

Pre-Acceptance Waste Audits

A guidance document for large
healthcare waste producers in England



CIWM

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Disclaimer

This guidance document is intended to provide information to all those establishments that are required to undertake pre-acceptance audits of their waste arisings. It has never been the intention that this document should be used for legal or public appeal cases.

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1. Introduction

1.1 What is waste pre-acceptance?

The Environmental Permitting (England and Wales) Regulations require that all wastes generated at a property that undertakes healthcare practices must be subject to a pre-acceptance audit prior to collection via a contractor. Failing to comply can result in the contractor being unable to collect your wastes. Furthermore, undertaking the correct pre-acceptance audit procedure will enable you to ensure your wastes are transported in accordance with legislation and that the suitable documentation and audit trail for managed wastes is available.

Waste pre-acceptance is the process of assessing the characteristics of a waste to enable a decision to be made about the appropriate disposal or recovery method for the waste.

For some types of waste it's possible to take a sample of the waste and carry out analysis to determine its characteristics. This might work for a chemical waste, but it isn't really possible for clinical and healthcare wastes which are highly variable in composition and have associated hazards that make handling of the waste inappropriate.

As such, pre-acceptance for clinical and healthcare wastes is undertaken using the pre-acceptance audit methodology. In essence, this means that the waste is sampled and assessed at source by inspecting it as it's generated and reviewing the processes for its production and subsequent management.

The information obtained during the pre-acceptance audit then informs the disposal or recovery method for each waste stream, to ensure that the method used is appropriate, compliant, reflects best practice and reduces the risk of harm to people or the environment.

Waste pre-acceptance applies to all producers of healthcare waste, however the level of detail provided in some sections of this guidance may not be applicable to smaller producers or those who only generate specific streams. Some waste

contractors have their own online tools that are aimed at smaller producers. Various professional organisations (e.g. the British Dental Association) have also developed tools. It is perfectly acceptable to use these tools when they are suitable for the quantities and types of waste generated by your organisation. Where an online tool does not meet your needs this guidance document will walk you through a typical hospital pre-acceptance audit covering most common areas, associated paperwork and waste streams. Other producers may wish to simply refer to specific sections.

Why are pre-acceptance audits important?

In addition to ensuring compliance with the Environmental Permitting (England & Wales) Regulations, there are several benefits to following best practice and undertaking thorough pre-acceptance waste audits, most importantly human health and environmental benefits. For example, audits can help to identify specific locations where potentially hazardous wastes are being wrongly assigned to a bin (e.g. medicinal sharps being placed in clinical waste bags) and by identifying any potentially incorrect segregation, harm to employees and contractors can be prevented. The environmental benefits can also be significant, for example by preventing inappropriate wastes being sent to for disposal when alternative recovery options are available.

Significant cost savings can also be realised through the correct segregation and classification of healthcare and clinical wastes.

The Royal College of Nursing (2011) have indicated in their freedom of information report on waste management that there is the potential for an annual saving of approximately £5.5 million for the NHS if just 20% of incorrectly classified infectious waste were to be reclassified as offensive waste. This is the result of infectious wastes costing a median value of £469 per tonne and offensive wastes costing a median value of £501 per tonne (Royal College of Nursing, 2011).

Fig. 1 outlines the key rationales for undertaking a pre-acceptance audit.

