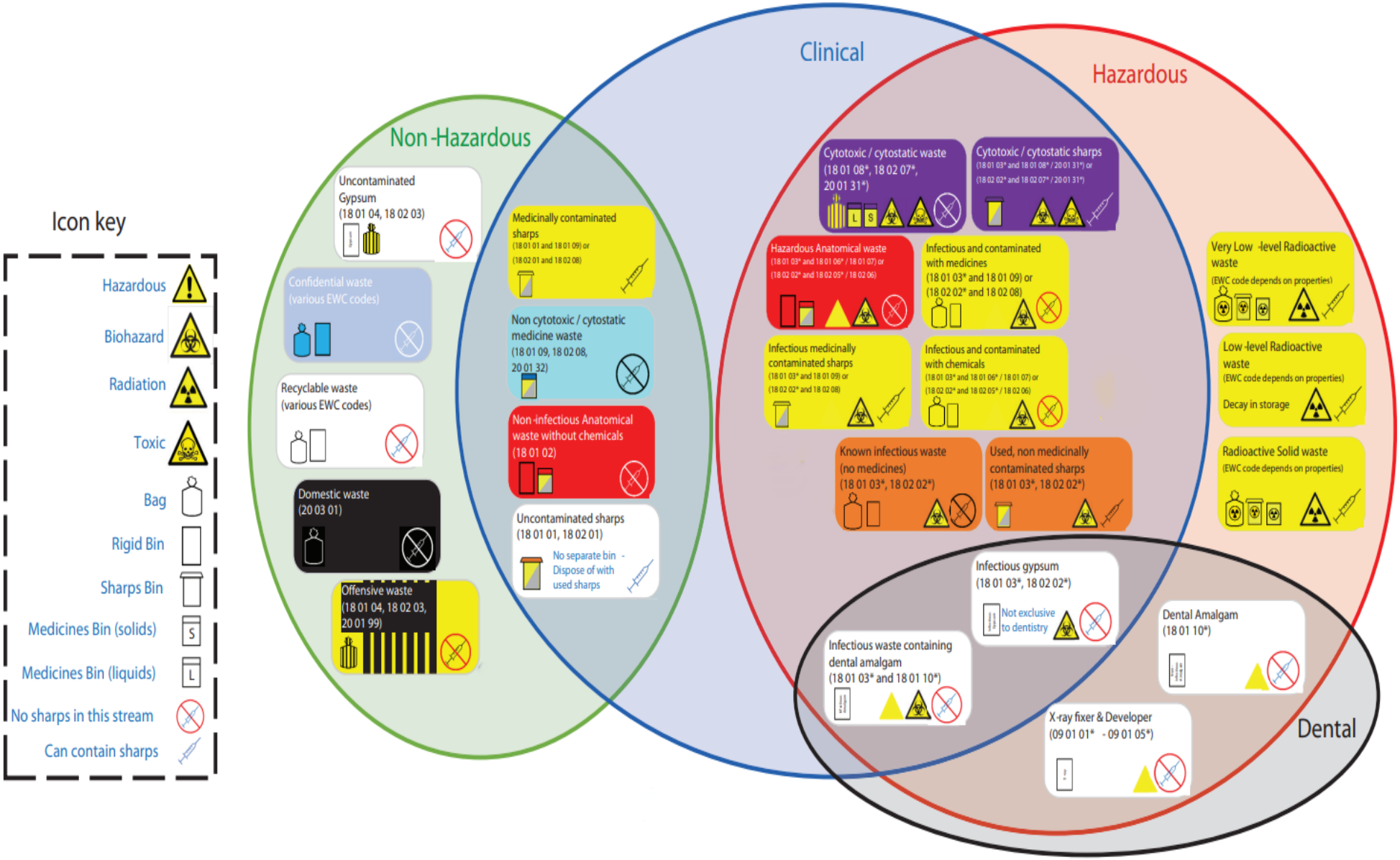

Bin body (colour may vary)

Figure 7: Relationship between waste types



5

Clinical Waste

5.18 The guidance in this section is intended to help waste handling staff in healthcare organisations to correctly identify, segregate and manage waste.

5.19 Healthcare organisations may wish to produce their own simplified guidance for internal use, for a wider audience. Note that the guidance included in this WHTM is based on legislation and practices in Wales and England, and may not be applicable in Scotland and Northern Ireland.

Definitions and Waste Types

5.20 Clinical waste is defined under the Controlled Waste (England and Wales) Regulations 2012 as follows:

"Clinical waste" means waste from a healthcare activity (including veterinary healthcare) that –

(a) Contains viable micro-organisms or their toxins which are known or reliably believed to cause disease in humans or other living organisms

(b) Contains or is contaminated with a medicine that contains a biologically active pharmaceutical agent, or

(c) Is a sharp, or a body fluid or other biological material (including human and animal tissue) containing or contaminated with a dangerous substance within the meaning of Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

5.21 Clinical waste can be divided into three broad groups of materials:

- Any healthcare waste which poses a risk of infection
- Certain healthcare wastes which pose a hazard
- Medicines and medicinally- contaminated waste containing a pharmaceutically-active agent.

The key principle is that all clinical waste, other than under the four following exceptions, should be managed as hazardous waste:

- Segregated non-cytotoxic and non- cytostatic medicines (that is, from human (EWC Code 18 01 09) or animal (EWC Code 18 02 08) healthcare and manufacturing, or separate fractions of out-patient-returned medicines (EWC Code 20 01 32))
- Clinical waste from municipal sources that are not in any way directly or indirectly associated with healthcare (for example needles and swabs from cosmetic body art or piercing)
- Anatomical waste without chemical contamination or infectious properties
- Non-hazardous sharps (note that these may be considered dangerous goods).

5.22 Many healthcare wastes contaminated with hazardous chemicals will be classified as a clinical waste. Any healthcare waste contaminated with a medicine that contains a biologically active pharmaceutical agent is considered clinical waste.

For example, on its own, a bottle of waste chemical would not fall under the definition of clinical waste, although it may still be hazardous.

5.23 Any sharp, or biological material contaminated with a dangerous substance, as defined by Regulation (EC) No 1272/2008 of the European Parliament and of the Council, is considered clinical waste.

5

5.24 When handling clinical waste always ensure the following:

- The hospital ward/department is visible on every bag and sharps container (pre-marked tags may be used for this)
- Never overfill bags (no more than two-thirds full)
- Segregate waste correctly – sharps always go in a sharps bin
- Never open a clinical waste bag to examine the contents
- Never handle spillages from clinical waste bags without ensuring health and safety procedures are followed – see the NHS's Standard Infection Prevention and Control Precautions
- Never place your hand inside a clinical waste bin/ When emptying bins, always hold clinical waste bags away from your body to reduce the risk of contamination and prevent needlestick injuries
- Do not use force to compress waste bags – this may result in bags splitting
- Damaged or leaking bags must not be moved until the complete bag is placed inside a new bag
- Appropriate PPE clothing must be worn.

Classification and Segregation

5.25 This section provides the definitions and assessment framework for typical healthcare wastes based on the legislative framework set out in Chapter 4. It emphasises the need to undertake an assessment to classify a waste. This section does not address all packaging issues related to transport, which is addressed in paragraphs 5.75–5.136.

5.26 The EWC contains codes that apply to waste produced from healthcare and similar wastes from municipal sources. The codes applied to waste streams are defined by the individual items placed in a receptacle; they are never determined by the type of receptacle used.

5.27 Staff segregating waste must be provided with appropriate ongoing training and clear instructions on waste segregation.

5.28 Figure 8 shows a summary methodology for identifying and segregating waste. Technical Guidance WM3 contains more complete guidance. Figure 8 has been included in an enlarged format in Appendix 3 to allow waste managers and clinical staff to print a separate copy as a guide.

5.29 There are a number of key considerations that should be followed when attempting to classify healthcare waste. These are summarised below and should be read in conjunction with WM3.

Is it Clinical Waste?

5.30 Clinical waste is defined at the beginning of this section. If the waste is not clinical, it is very likely non-hazardous unless it contains any of the following:

- Radioactive material
- Dental amalgam
- X-ray fixer and/or developer
- Electrical equipment or electronics.

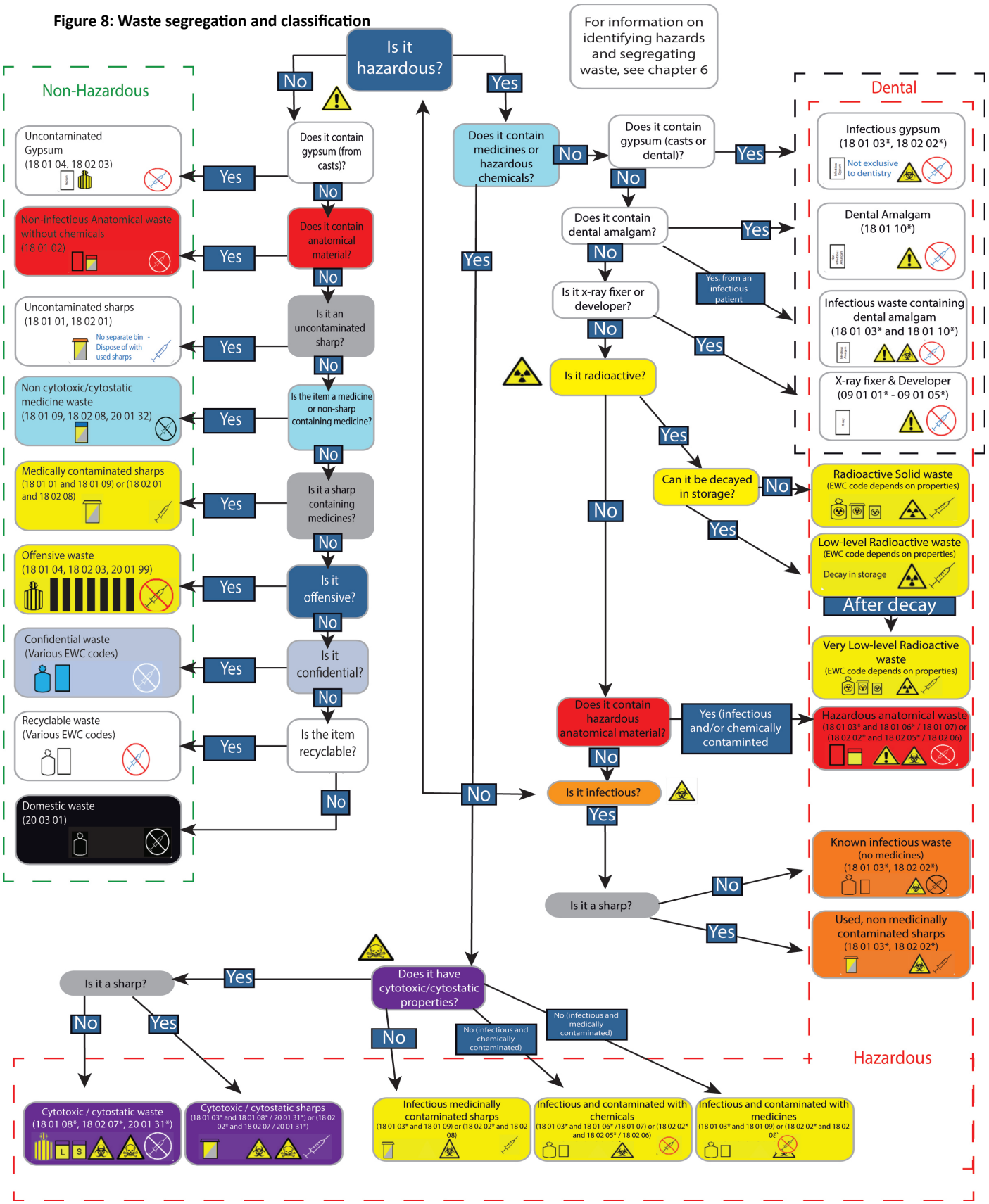
For information on the management of non-clinical wastes, see Appendix 2.

5

Is it Hazardous?

5.31 The handling and disposal requirements of a waste are typically based on its hazardous properties. A hazard is anything which can cause harm to humans or the environment. A full list of hazards is defined in Technical Guidance WM3, which is available in Appendix 3.

Figure 8: Waste segregation and classification



5

5.32 Healthcare products with hazardous properties, excluding medicines, should have those properties clearly marked on packaging, with a detailed description included in the safety data sheet.

5.33 Hazardous properties of waste include:

- Containing infectious pathogens (infectious wastes)
- Containing medicines which cause damage to cells (cytotoxic/cytostatic wastes)
- Containing medicines or chemicals which can harm humans or the environment (chemical and medicinal wastes)
- Having radioactive properties (radioactive wastes).

5.34 Sharps wastes are not considered hazardous by themselves under the definition of Technical Guidance WM3; however, once used, many sharps wastes generated in a healthcare setting will be hazardous. It should be noted that a non- hazardous sharp may still cause needle-stick injuries if handled inappropriately and should therefore be handled with caution.

5.35 Sharps from mass vaccination in non- registered premises are not considered hazardous. In all other situations, sharps waste must be assessed for hazards.

Identifying Hazards

5.36 Many hazards can be identified by warning symbols located on packaging or signage and correspond to the hazards listed in Appendix 1.3.

Consideration should be given to which ward/area the waste came from.

Wastes with certain hazards are generally only generated in specific areas of a healthcare facility.

These include radioactive wastes, which will typically only occur in nuclear medicine departments, laboratories, operating theatres, and potentially in areas using X-ray equipment (radiation-contaminated PPE).

Known infectious wastes will usually only come from wards treating patients (or patient samples) and certain specialist departments, including GUM clinics, skin clinics and laboratories.

Is it a Medicine, or Does it Contain a Pharmaceutically Active Medicine?

5.37 Classification is determined by assessment of the medicinal products in the form supplied by the manufacturer or distributor and does not consider the effects of any subsequent dilution that may occur during routine use.

5.38 Medicines may take the form of pills, liquids or powders in various containers, gels, patches, ointments, aerosols or intravenous (IV) fluids.

5

5.39 If a medicine is delivered via a sharp, it must not be disposed of with non-sharps medicinal wastes. Excess liquid material in syringes should not be discharged into drains, but left in the syringe and placed into the appropriate lidded sharps box suitable for pharmaceutically contaminated sharps – these are yellow for non-cytotoxic/ non-cytostatic and purple for cytotoxic/ cytostatic.

5.40 If a sharp has been used on a patient in a healthcare setting or has been in contact with infectious material it must be disposed of in a container for infectious, medicinally contaminated waste.

5.41 Medicine and chemical containers, unless completely empty and rinsed out, should be assumed to be contaminated and should be classified based on the chemical they contain.

5.42 Liquid medicines should not be discharged to the sewer; see paragraphs 5.144–5.174 for more information on treatment, recovery and disposal. Further guidance is also available in Water UK's 'National guidance for healthcare waste water discharges' (2014).

5.43 Used absorbents and spill-kits for chemical spills should be classified under Chapter 15 of the EWC.

5.44 Inhalers contain active pharmaceutical ingredients (APIs) and should accordingly be disposed of alongside other medicinal waste by incineration through hospital/ community pharmacy disposal or sent to a permitted pharmaceutical aerosol recovery process. This prevents the potent greenhouse gas propellants used in metered dose inhalers (MDIs) from leaking into the atmosphere after disposal.

A pharmaceutically active medicine is one which may have an effect or impact on human biology. Non-pharmaceutically active medicines include saline, sterile water, and sugar solutions.

5.45 Where non-pharmaceutically active IV fluids occur in small quantities and present no other hazard, for example infection due to contamination with body fluids or the addition of pharmaceutically-active substances, these can:

- Be discharged to foul sewer, subject to approval by the sewage undertaker, and the empty containers can be placed in the offensive/hygiene waste stream
- Be placed in the offensive waste stream for EfW or another permitted process.

Where medicines from a primary care setting are taken to a pharmacy, for example where the pharmacy supplies medicines and collects unwanted material:

- Cytotoxic and cytostatic medicines must be consigned from the practice to the pharmacy, which must send the practice and the regulator consignee returns
- Other medicines must be transferred using a duty of care waste transfer note
- A registered waste carrier is normally required to transport the material
- If the practice is charged for collection or disposal of the waste medicines by the pharmacy or its parent organisation, the pharmacy must hold an environmental permit

The World Health Organization's 'Guidelines for medicine donations' (2010) should be followed when donating unneeded medicines internationally.

5

Does the Waste Contain a Cytotoxic or Cytostatic Medicinal Waste?

5.46 Cytotoxic and cytostatic medicines are among the most dangerous drugs used in healthcare. They are often used for chemotherapy and other specialised purposes, but some are more commonly prescribed, such as chloramphenicol.

5.47 A cytotoxic or cytostatic medicine is defined within Technical Guidance WM3 as any medicinal product that possesses one or more of the following hazardous properties:

- HP6: Acute toxicity
- HP7: Carcinogenic
- HP10: Toxic for reproduction
- HP11: Mutagenic.

5.48 If a waste contains cytotoxic or cytostatic material, it is both clinical and hazardous and should be handled in compliance with HSE's 'Safe handling of cytotoxic drugs in the workplace – Health and Social Care' (2013).

5.49 In Wales and England, mixing cytotoxic and cytostatic medicines with other medicines is prohibited except in homes. **Medicines should be segregated at source wherever possible.**

5.50 In a case where a healthcare organisation receives mixed medicines from a patient's home, the consignment note for the removal of mixed medicines must both clearly identify the presence of wastes and list the components, through EWC codes, descriptions and hazardous properties.

Does it Contain Any Other Chemicals?

5.51 This section is not provided for use in assessing laboratory chemicals and reagents. It is provided as an overview to support the assessment of other healthcare waste streams that may contain or be contaminated with waste chemicals.

5.52 The following advice applies for waste chemicals:

- They should not be placed in clinical, offensive or municipal waste streams; in Wales and England such mixing is prohibited
- They should be segregated and packaged according to transport classifications and chemical compatibilities
- They should normally be classified as EWC code 18 01 06* or EWC code 18 01 07 unless they are photo-chemicals, where these are classified under subchapter 09 01
- Hazardous properties should be assessed, and classification codes assigned using the procedures set out in Technical Guidance WM3.

X-ray fixer and developer wastes are chemically hazardous but have their own separate, specific containers (typically white, clearly marked, resealable jugs).

These wastes should not be mixed with each other or any other waste.

These wastes should be returned to the supplier or sent to a specialised, licensed treatment facility.

5.53 Gypsum, which is present in plaster casts and certain types of dental mould, should be segregated from other wastes and disposed of in a designated gypsum bin, or infectious gypsum bin.

Is it Infectious?

5.54 Annex III of Directive 2008/98/EC 'Waste Framework Directive' defines "Infectious" as 'waste containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms'.

5.55 It is, however, very difficult to know whether a waste contains viable micro-organisms without testing, and it is not feasible to test every piece of potentially infectious waste. To determine whether a waste is likely to be infectious, consider whether the item:

- Originated from a patient being treated for an infection, or from contact with a patient carrying a tranmissible disease (e.g. PPE that has come into contact with an infectious patient)
- Was used in the care of a patient with a known infection, such as a blood-borne virus or *Clostridioides difficile*
- Has been identified as infectious by a clinician
- Is a culture, stock, or sample of infectious agents from laboratory work, or has been in contact with such materials

5.56 If the answer is "yes" to any of the above (5.55), the waste may be infectious and should be managed as follows:

- **Infectious waste without any additional hazardous properties** should be disposed of in an **orange bag**, which is used for waste that is solely infectious
- Infectious waste that is also contaminated with **medicines or chemicals** should be disposed of in a **yellow bag**, which is intended for infectious waste containing pharmaceutical or chemical contamination

Nappies and personal hygiene wastes are not considered infectious waste (unless they are from an infectious person) and should not be put into a clinical waste bin. They are considered offensive waste and go in a yellow and black striped bag. Only if they meet the criteria for "known infectious" (for instance, if they come from an isolation ward), should they go in an orange bin.

Nappies and sanitary products must not be disposed of in a yellow waste bin.

Is it Radioactive?

5.57 Radioactive materials should only be generated by specific areas within a healthcare facility such as nuclear medicine areas, operating theatres and labs. No other parts of a healthcare facility should generate radioactive waste or handle radioactive material. Only staff with specialised training should handle radioactive materials. For more information on radioactive waste, see paragraphs 5.172-5.202.

5

Does it Contain Recognisable Human Tissue?

5.58 Anatomical waste is waste which contains recognisable human parts. It is not necessarily hazardous on its own, but can be infectious or contain hazardous chemicals (or both), waste should be put in a red-lidded container.

5.59 Anatomical waste should be segregated, based on the hazards present, into the following categories:

- Non-hazardous anatomical waste, blood bags and blood preserves which are not infectious or chemically contaminated
- Infectious anatomical waste which is not chemically contaminated
- Chemically contaminated anatomical waste which is not infectious
- Infectious and chemically contaminated anatomical waste.

If none of the above?

5.60 If these considerations (from 5.36-5.60) do not apply and the waste is non-hazardous, assess whether it is offensive, confidential, recyclable or domestic waste. Key management principles associated with these waste types are detailed in Appendix 2.

Summary of advice for non-healthcare waste producers, syringes and needles are classified as sharps and must be managed appropriately, even when arising outside of healthcare settings such as:

- Substance abuse;
- Cosmetic piercings; and
- Other body art.

This waste is not considered to arise from healthcare and so is classified in the EWC as a separately collected municipal fraction (20 01 99). Items of substance abuse are typically treated as clinical waste due to the risk of infection and possess the hazardous property H9. For duty-of-care purposes, any potentially infectious clinical waste nature must be described, and the waste disposed of by incineration or alternative treatment. The waste must be packaged in a sharps receptacle for both transport and health and safety purposes.

Soft waste includes swabs, small dressings and cotton wool contaminated with body fluids arising from:

- Cosmetic piercing; and
- Other body art.

It also includes hygiene waste from boarding kennels, dog faeces collection bins and catteries. This waste should be segregated, for duty-of-care purposes, as offensive/hygiene waste where it is generated in large quantities (that is, in excess of 7 kg would be a reasonable indicator). This enables subsequent holders of the waste to identify the nature of the material and adapt handling and disposal procedures accordingly.

Only where it is generated in small quantities (that is, less than 7 kg is usually a reasonable indicator) should it be disposed of in the black-bag stream with other waste. Offices, childcare facilities, public conveniences, schools and shops would not normally be considered clinical waste producers. Appropriate risk assessments and procedures should be in place to identify those circumstances (for example an outbreak of gastroenteritis) where this may not be the case.

5

Colour Coding and Storage

5.61 The colour-coded waste classification system outlined in this section identifies and segregates waste on the basis of waste type, hazard and suitability of treatment/ disposal options in line with the approach summarised in paragraphs 5.20–5.60 regarding classification and segregation of waste.

5.62 The use of this colour-coding system is unlikely to change; however, its implementation, such as which categories are in use, may change in response to emergencies and other impactful developments such as pandemics, as discussed in paragraphs 6.148-6.153.

5.63 This colour-coded system must be utilised to aid the consistent identification and segregation of waste.

5.64 Consistent ongoing training for all staff involved in waste handling and production, combined with clear signage, effective written and visual prompts, is vital to ensure proper waste classification, segregation, and treatment.

5.65 Proper segregation of different wastes is critical for safe management of healthcare waste and helps control associated hazards, environmental impact and costs. The use of colour-coded and properly labelled receptacles is key to good segregation practice.