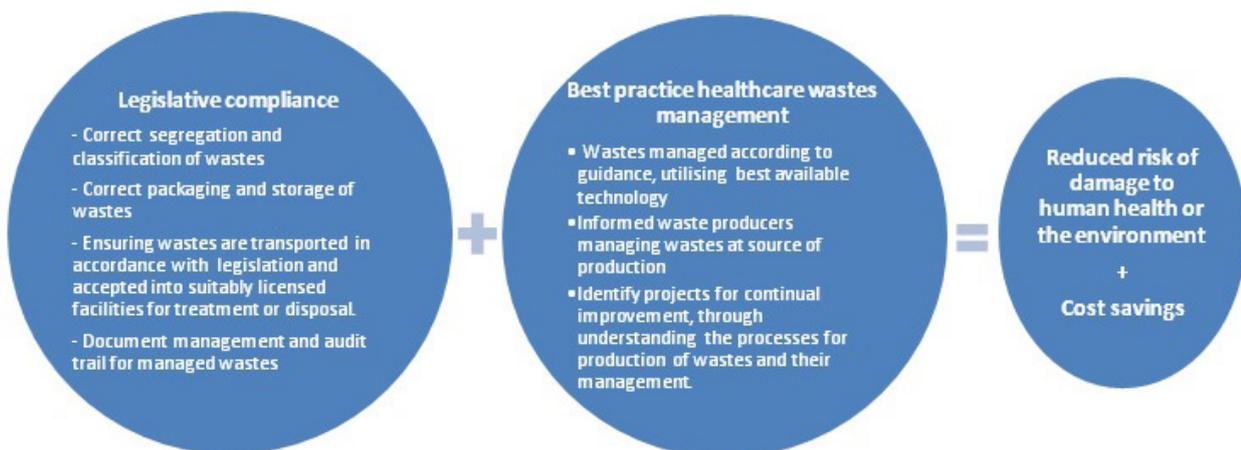


Fig. 1: Key reasons for undertaking a pre-acceptance audit

1.2 Guidance and legislation overview

All types of waste and activities involving the disposal or recovery of waste are governed by various regulations and legislation. These are applicable to everyone involved in the waste management chain, from the producer of the waste, through to the organisation managing its ultimate disposal.

There are three main types of regulation relevant to waste management, namely:

- environmental and waste regulations
- transport regulations
- health and Safety and infection control regulations

As pre-acceptance audits are concerned with assessing wastes to determine their suitability for a particular treatment or disposal method, the environmental and waste regulations are the most important for the purposes of this guide. Further information on applicable transport and health and safety legislation can be found in the HTM 07-01 [Safe Management of Healthcare Waste](#) (HTM 07-01) guidance document.

The Department of Health (DH) and the Environment Agency (EA), the two key authorities with responsibility for healthcare waste management (i.e. from generation to final disposal) in England, have produced guidance to provide advice to healthcare waste producers on meeting their legal obligations.

This guidance is applicable in England. Waste producers in Scotland, Wales and Northern Ireland should seek advice from their waste management contractor or local regulatory authority.

The EA has the power to prosecute offenders through the courts and to issue civil sanctions without recourse to the courts. Such sanctions include the power to issue fines of up to £250,000 for certain offences. [EA Civil sanction briefing note](#).

1.3 Relevant guidance and legislation

There are two key guidance documents that are relevant to waste producers undertaking pre-acceptance audits. The guidance provided helps producers of waste and waste management contractors to ensure compliance with the legal requirements. These documents are:

Department of Health - [HTM 07-01 Safe Management of Healthcare Waste](#) March 2013

This publication is the key guidance document that all healthcare waste producers should follow to ensure compliance with all relevant legislation.

The guidance includes practical advice on all aspects of healthcare waste management from segregation at source, through packaging and colour coding, to storage, transfer off-site and treatment requirements.

It also includes a section on undertaking waste management audits at healthcare facilities.

The latest edition was published in March 2013. Please note that it is subject to a continual review process so care should be taken to ensure that versions in use are current. The current version is available to download from the [‘Department of Health’ section of the gov.uk web portal](#).

Environment Agency - [Clinical Waste \(EPR 5.07\)](#)

This publication is the EA’s guidance document for the operators of clinical waste management facilities. It provides guidance on the best available techniques for the compliant operation of sites that incinerate, treat, store and transfer healthcare wastes.