5.66 The number and type of bins used at a facility should be based on the types and quantities of waste generated. In order to determine the type and quantity of bins needed and to inform storage and logistical requirements, a waste audit must be performed as discussed in paragraphs 6.91–6.94.

Wastes stemming from research, diagnosis, treatment or prevention of disease involving animals are classified using EWC codes beginning with 18 02.

5.67 Note that the bodies of bins may be any colour, as long as the bag, bin lid, and/ or label match the colour coding scheme defined in Table 5 or the relevant colour coding system used in the pertinent administration/country. This is to allow the use of bins made from recycled plastics which are often available only in limited colours, such as grey, due to manufacturing constraints.

Container Labelling

5.68 Each container must be labelled in accordance with the details of the legal requirements for transport and packaging.

5.69 The container labels should clearly identify the waste type(s) present within. The purpose of this is to ensure that wastes such as anatomical wastes and medicines are not moved in yellow-topped bins, which may lead to their subsequent mismanagement, injury or legal consequences of incorrect handling or disposal.

5.70 In addition, the container should be tagged or labelled in a manner that identifies the facility and place/ward of origin. This is required by waste management facilities in accordance with duty of care.

5.71 Bags should be labelled or tagged individually, rather than just the container (such as carts) holding the bags, as waste is often repackaged during transport and handling.

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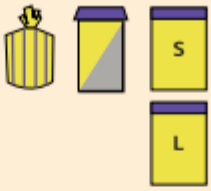
Table 7: Clinical waste colour coding and storage summary

Colour	Waste strea	Example items	Disposal methods	EWC codes	Hazards	Container requirements	Sharps
Yellow	Potentially highly infectious or highly infectious and/or medicinally/ chemically contaminated waste	IV bags Pharmaceutically contaminated sharps Chemically contaminated lab waste	Incineration or alternative treatment at a suitably permitted facility	18 01 03* and 18 01 06* 18 01 03* and 18 01 09 18 02 02* and 18 02 05* or 18 02 06	Infectious (HP 9) Medical/ chemical contamination	Depends on characteristics of waste 	May contain sharps (in a designated sharps bin) 
Orange	Suspected/ known infectious	Infectious dressings Swabs Phlebotomy needles/ syringes	Alternative treatment at a suitably permitted facility or incineration (legal, but not recommended under the waste hierarchy) recommended under the waste hierarchy)	18 01 03* 18 02 02* 18 01 01 18 02 01	Infection	Depends on characteristics of waste 	May contain sharps (in a designated sharps bin) 
Purple	Cytotoxic and cytostatic waste	Chemotherapy drugs Other cytotoxic drugs	Hazardous/clinical Incineration	18 01 08* 18 01 03* and 18 01 08* or 20 01 31* 18 02 02*	Cytotoxicity (damaging to cells)	Depends on characteristics of waste Other waste contaminated with cytotoxic: purple striped bag Sharps: sharps bin Medicines: solid or liquid rigid bin 	May contain sharps (in a designated sharps bin) 
Yellow/ Black	Offensive/ hygiene waste	Used non-infectious PPE, sanitary waste/ nappies Couch roll (paper used to cover exam tables) Non-infectious items contaminated with blood and other body fluids Animal faeces/ soiled animal bedding	EfW (can be incinerated at lower temperatures than infectious/known infectious streams) Landfill (legal, but not recommended under the hierarchy of waste)	18 01 04 or 20 01 99 18 02 03	Unpleasant, generally not hazardous	Tiger stripe bag only 	Must not contain sharps 
Red	Anatomical waste	Amputated tissue, full and partial blood bags, and blood preserves	Incineration	18 01 02 18 01 02 and 18 01 03* (if infectious)	Unpleasant, generally not hazardous unless infectious	Rigid containers only. Red or red lidded. Marked as anatomical. 	Must not contain sharps 

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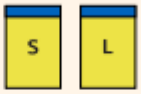
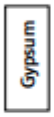
Colour	Waste strea	Example items	Disposal methods	EWC codes	Hazards	Container requirements	Sharps
Black	Domestic/ municipal waste	Food packaging	Recycling (limited if recyclables are segregated at source) EfW Landfill	20 03 01	Generally, not hazardous	Black bag or clear bag 	Must not contain sharps 
Blue	Medicinal waste	Expired medicines (excluding cytotoxic and cytostatic drugs) Testing kits Medicines returned to healthcare facilities by the public	Incineration/ specialist treatment	18 01 09, 18 02 08, or 20 01 32	Chemical/ environmental	Blue-lidded bin based on physical properties (syringes must be placed in a sealed container, liquid medicines in a designated liquids bin, and solid medicines in a solids bin Bags may be used if they are in a blue-lidded or primarily blue container Medicinal waste should not be stored in loose bags 	Must not contain sharps 
Dental amalgam 	Dental amalgam	Dental amalgam	Recovery (noninfectious)	18 01 10* (amalgam) 18 01 03* and 18 01 10 (amalgam contaminated with infectious material	Chemical Infection (if infectious)	Specific, marked, white bin or container labelled with contents. Amalgam bins must feature mercury vapour suppressants. Infectious amalgam must be in a separate bins for noninfectious 	Must not contain sharps 
Gypsum 	Gypsum	Gypsum	Recovery (noninfectious) Incineration (infectious)	18 01 04 (gypsum) 18 01 03* (infectious gypsum)	Chemical Infection (if infectious)	Specific, marked, white bin or container labelled with contents. Infectious gypsum must be in separate bins from non-infectious. Uncontaminated gypsum may also be disposed of in a black and yellow-stripe bag. Gypsum has specific disposal requirements, and should not be mixed with offensive waste. 	Must not contain sharps 

Colour	Waste strea	Example items	Disposal methods	EWC codes	Hazards	Container requirements	Sharps
Recyclable	Recyclable waste	Empty, uncontaminated drink cans Food packaging (rinsed) Devices/ medicine packaging Non-confidential paperwork Newspapers	Recycling Clean paper may be reused on-site for printing or other uses	Various	Not hazardous	Clear (or green) bag or rigid bin 	Must not contain sharps 
Confidential	Confidential waste	Paperwork containing patient data or commercially sensitive information	Shredding, followed by recycling	No specific EWC code	No hazard. Separate stream due to data protection legislation	Bag, rigid bin or console (no specific colour required; however, it is recommended to standardise the colour across the organisation) 	Must not contain sharps 

5.72 Contractors are required by the Environment Agency to only collect properly labelled waste. See the Environment Agency's additional guidance for clinical waste for further information (Environment Agency, 2011a, 2011b).

5.73 Each waste bag must be traceable back to its producer; this includes the postcode, facility and department.

Labelling of individual bags may not be practical in a busy or large healthcare facility. Pre-numbered tags or pre-printed stickers may be used for labelling.

Bulk Storage

5.74 A summary of requirements for the storage of larger quantities of waste is provided in Table 8.

5.75 Note that these requirements apply only to facilities which require a permit. Many healthcare facilities may qualify for a waste exemption as set out in guidance from the Environment Agency. Exempt facilities should aim to comply with the points below which are feasible and relevant to their site, in order to minimise risk.

5.76 For further information refer to the Environment Agency's (2021b) guidance 'Waste storage, segregation and handling appropriate measures – Healthcare waste: appropriate measures for permitted facilities'.

5

Table 8: Summary of bulk storage requirements

Bulk storage requirements
Individual bags and containers (for example, bins and boxes) of waste must not be stored loosely. Bagged waste should be stored and handled in fully enclosed, lockable, rigid, leak-proof and weatherproof containers.
Rigid waste containers (bins and boxes) must be sealed and in good condition. They should be stored and handled in an upright position to minimise the risk of spillages.
Containers must have a lid which is securely closed whenever they contain any waste, except when waste is being loaded into or unloaded from them.
Anatomical waste and animal carcasses must be stored in designated refrigerated units (operating below 5°C) unless stored on site for less than 24 hours.
Infectious wastes that are not pharmaceutical, chemical, anatomical or palletised wastes must be stored in a secure building. These infectious wastes may be stored outside at facilities that were operating before this guidance was published, but only if all of these conditions are met: • It is not technically or economically feasible to store them in a building • Alternative storage arrangements provide an equivalent level of environmental protection to storage in a building • An appropriate site-specific environmental risk assessment is carried out which includes (but is not limited to) an assessment of emissions to land and water (including odour), pests and flood risk • The waste is in containers that remain closed and locked at all times, except when waste is being loaded or unloaded from them • The containers are stored in a secure area of the site that has impermeable surfacing and sealed drainage.
Store and handle offensive wastes in a secure building or in secure, fully enclosed, rigid, waterproof and leak-proof containers. If waste is stored externally in containers (such as 770l bins), the containers must remain closed at all times, except when waste is being loaded or unloaded from them.
Do not store or hold wastes on site in vehicles or vehicle trailers, unless they are being received or prepared for imminent transfer (that is, they will be removed from site within 24 hours, or 72 hours if over a weekend) or unless as agreed in response to an emergency or business continuity scenario (see paragraphs 6.143–6.158).
Always maintain the integrity of waste packaging in a way that minimises handling. Never throw, walk on or handle healthcare wastes in a way that might damage the packaging. Pay particular attention to items at or near the bottom of containers, and avoid overloading, compressing or puncturing waste.

Transport and Packaging

5.77 Dangerous goods are solids, liquids or gases that can harm people, other living organisms, property or the environment. Common examples originating from the healthcare sector include infectious material, medical gases and radiotherapy isotopes, as well as some drugs and medicines.

5.78 Offensive wastes are not classified as dangerous goods and therefore can be transported and packaged differently to other healthcare wastes which are classified as dangerous goods. For further guidance on appropriate management routes for offensive waste, see paragraphs 5.218-5.228.

5.79 Healthcare facilities (as producers) are responsible for ensuring that dangerous goods are packaged and labelled appropriately, and are transported off-site by a properly licensed contractor, in compliance with the Carriage Regulations.

5.80 Contractors have a legal requirement to collect only waste which is properly labelled, with the producer identified.

5.81 The Carriage Regulations specify the requirements for packaging, marking, labelling and documentation, for which the duty rests with healthcare organisations as the consignor in the first instance.

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Carriage Regulations' is used to refer to the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (EU Exit) Regulations (2020).

5.82 The Carriage Regulations use criteria that are different from other legislative systems. They require that all dangerous goods be identified using a four-digit number (UN number) and a description (proper shipping name) and are assigned to a "class" of dangerous goods.

5.83 Healthcare waste dangerous goods can be transported in two ways:

- Packaging (boxed, drums etc.)
- Bulk loose material in skips, containers and vehicles.

5.84 This section considers only packaging and bulk transport with regards to healthcare waste, primarily clinical waste and waste medicines.

5.85 Healthcare organisations will often use other dangerous goods, for example gases or cleaning materials, that are not dealt with in this guide.

Further guidance on the transport of dangerous goods can be found at the following websites:

- The HSE's 'Carriage of Dangerous Goods Manual' provides guidance on all aspects of road transport.
- The Vehicle Certification Agency's (VCA) website provides the Packaging Approvals database, which lists all UN approved packaging.
- The Department for Transport's website provides guidance on transporting dangerous goods and copies of authorisations.
- The ONR website provides guidance on the transport of radioactive materials.

For detailed advice contact the VCA at packagingdg@vca.gov.uk

Dangerous Goods Safety Advisor (DGSA)

5.86 Under certain circumstances, the Carriage Regulations require healthcare organisation sites to appoint a DGSA. The requirement to appoint such a person is a duty on the employer and is in large part dependent on the quantity of dangerous goods transported.

5.87 DGSAs will be required when the quantity of healthcare waste classified as dangerous in transport exceeds certain thresholds in ADR (see Table 15). Transporting UN 2814, UN 2900, UN 3549 (Category A) or radioactive materials (Class 7 – UN Nos. 2912 to 2919, 2977, 2978 and 3321 to 3333) requires a DGSA.

5.88 Larger healthcare organisations, for example hospitals, may need to appoint a DGSA, while small clinics and surgeries may not.

5.89 From 2023, organisations whose main or secondary activities are not the carriage, loading or unloading of dangerous goods but which move such goods only occasionally will need to appoint a DGSA.

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5.90 If an organisation requires a DGSA to advise on transport of radioactive materials, the DGSA must have specialist knowledge of Class 7 transport.

5.91 It is important that all those involved in the movement of healthcare waste are aware of the person providing DGSA support. The name and contact number(s) of the DGSA(s) should be listed in the healthcare waste management policy.

5.92 Healthcare organisation sites that do not need to appoint a DGSA may still find it useful to approach DGSA consultants for general advice on an ad-hoc basis to ensure that they, as consignors of dangerous goods, are complying with the requirements concerning classification, packaging, marking, labelling and documentation.

The functions of the DGSA include:

- monitoring compliance with the rules governing the transport of dangerous goods
- advising the employer on the transport of dangerous goods
- ensuring that an annual report to the employer is prepared on the activities of the employer concerning the transport of dangerous goods
- monitoring practices and procedures relating to the activities of the employer.
- For further information, see the Department for Transport's (2020) guidance on employing a DGSA.

Transport of Packaged Goods

5.93 Once the UN number of a substance is known, ADR provides information on the packing group, packing instruction and any special packing provisions that apply.

5.94 Table 9 shows the most common packing provisions for healthcare waste.

UN 3373 "BIOLOGICAL SUBSTANCE, CATEGORY B" should never be used for waste consignments.

The three categories are generic and will not be appropriate for all medicines, including cytotoxic and cytostatic. Some waste will be classified in accordance with ADR but in some cases, a safety data sheet (SDS) for the medicine would show the appropriate transport classification. Advice from a DGSA should be sought where such information is not provided in the Safety Data Sheets.

5.95 All packaging, including UN-approved packaging or packaging for limited quantities used for dangerous goods, must be fit for purpose and capable of safely containing the goods when used in transport, whether it is carrying liquids or solids.

Table 9: Packing provisions for healthcare waste

Dangerous goods UN number	Proper shipping name	Packing instruction	Packaging examples
Category A			UN approved three part
UN2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS	P620	Packaging for relevant packaging instruction
UN2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS	P620	
UN3549	MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid	P622/LP622	
UN3549	MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid	P622/LP622	
Category B* **UN 3921**	CLINICAL WASTE, UNSPECIFIED, N.O.S.	P621 (table 12) IBC620 LP621	Rigid packaging/ wheeled bins (waste placed inside a bag, bin or other container)
Medicinal waste** **UN 1851 UN 3248**	MEDICINE, LIQUID, TOXIC, N.O.S. MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S.	LQ/P001 LQ/P001	Boxes, drums
UN 3249	MEDICINE, SOLID, TOXIC, N.O.S.	P002/LQ	Two part packaging
Dental amalgam **UN 2025**	MERCURY COMPOUND, SOLID, N.O.S.	P002 LQ (PGII & III)	Boxes, drums
Aerosols **UN 1950**	AEROSOLS	P207/LP200/ LQ	Boxes

Tables 9 and 10 define the common packing instructions for healthcare waste.

P621	PACKING INSTRUCTION	P621
This instruction applies to UN No. 3291.		
The following packagings are authorised provided the general provisions of 4.1.1 except 4.1.1.15 and 4.1.3 are met: (1) Rigid, leak-proof 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. (2) For packages containing larger quantities of liquid, rigid packagings (drums, jerricans and composites) which conform to the packing group II performance level for liquids.		
Additional requirement: Packagings intended to contain sharp objects such as broken glass and needles must be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.1.		

5.96 Paragraph and chapter references in Table 9 are to sections in UNECE's (2020) 'Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)'.

5.97 Paragraph and chapter references in Table 10 are to sections in UNECE's (2020) 'Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)'.

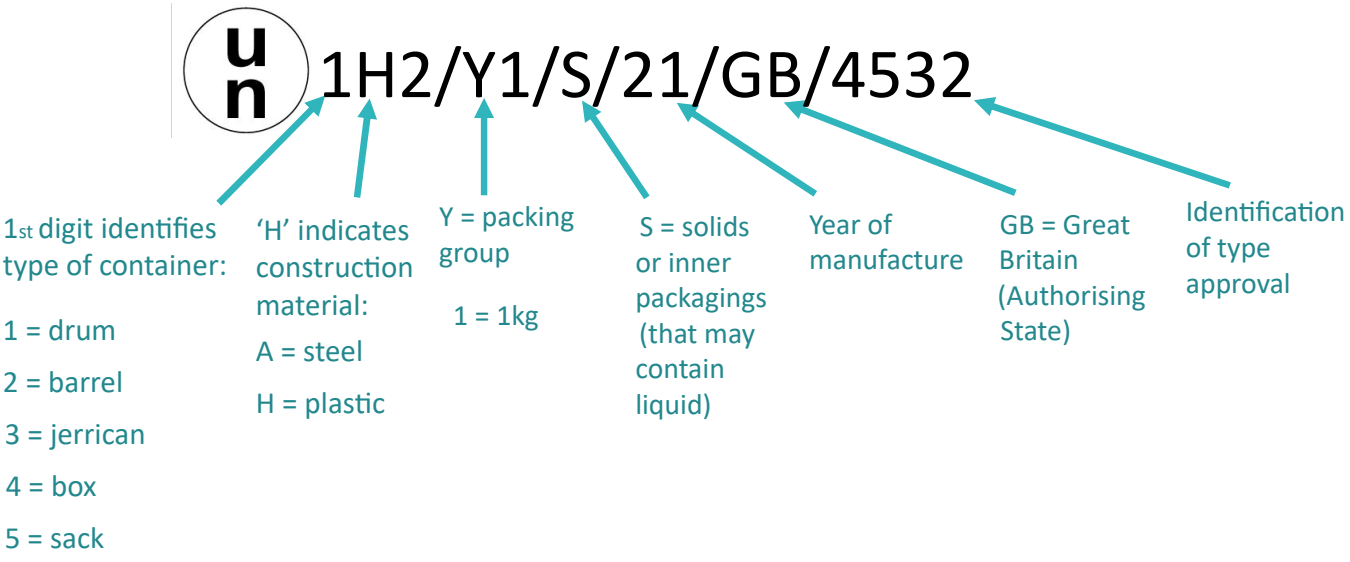
5.98 Where a packing instruction is indicated in Table 10, only packaging that has been UN-tested and approved (unless otherwise specified) must be used. Such packaging can be identified by the UN mark applied to the package. An example of a mark is shown in Figure 9.

5.99 If the letter "S" appears in the UN mark, as shown above, the packaging may only be used for solids or inner packagings, for example bottles that may contain liquids.

Table 10: Packing instruction P622

P622	PACKING INSTRUCTION	P622
This instruction applies to UN No. 3549 carried for disposal.		
The following packagings are authorised provided the general provisions of 4.1.1 and 4.1.3 are met:		
Inner packagings	Intermediate packagings	Outer packagings
Metal Plastics	Metal Plas-tics	Boxes Steel (4A), aluminium (4B), other metal (4N), plywood (4D), fibreboard (4G), plastics, solid (4H2) Drums Steel (1A2), aluminium (1B2), other metal (1N2), plywood (1D), fibre (1G), plastics (1H2) Jerricans Steel (3A2), aluminium (3B2), plastics (3H2)
The outer packaging must conform to the packing group I performance level for solids.		
Additional requirements: • Fragile articles must be contained in either a rigid inner packaging or a rigid intermediate packaging • Inner packagings containing sharp objects such as broken glass and needles must be rigid and resistant to puncture • The inner, intermediate, and outer packaging must be capable of retaining liquids. Outer packagings that are not capable of retaining liquids by design must be fitted with a liner or suitable measure of retaining liquid • The inner packaging and/or the intermediate packaging may be flexible. When flexible packagings are used, they must be capable of passing the impact resistance test of at least 165 g and the tear resistance test of at least 480 g in both parallel and perpendicular planes with respect to the length of the bag. The maximum net mass of each flexible inner packaging must be 30 kg • Each flexible intermediate packaging must contain only one inner packaging • Inner packagings containing a small amount of free liquid may be included in intermediate packaging provided there is sufficient absorbent and solidifying material in the inner and intermediate for all liquid content present. Suitable absorbent material which withstands the temperatures and vibrations liable to occur under normal conditions must be used • Intermediate packagings must be secured in outer packagings with suitable cushioning and/or absorbent material.		

Figure 9: UN mark example for solids or inner packaging



5.100 Most sharps receptacles are type- approved for solids only and must not be used for the disposal of liquids. However, it is recognised in the testing of these packagings that there may be small amounts of liquid residue from syringes, vials etc. and that the packaging must be able to retain these quantities, usually by means of some absorbent material.

5.101 Where Intermediate Bulk Containers (IBCs) are used, they must be inspected every five years. Producers and users of containers marked as IBCs must be able to verify that an IBC older than five years has been inspected and labelled as approved.

Limited Quantities

5.102 ADR specifies that some dangerous goods in small quantities do not need to be packaged in UNtype approved packaging. This is referred to as limited quantity exemptions.

> Note: Such dangerous goods will be packaged in a small receptacle of no more than 5 L for liquids or 5 kg for solids of PGIII, and never more than 1 L for liquids or 1 kg for solids of PGII, several of which may be placed in an outer packaging that may not exceed a gross mass of 30 kg in total. As this is a widely misunderstood concept, advice must be sought from a DGSA if these provisions are planned for use.

5.103 There is no limited quantity provision for clinical waste (UN 3291) or category A medical waste (UN 3549).

Specific Packaging Issues

5.104 Table 11 addresses most of the common considerations with regard to transporting healthcare waste.

Waste Medicines

5.105 Dangerous goods must not be packed together in the same outer packaging, or in large packages with dangerous or other goods, if they react dangerously with each other.

5.106 Waste medicines should, as far as possible, be disposed of in their original packaging (such as the blister pack or bottle). This will help to minimise the risk of a dangerous reaction. External packaging (typically cardboard or paper) must be removed and disposed of separately.

> If solids are still in their original blister packs or are bagged/bottled, they should be collected and placed in suitable outer packaging for transport (such as fibreboard or plastic boxes). This will require labelling in accordance with ADR – mainly, such packages are likely to fall under limited quantity provisions.

5.107 A similar procedure can be adopted for liquids, provided measures are taken to minimise the likelihood of breakage of the primary packaging (such as cushioning/ absorbent material).

5.108 Where the pills are loose or the liquids container has lost its closure (stopper/cap), a suitable receptacle that is compatible with the product should be used. Once a suitable receptacle is found, the procedures above can be followed.

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Batteries Including Those Used for Implants and Medical Devices

5.109 Where healthcare facilities provide recycling bins for batteries, they will be required to comply with the requirements of the Hazardous Waste Regulations and the Carriage Regulations, which establish special rules for packaging.