The guidance states that pre-acceptance waste audits are the most appropriate way to check that the healthcare waste producers are segregating the waste generated appropriately and consigning it correctly to ensure compliance for both the producer and the contractor.

Without a valid pre-acceptance audit, the contractor cannot legally accept and dispose of your waste.

The guidance also sets out what activities a pre-acceptance audit must cover and what information it must include to be acceptable to the waste contractor.

There are three pieces of legislation with particular relevance to waste producers undertaking pre-acceptance audits. An overview of these regulations is provided as follows:

[The Hazardous Waste \(England and Wales\) Regulations 2005](#) (and [List of Wastes \[England\] Regulations 2005](#)) (as amended)

These Regulations were introduced to implement new controls for the management of hazardous wastes. They:

- provide a definition of hazardous waste.
- require the use of European Waste Catalogue (EWC) codes to describe wastes.
- set out the requirements for cradle to grave documentation for the movement of hazardous waste, including the use and format for consignment notes.
- define the record keeping and reporting requirements for hazardous waste.
- introduced the requirement to segregate all types of waste and as such made it illegal to mix hazardous with non-hazardous waste, and to mix different categories of hazardous waste.
- introduced the duty to register as a hazardous waste producer with the EA if you produce over 500kg of hazardous waste per year (combined total for all types of hazardous waste).

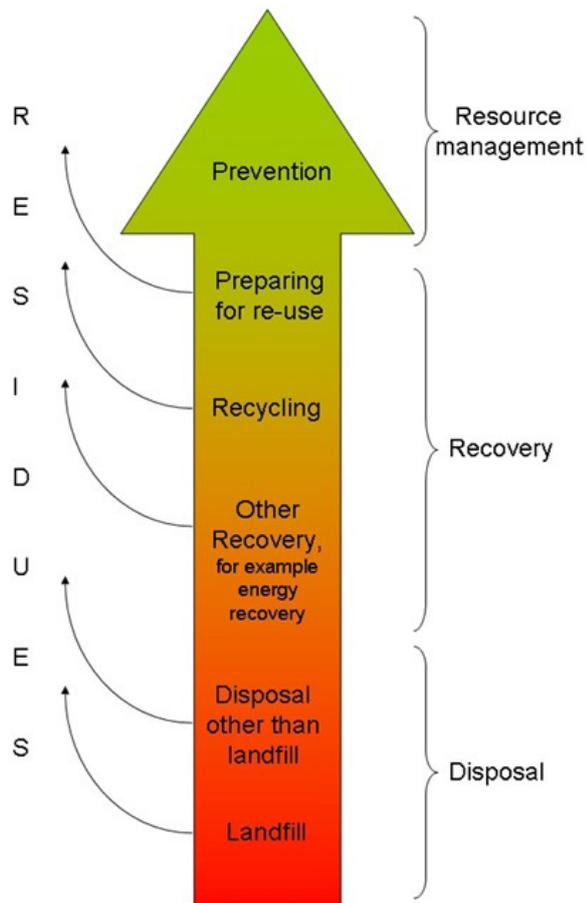


Fig. 2: Schematic of the Waste Hierarchy

[The Environmental Permitting \(England and Wales\) Regulations 2010 \(as amended\)](#)

These Regulations were introduced to consolidate the Waste Management Licensing regime and Pollution Prevention and Control (PPC) permitting process into one system of Environmental Permits. All operators of clinical and healthcare waste treatment plants, incinerators and transfer stations must comply with these regulations.

They provide a system of environmental permitting for a wide range of potentially polluting activities, including certain types of waste operations for the recovery or disposal of waste.

The permits strictly control what types of waste (by EWC code) a waste contractor can accept and what they can do with the waste type (e.g. what treatment process can be used, whether it is permitted for storage and transfer)

The permit requires the site to be managed in accordance with 'best available techniques' (BAT). Pre-acceptance audits at the site of production are considered to be BAT for healthcare waste pre-acceptance.