Table 11: Specific packaging issues

Specific packaging issues	Summary
Clinical waste (UN 3291)	P621, see Table 12, addresses boxes and drums whilst LP621/IBC620 is for large packaging such as wheelie bins. Community nurses collecting small amounts of clinical waste in their vehicles should ensure they use a rigid, secure, and leak-proof receptacle, in which bags can be placed (see paragraphs 6.16–6.32 on community healthcare).
Category A clinical waste	Occasionally, waste from the treatment of a patient meets Category A criteria (for example an infectious substance which is carried in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals). Indicative examples of substances that meet these criteria are given in A1.1: Category A Pathogen List. This list details which cultures can be classified as infectious substances of Category B when originating from diagnostic or clinical purposes. To prevent over-classification of Category A waste, it is important to note that some diseases/ infections on the A1.1: Category A Pathogen List are only applicable when in culture form. When not in cultured form these wastes are to be classified and transported as clinical waste (UN 3291). Wherever possible, the waste should be treated on-site to render it safe (see paragraphs 5.143– 5.173) to transport as non-dangerous goods. From a laboratory the shipment will have to be classified as UN 2814 and packaged in accordance with P620. Where the waste has come from the delivery of patient care it will be classified as UN 3549 and packaged in accordance with P622 (Table 13). To move Category A waste, ensure that a DGSA is appointed and consulted.
Sharps packaging	Sharps receptacles are tested and approved for solids only. They are not approved for the carriage of liquids. However, most sharps will be contaminated with liquids/fluids. A few millilitres of liquid are unlikely to present a risk of adverse chemical reaction, and such quantities in a sharps receptacle are acceptable for transport. However, the pouring of liquid from partially used vials of liquid or the discharging of syringes into sharps receptacles is not permitted. Sharps bins should be manufactured to standard BS EN ISO 23907-1 (single use), BS EN ISO 23907- 2 (reusable).
Cleaning receptacles	The Carriage Regulations require that no dangerous goods residue must contaminate the outside of packaging. If any dangerous substances contaminate the inside of a receptacle, the receptacle, even though nominally empty, must continue to be treated as dangerous goods. It is important that healthcare waste policies include a cart-cleaning procedure clearly specifying frequency a nd monitoring of the cleaning process to avoid the potential for cross-contamination between sites. Further details can be found in paragraphs 5.128 and 5.140.
Soiled surgical instruments	Where healthcare organisations are obliged to carry used medical devices or equipment by road that are potentially contaminated with or contain infectious substances which are being carried for disinfection, cleaning, sterilisation, repair or equipment evaluation, the carriage is exempt from the terms of ADR, providing the following conditions are met: • The packagings are designed and constructed in such a way that, under normal conditions of carriage, they cannot break, be punctured, or leak their contents, and the packagings are designed to meet the construction requirements listed in 6.1.4 or 6.6.4 of ADR • The packagings meet the general packaging provisions of 4.1.1.1 and 4.1.1.2 of ADR and are capable of retaining the medical devices when dropped from a height of 1.2 metres • The packagings are marked “USED MEDICAL DEVICE” or “USED MEDICAL EQUIPMENT”. When using overpacks, if the mark is not visible, they need to be marked. This agreement does not apply to: • Medical waste (UN 3291 and UN 3549) • Medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900) • Medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class.

5.110 Nickel cadmium and lead acid batteries should be segregated and recycled/disposed of appropriately.

5.111 Used lithium and lithium-ion cells and batteries (UN 3480, UN 3481, UN 3090 and UN 3091) collected and presented for carriage for disposal between the consumer collecting point and the intermediate processing facility, together with other non-lithium cells or batteries (UN 2800 and UN 3028), are not subject to the prohibitions and requirements of ADR provided they meet these conditions:

- They must be packed in IH2 drums or 4H2 boxes conforming to the packing group II performance level for solids
- Not more than 5% of each package must be lithium and lithium-ion batteries
- The maximum gross mass of each package must not exceed 25 kg
- The total quantity of packages per transport unit must not exceed 333 kg
- No other dangerous goods are carried.

5.112 For further information on recycling batteries, including the battery compliance schemes and how to comply with the Regulations, refer to the Environment Agency's 'Waste batteries: producer responsibility' (2018).

Marking and Labelling of Packaging

5.113 Large packaging also known as "wheelie bins" should be used, with the waste contained in a UN-certified plastic bag which in turn is placed in the bin.

Typical UN marking will start:

- 50H/Y/mm yy – large rigid plastic packaging
- 50A/Y/mm yy – large rigid steel packaging
- 11H2/Y/mm yy – rigid plastic IBC (Intermediate Bulk Container)
- 4H2/Y/mm yy – solid plastic boxes
- 5H4/Y/mm yy – bags
- (mm yy = month and year of manufacture)

5.114 Large packaging also known as "wheelie bins" should be used, with the waste contained in a UN-certified plastic bag which in turn is placed in the bin.

5.115 Marking is the application of the UN number and where necessary the proper shipping name onto the package.

5.116 Labelling is the application of the label (commonly referred to as the hazard warning diamond) appropriate to the class of dangerous goods. The labels must be 100 mm × 100 mm except that when the size of the package requires, the dimensions may be reduced provided they remain clearly visible.

5.117 Table 12 shows the nine classes of dangerous goods. Some additional examples below are given of dangerous goods in each class, which may be generated from healthcare, with the appropriate hazard warning diamond for the primary hazard.

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Table 12: UN classification and hazard warning diamonds

UN classification		Examples of material from healthcare premises	Hazard warning diamonds
Class 1	Explosives	Flares	
Class 2	Gases	Compressed Oxygen (UN 1072); CO2 (UN 1013); LPG (UN 1978); Nitrous oxide (UN 1070); Aerosols (UN 1950)	
Class 3	Flammable liquids	Fuel (UN 1202, UN 1203); Alcohol, Adhesives, Paints	
Class 4.1	Flammable solids		
Class 4.2	Spontaneously combustible	This class provides raw materials for some drugs and medicines	
Class 4.3	Dangerous when wet		
Class 5.1	Oxidiser	Oxygen generator (UN 3356), some cleaning solutions	
Class 5.2	Organic peroxide	Disinfectants and laundry chemicals	
Class 6.1	Toxic	Poisons, some disinfectants and drugs	
Class 6.2	Infectious substances including pathogens	Infectious waste (UN 3291) Category A substances (UN 2814/ 2900/ 3549) Category B substances (UN 3373)	
Class 7	Radioactive	Long half-life solid radioactive waste	
Class 8	Corrosives	Bleaches, cleaning materials	
Class 9	Miscellaneous	Batteries, asbestos (UN 2590), some drugs	

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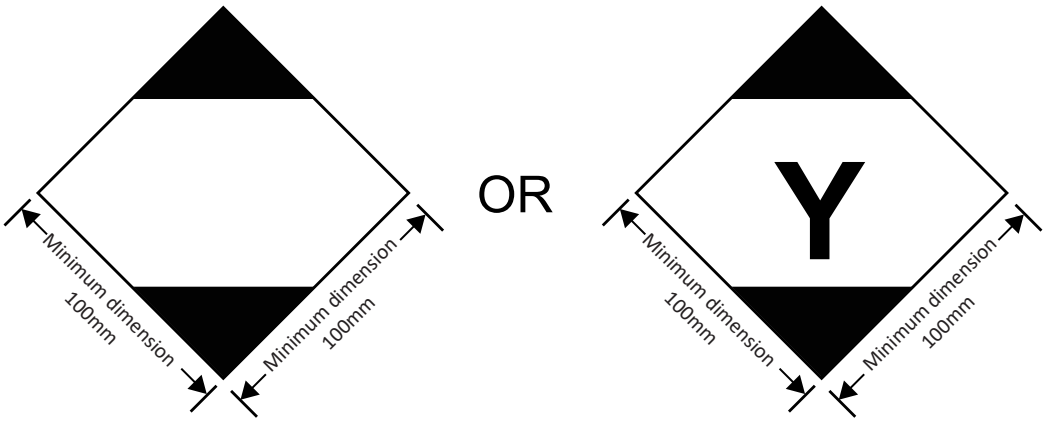
Note:
This is not a comprehensive list of UN numbers of Class hazard warning diamonds. A full list of the hazard warning diamonds can be found in ADR.

5.118 For dangerous goods in limited quantities, the only mark required is as illustrated in Figure 10. A DGSA should be consulted to determine where the use of limited quantities is appropriate

Figure 10: Limited quantities markings



The marking on the left should be used for land transport. Some packages may have the marking on the right, indicating that they are permissible in land transport but also meet additional air transport requirements, although the mark alone does not indicate that air shipments will be permitted.

5.119 When the limited quantities mark is used, there is no requirement for the UN number to appear on the package.

Bulk Transport

5.120 Bulk transport of wastes classified as UN 3291 is permitted. The load thresholds (see Table 12) only apply to waste in packages, in accordance with the packaging instructions. Therefore, if waste is carried in bulk (for example the carriage of hazardous infectious waste in bags in a BK2 approved vehicle or trailer), the full provisions apply immediately regardless of load or vehicle size.

5.121 Where practical, the use of approved bulk transport should be encouraged rather than the use of large packaging, as it improves the efficiency of logistics and minimises the environmental impact and associated carbon impact of waste transport.

5.122 A health and safety assessment should be undertaken prior to the use of bulk transport, as the loading/unloading of bulk vehicles, and rapid handling of large quantities of waste can pose a health and safety risk to staff.

This could be achieved by storing larger quantities of packaged waste material before it is removed from site, where space and permitting arrangements allow. Alternatively, vehicle space can be fully utilised by arranging a transport route which has multiple healthcare collection points.

5.123 For bulk transport of healthcare waste, a DGSA must be consulted.

Transport of Offensive Wastes

5.124 By definition, offensive wastes are not classified as dangerous goods, and therefore transport and packaging of such wastes need not comply with the requirements of ADR.

5.125 Unlike dangerous goods, offensive waste can be transported in non-UN- approved packaging; for instance, offensive waste bags can be disposed of in plastic carts which do not have to be yellow in colour.

5.126 Offensive waste and pharmaceutical/ medicinal waste should not be moved in bins marked and labelled as Class 6.2, UN 3291. The marks/labels should be removed or covered.

5.127 Waste carts which store offensive waste bags only need to be cleaned when a visual inspection after tipping has identified the cart as unclean or malodorous, for example there is evidence of leaks, spillage or contaminated contents.

5.128 Offensive wastes may be compacted prior to transport, unless prohibited in the environmental permit, which increases vehicle efficiency by maximising load capacity. If site storage capacity allows, offensive wastes should be stored in larger quantities before transport for treatment, recovery or disposal is arranged

Transport on the Road

5.129 Dangerous goods in limited quantities as described in Table 12 are not subject to all provisions of the Carriage Regulations and do not count towards load thresholds.

UN 1851, 3248 and 3249 are usually transported in limited quantities.

5.130 ADR allocates transport categories which are linked to packaged dangerous load thresholds over which the full provisions of ADR apply, including the requirement to appoint a DGSA. For healthcare waste, these thresholds are indicated in Table 13.

Table 13: Load thresholds

Transport category	Substance	Quantity
0	Category A substances (UN 2814/2900/3549)	0
2	Clinical waste (UN 3291)	333 kg/L
1	Medicines/chemical wastes PG I	20 kg/L
2	Medicines/chemical wastes PG II (UN1851/3248/3249/cytotoxic drugs)	333 kg/L
3	Medicines/chemical wastes PG III (UN1851/3248/3249/cytotoxic drugs)	1000 kg/L

Note: consult ADR for full details

5.131 Below these thresholds the following apply:

- One 2 kg fire extinguisher must be carried on the vehicle
- General awareness training of all involved in the transport operation must be provided.

5.132 Above the threshold, the following applies:

- Additional vehicle equipment, fire extinguishers and PPE must be provided
- Vehicles must be marked with orange plates if the goods are packaged, and if in bulk they must be fitted with plates described in Schedule one of the Carriage Regulations
- Formal ADR-approved driver training must be provided
- Additional operational provisions as specified in ADR must be incorporated
- A DGSA must be appointed.

5.133 Where small quantities of clinical waste (UN 3291) are carried in M1 vehicles, private cars and car-derived vans for example (as happens in community nursing for example), there is no need to carry a 2 kg fire extinguisher.

5.134 Bags of waste up to 15 kg must not be placed directly into any vehicle, including a car (derogation 17 of ADR). They must be placed in a rigid, secure and leak-proof outer packaging duly approved for the purpose. Community practitioners must be trained on the transportation of waste, as specified in ADR Chapter 3.

Documentation

5.135 Authorisations must be acquired from the Department for Transport for the transport of dangerous goods in packaging which is not UN-approved. These are only approved in extenuating circumstances.

For wastes consigned in limited quantities or moved by a healthcare worker from a private home, transport documentation is not required. In other cases, although waste contractors may be willing to assist with compilation of the appropriate documentation, the legal duty remains with the consignor. Documentation is likely to be needed to comply with the Hazardous/Special Waste Regulations, the requirements of which are detailed in paragraphs 6.84 - 6.114.

5.136 The Department for Transport may impose specific conditions on any approved authorisations to mitigate the risk of spillage and contamination during transport.

Example circumstances which may require authorisation are:

- Use of a bulk haulage vehicle without BK2 type approval to clear waste backlogs during an emergency event
- Use of non-UN-approved packaging when there is a supply shortage

Carriage on Ships in UK Waters

5.137 When transporting dangerous goods including waste materials by sea, the International Maritime Dangerous Goods (IMDG) code must be followed. This code was developed as a uniform international code for the transport of dangerous goods by sea covering such matters as packing, container traffic and stowage, with particular reference to the segregation of incompatible substances.

5.138 Dangerous goods for a sea passage must be declared on a dangerous goods note to the shipping line and be accompanied by an SW28 Competent Authority Approval for each load. The documents described in the compliance section of Chapter 6 meet the requirements of the IMDG code, provided the transport information is included. This will apply to shipments from Northern Ireland, the Isle of Wight, the Scottish Isles and other locations outside of the UK mainland.

On-site Transport

5.139 On roads to which the public do not have access, dedicated trucks, trolleys, tugs or wheeled containers may be needed to transport waste receptacles to storage areas; they should not be used for any other purpose, in order to prevent contamination.

Service roads need to be designed and constructed so that they:

- Are easy to clean and drain
- Contain any leakage from damaged receptacles or containers
- Permit easy loading and unloading of containers
- Do not offer harbourage for insects or vermin
- Do not allow particles of waste to become trapped on edges or crevices.

5.140 Containers for on-site transport need to be steam cleaned or disinfected following leakages or spills, and at regular intervals. If containers are heavily used, cleaning is likely to be required. The effluent water from washing infectious waste containers must be captured. This can be difficult on-site if there is not a purpose- built cleaning space. For this reason, washing of infectious carts is often performed by a specialist contractor. The healthcare waste procedures need to specify the method and frequency of steam cleaning or disinfection.

5.141 Internal vehicles (or equipment) should not be used to transport waste materials on roads to which the public have access unless they meet the full provisions of the Carriage Regulations as appropriate.

5.142 Road derogation 11 of ADR states that Class 2 to 6, 8 or 9 materials can be transported between one part of a private premises and another part of the premises within the immediate vicinity, even when separated by road, without having to meet the Carriage Regulation requirements.

For example, when dangerous goods are transported between two separate buildings at the same hospital, but they are separated by a road, the Carriage Regulations in this instance would not apply.

Treatment, Recovery and Disposal

5.143 This section focuses on the established techniques that are used to render safe clinical waste.

5.144 All treatment and disposal facilities, regardless of size or type of technology used, are required to “render safe” clinical waste. The requirements of rendering safe depend on the type of waste treated and on the nature of the contaminants present in the waste. They will also be subject to detailed control by the relevant environmental regulator.

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Rendered Safe

5.145 "Rendered safe" is an accepted method or process that has been applied which:

a) Demonstrates the ability to reduce the number of infectious organisms present in the waste to a level at which no additional precautions are needed to protect workers or the public against infection from the waste

b) Destroys anatomical waste such that it is no longer generally recognisable

c) Renders all clinical waste (including any equipment and sharps) unusable and unrecognisable as clinical waste

d) Destroys the component chemicals of chemical or medicinal and medicinally contaminated waste.

5.146 Alternative treatment plants, except those treating anatomical, medicinal or chemical wastes, should demonstrate the two criteria (a) and (c) detailed above in order to demonstrate that the waste is rendered safe. These criteria apply to:

- All non-incineration technologies that are used to treat clinical/healthcare waste
- Each individual device regardless of load capacity and permitting status
- Existing operational devices, as well as devices being newly installed.

5.147 The additional criteria in table 14 (b) and (d) will apply if anatomical, chemical or medicinal wastes are treated. Where these have not been met, the waste is not considered to have been rendered safe. This is applicable if it is intended that the material is to be subsequently sent to landfill, in which case further treatment would be required.

5.148 A detailed explanation of the "rendered safe" criteria is provided in Table 14.

Treatment, Waste Management and Disposal Systems

5.149 Treatment and waste management systems for healthcare waste can take several different forms:

- Hazardous waste or clinical waste incineration
- Conventional/hybrid EfW incineration
- Non-burn/low-temperature alternative treatment
- Other emerging technologies
- Landfill.

5

Table 14: Summary of rendered safe criteria

Criteria	Summary
A: reduction in pathogen numbers	Microbial inactivation is a critical element of the "rendering safe" of certain types of healthcare waste. There are three critical aspects: • For infectious waste, the treatment must demonstrate, as a minimum, the level III criteria provided by the State and Territorial Association on Alternative Treatment Technologies (STAATT) or equivalent • For cultures of pathogenic microorganisms, the level IV criteria must be achieved (pre-maceration or shredding is not appropriate for such wastes) • The ability to achieve these criteria must be demonstrated for the worst-case challene load, and in a manner that meets the requirements of any applicable guidance issued by the waste regulatory agencies.
B: destruction of anatomical waste	Treatment of anatomical waste requires that the waste be rendered unrecognisable in suitable permitted facilities, which at this time means incineration. Sensitive anatomical wastes may be taken for burial if requested.
C: unusable and unrecognisable	This criterion applies to both non-incineration and incineration technologies. The treatment or incineration must ensure that there is no recognisable clinical waste remaining. This reduces the likelihood of the waste causing offence. Note that confidential material may need to beprocessed separately to meet British Standards for secure disposal, and so should be segregated from clinical waste streams, and managed/treated/disposed of separately.
D: the rendering safe of pharmaceuticals and chemicals within the waste	All pharmaceutically active substances, both hazardous and non-hazardous, present in the medicinally contaminated waste, and any waste chemicals, should be destroyed during disposal at a suitably authorised facility. For further information on management of controlled drugs, see the Controlled Drugs (Supervision of Management and Use) Regulations 2013 and paragraphs 6.16–6.32.

5.150 Whilst not strictly considered treatment, landfill disposal for offensive EWC 18 01 04 wastes remains a disposal option for some healthcare wastes specified in the offensive waste section. This should only be used as a last resort, with preference given to incineration with energy recovery, such as conventional EfW, as per the waste hierarchy discussed in paragraphs 3.2 –3.19.

5.151 While there are a large number of systems available to treat healthcare waste, that use heat, chemicals, irradiation or combinations of these methods. The selection of the most appropriate system is dependent on:

- The type of waste to be treated
- Staffing requirements
- The volume of the waste to be treated
- Initial and continuing operating costs
- Support capabilities of the supplier.

5.152 Treatment, recovery and disposal methods need to be reliable and capable of consistently achieving the required standard of treatment. For guidance on what is required to comply with an environmental permit for the treatment of healthcare waste, see the Environment Agency's (2021b) guidance 'Waste storage, segregation and handling appropriate measures – Healthcare waste: appropriate measures for permitted facilities', and paragraphs 6.102–6.111.

5.153 The types of waste which can be accepted by different treatment facilities will be determined by their permit.

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Treatment Options to Render Safe

5.154 A summary of treatment methods to render safe clinical waste is included in Table 15.

5.155 The list below is not exhaustive, and not all techniques may be in use or common in the UK at time of reading. New technologies are continuously evolving and being adopted. For more complete guidance, see the United Nations Environment Programme's 'Compendium of Technologies for Treatment/ Destruction of Healthcare Waste' (2012) and the WHO's 'Overview of technologies for the treatment of infectious and sharp waste from health care facilities (2019).

Discharge to Sewer

5.156 Discharges of some waste streams to sewer may require the prior agreement of the statutory responsible bodies. Water UK's 'National guidance for healthcare waste water discharges' (2014) provides additional information on specific waste streams. Disposing of any waste to the sewer may present a substantially greater risk of damage to the sewerage undertakers' assets than domestic sewage, and healthcare organisations should first seek advice from the sewerage undertaker.

5.157 Some examples of typical sewer discharges are:

- Body fluids, such as blood and similar potentially infectious substances, for example from suction canisters or wound drains
- Photo-chemicals (X-ray): these These are suitable for recycling, discharging them to the foul sewer, while it may be allowed under a discharge consent it is considered poor practice. Approval should be obtained from the relevant sewerage undertaker before any such discharge orccurs
- Discharge of shredded material: it is essential that the sewerage undertaker is aware of the presence of this material and that its disposal is permitted by the producer's trade effluent consent
- Radioactive waste from nuclear medicine diagnostic studies and treatments with low concentrations of radioactivity with short half-lives: water-miscible waste may be disposed of in sewers within permitted levels from the relevant competent authority.

Table 15: Treatment methods to render safe

Treatment	Description
Chemical disinfection	Chemical process with disinfectant such as chlorine or sodium hypochlorite (bleach). Treatment uses oxidising properties to sterilise wastes prior to permanent disposal. This process may require additional pre-treatment such as grinding.
Steam autoclaving	Steam autoclaving is the most common method of medical waste treatment. It involves utilising closed chambers that apply heat and pressure over a period of time to reach sterilization. This process is done in batches, and generally is not utilised for materials that can combust or melt at low temperatures. Treated material still requires further disposal, typically done through non-hazardous landfilling.
Auger	An auger uses heated oil or steam to sterilize waste which is moved through a screw-shaped chamber. The oil or steam does not come into contact with the waste, and may be heated electrically or with a burner.
Gamma irradiation	Utilises cobalt, which gives out gamma radiation, to sterilise waste. This method is generally considered high-cost due to the cobalt use. Not suitable for pathological waste. In the UK, this technology is typically used to treat equipment prior to use, rather than waste.
Microwave irradiation	Steam-based process where steam is generated by microwave energy (2450 MHz at a wavelength of 12.24 cm) from water contained in the waste. This treatment is an emerging technology but is rapidly becoming widely utilised. The treatment consists of a chamber where the waste is heated up to 121ºC. Waste is considered non-hazardous once treated. Suitable to treat biohazardous, infectious, sharps and sludge. The process is generally considered faster than autoclave treatment.
Radio frequency irradiation	These systems apply low-frequency radio waves to inactivate microbes contained within the waste. These waves heat the waste from the inside of the materials to their external surfaces.
Frictional treatment	This emerging treatment is based on using friction generated by rotor blades and heaters to achieve required sterilization temperatures. Waste is typically shredded and heated up to 135–150°C for several minutes. Vapours flow through heat exchangers and filters before being released. This in an emerging technology which is not yet well established in the UK.
Hazardous or clinical waste (HCW) incineration	Dual chamber incinerators burn waste in the primary combustion chamber above 850°C. Multiple oil or gas burners maintain the temperature in the primary chamber. Vapours produced in the primary chamber are directed into a secondary chamber which has more burners to bring the temperature to above the 1100°C required to treat HCW. Flue gas treatment is recommended to reduce air pollution and may be required by the relevant national legislation. Incineration can reduce the waste quantity by up to 80% and is unsuitable for inert wastes.

5.158 Seek advice from the sewerage undertaker before disposing of material to the sewage network. Medicines, cytotoxic and cytostatic waste should not be disposed of in sewers.

Incineration

5.159 Incineration must be performed in compliance with the Environment Agency's (2015) guidance on the Permitting Regulations and in line with the conclusions of the European Commission's 'Best Available Techniques (BAT) Reference Document for Waste Incineration' (2019).

Conventional Energy from Waste Treatment

5.160 Clinical waste can sometimes be incinerated alongside other waste streams, for instance municipal or industrial waste streams in conventional energy from waste (EfW) facilities. This is only suitable where there are existing local municipal incinerators that have the appropriate permit to accept clinical waste. These sites may be publicly or privately operated.

5.161 EfW facilities operate by incinerating the material, producing gas and ash. Many EfW facilities do not have a secondary high-temperature chamber, and thus generally do not burn at high enough temperatures to render cytotoxic or prion-contaminated waste fully safe. Once incinerated, ash is collected for aggregate production or disposal, and exhaust gases are cleaned through physical and chemical systems.

5.162 Offensive waste is increasingly accepted for treatment at EfW facilities and is a good way of moving the waste stream up the waste hierarchy and away from landfill disposal, which in turn generates energy.

5.163 Other permitted recovery options may also be suitable. If there are permitted recycling facilities available which can accept offensive waste, this should be given preference over EfW or other recovery options.

5.164 Waste must be correctly segregated to help ensure that it is sent to the most appropriate form of treatment. More information on classification and segregation is included in paragraphs 5.18-5.60 and on offensive waste in paragraphs 5.218-5.228, regarding how to correctly identify and segregate each waste type.

On-site vs off-site treatment considerations

5.165 On-site treatment refers to the treatment of waste at the same healthcare facility at which it is generated, and may include autoclaving in purpose-built autoclave facilities before waste is transported off-site. Check whether there are regulatory position statements (RPSs) covering the relevant treatment method. This may include the compaction and baling of non-clinical wastes.

> Operators of on-site waste treatment and disposal facilities are required to adhere to audited procedures that comprehensively address occupational and site-wide risks, while ensuring the consistent application of regulatory standards for waste treatment and disposal.

5.166 Dependent on the assessment of quantities of waste and specific treatment, on-site facilities may support net zero carbon by reducing emissions associated with haulage. It can also help healthcare organisations take more control of direct emissions from treatment.

5.167 When assessing options for on-site treatment, waste managers should assess:

- The quantity and type of waste produced
- The layout of the facility and the amount of space available
- Local constraints, for example planning permission, environmentally sensitive receptors.

5.168 In exceptional circumstances, for example an autoclave malfunction, waste that is normally autoclaved, such as microbiological cultures and other infectious waste classified as Category A infectious substances in ADR, should be packaged for carriage and transferred to an incinerator as soon as possible.

5.169 All on-site treatment facilities are likely to require an environmental permit or a valid exemption from the regulator as detailed in paragraphs 6.83–6.139. This includes facilities that only treat waste produced on site.

5.170 Off-site treatment refers to the treatment of wastes at an authorised facility separate from the site at which they were produced. This may include off-site incinerators or alternative treatment facilities. These facilities are typically operated by private contractors in the UK.

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5.171 When assessing a waste disposal model (off-site verses on-site treatment and management facilities), the following factors should be considered as part of developing a robust and sustainable business model

- The cost of sending waste to this facility compared with the cost of on-site treatment
- The operator's track record
- Whether on-site treatment is feasible on site, based on floorspace, layout, permitting, local constraints, cost and other relevant factors
- What alternative arrangements are possible, and whether these can be adopted in the event of an emergency.

Radioactive waste

5.172 Radioactive healthcare waste is contaminated with low-level radioisotopes.

This waste requires disposal in suitably licensed facilities, normally by incineration. Appropriate packaging is required for radioactive waste in line with transport requirements. Radioactive materials and waste should only be handled by trained professionals.

5.173 This section covers the management of two main types of radioactive waste: low-level radioactive waste; and solid radioactive waste produced from healthcare activity where routinely used, disposable solid items become contaminated with small amounts of radioactivity. It does not cover the management and disposal of aqueous radioactive waste or spent sealed sources.

5.174 The difference between the two types of radioactive waste is:

- Low level radioactive waste is shorter half-life waste that can be subjected to decay in storage on the premises until it is essentially non-active, and then disposed of within the usual waste stream for that type of waste
- Solid radioactive waste that cannot be subject to decay in storage on site and will need to be transported off-site to a suitably licensed disposal facility in full compliance with the transport regulations.

Radioactive healthcare wastes

5.175 Common radioactive healthcare wastes may include:

- Syringes and needles used to prepare and administer diagnostic and therapeutic radiopharmaceuticals
- PPE used by staff handling such material
- Other disposable equipment used in nuclear medicine procedures.

5.176 Some radioactive wastes may be referred to as low-level radioactive waste (LLW) or very low-level radioactive waste (VLLW).

5.177 Radioactive waste generated from healthcare includes radionuclides used in therapeutic and diagnostic medicine. This waste is considered to be LLW and typically falls into one of three categories:

- Long half-life
- Other beta/gamma emitters
- Radioiodines

5.178 Further guidance and information on thresholds is available in the Department for Business, Energy & Industrial Strategy's 'Scope of and exemptions from the radioactive substances legislation in England, Wales and Northern Ireland: Guidance document (2018).

Legislative background and key staff

5.179 Facilities handling radioactive material must comply with the Environmental Permitting Regulations as set out in Table 5 – 'Summary of waste and environmental legislation' in Chapter 4.

5.180 To comply with legislation, a radioactive waste adviser (RWA) must be appointed to advise on the application of best available techniques for the accumulation, management and disposal of radioactive waste.

5.181 The RWAs will work with environmental regulators including the NRW, Environment Agency, SEPA and NIEA to ensure that radioactive wastes generated, stored and disposed do not exceed permitted levels.

5.182 Transport of radioactive materials must comply with the Carriage of Dangerous Goods regulations as described in paragraphs 5.77-5.142.

5.183 If an organisation is regularly involved in the transport of radioactive materials, a DGSA must be appointed who has specialist knowledge of Class 7 transport.

5.184 The Ionising Radiations Regulations set out the responsibilities of employers for the radiation safety of staff and for minimising the risk of harm when they are exposed to ionising radiation, including the requirement to ensure that doses are as low as reasonably practicable.

5.185 Employers must notify the HSE of their intention to work with ionising radiation at least 28 days prior to the commencement of work. Any site wishing to use radioactive materials must be permitted to hold, accumulate and dispose of radioactive materials.

5.186 The 2018 Ionising Radiation (Medical Exposure) (Amendment) Regulations (IR(ME)R) set out the basic safety standards for the radiation safety of patients, to ensure that their exposures are justified and optimised.

5.187 Any healthcare organisation exposing patients to ionising radiation must appoint a suitably qualified and experienced medical physics expert (MPE). MPEs will be involved in the day-to-day use of radioactive materials and are important for compliance with IR(ME)R and all of the relevant regulations.

5.188 Any employer working with ionising radiation must consult with a suitable radiation protection adviser (RPA) to advise on compliance. The role of an RPA is advisory, and it is the responsibility of the to ensure the safe management of radioactive materials, including waste. Further details are set out in paragraphs 5.77-5.142.

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Specialist advisers appointed by healthcare organisations and key personnel from all areas producing radioactive wastes should be engaged in the development of a site-specific radioactive waste management plan and identify the best options to minimise the generation of radioactive waste in order to minimise the impact of discharges on people and the environment.

5.189 Facilities where radioactive materials are used, including waste storage areas, should be designed specifically for the purpose and should help minimise waste generation and the risk of contamination.

5.190 Detailed systems of work should be in place to manage the use of radioactive materials, and where this occurs in several departments or areas within a facility, there should be central oversight of the overall use of radioactive materials in the organisation.

5.191 All radioactive supplies should be closely managed and controlled throughout their lifecycle with detailed records at all stages (ordering, storage before use, use, accumulation/storage and disposal of waste) to allow demonstration of compliance with relevant environmental permits.

5.192 All containers of radioactive waste must be clearly labelled as radioactive – marked with the word "Radioactive", with the ionising radiation symbol (trefoil) with a label indicating the radionuclides in the container, and the area/facility of origin.

5.193 Radioactive wastes should be stored separately from other waste streams, in secure, locked locations, which meet the requirements of any relevant environmental permits/authorisations. Records of radioactive waste generation, storage, removal and disposal should be kept, allowing demonstration of permit compliance.

5.194 Radioactive material and radioactive waste must not be moved to other departments or premises unless it is allowed under the conditions of the facility permit.

Accumulation and decay storage of low-level radioactive waste

5.195 Standard sharps bins or bags appropriate to the characteristics of the waste being collected should be used. Once sealed:

- These should be labelled with tape bearing the trefoil symbol and the word "Radioactive"
- A reference number and a description of the contents, including the radionuclide, amount of radioactivity and date should also be recorded in a suitable database
- After logging, the waste should be stored in a dedicated, appropriately shielded and secure radioactive waste store
- Following a suitable period of storage until decayed, any radioactive symbols must be removed before disposal of the waste via standard waste streams.

5.196 Decay stored waste should be monitored before final disposal via the standard waste stream, with suitable records generated.

5.197 Different radionuclides should generally be accumulated in separate bins and segregated according to their half-life.

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Off-site disposal of solid radioactive waste

5.198 Two disposal methods are possible for solid radioactive waste:

- Return to supplier where possible, for instance generators and spent fuel sources
- Solid waste containing long-lived radionuclides may need disposal off-site to a suitably permitted/authorised radioactive waste disposal site.

Transport of solid radioactive waste

5.199 Suitable containers for transport of radioactive materials must be used, and all instructions for their use must be followed. These may require certification by the appropriate competent authority depending on the amounts of radioactivity to be transported.

5.200 Radioactive waste should only be prepared for consignment under the transport and carriage regulations by suitably trained staff, as set out in paragraphs 5.77-5.142.

5.201 Radioactive waste is classified as Class 7, and the hazard warning labels required will vary dependent on the radionuclide and amount of radioactivity present. Staff will need appropriate specialised radiation detection equipment to assess the status of the package before shipment.
Only suitably experienced couriers should transport radioactive materials, and radioactive packages should only be released to appropriately trained drivers.

5.202 Responsibilities for the package during transportation, including emergency arrangements, should be agreed between the consigner and courier before transportation.

Dental waste

5.203 This section deals with waste streams and considerations which are likely to be specific to dentistry. Information on other waste streams is included in paragraphs 5.25-5.73 and further information on dental waste is provided in the British Dental Association's 'BDA advice: Healthcare waste' (2016).

5.204 Dental practices must comply with the same key legislation as hospitals, GP practices and all other healthcare facilities. This guidance sets out how to classify, store and handle the wastes generated by dental facilities.

5.205 Dental practices will produce a wide range of both hazardous and non- hazardous wastes and are likely to produce waste streams not found at other healthcare facilities, specifically including:

- Non-infectious dental amalgam
- Infectious waste containing dental amalgam
- lginate/gypsum moulds.

Key considerations

5.206 When deciding whether a saliva- contaminated item is an infectious or offensive waste, a risk assessment should be performed based on the patient and the circumstances.

5.207 As the disposal of teeth from dental premises is unlikely to cause offence, dental practitioners may treat this as non- anatomical infectious waste. It is common practice for non-amalgam teeth and spicules to be placed in the yellow-lidded sharps receptacle; however, this should be for just broken or jagged teeth, with whole non-infectious teeth treated as offensive waste.

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5.208 Dental practitioners must ensure that all waste is treated appropriately, and that teeth containing amalgam are disposed of as dental amalgam waste. Specialised containers known as tooth pots, crown pots and bridge pots may be used to store extracted amalgam-contaminated teeth, crowns and bridges. For further information see paragraphs 5.212-5.217 on dental amalgam.

Gypsum

5.209 Gypsum is often used in dentistry to make moulds and study models. Gypsum should not come into direct contact with patients. Instead, alginate is used to mould the patient's mouth, and the gypsum mould is made using this alginate mould. It is therefore very unlikely that gypsum waste will be infectious.

5.210 Gypsum should be treated as its own waste stream and should not be mixed with any other wastes. Gypsum can emit hydrogen sulphide, which is a toxic odorous gas if it comes into contact with biodegrading material like organic waste. Sending items with a gypsum component to non-hazardous landfill is prohibited.

5.211 Gypsum may be sent to a hazardous waste landfill, provided the landfill has a dedicated area for its management, or sent to a permitted facility for recovery, which is the preferred option.

Dental amalgam

5.212 Dental amalgam is a mixture of metals, consisting of liquid mercury and powdered alloy containing silver, tin and copper. It is considered hazardous waste due to its high mercury content of up to 50%:

- Liquid form has limited absorption through skin
- Vapour form is extremely toxic, easily absorbed through the lungs, potentially harming the immune system and posing serious risks to unborn children

5.213 Due to its unique characteristics, dental amalgam should be treated as its own waste stream, with separate bins for infectious and non-infectious amalgam.

5.214 Amalgam waste may be packed in accordance with the SDS provided by the manufacturer, but the package should be marked with UN 2025. For further guidance on SDSs, see paragraphs 2.19-2.22.

5.215 Dental amalgam bins must be sealable and made from puncture-resistant rigid material and must contain a mercury suppressant. Bins must be clearly marked as dental amalgam and should feature the hazard symbols relevant to mercury (toxic, long-term health hazard and environmental hazard).

5.216 If transporting dental amalgam waste, a container certified for transporting mercury may need to be used as set out in paragraphs 5.77–5.142.

5.217 Substances containing mercury are regulated by the Control of Substances Hazardous to Health (COSHH) Regulations (2004).

5

Offensive waste

5.218 Offensive waste is defined as:

- Non-clinical
- Non-Infectious waste that may still contain body fluids, secretions, or excretions
- Classified as non-hazardous and typically falls under the following waste codes **18 02 03**, waste from research, diagnosis, or treatment involving animals, **20 01 99** if from municipal sources

Most offensive waste is classified as such due to its potentially unpleasant odour or appearance. However, not all materials in this category are overtly offensive for example, used personal protective equipment (PPE). (See Figure 11 for further examples of offensive waste.)

Offensive waste is non-hazardous. If an item contains

- Infectious
- Contaminated with chemincals/medicines
- Radioactive
- Sharps

Then the waste cannot be classed as offensive.

5.219 Offensive waste can be generated in both healthcare settings and the wider community. If not correctly identified and segregated, it may lead to more costly handling and treatment processes.

Offensive wastes generated by healthcare facilities will fall into one of the two categories:

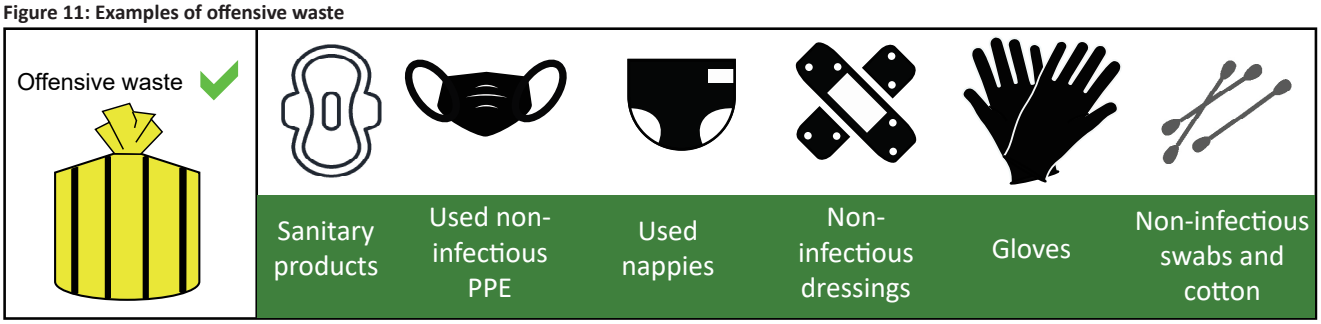
- Healthcare offensive wastes which would not be generated outside of a healthcare facility:
  - » Single-use intruments (tongue depressors, specula)
  - » Used gowns
  - » Used PPE which has not been contaminated with bodily fluids
  - » dressings from non-infectious patients
- Household and municipal offensive wastes which could be generated outside a healthcare setting
  - » Nappies and adult continence products, colostomy bags, catheters
  - » Used personal hygiene products
  - » Non-infectious dressings

Offensive wastes which are commonly over-classified as hazardous or infectious include:

- PPE - only clinical if contaminated with infectious fluids, chemicals or radiation
- Single-use gowns and other items that touch patients - as with PPE, offensive unless hazardous

5

Figure 11: Examples of offensive waste



5.220 Offensive waste should only be placed in a yellow and black-striped ("tiger") bag.

5.221 Sharps are not considered offensive waste as they could pierce the bag, and so sharps must always go in a sharps bin.

5.222 If there is no good reason to believe the item is hazardous – i.e infectious, chemically/ pharmaceutically/cytotoxically contaminated or radioactive – do not dispose of it in a yellow, orange or purple bin/bag or other container for hazardous waste.

5.223 As they are non-hazardous, offensive wastes do not need to be autoclaved or pre-treated before being sent for disposal or recovery. Laboratory wastes which have been autoclaved are however considered offensive waste, as long as they do not contain chemicals.

5.224 It is typically acceptable to dispose of liquid offensive wastes such as urine, liquid faeces and vomit to the sewer.

> Landfilling liquids is prohibited under the Environmental Permitting (England and Wales) Regulations (2019), the Landfill (Scotland) Regulations (2003) and the Landfill Regulations (Northern Ireland) (2003). Therefore, non- pharmaceutically active liquids (for example intravenous saline bags) should not be placed in the offensive waste stream if they still contain free-flowing liquid. These should instead be emptied to foul sewer. For further details see paragraph 5.36.

Handling offensive waste

5.225 By definition, offensive waste is not hazardous. However, hand washing and ensuring that clothing and PPE are clean after handling it are recommended.

Disposal or recovery of offensive waste

5.226 Offensive waste is suitable for conventional EfW, provided that the site at which it is intended to be treated is licensed and permitted to do so.

5.227 Most non-hazardous landfills accept offensive waste for disposal; however, this should be considered a last resort. When offensive waste is sent to conventional EfW facilities, regulators may classify this as 'recovery' if facility meets the required efficiency level, knowns as the R1 value. This value is 0.6 for facilities operating before January 1, 2009, and 0.65 for those operating after December 31, 2008. Therefore, the use of modern EfW facilities with the higher R1 value is encouraged.

5.228 Offensive waste may be shredded and further processed into refuse-derived fuel, in order to make it more suitable for EfW processes, or suitable as a fuel for other purposes.

6

Chapter 6
Management Approach

6.1 The purpose of this chapter is to provide an overview of the approach to the management of healthcare waste. It is not intended to be a prescriptive guide but is intended to set out the key principles associated with key management functions.

In-house services

6.2 All healthcare organisations should have a waste management policy or plan. An electronic copy should be openly available on the organisation's intranet.

6.3 A waste management policy is intended to set out a simple and pragmatic approach to be implemnted by organisations in all circumstances, including when waste management services, such as management or treatment, are delivered in-house.

6.4 The waste management policy should clearly identify the date of commencement and include a review date, being no more than two years after commencement.

6.5 The waste management policy should include a comprehensive list of all the organisation's facilities that produce healthcare waste, this includes any location where registered practitioners routinely provide care, as well as sites that generate hazardous waste.

6.6 Organisation-specific waste management guidance or training material should be included within the waste management policy and should be consistent with this guidance.

Checklist for a waste management policy or plan:

- Definitions for the various waste types
- Employer's and employee's responsibilities
- Education and training requirements and materials
- Waste management strategy
  - Waste avoidance, reuse and recycling (and associated targets)
  - Waste handling, storage and transport arrangements
  - Waste treatment and management routes
- Continuous improvement and audit requirements
- Occupational health and safety measures
- Purchasing and green procurement may also be referenced.

6

Governance arrangements

6.7 A healthcare waste policy requires waste producers and staff involved in the management of waste to accept their responsibilities and to take all reasonable measures to ensure that the waste is dealt with appropriately from the point of production to the point of final disposal.

6.8 Effective and active waste management must be part of everyday practice and be applied consistently across healthcare sites. Good waste management and organisational processes are crucial to prevent the mixing of waste types, ensuring correct waste segregation, consignment, and appropriate treatment and disposal. See Figure 12 for key waste manager measures.

6.9 Effective governance is crucial in ensuring that waste is managed in a safe and sustainable manner. Larger healthcare organisations should establish an internal steering group that has oversight of all waste management activities and processes, to ensure governance procedures are fully implemented. Waste management may also be governed through existing groups, such as IPC, H&S, etc., provided the necessary level of oversight is provided.

6.10 The steering group (or other waste management governance body) should include arrangements for ensuring that this WHTM is properly implemented, and should establish monitoring tools to identify gaps or weaknesses in compliance. This steering group would strive to improve compliance in managing waste and recommend improvement actions.

6.11 Typical roles and responsibilities for the robust management and oversight of waste management are illustrated in Table 16.

Data recording, monitoring and reporting

6.12 Very few healthcare organisations have a dedicated waste data analyst who is trained to collate and accurately report waste data. This includes EFPMS returns from NHS organisations.