[The Waste \(England and Wales\) Regulations 2011 \(as amended\)](#)

The Waste (England and Wales) Regulations 2011 include aspects of the 'Duty of Care' (DoC) that were first introduced in the Environmental Protection Act 1990. The key requirements of DoC are that:

- o Everyone who generates, imports, keeps, stores, transports, treats or disposes of waste must take all reasonable steps to ensure that it is managed properly.

The DoC Code of Practice states that you must:

- o Ensure that the person who takes control of your waste is licensed to do so.
- o Take steps to prevent your waste from escaping from your control.
- o Store your waste safely and securely.
- o Prevent your waste from causing environmental pollution or harming anyone.
- o Describe the waste in writing and prepare a transfer note if you intend to pass it on to someone else.

The same regulations also brought requirements from the European Waste Framework Directive into domestic law. There are various new requirements, the most important of which for clinical and healthcare waste management is the:

- o Legal requirement for organisations to apply the European Union Waste Hierarchy (Fig. 2) when deciding on waste management options, and to declare on the consignment paperwork that the Hierarchy has been applied.

Table 1: Key audit deadlines according to waste producer

Waste Producers	First Audit Deadline	Subsequent Audits
Doctors/GP Surgeries (SIC 85.12)	01 July 2011	Every 5 years
Sites producing over 5 tonnes per year	01 Nov 2011	Every 12 months
Dentists/Veterinary/Research Labs	01 March 2012	Every 2 Years
Other Healthcare involving no Doctors/Hospitals (SIC 85.14)	01 July 2012	Every 5 Years
Community Pharmacies	1 July 2013	Every 5 Years
Care Homes providing nursing or medical care	1 July 2013	Every 5 Years
Other Healthcare not included in the above, producing < 5tonnes pa.	01 July 2013	Every 5 Years

Dates taken from the Environment Agency's Briefing Note, Version 6.0 October 2010

1.4 When must an audit be completed and how often?

The frequency at which pre-acceptance audits have to be completed is dependent on the type of producer and the amount of hazardous clinical waste generated per year. In October 2010, the EA published a briefing note that set deadlines and frequencies for all applicable waste producers (Table 1).

It is important to note that the frequency of audits for some may change if they fall below the five tonne threshold. For example, if a producer implements the offensive waste stream and the quantity of hazardous waste they generate falls to under five tonnes per annum. Another example might be where a producer is not required to generate an annual audit as they do not generate over five tonnes, but then due to changes in practices the quantity increases to take them over the threshold, at which point an annual audit would then be required. It should be noted that for sites generating over five tonnes per year, the entire practice should be included in the first audit.

Subsequent audits should include one third of the units, wards and departments. Over a three year period, all units, wards and departments must be included. If a producer has an audit rejected as it is unsatisfactory or they have an EA audit and have to make major changes to the way they segregate waste then they may be requested to conduct a 100% site audit even though they may have submitted 1/3rd audits previously. For further information, please see EPR 5.07.

1.5 Who can carry out the audit?

Audits may be completed by staff internal to the organisation being audited or external expertise may be used, including a representative of the waste contractor or by third party healthcare waste management consultants.

However, it is important that the person(s) carrying out the audit are suitably trained and competent with regard to healthcare waste management. EPR 5.07 states “these staff must have a clear understanding of clinical waste, its composition, classification, packaging and transport, the wastes associated with specific healthcare activities, any conditions with the permit that relate to these, and the