Figure 12: Key waste manager measures

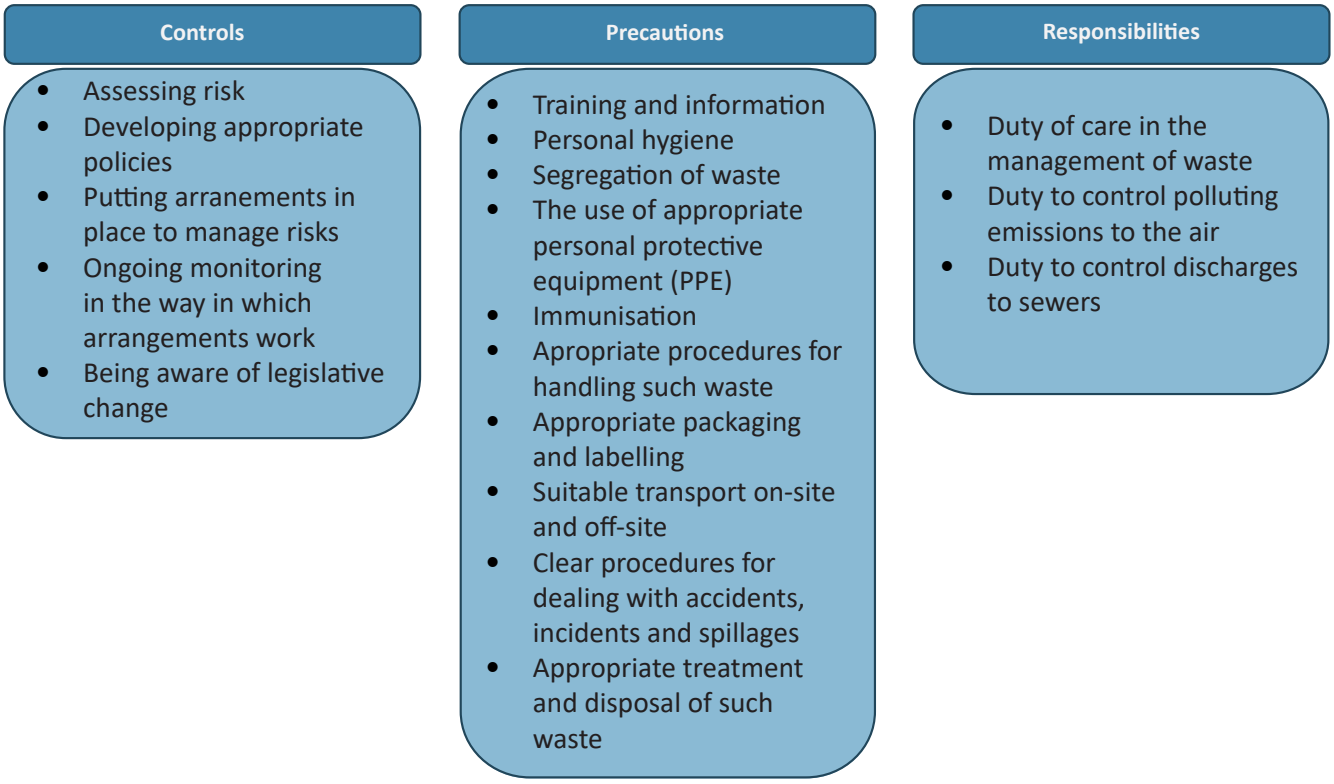


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Table 16: Typical roles and responsibilities

Role	Location	Responsibilities
Organisation Chairperson	Hospitals/Healthcare facilities	Ensure governance procedures required in WHTM 07-01 are established across the health organisation to avoid non-compliance leading to enforcement actions by the regulator. Provide capital resources to implement WHTM 07-01 across the healthcare organisations.
Estate and Facilities Director	Hospitals Healthcare facilities	Ensure the safe and compliant management of waste. Direct and support the establishment and management of on-site waste infrastructure and services.
Waste Manager	Hospitals Healthcare facilities	Develop and implement waste policies and organisation-specific guidance in line with current legislation; be accountable for implementation of WHTM 07-01. Promote and provide the structure and resources to allow the effective segregation of clinical waste. Collate and report all accurate waste data as required in EFPMS and ensure compliance with duty of care responsibilities.
Steering Group	Corporate	Develop tools to monitor implementation of WHTM 07-01. Recommend actions with timeline for implementation where gaps are identified from a compliance perspective.
Dangerous Goods Safety Advisor	Hospitals Healthcare facilities	Externally sourced third-party or internal staff to advise and undertake duty of care audits in accordance with current waste legislation.
Nurses, Doctors, Dentists, Optometrists, and other practitioners and clinicians	Hospitals Healthcare facilities	Compliant segregation of waste at source. Implementation of waste hierarchy.
Consultants	Hospitals Healthcare facilities	Segregate waste at source and assist in the development of strategies for sustainable purchasing. Implementation of the waste hierarchy
Procurement Managers	Hospitals Healthcare facilities	Deliver the safe and sustainable selection of health products and waste services. Implement sustainable procurement initiatives.
GP Provider (contract holder)	Primary Care	Account for compliance in relation to the wastes generated at their premises.
Identified Accountable Individual	Primary Care	Promote the effective segregation of healthcare waste and individual responsibilities for waste management. Work with Waste Managers and regions to appoint managing agents and develop re-procurement approaches for primary care.
General Practice Clinical staff	Primary Care	Responsible for the safe disposal and segregation of clinical waste.
General Practice Non- Clinical staff	Primary Care	Where needed, support the movement of healthcare waste containers and coordination with waste contractors.
Pharmacists	Primary Care	Compliant segregation of waste at source. Implementation of waste hierarchy.
Pharmacy staff	Primary Care	Segregate waste at source, and liaise with clinical waste contractors for collection (and commissioners as required).
Radioactive Waste Adviser	Hospitals Healthcare facilities	Advise on the disposal and management of radioactive waste.

6

6.13 Waste data supports compliance requirements and addresses responsibility under duty of care requirements. Without any built-in validation checks and regular audits of waste data, pro-active data-led decision-making and risk management is impacted.

6.14 It is important that all data is recorded in a consistent and accurate manner.

6.15 Clear guidelines and definitions should be provided wherever data is entered. The data provided will be utilised to estimate the carbon emissions from waste management, allowing the implementation of actions that will help the NHS to meet its net zero targets.

6.16 Table 17 summarises the types of data that should collated and, where applicable, requested from the contractor.

Community healthcare

6.17 Community healthcare can take many forms and occurs in various environments. It includes activities undertaken by all healthcare staff who provide services outside of hospitals or healthcare facilities to:

- Patients in their own homes
- Residents of care homes without nursing care
- Householders who are self-medicating and self-caring.

6.18 Healthcare staff working in the community are responsible for the waste produced as a result of their activities and should otherwise comply with the duty of care requirements set out in paragraphs 6.83-6.89.

6.19 All healthcare organisations have a legal duty to ensure that wastes produced by the actions of healthcare staff in the community, for example in a patient's home, and classified as hazardous due to an inherent risk of infection, cytostatic/ cytotoxic, sharp or other hazards, are not placed into the domestic waste stream for disposal.

Table 17: Key waste data capture requirements

Types of data	Justification	Frequency of reporting	Monitoring responsibility
Incineration	Most expensive treatment option and misclassification increases carbon emission significantly	Monthly	Healthcare organisations and Waste Manager
Alternative treatment	Less carbon intensive	Monthly	Healthcare organisations and Waste Manager
Offensive waste	Large volumes generated	Monthly	Healthcare organisations and Waste Manager
Confidential waste	Compliance with the General Data Protection Regulation (transposed into UK law by the Data Protection Act 2018)	Monthly	Waste Manager
Non-clinical waste to landfill	Landfilling cost increase year on year and landfill diversion reduces carbon emission	Monthly	Waste Manager
Non-clinical waste recycled including food	Resource conservation	Monthly	Waste Manager
WEEE	The volume of waste is expected to grow exponentially	Monthly	Waste Manager
Radioactive waste	To monitor generation levels To monitor compliance with environmental permits	Monthly	Medical physicist/RWA
Landfill diversion	To demonstrate progress made	Monthly	Healthcare organisations

6

Community practitioners should:

- formally adopt a method of risk- assessing waste with a demonstrable audit trail of decisions
- make provision for the appropriate segregation and packaging of the different waste streams, set out in paragraphs 5.25–5.60.
- implement an uncomplicated method for undertaking or arranging safe and legal collection and disposal of the waste whilst minimising cost to the organisation, as detailed in paragraphs 5.77–5.142.

6.20 Community practitioners carrying waste are required to receive ADR awareness training.

6.21 Community healthcare may involve limited quantities of anatomical waste, for instance from home births or other sources. This should be managed in accordance with the guidance set out in Chapter 5.

6.22 Further guidance on the sensitive handling of pregnancy remains is available in the Human Tissue Authority's 'Guidance on the sensitive handling of pregnancy remains' (2021).

Healthcare worker intervention

6.23 Healthcare waste generated during home treatment by a nurse or healthcare professional is classed as healthcare waste. If non-hazardous and properly sealed, it may be disposed of with household waste, such as non-infectious dressings, personal hygiene items, nappies and incontinence pads from a healthy population.

There are, however, exceptions to this restriction:

- Mixed domestic waste can contain small numbers of plasters, dressings and incontinence products. Where similar wastes are produced as a result of treatment, these can be double-bagged and placed in the domestic waste bin with the householder's permission
- Where the quantity produced is less than 7 kg per collection period.

6.24 If the waste is classified as hazardous, the staff handling it should either:

- Remove that waste from the home and store it in approved containers. Healthcare workers conducting home visits should carry suitable containers as part of their equipment if there is potential for the removal of hazardous waste
- Check that a suitable area for waste storage is available in the home, where it will not harm residents, and is not accessible to pests and pets; inform the patient of the relevant risks and obtain their informed consent; and arrange for the waste to be removed by the local authority or an appropriate contractor.

6.25 When assessing whether the healthcare waste should be classed as infectious or not, consideration must be given to the medical history of the patient, where available, and any clinical signs and symptoms indicating a potential infectious risk. The assessment for infectious properties of the waste must be made at the time the waste is generated.

6.26 Classification may need to be reviewed and changed as additional information about the patient becomes available; for example if a patient's condition changes to the extent they demonstrate symptoms of being infectious, the waste may need to be reclassified.

6.27 Table 18 provides a generic assessment that may be used to aid classification of the waste.

6.28 Staff should not use a patient's own sharps container for sharps waste, and should carry a UN-approved sharps container to remove any sharps generated during home treatment.

6.29 Where the householder is a self- medicating patient who uses injectables with no healthcare staff involved in the administration, the GP or healthcare staff should prescribe the householder a sharps bin relevant to the medication being administered and:

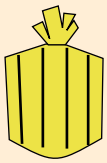
- Provide training in the safe use of the bin
- Show how to correctly seal and label the bin as detailed in paragraphs 5.77–5.142.
- Advise on local waste management options.

6.30 Non-infectious body fluids should not be disposed of in either the offensive waste stream or the domestic waste stream where the likely destination is landfill. Any liquid waste classified as offensive following a risk assessment may be disposed of either:

- Into the foul sewer at the premises
- By being absorbed onto a cloth or solidified with absorbent or gelling granules before being placed into the bin. There should be no free-flowing liquid present.

6.31 Hazardous liquids should be placed into sealed, leakproof containers and removed from the patient's home for disposal; this is detailed in paragraphs 5.61–5.73.

Table 18: Key waste data capture requirements

Containment	Proposed general classification	Examples	Exceptions
Urine faeces, vomit and sputum	Offensive  (where risk assessment has indicated that no infection is present, and no other risk of infecion exists)	Urine bags, incontinece pads, single-use bowls, non-infectious PPE (gloves, masks, etc)	Gastroinestinal and other infections that are readily transmissible in the community setting, such as verocytotxigenic Escherichia coli (VTEC), campylobacter, salmonella, chickenpox/shingles Hepatitis B and C, HIV - only if blood is present
Blood, pus and wound exudates	Known infectious  (Unless assessment indicates no infection present - if no infection, and no other risk of infection, then offensive)	Dressings from wounds, wound drains, delivery packs	Blood transfusion items Dressings contaminated with blood/wound exudates assessed not to be infectious Maternity sanitary waste where screening or knowledge has confirmed that no infection is present, and no risk of infection exists

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Primary care

6.32 Primary care services including GP, community pharmacy, dentistry and optician services provide the first point of contact in the healthcare system. They are responsible for delivering healthcare and health improvements to their local area. They may also not produce the same waste streams in the same quantities as other larger or more specialised healthcare facilities.

6.33 All producers of primary care waste, their employees and service providers have a duty of care to ensure all the waste is being managed in a compliant manner, which is detailed in Chapter 4.

6.34 All clinical waste generated in primary care settings should be classified and segregated in accordance with the provisions set out in paragraphs 5.25-5.60.

6.35 Table 19 illustrates good practice for primary care-related waste arisings.

6.36 All waste bags and sharps containers should adhere to packing and storage requirements described in paragraphs 5.77–5.142.

Table 19: Best practice examples for primary care

Waste receptacle	Best practice
Waste bins	• Positioned where they are easily accessible to staff • Lidded and operated with a foot-pedal if in clinical areas and toilets • Blue bins should be used for vials and other medicines • Domestic/recycling bins accessible to staff and patients • Food waste bins where practical (in staff kitchen areas, or wherever food is prepared and stored)
Waste bags	• No more than two-thirds full so the bag can be tied securely • "Swan necked" (neck of bag twisted, bent in half, and fastened) • Securely tied using a plastic tie or secure knot
Sharps container	• Purple-lidded: cytotoxic and cytostatic medicinally contaminated sharps • Yellow-lidded: other medicinally contaminated sharps • Orange-lidded: non-medicinally contaminated sharps • Reusable sharps containers should be used if feasible

Ambulance services

6.37 Emergency care practitioners (ECPs), first responders, rapid response vehicles or paramedics should follow the guidance on community healthcare in paragraphs 6.17–6.31 in relation to classifying, transporting and disposing of waste from community sources. Owing to the lack of prior knowledge of patients' medical history, the ability to classify healthcare waste as non-infectious for emergency care services is more challenging than in most other settings.

6.38 The assessment and subsequent processing of the waste must thereafter comply with legal requirements to segregate hazardous from non-hazardous waste, whilst ensuring the EWC number (paragraphs 5.61–5.73) assigned to the waste reflects those permitted for receipt by the waste treatment contractor.

6.39 All staff should undertake waste awareness training.

Waste receptacles and storage

6.40 When infectious waste is being transported in vehicles prior to treatment, the waste should be appropriately packed in safe and secure conditions as summarised in paragraphs 5.77–5.142.

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6.41 When infectious waste is being transported in vehicles prior to treatment, the waste should be appropriately packed in safe and secure conditions as summarised in paragraphs 5.77–5.142.

6.42 When dealing with anatomical waste resulting from an amputation, a medical assessment for potential reattachment should be undertaken before classifying body parts as waste. Packaging for body parts and limbs should be strong enough to resist protrusion of bones.

6.43 Waste streams including sharps should be clearly identifiable and labelled in accordance with the waste classification and any specific requirements, depending upon the waste management route; for example, waste dropped off at an ambulance service site or other healthcare organisation should be labelled by the specific NHS ambulance organisation. Waste from ambulances should not be dropped at GP practices and should not be dropped at any site which does not have an agreement to receive such waste.

6.44 The maximum weight of dangerous goods which can be transported in ambulance vehicles is 15 kg when carried without a fire extinguisher on board, as set out in the summary of load thresholds (see Table 13).

6.45 The ambulance service, due to its varying patient care activities, has a number of options available when disposing of waste, as summarised in Table 19.

Table 19: Ambulance service waste transfer/management options

Service providers	Management option	Key considerations
Emergency response including emergency ambulance and air ambulance	Transfer the waste to the hospitals Return waste to ambulance station for collection	The hospital is not required to provide this service; it is, however, considered best practice. First responders generating waste on-site should hand the waste t o the attending emergency ambulance to consider the appropriate waste management method. Where the ambulance organisation drops its waste off at a hospital, this is classed as waste transfer. Therefore, duty of care applies, see paragraphs 4.1–4.44 on key legislation and paragraphs 6.86–6.91 on compliance. This activity is usually covered under a Non Waste Framework Directive exemption (NWFD 3), which does not require registration with the regulator.
ECPs, first responders, and rapid-response vehicles working in Community Healthcare	Seek approvals from local authority	Follow the guidance in community healthcare paragraphs 6.16–6.32, in particular for infectious and offensive waste streams.
Ambulance transport services – patient transfer	Hospitals	It is less likely that any infectious waste will be produced. Where non-clinical waste is generated and has been risk-assessed, this can be safely disposed of in the black-bag waste or recycling streams at the hospital, depending upon arrangements.

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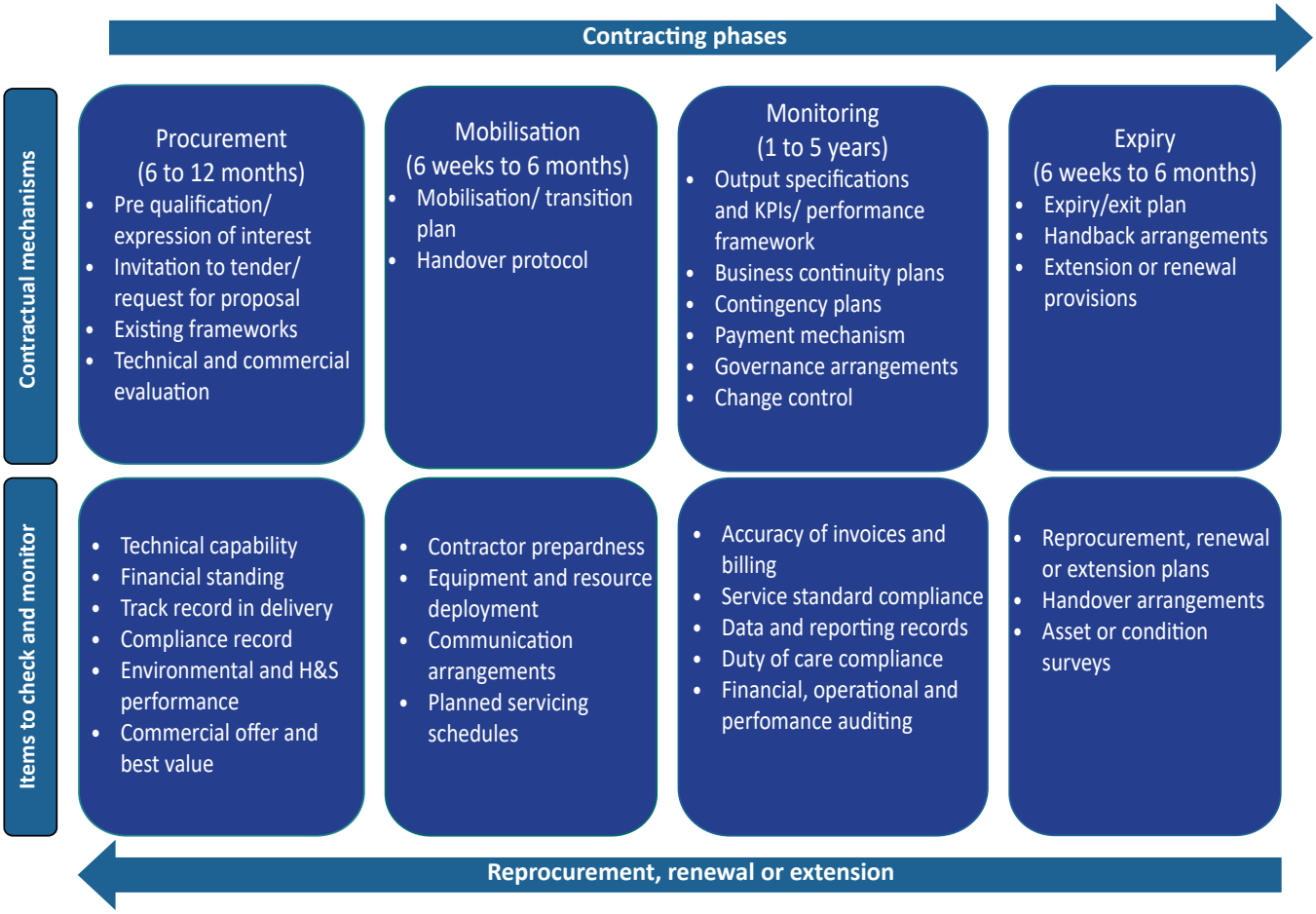
Contract management

6.46 The healthcare waste management sector is heavily reliant on the use of third- party contractors to deliver services. This can include internal facilities management, waste collection and transport, and waste treatment and management functions. There may be separate contracts for each component of the system as well as separate contracts for each healthcare waste type, with specific arrangements in place for clinical waste. Alternatively, there may be integrated contracts where "total" waste management services are provided.

6.47 In each case it is essential that a robust approach is taken to the procurement, mobilisation and monitoring of waste contracts, to ensure that best value and high standards are achieved whilst being in compliance with regulatory requirements.

6.48 It is therefore essential that procuring managers and waste managers are aware of the types of contractual mechanism and monitoring requirements needed to do this effectively, from the point of procurement through to contract expiry, as set out in Figure 13.

Figure 13: Principles in preparing for and managing waste contracts



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6.49 Waste management service contracts typically last for between one to five years, and often include extension and/or renewal provisions. Procuring managers should give careful consideration to the proposed contract duration; longer contracts typically achieve better value as they provide more opportunity for the contractor to realise a return on investment in new equipment or infrastructure. However, it is important that the commercial provisions in such contracts appropriately allocate pricing risk between the contractor and the healthcare organisations, especially in respect of clinical waste treatment, where the market can be particularly volatile.

6.50 Procuring managers should liaise with their organisation's waste/facilities manager to plan for the award of new service contracts in advance of the procurement exercise; this should be 12 months or more in the case of major or long-term contracts, as the level of complexity and duration of the procurement phase will be subject to the scale and type of services being procured.

6.51 It is important that adequate time is allowed for any new contractor to mobilise its services, as there will be lead-in times associated with the provision of new equipment and resources, for instance containers and vehicles.

6.52 Waste management contracts should include provisions and flexibility to mobilise waste contractors to support disasters and/ or emergency scenarios on an ad-hoc basis, where excessive volumes of waste may be generated.

> The National Audit Office (NAO) has produced a Good practice contract management framework (2016) for managing a broad range of contracts. It is particularly relevant for contracts where services are delivered over a long period of time where customers need to ensure that service levels and value for money are maintained over the duration of the contract.

6.53 Waste managers should ensure that there is a detailed understanding of the service standards, KPIs, performance frameworks and technical and operational requirements set out in the contract and should establish robust monitoring arrangements and procedures to ensure that the contractor delivers services in accordance with such provisions.

6.54 Standards that encourage the most cost-effective, carbon- and resource- efficient means of transport and treatment are encouraged, provided that compliance with regulatory requirements is maintained.

6.55 Table 20 provides a summary of key contractual functions, how they should be monitored and who should typically be responsible for monitoring them. It is not intended to be an exhaustive list of all contract management functions.

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Table 20: Example of key contract monitoring functions

Contractual function	Monitoring aspects	Typical Monitoring tools	Monitoring responsibility
Service levels (typically set out in a schedule)	• Collections schedules • Information reporting • Use of appropriate sub-contractors • Condition and quality of equipment • Risk assessments and method statements • Duty of care compliance.	• KPIs to establish the required level of service (for example no more than 1% missed collections, 98% of transfer notes/consignment notes correctly completed) • Service reports (typically monthly) on number of collections, type, date, weight including transfer/consignment note evidence.	Waste manager
Implementation/ mobilisation plan	• Schedules of bin and equipment deliveries to organisation sites • Arrangements for the handling of any backlog or transitional waste • Supply chain arrangements • Net zero and social value considerations • Site-specific issues and logistics.	• Bin and equipment delivery and installation programme • List of sites to be serviced • Programme for first collection of waste • List of proposed waste transport, treatment and disposal suppliers (along with associated duty of care pack).	Procuring manager/ waste manager
Payment mechanism	• Cost of service per waste type (for example fee per collection or per tonne of waste collected) • Performance incentives (additional payments) and/or penalties (deductions).	• Invoice reconciliation and checking of supporting evidence.	Finance manager/ waste manager
Business continuity plans (BCPs)	• Interaction with organisation and/or NHS BCPs • List of potential service failure scenarios and mitigation measures • Arrangements for returning to normal service.	• Service levels in the event BCP enacted • Risk register • Contractor procedures, processes and responsibilities.	Waste manager
Expiry plans	• Arrangements for handover to a new contractor • Provision of transitional assistance services • Provision of relevant data and information.	• Programme for the handover of equipment or resources where applicable • Programme for the final collection of wastes • Provision of asset register • Details of incumbent contractor working arrangements over the prior 12-month period.	Procuring manager/ waste manager

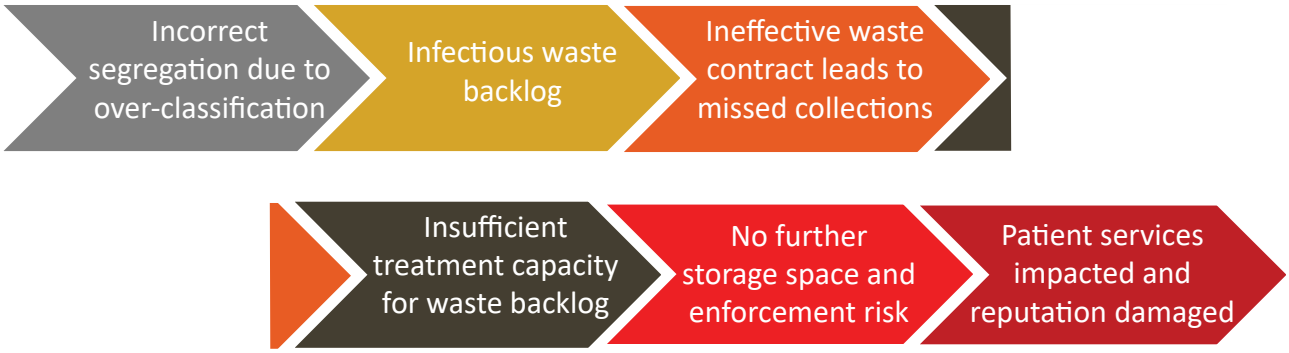
6

Managing risk

6.56 Risk management is an essential component in safe and sustainable waste management.

6.57 Given the complexities associated with managing different types of healthcare waste, there is a wide range of risks that could materialise if effective control measures are not in place. Figure 14 highlights how different types of operational failure can culminate in significant service or regulatory risk.