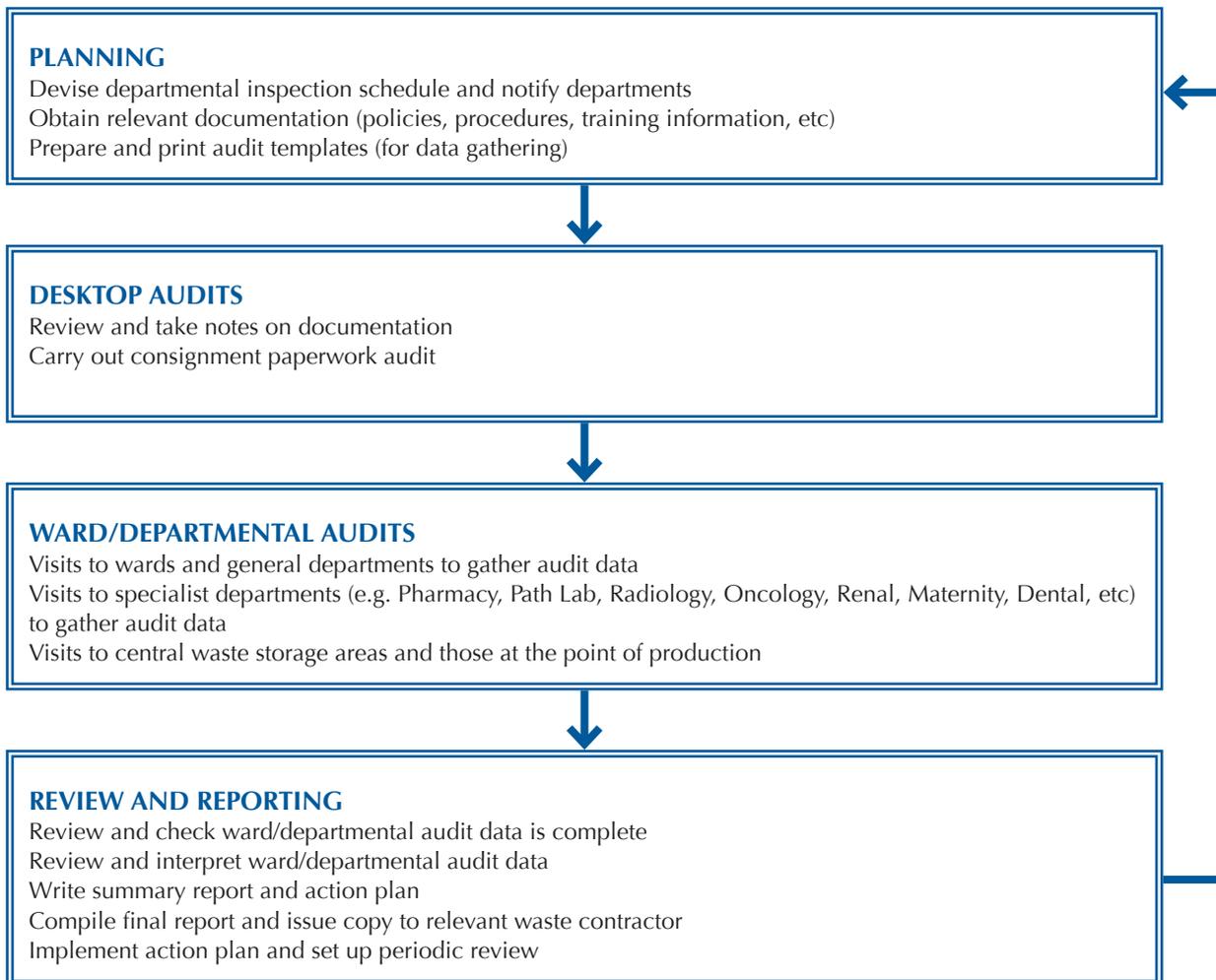


Fig. 3: Key steps in undertaking an audit

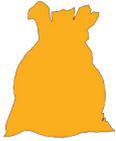
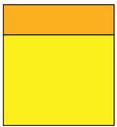
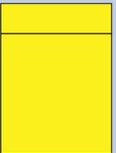
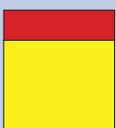
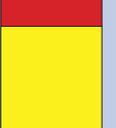
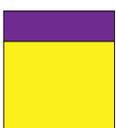
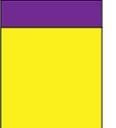
DESCRIPTION	CONTAINER TYPE	COLOUR CODE	EWC CODE/S	UN CODE	TREATMENT METHOD
Infectious clinical waste	Orange Bag		18 01 03*	3291	Alternative Treatment
Infectious waste contaminated with chemicals	Yellow bag		18 01 06* 18 02 02*	VARIOUS 3291	or Incineration
Offensive Waste Waste from non-hazardous processes. Non-infectious	'Tiger' Bag Biobin		18 01 04 18 02 03	N/A N/A	Landfill or Incineration (EfW)
Clinical Waste for Treatment: All infectious waste EXCEPT: Anatomical tissue & high risk waste NO MEDICINES	Orange Bag Orange-lidded Sharps Bin Orange-lidded Plastic Bin or Box with orange plastic liner. Biobin	  	18 01 03* 18 02 02* 18 01 01	3291 3291 N/A	Alternative Treatment
Clinical waste for Incineration: Highly infectious waste (Cat. A or live cultures) only, recognisable tissue or mixed sharps, chemicals and medicines.	Yellow bag Yellow-lidded Sharps bin Yellow-lidded plastic bin or Box with yellow plastic liner Biobin	  	18 01 03* 18 02 02* 18 01 02 18 02 01	3291 3291 N/A N/A	Incineration
Non-hazardous medicines	Yellow plastic bin with blue lid Biobin		18 01 09	N/A	Incineration
Recognisable tissue / anatomical waste	Yellow plastic bin with red lid Biobin	 	18 01 02 18 01 03* 18 02 02*	N/A 3291 3291	Incineration
Sharps and Hazardous Medicinal waste (cytotoxic/cytostatic) Waste from processes involving Hazardous Medicines – preparation and administration.	Bag (lettered/ purple) Purple-lidded Sharps bin Purple-lidded Plastic Bin Biobin	   	18 01 03* 18 01 08* 18 02 07*	3291 3259 and/or 1851	Incineration

Table 2: A guide to best practice colour coding

requirements for the completion of waste consignment and transfer notes”.

It is also recommended that the auditor(s) has a good working knowledge of the national guidance document HTM 07-01.

1.6 Planning the audit

Sections 2 – 5 of this guide will advise you on how to carry out the audit, the important things to look out for, and how to write up the audit report. Before you get to this stage it's best to make an audit plan so you know what information you'll need, who will be doing what, where they'll be doing it and when (Fig. 3).

Fig. 3 is provided as recommended best practice in relation to the audit process. However, the order in which the various elements are completed is not essential, providing all of the stages are covered within the audit process.

1.7 Segregation and colour coding refresher

Table 2 (opposite) illustrates a guide to best practice colour coding with examples of compliant waste and inappropriate wastes for each type of container. The colour coding system is as specified in HTM 07-01 and is not interpreted.

2. Undertaking the audit – desktop audit

2.1 Policies, procedures, paperwork and training

Before commencing your audit it makes sense to review the relevant documentation. Reading your organisation's waste management policy, procedures (SOPs) and training materials in advance of carrying out the audit will help you to understand what should be happening to waste generated by the hospital. It is also important to check that the waste consignment documentation is being completed correctly.

2.2 Waste management policy

HTM 07-01 states that:

“To effectively manage healthcare waste, all those involved in the management of the waste stream should have access to an appropriate healthcare waste policy that identifies who is responsible for the waste and provides clearly written instructions on how it should be managed”.

First, establish that the organisation has a policy covering waste management activities, and if so, that it defines responsibilities and provide clear instructions. The instructions may be provided in separate procedures, SOPs or appendices so make sure that you check all related documentation. HTM 07-01 includes a full list of items that should be included in the policy.