Figure 14: Example of operational failure escalation



Other examples of risks include:

- Commercial – arrangements not put in place to extend, renew or procure new waste management services, resulting in waste not being collected
- Training and education – inadequate measures in place to ensure that the workforce understand the requirements for safe and sustainable management of healthcare waste, leading to noncompliance and inaccurate segregation
- Financial – insufficient funds available for the management of waste services or funds needing to be diverted from other areas (equipment, staff, facilities, etc.)
- Compliance – waste duty of care requirements are not fully complied with, leading to a regulatory action and/or enforcement
- Environmental – pollution or emissions to the local environment caused by ineffective or non-compliant waste management practices.

6.58 Estates and Facilities Management teams should ensure that an operational risk register is in place for the management of healthcare waste.

6.59 The potential risks included in the risk register should be reviewed and updated regularly, but no less than once a year, and immediately after any major change to the way in which services are delivered, for example a change in waste service contractor.

6.60 If the consequence of a risk materialising is deemed to be “significant”, inclusion within the wider organisational risk register should be considered for escalation to management board level.

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6.61 Monitoring the risk register to establish whether the likelihood of risks has changed should occur monthly and should be undertaken by waste managers or those appointed as being responsible for waste management.

6.62 Where risks have materialised, they should be recorded in an issues log that identifies the specific mitigation measures that will be implemented to respond to and de-escalate the issue. A lessons-learned process should be undertaken to reflect on how the organisation can improve its management of risk moving forward.

6.63 An example of the headings that would typically be included within a standard risk register is set out in Table 21.

6.64 When developing a risk register, waste managers may need to seek input from the following stakeholders, especially where the implementation of mitigation measures would require their involvement:

- Waste service contractors
- Facilities management contractors
- Procurement specialists
- Regulators and/or other government bodies (NRW, Defra, EA, HSE, DfT, etc.)
- NWSSP

Table 21: Example risk register format

Risk ID	Category	Description	Probability level	Impact level	Risk	Control Measures	Owner	Post control measure risk
R1	Opera-tional	Significant backlog of waste stored at healthcare premises due to waste not being collected, leading to impacts on patient services and potential compliance issues	L	H	M	Ensure waste collection contracts feature robust service levels, KPIs, financial incentives and penalties, enforcing such standards when required	XX	L
R2	Commer-cial	Arrangements not put in place to extend, renew or procure new waste management services, resulting in waste not being collected	L	H	M	Commence procurement or renewal process 12 months prior to contract expiry. Ensure adequate handover and mobilisation period in place	XX	L

6

Training

6.65 The healthcare waste management policy must be implemented by a trained and competent individual.

6.66 The safe and sustainable management of healthcare waste cannot be effective unless it is applied carefully, consistently and universally by all within the healthcare organisation. This requires that all healthcare staff should be aware of the healthcare organisation's procedures and guidance.

6.67 Training is a requirement of Chapter 1.3 of ADR, even for community healthcare practitioners who are exempt from other ADR requirements, and for staff handling small quantities of waste.

6.68 Organisations must ensure all employees are aware of their responsibilities in supportign effective waste management

6.69 Healthcare organisations must ensure that waste management training is delivered to all staff involved in the handling and management of waste. A clear and coherent programme should be established to support training for new staff, refresher training and training for new and emerging issues.

6.70 Training needs vary depending on the responsibilities and job function. Certain staff will require more specific training. These include people who regularly use disposable PPE or handle waste using PPE, waste management facility operators, drivers, and community and laboratory staff.

6.71 Ideally, separate training programmes should be designed for, and targeted towards, the job roles identified in Table 22, all of whom have a role to play in sustainable waste management.

6.72 Those delivering training should have experience in teaching and training and be familiar with the risks and practices of healthcare waste management. Smaller establishments generating healthcare waste may not have this range of expertise available to them but should still have access to competent advice on hazardous waste issues.

6

Table 22 Summary of key competencies for job role

Job function/responsibilities	Specific training topics	General training topics
Medical doctors/dentists/ advanced clinical practitioners/ radiographers	• Use of protective equipment • Waste segregation.	• The risks associated with healthcare waste, its segregation, handling, storage and collection • Personal hygiene • Any procedures which apply to their particular type of work • Procedures for dealing with spillages and accidents • Emergency procedures • Appropriate use of protective clothing • Duty of care requirements.
Pharmacists	• Disposal of medicines • Ensuring that the origin of the waste is marked on the container.	
Nursing staff Health-care assistants	• Waste segregation • Use of protective equipment.	
Drivers transporting healthcare waste, including ambulance staff	• The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (as amended) • Access to a qualified DGSA • Understanding of marks and labels • Knowledge of acceptable load thresholds.	
Waste handlers	• Understanding of marks and labels • Handling bags/containers correctly • Procedures in case of accidental spillage and how to report an incident.	
Waste managers	• Understand legislative requirements • Waste hierarchy • Permit compliance and waste exemptions • Waste reporting • Access to a qualified DGSA • Consignment/waste transfer note • Pre-acceptance audit requirements/ duty of care • Waste policies and procedures • Net zero carbon and carbon literacy • The 5 R's of sustainable procurement • Cabinet Office Social Value Model including health specific net zero and social value guidance • NHS Net Zero Plan and Net Zero Supplier Roadmap • Sustainable procurement and carbon literacy.	
Cleaners, porters, auxiliary staff	• Safe and appropriate cleaning and disinfection procedures • Understanding of marks and labels • COSHH • Local training if working in areas using radioactivity.	
Infection prevention and control staff, healthcare managers and administrative staff responsible for implementing regulations on healthcare waste management	• Use of protective equipment • Access to a qualified DGSA • COSHH • Understanding of marks and labels.	
Finance managers	• Sustainable procurement (5 R's) • NHS Net Zero Plan • Sustainable procurement.	
Procurement managers	• Understanding of producer responsibility • Circular economy principles • Sustainable procurement (5 R's) • NHS Net Zero Plan	

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Healthcare organisations which use agency and bank staff ("floating" staff who move between facilities on an ad-hoc basis) should prepare guidance which sets out the training and handling requirements specific to the facility. Organisations which regularly share bank staff should consider cooperating, and aligning their waste management training programmes, to improve transferability. Such guidance should be consistent with this WHTM.

6.73 Operators of waste management facilities must also demonstrate the necessary technical competence for the relevant permitted activities. In Wales and England, this is now assessed on the basis of either an employee's individual competence (Certificate of Technical Competence (CoTC)) or an employee's individual competence coupled with corporate competence (demonstrated through an environmental management system (EMS) or quality management system (QMS)).

6.74 Further guidance and information on legal, financial and professional requirements for operators and managers, including extra duties for waste activity operators, can be found on the Environment Agency's website (EA, 2019a).

Procedures

6.75 Where healthcare organisations have developed their own training materials, they should:

- Be written in a way which can be understood by those who need to follow them, including those with English as a second language
- Use pictures or photos which will assist with any language barriers
- Take account of different levels of training, knowledge and experience
- Be up to date
- Be available to all staff including part-time, shift, temporary, agency and contract staff
- Be available in all areas.

6.76 Healthcare organisations should ensure that procedures are followed by all staff involved in waste handling activities. Staff at all levels who generate the waste need to recognise that they are personally responsible for complying with agreed local procedures.

6.77 The risk assessments required by the Management of Health and Safety at Work Regulations and COSHH regulations should identify which staff are involved in the handling of healthcare waste. Employees should receive information on:

- The risks to their health and safety, that is, the details of the substances hazardous to health to which they are likely to be exposed
- The significant findings of the risk assessment
- Any precautions necessary
- The collective results of any relevant health surveillance.

6

Records

6.78 Full records of all training should be kept, as this will enable managers to identify members of staff who are not receiving the appropriate level of training, and where such training should be focused. In certain cases, training records are also required to demonstrate technical competence, regulatory compliance and continued professional development (CPD).

6.79 All mandatory training should be included as part of the induction programme for new starters. All employees should be retrained in procedures and topics annually or following amendments to the existing process.

Compliance

6.80 Site-based waste management activities must comply with the relevant key legislation identified in paragraphs 4.1– 4.44.

6.81 Effective compliance prevents breaches in legislation, and ensures that controls are in place to limit impact to the environment, human health and demand for resources.

6.82 For healthcare waste management, the main topics that govern effective compliance comprise:

- Duty of care
- Waste auditing
- Environmental permitting and licensing requirements
- Health and safety.

Duty of Care

6.83 Everyone who produces, imports, keeps, stores, transports, treats or disposes of waste must take all reasonable steps to ensure that waste is managed properly from the point of production to the point of final disposal.

6.84 Producers of waste must follow Defra's statutory guidance 'Waste Duty of Care: Code of Practice' (Defra, 2018). The guidance provides details on waste producers' legal requirements and further resources including key documents for waste classification, examples and guidance for waste transfer notes and consignment notes, and other related legislation.

6.85 A checklist of practical measures to follow are provided in Appendix A1.2 of this document, and this is supplementary to Defra's duty of care guidance.

Ensure all waste is managed by authorised personnel, maintain accurate records of waste generated, and verify that all legally required documentation is propely completed.

6

6.86 Describe waste using:

- A written description
- Use of the appropriate EWC code(s) which are set out in paragraphs 5.25–5.77 for classification, segregation, colour coding and storage, with further information on how to classify different types of waste available from the Environment Agency's website
- Quantities on both waste transfer (for non-hazardous waste only) and hazardous waste consignment notes.

6.87 Time-limited permissions, such as waste carrier licences, should be monitored to ensure renewals are applied for and granted before the expiry.

BETWEEN JURISDICTIONS:

Any consignments of waste crossing an administrative border, for example from one devolved region to another, should be made by the producer of the waste using both their "home" regulator's guidelines and the "destination" guidelines. This does not apply to "cross- border" movements between Wales and England or vice versa.

6.88 A register of hazardous waste generation is required and should contain quarterly producer returns provided by waste management contractors, and records of consignment notes.

6.89 Contractors and waste management site operator competency and track records should be assessed before signing a contract, as part of duty of care. Ongoing performance should be tracked, with clear performance standards laid out in the contract.

Compliance with Carriage of Dangerous Goods

6.90 It is important that all those involved in the movement of healthcare waste are aware of the person providing DGSA support. The name and contact number(s) of the DGSA(s) should be listed in the organisation's waste management policy. Further information on transport and packaging is included in paragraphs 5.77– 5.142.

Waste Auditing

6.91 Waste audits are an essential tool for:

- Assessing the composition of a waste stream for the purposes of duty of care
- Demonstrating compliance with regulatory standards
- Informing the development of waste management policies and procedures so that they are better aligned to key waste management principles such as the circular economy
- Monitoring progress towards waste hierarchy targets and
- Monitoring the progress of the implementation of strategies and policies

6.92 Audits required for compliance purposes are:

- "Waste pre-acceptance audits", undertaken by waste producers to provide to waste operators and
- "Waste acceptance audits", undertaken by waste facility operators in accordance with waste acceptance procedures.

6.93 It is good practice to either tailor pre-acceptance audits or undertake additional audits for the purpose of monitoring progress against organisational waste policies and targets.

6.94 Duty of care audits provide detailed assessment of the performance of internal management against policy, including waste composition. Such audits provide evidence to support pre-acceptance audits, covering training, policy assessment and waste containment/handling measures.

Audit Scope and Procedure

6.95 Waste audits need to be carried out by a nominated person who is responsible for waste management, although this can be conducted with an experienced waste audit contractor or consultant.

6.96 Audits should only be undertaken by those who are trained in the audit procedure and who are fully aware of the risk and hazards posed. The type and effectiveness of the audit undertaken depends on the nature of the waste stream and the purpose of the audit. To audit the entire waste stream, more than one audit method may be required.

6.97 A detailed method statement should be produced for each audit.

6.98 It is good practice for waste audits to address the elements shown in Table 23 for the applicable healthcare waste types at the healthcare organisation site.

Table 23 Waste audit elements

Information to collect during theory phase of audit	Information to collect during practice phase of audit	Prepare action plan
Record the segregation, packaging and labelling of: • Infectious waste • Anatomical waste • Cytotoxic and cytostatic waste • Offensive waste • Domestic waste • Medicinal or pharmaceutical waste • Dental amalgam and gypsum (seperate) • Radioactive wastes • Recycling Record the provisions of bins/waste receptacles: • Location • Type • Quantity • Capacity	Review compliance and performance against set targets for: • Classification • Segregation • Packaging • Waste description • Paperwork completion and retention • Storage • Recycling • Movement/Transport • Health and Safety • Final disposal • Review bin provisions across the site • Net zero and social value	Record actions for improvements, with prioritisation to compliance and health and safety • Set a target date • Assign responsibility • If identified bin provisions need to be improved, consult Chapter 5 and arrange for improvements to be made as soon as practicable

6.99 Audits should be conducted in two phases:

1. Desk-based (what do the policies, procedures and training specify for waste segregation, packaging, labelling, etc.)

2. Practice (inspection of waste in containers in use throughout the facility).

6

Pre-acceptance waste audits

6.100 Permitted waste treatment and disposal sites in Wales and England must obtain pre-acceptance audits from producers of waste before they can accept the waste and are required by the producer at the frequencies demonstrated in Figure 15.

6.101 Waste pre-acceptance audits are the assessment of the characteristics of a waste to ensure that the disposal or recovery method for the waste is compliant and appropriate.

6.102 The Chartered Institution of Wastes Management (CIWM) provides established guidance (2014) on waste pre-acceptance audits and managing healthcare waste which should be followed by any person responsible for carrying out a pre- acceptance audit.

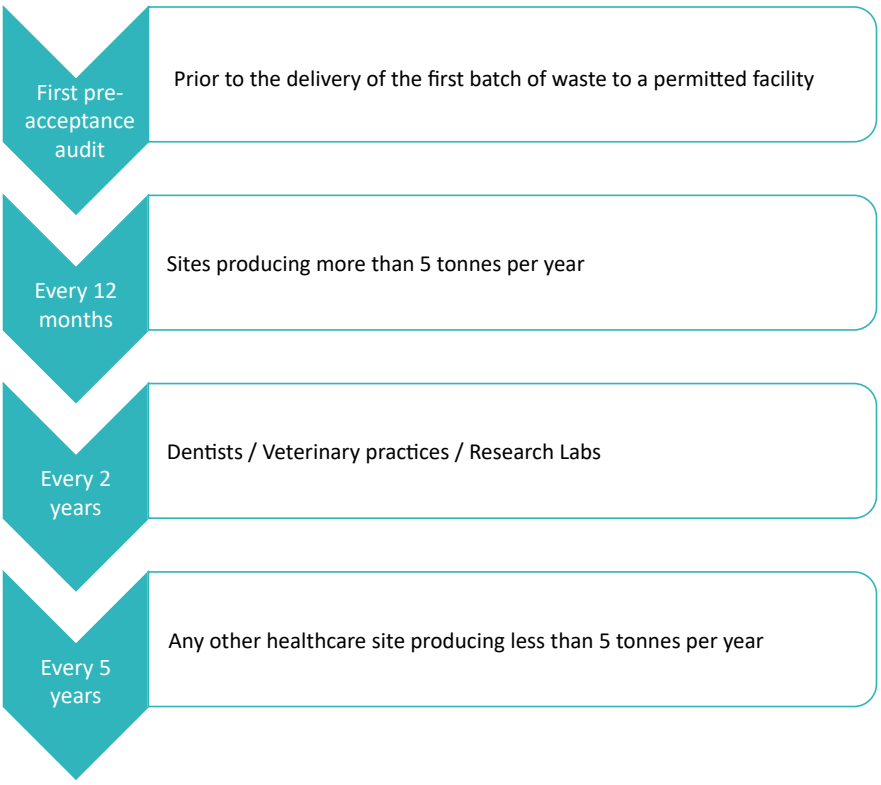
6.103 If feasible, non-compulsory waste audits should be carried out before implementing or updating waste management procedures, and at routine intervals afterwards, in order to monitor compliance with waste segregation schemes.

6.104 After changes are made to waste management policies, audits can be used to monitor and encourage compliance.

Permitting and licensing

6.105 Any waste operation or installation will require an environmental permit unless it is an exempt activity.

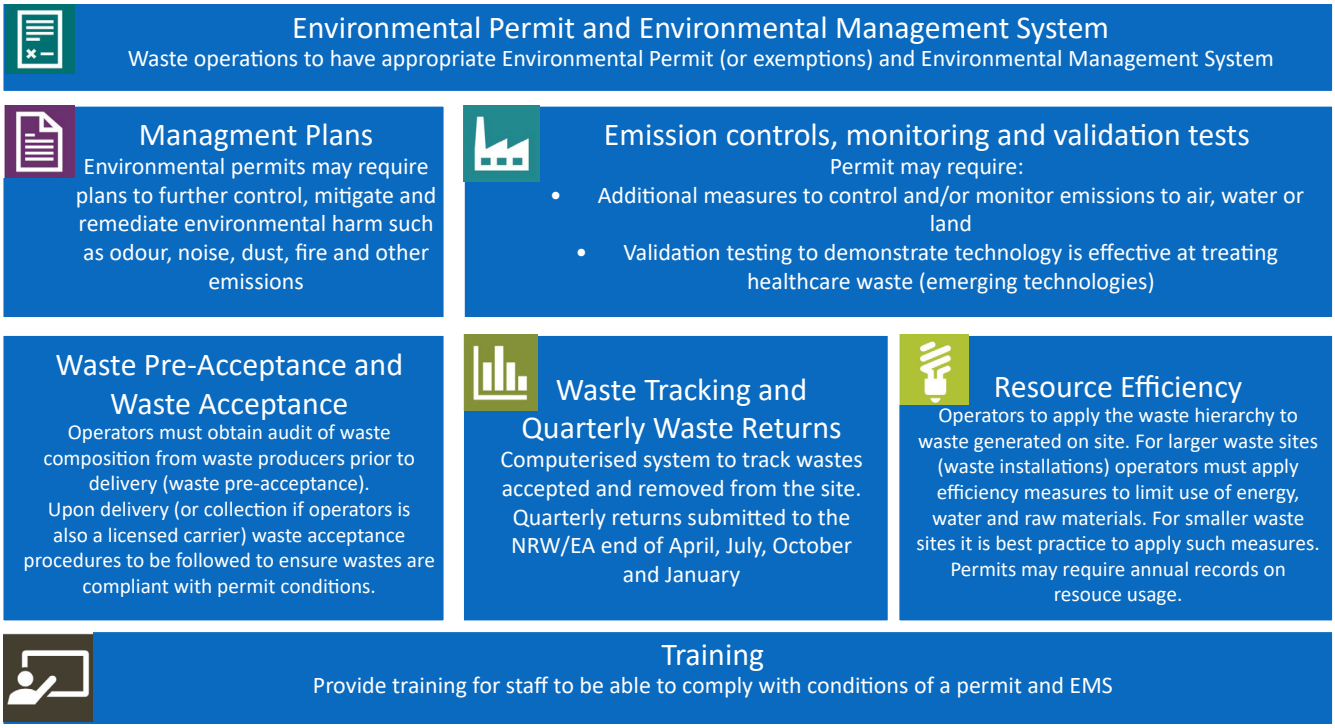
Figure 15: Summary of environmental permitting compliance requirements



6.106 Healthcare organisations should ensure healthcare wastes are sent to waste management facilities that are permitted to accept and treat/dispose of the waste intended for them.

6.107 Operators of such sites must follow the Environment Agency's technical guidance, which may form part of the operational techniques within a permit: 'How to comply with your environmental permit: additional guidance for clinical waste (EPR 5.07)' (Environment Agency, 2011a) and 'Waste storage, segregation and handling appropriate measures – Healthcare waste: appropriate measures for permitted facilities' (Environment Agency, 2021b).

Figure 14: Summary of environmental permitting compliance requirements



6.108 Operators using environmental permits must also comply with an EMS, which is required to outline the procedures for minimising the risk of pollution to land, air and water from the activities covered by a permit.

6.109 The regulatory authority – NRW, Environment Agency, SEPA or NIEA – will attend permitted sites to review compliance. In general, the frequency is dependent on the environmental risk the site poses.

6.110 For permitted sites in Wales and England, following such visits the operators are provided with a Compliance Assessment Report (CAR), which will provide comments on the inspection and will state if any aspects of the permit have been breached. If any breaches were identified, a compliance score will be applied to indicate the severity of the breach.

6.111 The regulator may allow for changes to the operation of a waste activity prior to or without a variation to a permit. Local enforcement positions (LEPs) are at the discretion of the regulator where changes to operation are deemed justified for the short term. LEPs state the additional measures an operator must comply with. Within Wales NRW has a low risk position and regulatory decisions for similar issues.

6.112 The regulator may require an operator to apply for a variation or revert to original permit conditions once an LEP has expired.

6.113 Healthcare facilities that do not require an environmental permit must ensure that any other relevant licences, registrations and permissions are in place. The waste manager is responsible for checking and securing the following, if required:

- Waste exemptions and/or operations under a regulatory position statement (RPS) can be viewed on the NRW/EA website
- Obtaining a waste carrier licence from Natural Resourse Wales/Environment Agency if carrying waste off the premises
- Hazardous waste registration with NRW if producing more than 500 kg of hazardous waste in any period of 12 months (see box after paragraph 4.22).

6.114 Hospital sites often accomodate multiple organisations that generate hazardous waste. In Wales, if these organisations occupy distinct units or areas within the complex, each is regarded as a seperate premises for the purposes of producer registration under the Hazardous Waste Regulations.

Health and Safety

6.115 Health and safety legislation requires employers to protect the health, safety and welfare of their employees, clients, visitors and the general public. Healthcare organisations should review their own and their waste contractor's approach to health and safety as part of their responsibility.

- Healthcare organisations should:
- Have an appointed health and safety representative or advisor and/or employee representative
- Have a health and safety policy and management system
- Maintain a health and safety record of the site, such as capturing information on all accidents and incidents
- Observe general health and safety compliance.

Risk Assessments

6.116 As a minimum, a health and safety risk assessment must address the following:

- Hazards – what could cause injury or illness?
- Risk – how likely is it that a hazard will occur, such as someone being harmed, and the consequence of the hazard arising, such as how serious the injury will be?
- Action – what actions will be taken to eliminate the hazard, or if not possible, to mitigate or control the risk.

Where using contractors:

- Request a risk assessment for the carriage of dangerous goods
- Request a copy of the H&S policy, and updated copies following annual reviews
- Request and review the PPE policy used by the waste contractor, and check the extent to which the policy is complied with
- Check their ability to keep records of observations of H&S and to provide feedback to waste contractors, especially regarding breaches.