Second, check that the instructions are provided in accordance with best practice guidance as set out in HTM 07-01? You might find that the policy and procedures provide information that is out of date.

Third, check that all relevant employees have access to the policy. Is the policy available on the intranet, for example, and are hard copies available for those who may not have access to a computer?

Finally, check and record whether the policy and procedures form part of a documented environmental management system. Having a formal management system isn't an essential requirement, but it is good practice and will help to ensure that policies and procedures are subject to regular review and are communicated effectively.

2.3 Waste management training

HTM 07-01 states that:

“A policy for the safe management of healthcare waste cannot be effective unless it is applied carefully, consistently and universally. This requires that all healthcare staff should be aware of the policy/procedures and that the policy is implemented by trained and competent people”.

Check whether any waste management training takes place, and what format this takes. What training aides are used, for example presentations, videos or handouts? Is the training material consistent with the policy, and with the current guidance in HTM 07-01?

2.4 Waste consignment documentation

You should undertake a review of waste consignment documentation to ensure that consignment notes are being completed correctly. This is a fundamental part of the audit as all of the hard work in packaging and segregating the waste correctly in the hospital could be in vain if the waste is then described incorrectly on the consignment note.

The documentation review should cover all types of waste generated within the hospital, and not just clinical waste. Consignment note records for other types of waste will provide supporting evidence that those waste streams are being segregated from clinical waste, and handled and treated appropriately.

You can record your checks on a simple table and include this in your audit report.

The regulations also require that hazardous waste generating sites maintain a site register. The register should contain quarterly producer returns provided by your waste management contractors, as well as the consignment note records. You should ensure that both types of document are being retained, ideally in the same location.

Fig. 4 (overleaf) outlines an example of a consignment note showing things that you should check for.

3. Undertaking the audit – departmental audits

3.1 Compositional audits

A key requirement as set out by the EA is the compositional audit. This is an actual review of what wastes are generated in each department and verifies that all wastes are being correctly segregated (and therefore described and disposed of). It is essential that the contents of the waste containers are inspected to determine if the correct waste streams are present and that no mixing of waste is occurring. This should be carried out by visually inspecting the wastes present within, and by discussions with staff in the department.

EPR 5.07 indicates that “the contents of a representative number of each type of container” for each unit or area audited should be checked. The easiest way to record your findings is to use a table to note the container type, location and contents, plus any other observations. This table can then be included in your final audit report.

In addition to the contents of the containers, it’s also worth examining and noting other issues such as those listed below:

- Have sharps containers been signed and dated on assembly?
- Have sharps containers been correctly assembled?
- Are full sharps containers permanently sealed before being placed in the storage area?
- Are there posters or guides near containers to advise staff on the correct segregation?
- Are bins colour coded to match the waste type (i.e. orange lidded pedal bins for orange bag waste)?
- Are waste storage carts locked and in a secure area?
- Are any containers (bags/sharps) over filled?
- Are all bags suitably sealed (i.e. knotted or tied with a tag)?
- Are there general waste bins available in the area? (black, clear, recycling).

It should be noted that the majority of the observations above are examples of good practice, rather than legal compliance (with the exception of secure storage).

Recording this information will help you to build up a picture of the overall standard of waste management in each department. For example, if you find many instances of poor segregation this may be connected to a lack of information, incorrectly coloured bins or unsecure storage areas.

The easiest way to record the information is to print off copies of an audit table in advance, that you can complete as you go around the hospital

3.2 Staff questioning

Staff observations and questions will give a key insight into what staff are doing in practice and can help identify

current disposal practice for wastes that may be generated but haven’t been seen during the container inspections. A good approach is to use open questions and not to give the answer away, for example:

- Which container would you use to dispose of cytotoxic drugs?

rather than:

- Do you use purple lidded containers for cytotoxic drugs?

Information obtained from discussions with staff can be recorded in the observations and recommendations section of your compositional audit tables.