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6.117 Healthcare employers must comply with the COSHH regulations, including undertaking COSHH risk assessments for the use of hazardous substances. Such risk assessment must address the hazards, risks and controls for the wastes generated from the use of hazardous substances.

6.118 All staff involved in activities relating to the handling of healthcare waste must be made aware of the hazards, risks and control measures. The staff should read and understand the risk assessment, and the risk assessment must be regularly reviewed following any accident/incident to ensure it remains effective and compliant.

6.119 Further information is available from the HSE, in particular Approved Code of Practice L5 (HSE, 2013) regarding compliance with COSHH. Staff protection: PPE provision and vaccinations

6.120 Healthcare employers must ensure staff that handle healthcare waste have sufficient and correct PPE. This should be addressed in a PPE policy, risk assessments and method statements.

6.121 Healthcare organisations should ensure waste contractors also have the adequate provisions for PPE for their staff.

6.122 PPE must be maintained and kept in good condition, and replacement PPE should be made available.

6.123 Appropriate numbers and locations of collection points, either as waste containers or safe collections for PPE that can be reused after sanitisation, should be made available, particularly in areas where PPE is used. PPE use should be based on a local risk assessment, carried out by the Health and Safety department of the relevant healthcare organisation.

6.124 Further guidance and information on personal protective equipment at work can be found on the HSE website.

6.125 Employers must review the vaccination needs of staff, which includes an assessment of the risk from exposure to pathogens and disease. Staff who handle infectious waste, including waste management staff, therefore must also be considered in any immunisation programme, in particular for blood-borne viruses.

6.126 Hepatitis B vaccinations should be offered to staff who may come into contact with infectious waste, and in line with DHSC Green Book chapter 12, 'Immunisation of healthcare and laboratory staff' (UK Health Security Agency, 2020).

6.127 HIV post-exposure prophylaxis should also be made available to staff who have been exposed; further guidance is provided by the UK Chief Medical Officers' Expert Advisory Group on AIDS (EAGA) 'Guidance on HIV post-exposure prophylaxis' (DHSC, 2015).

6.128 Vaccination should never be regarded as a substitute for good practice, although it does provide additional protection.

6.129 Guidance on assessing the risk to healthcare workers of exposure to blood- borne viruses, and action to be taken after possible infection, are provided on the HSE website. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR).

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Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations concerns incidents that contributed to work-related:

- Specific injuries outlined by RIDDOR
- Over-seven-day injuries
- Injuries to non-workers
- Reportable occupational diseases, including carpal tunnel syndrome, exposure to biological agents
- Fatalities
- Reportable dangerous occurrences, including collapses, overturning and failure of lifting equipment, explosions or fires causing disruption to workers for more than 24 hours.

6.130 Healthcare facilities and waste contractors must keep records of injuries, diseases and dangerous occurrences included within the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (2013) (RIDDOR).

6.131 The HSE must be informed of all reportable incidents either online or over the phone.

6.132 Records of incidents should be used as a management tool to inform risk assessment and help develop improved measures to prevent potential risks.

6.133 If an incident involves a contractor, healthcare organisations should request a copy of the contractor's incident reporting procedure and details of reported incidents, accidents and RIDDOR occurrences for the previous three years to identify trends.

6.134 Further information on RIDDOR in relation to health and social care can be found on the HSE website.

Investigations

6.135 All health and safety incidents should be investigated and be compliant with health and safety legislation (see Table 5).

6.136 Investigations are used to establish the causes of the incident, review existing risk controls and identify action needed if required, such as improved measures if found not to be adequate.

6.137 It is a legal requirement for all sharps injuries to be investigated under the Health and Safety (Sharp Instruments in Healthcare) Regulations (2013).

6.138 Any investigation must be based on sufficient information, notably:

- Who was injured?
- Where the incident occurred?
- What type of waste, sharp or other item caused the injury?

6.139 Any lesson learned following an investigation should be applied across the organisation, rather than just within a location or department only.

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Emergency preparedness

6.140 Evidence has indicated that healthcare organisations which are well prepared for unplanned events and emergencies are less likely to suffer serious service disruption or be exposed to excessive costs.

6.141 Developing a comprehensive risk register as defined in paragraphs 6.56–6.64 is helpful in preparing for unforeseen events. A comprehensive risk register will assist in the production of a wellconsidered and robust business continuity plan.

6.142 However, there are certain scenarios in which excessive volumes of healthcare waste might be produced, to the extent that existing management systems would be unable to cope. These could include an unforeseen waste contractor failure, or a major event that places long-term pressure on the NHS, such as a pandemic.

Business Continuity Planning

6.143 There are a number of events which may cause operational disruption. These include local, regional and national issues, supplier failures, and issues which cause significant and unexpected increases in waste generation.

6.144 Developing a clear and well-communicated business continuity plan (BCP) is a good way of understanding the measures that might need to be implemented in such scenarios.

6.145 Where response to a national issue is required, it is likely that Emergency Preparedness and Resilience Response (EPRR) protocols will be enacted, along with a single point of contact (SPoC) and national logistics cell.

6.146 Daily updates would typically be requested from affected health organisations and the supply chain so that the "live" situation is fully understood. It is likely that other stakeholders will also need to be engaged or consulted with, which may include NWSSP SES, NRW, NHS England, DHSC, EA, Defra, DfT and/or the HSE. Issues may be escalated to the NHS Wales region, in accordance with the NHS Wales Resilience Framework (2025) & Delivery Plan, and the relevant healthcare organisation's incident response plan.

6.147 The scale of response to a business disruption event is determined by the extent to which the issue is local, regional or national, as summarised in Table 24.

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Table 24: Disruption event description and key actions

Scale of event	Defined as	Examples of disruption event	Key actions
Local	Issues that affect a single health organisation, GP practice, or other body. Local issues are generally the result of isolated supply chain failures.	• Service provider has missed less than three (3) consecutive collections and/or the frequency of scheduled collections is reduced. • Treatment facility offline or unavailable for an undefined period.	• Manage through service contract • Notify local resilience team and IPC leads • Activate organisational BCP • Implement regular communications with service contractors • Conduct frequent waste backlog audits • Gather and record data
Regional	Service failures across one or more sites in an NHS region that have lasted for more than three (3) contiguous scheduled collections or intermittent collections lasting for more than one (1) week affecting more than one (1) organisation in a region. These impacts can affect all types of site and include primary and secondary care, mental health facilities and ambulance sites.	• Multiple treatment facility failures in any • NHS region. Regional service provider failures, for instance vehicle/driver/container shortfalls. • Shortfall in clinical waste treatment capacity due to unexpected increases in waste generation. • Regional severe weather events, such as snowfall or flooding.	• Escalate to National Logistics Cell function or others • Activate organisational BCP • Regional communications with service providers • Monitor corrective actions • Activate waste backlog storage contingency
National	Issues that cross more than two (2) adjoining or more than three (3) unconnected NHS regions. Will vary in severity and can be triggered by a variety of activities.	• Critical supplier failure, for example where services were disrupted prior to an organisation going into administration. • Major compliance issues caused by the stockpiling of waste on supplier sites. National surge in demand for clinical waste treatment. • Organisations failing to correctly segregate their waste in line with WHTM 07-01.	• Review whether a National Capacity Coordinator is required and take action if necessary • National Logistics Cell (or others) commence daily data gathering from NHS and service sectors • Activate waste backlog storage contingency • Assess market capacity • Seek regulatory relief where applicable and necessary, such as RPSs/carriage of dangerous goods authorisations

Principles in pandemic waste management

6.148 The response to the COVID-19 pandemic has demonstrated the need for healthcare organisations to be able to quickly adapt their waste management arrangements, in response to rapid increases in waste volumes and temporary changes in the way in which healthcare waste is managed.

During the COVID-19 pandemic the NHS produced a waste management standard operating procedure (SOP) to help ensure that the collective response to the delivery of waste management was consistent across all organisations. In the event of a pandemic or major incident, the NHS website should be checked to identify whether an SOP has been produced, and organisations should fully comply with the SOP where this is the case.

6.149 It is also important to consider the impact on non-clinical wastes, with specific consideration given to ways in which packaging and PPE waste can be minimised and cross-contamination avoided.

6

6.150 Healthcare organisations should check for any research carried out specific to the disease or infection, to determine the extent to which waste could serve as a vector for the disease, as this will likely have a significant impact on the way in which waste services are provided, and potential control measures. This should also include checking for any pandemic-specific waste management guidance that may be issued by the NHS centrally or by any regulator.

6.151 There are a number of key principles that should be considered in any response, as summarised in Figure 15.

6.152 When responding to an incident, it is essential that there is regular and accurate reporting of data so that situational responses can be based on well-informed and reliable information.

6.153 In such a scenario, ensure that waste volumes and movements are documented on a daily basis if feasible. This proved to be effective in the response to the COVID-19 pandemic, when the daily central reporting of waste volumes helped to manage network capacity by mapping and coordinating infectious waste treatment capacity against demand (see Figure 16).

Figure 15: Key principles in BCP response

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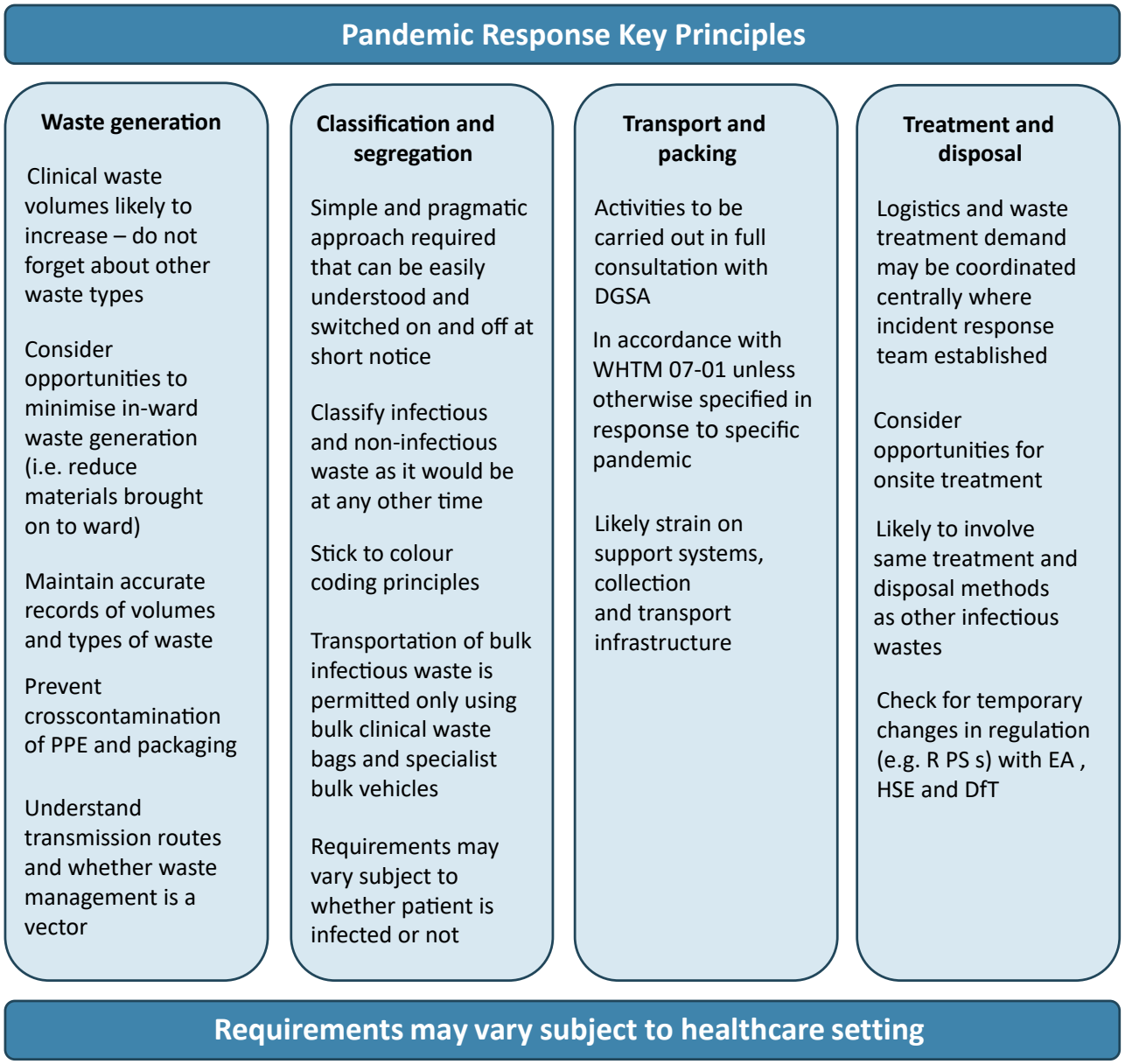
Figure 16: Key principles in waste management response to pandemic



A1

Appendix 1 - Technical

Note that the pathogen list below is indicative, not exhaustive.

UN number and name	Microorganism
UN 2814 **Infectious substance affecting humans**	• Bacillus anthracis (cultures only) • Brucella abortus (cultures only) • Brucella melitensis (cultures only) • Brucella suis (cultures only) • Burkholderia mallei – Pseudomonas mallei – Glanders (cultures only) • Burkholderia pseudomallei – Pseudomonas pseudomallei (cultures only) • Chlamydia psittaci – avian strains (cultures only) • Clostridium botulinum (cultures only) • Coccidioides immitis (cultures only) • Coxiella burnetii (cultures only) • Crimean-Congo haemorrhagic fever virus • Dengue virus (cultures only) • Eastern equine encephalitis virus (cultures only) • Escherichia coli, verotoxigenic (cultures only) • Ebola virus • Flexal virus • Francisella tularensis (cultures only) • Guanarito virus • Hantaan virus • Hantavirus causing haemorrhagic fever with renal syndrome • Hendra virus • Hepatitis B virus (cultures only) • Herpes B virus (cultures only) • Human immunodeficiency virus (cultures only) • Highly pathogenic avian influenza virus (cultures only) • Japanese Encephalitis virus (cultures only) • Junin virus • Kyasanur Forest disease virus • Lassa virus • Machupo virus • Marburg virus • Monkeypox virus • Mycobacterium tuberculosis (cultures only) [a] • Nipah virus • Omsk haemorrhagic fever virus • Poliovirus (cultures only) • Rabies virus (cultures only) • Rickettsia prowazekii (cultures only) • Rickettsia rickettsii (cultures only) • Rift Valley fever virus (cultures only) • Russian spring-summer encephalitis virus (cultures only) • Sabia virus • Shigella dysenteriae type 1 (cultures only) [a] • Tick-borne encephalitis virus (cultures only) • Variola virus • Venezuelan equine encephalitis virus (cultures only) • West Nile virus (cultures only) • Yellow fever virus (cultures only) • Yersinia pestis (cultures only)

UN number and name	Microorganism
UN 2900 **Infectious substance affecting animals only**	• African swine fever virus (cultures only) • Avian paramyxovirus Type 1 – Velogenic Newcastle disease virus (cultures only) • Classical swine fever virus (cultures only) • Foot and mouth disease virus (cultures only) • Lumpy skin disease virus (cultures only) • *Mycoplasma mycoides* – Contagious bovine pleuropneumonia (cultures only) • Peste des petits ruminants virus (cultures only) • Rinderpest virus (cultures only) • Sheep-pox virus (cultures only) • Goatpox virus (cultures only) • Swine vesicular disease virus (cultures only) • Vesicular stomatitis virus (cultures only)
[a] Nevertheless, when the cultures are intended for diagnostic or clinical purposes, they may be classified as infectious substances of Category B (carriage on road only)	

A1.2: Duty of care checklist

RESPONSIBILITIES FOR WASTE PENDING COLLECTION
Containers clearly labelled and secure
Limiting access to waste and their storage areas (from unauthorised personnel and pests)
Vehicles for collection are covered and secured
Wastes accurately described on Waste Transfer Notes/Hazardous Waste Consignment Note
Collate documents
Environmental permits and waste exemptions (Check EA Public Register and request copies from contractors)
Waste carrier and/or broker registrations (Check EA Public Register)
Records of enforcement action (Check EA Public Register and HSE website)
Business documents for organisations involved in the waste supply chain: ISO accredited management systems (in particular ISO 14001 Environmental Management Systems, ISO 9001 Quality Management Systems and ISO 45001 Health and Safety Management Systems)
Insurance provision. Waste contractors, as a minimum, are to hold public libaility insurance and employer's liability insurance
Hazardous Waste Consignment Notes (retained for two years minimum)
Waste Transfer Notes (retained for two years minimum)
Quarterly Returns (from waste treatment and/or disposal operators)
Pre-acceptance audits
Training records
Risk assessments (health organisation and the waste contractor)
COMPLIANCE WITH CARRIAGE OF DANGEROUS GOODS
Appointed Dangerous Goods Safety Adviser (DGSA)
Vehicles or packages supplied or used by a waste contractor are compliant with the relevant legislation
Correct use of UN number and class hazard label
Ensure drivers have all required authorisations and documentation in place and records maintained: • Authorisation document issued by Department of Transport for waste collected in bags or in non-UN-approved clinical waste packages • Dangerous Goods Declaration • Instructions in writing
RECOVERY OR FINAL DISPOSAL
Check permit allows for the waste types to be accepted
Check the waste activity on the permit matches the expectations of how the waste is reused, recycled, recovered or disposed
Site visit to learn and observe how healthcare waste is handled, treated/disposed of (Optional, it is best practice to audit sites where possible)

A1.3: WM3 hazards

Hazard
C1: Explosive (HP 1)
C2: Oxidizing (HP 2)
C3: Flammable (HP 3)
C4: Irritant (HP 4)
C5: Specific Target Organ Toxicity/Aspiration Toxicity (HP 5)
C6: Acute Toxicity (HP 6)
C7: Carcinogenic (HP 7)
C8: Corrosive (HP 8)
C9: Infectious (HP 9)
C10: Toxic for Reproduction (HP 10)
C11: Mutagenic (HP 11)
C12: Produces toxic gases in contact with water, air or acid (HP 12)
C13: Sensitising (HP 13)
C14: Ecotoxic (HP 14)
C15: Capable of exhibiting a hazardous property listed above not directly displayed by the original waste (HP15)
C16: Persistent Organic Pollutants

A2

Appendix 2 - Non-clinical waste and resource management principles

The management of non-clinical waste is vital to achieving objectives, goals and targets laid out in Chapter2. Non-clinical wastes may possess hazardous properties and must be handled, stored, treated and disposed of in accordance with the relevant guidance set out in Chapters 4 and 5. EWC codes for the classification of non-clinical wastes, and hazards associated with non-clinical waste streams, can be found in Technical Guidance WM3 (Environment Agency 2021a).

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Non-hazardous residual waste	General waste of the type produced by households. Often consists of food scraps (where not processed as a separate waste stream), non-recyclable plastics, packaging, noninfectious textiles, and small amounts of inorganic materials, such as stone. Represents waste that is left once all other efforts have been made to prevent, reuse, recycle or recover materials.	Switching from single-use items (such as paper cups) to reusable equivalents (glass or ceramic cups) Waste and recycling bins should be placed strategically and paired wherever possible. Bins should be placed in locations where they are likely to be needed and should ideally be placed so that one is always in view Provide recycled plastic cups for use with vending machines and/ or encourage staff to use reusable mugs.	Recyclables and residual general wastes can be stored in the same room but should be stored in separate designated bins. It is recommended that residual waste is stored in black bins, although clear/ opaque receptacles may also be used. Hazardous wastes (including some deodorants, batteries etc.) and clinical wastes should never be placed in the black-bag residual waste stream.	A waste contractor may be appointed to collect and dispose of residual waste. Typically, residual waste may be incinerated, landfilled or sent to a materials recovery facility (MRF) to have any recyclable content recovered from it.	The Newcastle upon Tyne Hospitals NHS Foundation Trust switched to reusable canteen cutlery, bowls, straws and side plates in 2017, saving £80,000 annually, and diverting from landfill: 513,600 disposable polypropylene bowls 490,800 disposable polypropylene lids for bowls 312,000 polystyrene bowls 371,000 plastic spoons 216,000 plastic knives
Organic waste	Organic waste, such as food waste from kitchens, green landscaping waste from grounds maintenance and floral displays	Ensuring a robust system for measuring food waste from difference sources (kitchen waste, plate waste, unserved meals), so that prevention interventions can be identified Sending back reusable items to suppliers where possible (such as cooking oil) Utilising “just in time” procurement for goods and examining sales patterns, to avoid over-purchasing (leading to food products unnecessarily being thrown away) Utilising digital meal ordering systems in hospitals, enabling healthcare and catering teams to adapt food provision to patient needs, manage allergies and diets, and minimise waste	Should be collected separately at source (kitchen and cafeteria) and kept separate. Under the Environment Act, this stream should be collected separately (not mixed) with other streams. The nature of the waste, in particular food waste, may give rise to problems with vermin. General operational practices will reduce the potential for vermin infestations, and other controls in place to prevent problems include: waste should not be stored on site for extended periods, with at least daily removal of food waste recommended	Macerators are disposal units that allow food waste to be flushed down existing drains, leaving food preparation and bin areas clean and free from hygiene problems. This option allows for a reduced reliance on waste collection but does not allow for any recovery opportunities, so is not preferred under the waste hierarchy, and is not permitted in Northern Ireland. Organic waste may be sent to a composting or anaerobic digestion (AD) facility for energy and/ or fertiliser generation.	In 2014, Cardiff and Vale University Health Board introduced separate collections of food waste for anaerobic digestion. This diverts an estimated 0.52 kg of food waste from landfill per bed per week and helps to generate renewable bio-energy. In 2013 Somerset Partnership NHS Trust Foundation introduced separate food collection, and designated food waste bins. The tonnage collected by the contractor indicates that, alongside a new dry recycling scheme, the food waste scheme has contributed to an overall recycling rate of between 75% and 88% between November 2013 and January 2014.

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Organic waste (continued)		Considering the possibility of entering a "back-of-store" surplus food partnership with a local charity so that any surplus food waste generated could be put to good use. If it is not possible for this waste to be redistributed to people, then consideration could be given for its use as an ingredient in animal feed Selecting plant landscaping that requires low maintenance and produces less waste Working with in-house catering staff or contractors to identify opportunities (and contractual incentives) to reduce food waste through: control of ordering for working lunches Active management of the quantities cooked in canteens Control of stock ordering menus that make use of "leftovers".	The area around the food waste storage should be cleaned after every removal and at frequent intervals throughout the day The floor of the loading areas should be regularly cleaned throughout the day and at the end of every working day. The food waste storage bins should be cleaned regularly Any waste spillage should be cleared up, as soon as practically possible. Collection of green wastes would have to be coordinated to ensure that wastes are removed from the site after services are completed.	For instance, organic waste may be treated on-site with de-watering technologies, which remove excess water and so the weight of organic wastes, before onward treatment and further recovery at an AD site for example. Organic waste may also be subject to on-site aerobic digestion, where a bio-enzymatic formula turns food waste into grey water, and via filters enters the drainage system. This option allows for a reduced reliance on waste collection, but depends on local water governance arrangements; and any further recovery opportunities, including EfW or fertiliser production, would depend on the units used and/ or the Trust's water treatment facility. In-Vessel Composting (IVC) can be used to treat wastes that have biosecurity or odour issues and facilitate pathogen destruction, such as food wastes. For IVC to operate successfully, structural material is needed to be added to the process; this is normally green waste or wood chip. A permit is required to use composted material off-site, and this should be factored into decision-making (does the facility have grounds in which to use the compost, or is getting a permit feasible?) Green waste is typically treated as a segregated waste stream through windrow composting or AD but can also be managed using IVC that utilises this as a bulking agent. Organic waste is generally not suitable for incineration because the moisture content is too high.	
Recyclable waste	Items such as non-infectious / non-chemically contaminated glass, including bottles, jars, glassware,and non-contaminated vials	Waste and recycling bins should be placed strategically and paired wherever possible. Bins should be placed in locations where they are likely to be needed and should ideally be placed so that one is always in view. Sending back reusable items to suppliers where possible	It is recommended that dry recyclables are separated at source and collected separately. Bins for recyclable waste should be clustered, clearly marked, and present in areas of high waste generation and high footfall (waiting rooms, reception, corridors, cafeterias etc).	The preferred option is for this waste stream to be collected by the local government authority or waste contractor for recycling at a permitted and licensed facility. Mixed recyclables can be sorted and separated at MRFs. Source segregated materials can be sent directly to re-processors for recycling, provided there is little contamination.	East Sussex Healthcare NHS Trust, in partnership with Veolia conducted a waste audit of their key sites and introduced bespoke recycling points within the hospitals as well as introducing recycling at ward- level (in staff and common rooms).

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Recyclable waste (continued)	Plastics, such as PET and HDPE bottles, food containers, bottles, and cups; polystyrene packaging, and metals such as aluminium, and ferrous drink cans, food tin cans, other metal containers such as empty paint containers. Non-contaminated paper and cardboard waste (packaging waste, office paper newspapers, magazines etc). Recyclable in most areas	Reducing the amount of packaging used to ship or transport products; for instance, switching from cartonless bottles or using multi-month packs Ensuring a returns policy is in place with suppliers for unsold and damaged goods Storing and reusing cardboard shipping boxes Training staff on how to properly handle packaging and avoid contamination in order to allow for reuse, in addition to ensuring that incoming packaging is segregated for recycling Bulk buying items such as office supplies to reduce the amount of packaging Avoiding colour printing whenever possible Setting double-sided printing as the default option for photocopiers and staff computers, and raising awareness of this with staff to discourage single-sided printing Using single spacing and narrower margins for less important documents Reusing out-of-date headed paper and wasted printouts as scrap/notebooks “Unsubscribing” from senders of from senders of junk mail	Some recyclables (plastics, ferrous and non-ferrous cans etc) can be processed on-site via baling and compaction, which can be done with machines (typically when dealing with large quantities of recyclables). These are used to bind together the separated material streams and provide compaction. Baling reduces transport volume. Compaction achieved through baling is advantageous for hospitals, as it reduces the storage space required. However, baling/ compaction should only be used if the receiving facilities requirements can accommodate the material in this form. Should be kept separate from non- recyclable wastes to avoid cross- contamination. Paper and card can be processed via bailing and compaction to reduce storage space requirements, provided the receiving facility’s requirements can accommodate the material in this form. Bales would need to be stored in a suitably fire-rated area. They are typically transported with a forklift truck, which would be required to manoeuvre the bales from the central waste storage area to the loading dock for removal off-site	In many places collected by a local government authority or waste contractor for recycling at a permitted and licensed facility. Stationery and office paper may be returned to the supplier if unused or undamaged.	Recycling has increased by 30% and delivered a 20% decrease in general waste

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Waste Electronic and Electrical Equipment (WEEE)	IT equipment (computers, monitors, printers, keyboards etc) Specialist equipment (coagulators, centrifuges, audiometry equipment, dialysis equipment, cardiology equipment, microscopes, autoclaves, mobile digital X-ray equipment, oscilloscopes etc) Bulky equipment (refrigerators, freezers, biosafety cabinets,televisions, washing machines, fans, microwaves, cookers etc) Implanted devices (pacemakers) Lighting equipment (fluorescent tubes/ bulbs) All other electronics, and electrical equipment (radios, speakers, monitoring and control equipment such as thermostats, smoke detectors and heating regulators etc)	Sending back reusable items to suppliers where possible Ensuring a returns policy is in place with suppliers for unsold and damaged goods Investing, where possible, in high-quality equipment that is durable and repairable Switching from analogue to digital X-ray systems to eliminate the stream of hazardous fixer, developer, and film Considering renting equipment that is used only occasionally rather than having to store, maintain and calibrate it in the workplace Not allowing obsolete equipment to take up space and collect dust. The sooner it is recycled, the quicker that valuable resources will be available for reuse, thus avoiding the processing of more virgin materials Allocating space in the central waste storage area for bulky items prior to collection/reuse.	WEEE should be stored in a safe, secure area. Care should be taken to ensure that equipment that may be capable of repair and reuse is not further damaged in storage. Compliance schemes and waste management companies that collect WEEE may require that it be separated in a certain way. Waste storage areas for WEEE will require appropriate firefighting methods as water will not be typically used in such environments.	Electronics can be hazardous to the environment and should be returned to the manufacturer for disposal / recycling where possible (as in the case of certain medical / laboratory electronics) or handed off to a designated government agency or specialist contractor. WEEE should be sent to specialist WEEE recyclers to ensure environmentally friendly and safe disposal. Simpler / non-laboratory WEEE can be repaired and / or donated (for instance in the case of outdated IT equipment). Disposal of electronic equipment will need to be in accordance with the Waste Electrical and Electronic Equipment Regulations and, if hazardous, the Hazardous/ Special Waste Regulations. IT equipment can often be repaired, or have components replaced. Specialist WEEE equipment should, if possible, be returned to the manufacturer for refurbishment, or specialist deconstruction and recycling. Simple microscopes should be safe to sell from scrap/ local recycling. Producers should contact their waste contractor to establish the best-practice disposal route for implanted devices.	Whittington Health NHS trust, in partnership with CRT group dispose of around 350 PCs, laptops, and mobile phones per year. These devices have their hard drives removed, cleared, and shredded (to ensure no sensitive data is retained) before being refurbished and donated to charities including homeless shelters, and education projects. This initiative has saved the trust approximately £3-5 per device in disposal costs, totalling around £1400 per year.

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Waste Electronic and Electrical Equipment (WEEE) (contd)	Batteries	Developing a procurement policy which explicitly precludes purchasing products that contain toxic materials such as mercury, PVC, or glutaraldehyde; and setting progressive targets for those which cannot yet be eliminated. Sending back reusable items to suppliers where possible. Ordering only from suppliers who provide rapid delivery of small orders and who accept the return of unopened stock Provide separate storage receptacles in waste storage rooms for batteries	Batteries should be segregated and collected separately. The waste receptable should be clearly labelled with the type of waste and the name of the major chemicals, with any necessary hazard labels attached to corrosive, flammable, explosive or toxic chemicals. The liquid contents of batteries should never be mixed or disposed of down the drain but should be stored in strong leak-proof containers. Where Healthcare facilities provide recycling bins for batteries, they will be required to comply with the requirements of the Hazardous Waste Regulations and the Carriage Regulations, which establish special rules for packaging.	Batteries can contain chemicals such as lead, mercury, or cadmium. If they are disposed of to landfill, the chemicals they contain may leak into the ground. This can pollute the soil and water and potentially harm human health. The preferred option for disposing of batteries would be to return these to the supplier or send them to a specialist recycling facility to recover metals, including valuable metals such as nickel, cobalt, and silver. Note that under duty of care and Hazardous Waste Regulations mixing prohibition, nickel cadmium and lead acid batteries would need to be segregated and recycled/disposed of appropriately.	NHS Scotland advocates the use of rechargeable batteries wherever possible, as they estimate that the energy required to manufacture a single-use battery is approximately 50 times greater than the energy the battery will give out in its lifetime.
Gypsum and plaster casts	Gypsum-rich wastes are likely to be produced from: Plaster casts and related materials in accident and emergency departments, fracture clinics, and perhaps veterinary surgeries. Plaster models in dental practices and similar units in hospitals. They may also be produced by chiropodists/ podiatrists.	Limited opportunities given healthcare need.	The vast majority of plaster casts and models are not infectious and must not be placed in the clinical waste stream. Gypsum plaster casts should not be placed in the offensive waste stream either. These should be segregated as a specific 18 01 04 gypsum waste stream.	These materials, if they enter a normal landfill with other waste including residues from clinical waste disposal, may produce hydrogen sulphide gas. For this reason, it is prohibited from landfill. The two main disposal options for noncontaminated gypsum wastes are: •gypsum recycling •hazardous waste landfill Procedures should be put in place to identify and segregate the small proportion that is genuinely contaminated and poses a risk of infection – this may then be disposed of in the orange bag.	

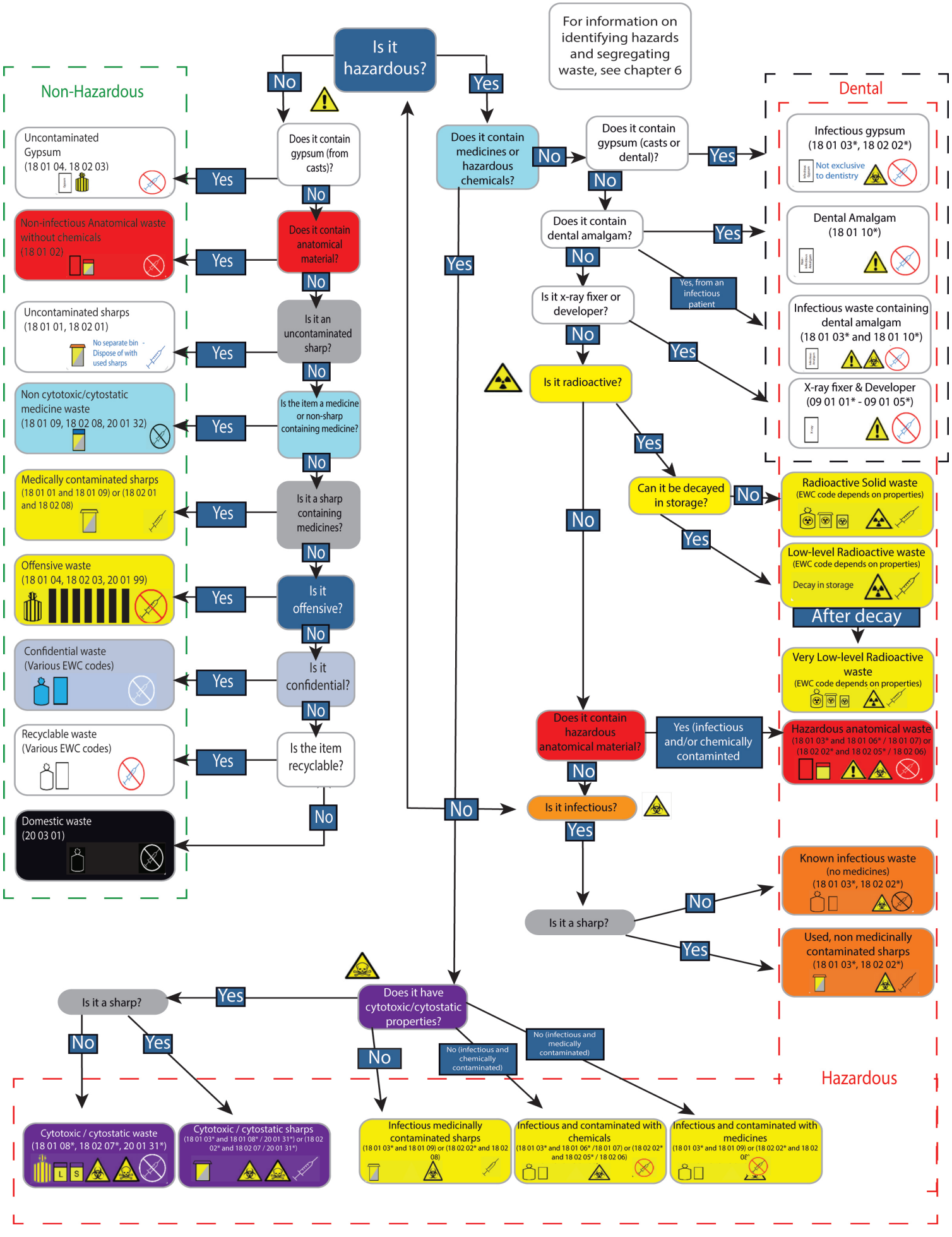
Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal
Non-clinical chemicals	Heavy metals contained in medical devices, such as mercury in broken thermometers, aerosols, POPs, hand gels, cleaning materials, bleaches, varnishes etc	Developing a procurement policy which explicitly precludes purchasing products that contain toxic materials such as mercury, PVC, or glutaraldehyde; and setting progressive targets for those which cannot yet be eliminated. Sending back reusable items to suppliers where possible. Using minimum concentrations of chemicals where possible Centralised purchasing of hazardous chemicals Monitoring of chemical flows within the health facility from receipt as raw materials to disposal as hazardous wastes Ordering only from suppliers who provide rapid delivery of small orders and who accept the return of unopened stock Preventing the accumulation of significant quantities of outdated chemical products by: Regularly ordering smaller quantities of product rather than in bulk and all in one go Using the oldest batch of a product first Using all the contents of each container Checking the expiry date of all products at the time of delivery. Provide storage receptacles in waste storage rooms for unused discarded hazardous chemicals for example bleaches, varnishes, etc.	Hazardous chemical wastes of different composition should be stored separately to avoid unwanted chemical reactions. Waste storage areas for chemicals will require appropriate firefighting methods as water will not be typically used in such environments. Care should be taken to ensure that liquid chemical wastes are never disposed of down the drain. A liquid and chemical resistant sump should be provided in areas set aside for washing of bins containing chemical wastes. Chemical waste must be collected in strong leak-proof containers that resist reaction with the type of chemical it hosts, labelled accordingly, never mixed with other chemicals, and sent to specialized treatment facilities (if available). The characteristics of different chemicals should be carefully considered prior to storage and subsequent disposal, taking into account flammability, corrosivity and explosivity. A separate zone should be allocated in the central waste storage area for storage of chemical waste, with further separation recommended depending on the hazard class. The central waste storage area should be equipped with adequate lighting and ventilation, spillage kits, PPE and first aid equipment. The chemical waste storage zone in the central waste storage area should be built with materials that are able to withstand explosion or leakage. Liquid and solid chemical wastes should be segregated. For storage of liquid chemicals, it is recommended that a chemical-proof sump is incorporated into the storage system. If this is not possible, then catch-containers should be placed under the storage containers to collect any leaked liquids. Packaging used for the storage and off-site transport of chemical waste should be appropriately labelled, indicating the hazardous class, date and point of generation, where possible. Alcohol hand gels that do not contain siloxanes (which cause significant damage to plant and equipment used in the sewage treatment process) and which is not prohibited to be discharged to the sewer may be rinsed out and the packaging recycled or placed into the domestic waste stream.	Less hazardous chemical wastes may be diluted and disposed of using sewage/ wastewater drains. Larger quantities and more hazardous chemical wastes will require more advanced treatment. Where possible, chemical wastes should be returned to the supplier, or passed on to a licensed contractor, or suitable government body for disposal. Large amounts of chemical waste should not be buried, because they may leak from their containers, overwhelm the natural attenuation process provided by the surrounding waste and soils, and contaminate water sources.

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Disability aids/ walking aids	Disability aids/ walking aids	Ensuring a returns policy is in place for patients to return aids at the end of the patient's care needs. Implement an internal reuse scheme with in-house refurbishment or a reuse service contract with suppliers for returned aids. Forming relationships with charities/other organisations that may be able to accept donations of disability aids (charities, local schemes/ organisations) When they have reached the end of their useful life, these items should be handled in accordance with the Waste Hierarchy Examine procurement and ordering practices to reduce overordering, and maximise return and reuse schemes. Examine the disability aids used in the organisation, and see if there is scope to refurbish/ make them suitable for use in accordance with the principles	Aids should be stored in a designated weatherproof area away from hazardous materials and other wastes. These items do not need to be stored in a bin unless there is a reason to do so (for instance if a large quantity of devices is being organised). Returned aids should be segregated from refurbished devices to retain resources and value. It is suggested separate storage containers or areas for aids that have been returned (before sorting), cleaned and pending further assessment, suitable for repair or refurbishment, and requiring recovery/ treatment/ disposal. Refurbished aids should be stored in pairs.	Adequate space and equipment for refurbishment should be made available when disability aids/ walking aids are repaired or refurbished by NHS organisations. Such as workstations and storage of tools and equipment. The manufacturer of the device should be contacted to establish whether a "take-back" scheme exists for this equipment. Used disability aids could also be donated to local charities which may be accept the devices for reuse, refurbishment, or recycling. Many of the components are likely to be recyclable, with potential for income. Damaged aids should be delivered to a local recycling facility.	Refer to the Walking Aids Reuse How-To Guide
Textiles	Non-infectious textiles (clothes, linen, and curtains etc)	Ensuring a returns policy is in place with suppliers for unsold and damaged goods Forming relationships with charities/other organisations that may have use for textiles. Clothes and textiles that are in good condition can be donated to registered charities and reuse organisations. When the bed linen is restocked daily, any unused linen should be placed where it can be used first, to ensure stock rotation. Excessive amounts of linen should not be taken into an isolation room/cohort area as any unused linen must be treated as contaminated and disposed of accordingly. Effective management of bed linen should ensure that there is minimal or no excess linen left on the ward each day.	Clean textiles must be: Stored in a designated, clean, dust-free, closed cupboard to prevent airborne contamination, or on a dedicated fully enclosed mobile trolley. Stored off the floor. Segregated from used/ soiled textiles. If there is exposure of clean textile to any infectious agent, then it must be disposed of as infected linen Clean textiles must not be: Stored in areas such as the sluice or in bathrooms. Decanted onto open trolleys unless for immediate use.	The manufacturer of unused textiles should be contacted to establish the possibility of implementing a take-back or bring-back scheme. Collection of such wastes by registered charity collection services should also explored. Items that are not suitable to be passed onto someone else can be recycled and made into new items, for instance padding for chairs and car seats, cleaning cloths and industrial blankets.	

Waste type	Description	Waste prevention, resource efficiency and circular economy implementation	Waste segregation, storage, handling and collection	Recovery, treatment and disposal	Case studies
Bulky waste	Items that are too large to be accepted by the regular waste collection (refurbishment waste, furniture, mattresses, bed frames, tables, chairs)	May potentially be repairable or recyclable, depending on the nature of the item. Sending back reusable items to suppliers where possible (wooden pallets, furniture, mattresses, chairs tables, bed frames etc). Not allowing obsolete equipment to take up space and collect dust. The sooner it is recycled, the quicker that valuable resources will be available for reuse, thus avoiding the processing of more virgin materials. Allocating space in the central waste storage area for bulky items prior to collection/reuse.	Bulky waste items are typically too large to be stored in bins, so should be kept uncontained in a secure area where possible. Needs to be stored until collection can be arranged. Materials such as wooden pallets should be properly stacked where possible to maximise the ability to reuse them and minimise safety hazards.	The disposal of heavily soiled or infectious mattresses should be made through the waste contractor. Most bulky items will be recyclable or feature component parts that are recyclable, for example timber, metal, cardboard, textiles. Non-recyclable items can be sent to conventional EfW facilities for energy recovery or to landfill.	Barts Health NHS Trust has partnered with Globechain and Premier Sustain to distribute bulky items which are no longer needed (furniture, fittings, etc) to local organisations which can use them. Globechain requires recipients to prepare case studies, so Barts Health NHS Trust can understand how these items are being used, and Premier Sustain creates monthly reports detailing the GHG reductions achieved through the programme.
Depressurised containers	Depressurised gas cylinders or containers	Sending back depressurised containers to suppliers where possible.	According to the British Compressed Gases Association's (BCGA) Code of Practice 44, "cylinders are never fully empty, unless a cylinder is new, de-valved, or following inspection and test where it has not yet been filled with a gas." Therefore, their storage is considered in-line with full gas cylinders as described in this Code of Practice. Gases with the same hazard category should be grouped together, with clear signage used to indicate this. It is recommended that depressurised containers are stored externally in secured compounds or cages. If this is not possible, then a dedicated internal storage room with appropriate signage should be allocated for this purpose. It is recommended that full gas containers are segregated from empty ones, using labelling to clearly indicate the 'cylinder status'.Empty cylinders should be treated with the same caution as full ones (by chaining or clamping them to prevent them from falling over. Small cylinders can be stored horizontally on metal racks.	BCGA's Code of Practice 18 states that empty gas containers should be returned to the supplier as soon as possible. Aerosol cans may be classified as non-hazardous if they are empty and can be sent to metal recyclers.	

A3

Appendix 3 - Waste segregation and classification diagram



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Useful websites

FutureNHS is a platform from the NHS, helping the health and social care sector connect and collaborate. https://future.nhs.uk/

UK Research and Innovation is a nondepartmental public body sponsored by the Department for Business, Energy and Industrial Strategy (BEIS). https://www.ukri.org/

Warp It: a reuse network, their mission is to provide a place where organisations keep their equipment, assets and “stuff” circulating to reduce spend, waste and supply chain environmental impacts. https://www.warp-it.co.uk/

Abbreviations used in this document

AD Anaerobic Digestion
BAT Best Available Techniques
BBV Blood borne viruses
BCGA British compressed gasses association
BCP Business Continuity Plan
BPM Best Practice Means
CAR Compliance Assessment Report
CEAP Circular Economy Action Plan
CIWM Chartered Institution of Wastes Management
COSHH Control of Substances Hazardous to Health
CoTC Certificate of technical competence
CPD Continued Professional Development
DDT Dichlorodiphenyltrichlorethane
Defra Department for Environment, Food and Rural Affairs
DfT Department for Transport
DGSA Dangerous goods safety adviser
EA Environmental Agency
EAGA Expert Advisory Group on AIDS
ECP Emergency Car Practitioners
EfW Energy from Waste
EFPMS Estates Facilities Performance Monitoring System
EMS Environmental Management System
EoW End of Waste
EPRR Emergency Preparedness & Resilience Response
ERIC Estates Return Information Collection
EWC European Waste Catalouge
FHT Frictional Heat Treatment
FTE Full-time Equivalent
GHC Greenhouse gases
WHBN Welsh Health Building Note
HCW Health care waste
HDPE High-density polyethylene
HP High-density polyethylene
HSE Health and Safety Executive
HSENI Health and Safety Executive Northern Ireland
WHTM Welsh Health Technical Memorandum
IBC Intermediate Bulk Container
IMDG International Maritime Dangerous Goods
IPC Infection Prevention and Control
IVC In vessel composting
KPI Key performance Indicator
LEP Local Enforcement Position
LoW List of Waste
MPE Medical Physics Expert
MRF MRF
NAO National Audit Office
NIEA Northern Ireland Environment Agency
NRW Natural Resources Wales
OEP Office of Environmental Protection
PET Polyethylene terephthalate
POPs Persistent Organic Pollutants
PPE Personal protective equipment
PPN Procurement policy note
RIDDOR Reporting of Injuries, Diseases and Dangerous Occurances Regulations
RPA Raditation protection adviser
RPS Regulatory postition statement
RWA Radioactive Waste Adviser
SDS Safety data sheets
SEPA Scottish Environment Protection Agency
SOP Standard Operating Procedure
SPoC Single point of contact
STAATT State and Territorial Association on Alternative Treatment Technologies
UKRI UK Research and Innovation
VCA Vehicle Certification Agency
WEEE Waste Electrical and Electronic Equipment