Always try to tailor the question to the type of employee you’re talking to. For example, the questions asked of a matron will be different to those of a senior staff nurse, which in turn will differ from those asked of a housekeeper.

3.3 Waste compound and storage areas

Healthcare waste should be stored securely so as to prevent the escape of waste, harm to the environment and harm to human health. Failure to do so is a breach of the statutory duty of care. This applies to storage at the point of production and bulk storage areas (collection point). Inspecting the waste storage areas, both at the point of production and at the collection point, is a fundamental part of the audit.

An effective system of segregation must ensure that wastes segregated at source are kept separate throughout the waste disposal chain. For example, if a ward segregates waste into tiger stripe bags, orange bags, yellow lidded sharps bins and purple lidded sharps bins, and then all of these containers are put into the same wheeled cart for transfer around the hospital, then segregation has not been maintained and incorrect disposal is likely to occur. There are two key waste storage areas:

- waste storage areas at the point of production
- central storage areas where the waste is kept pending collection from site

Check where the waste is stored in each individual department pending collection by the portering or waste team, and then again for the central storage area(s).

Key points to look out for are listed below:

- Is there a designated storage area that is not publicly accessible?
- Is the storage area lockable, and was it locked when you inspected it?
- Is there adequate provision to maintain segregation in the storage area (e.g., separate wheeled carts for orange and tiger stripe bags and a designated shelf for sharps bins to be collected individually)?
- Is the waste in the storage area correctly segregated?
- Are there any posters or notices in the storage area to

- indicate which wastes should go where?
- Are wastes collected frequently enough to ensure storage capacity for wastes segregation is sufficient and odours do not cause a nuisance, in accordance with any statutory nuisance requirements and licence/ permit requirements?
- When visually checking the contents of the bin, do the waste packages inside match the waste type denoted by the colour or tag?

4. Departmental guides

4.1 Introduction

This section will focus on common areas within hospitals, giving a more in depth guide to the types of waste that may be generated and what to look out for during your audit.

These notes are not intended to provide an exhaustive list of wastes or issues relating to them, but are designed to provide a quick guide to the key points of interest in each area. For detailed and exhaustive guidance always refer to the relevant section of HTM 07-01.

4.2 Wards

In terms of the total volume of waste generated at any hospital, the highest proportion is from the wards. The specific detail of what types of waste are generated and how they are managed is very much dependent on the type of ward, but here are a few useful points that are applicable to most areas.

- Sharps segregation

Does the ward segregate medicinal sharps from non-medicinal sharps where it is practical to do so? For example, a sharps container attached to a phlebotomy trolley should have an orange lid as it is only used for non-medicinal sharps waste.

- Cytotoxic and cytostatic medicines

Cytotoxic medicines are routinely used only on Oncology wards but, cytostatic medicines are used in a wide range of areas. Ask staff if they are aware whether any cytotoxic or cytostatic medicines are used, and, if so, how they are disposed of.

- Offensive waste segregation

Has the ward implemented the use of tiger-striped bags for offensive non-infectious waste? Offensive wastes can include incontinence and sanitary wastes as well as other waste materials such as dressings and personal protective equipment (PPE) arising from patients deemed to be non-infectious.

- Positioning of pedal bins

The location of bins for infectious, offensive, domestic and recycling waste is key to correct

segregation. Look for evidence that this has been given consideration and if it's not clear why a particular type of container is in a particular location ask a member of staff. Examples of good practice include the removal of infectious waste bins from publicly accessible areas to prevent misuse, and the positioning of domestic waste bins next to hand washing basins to ensure that paper towels are not disposed of into the infectious waste stream.

- Liquid wastes

There are two main types of liquid waste routinely generated on wards that can be difficult to dispose of appropriately. They are:

- Suction canisters or liners containing bodily fluids routinely classified as infectious waste. How are these handled? If they are packaged in bags or other non-leak proof containers, is the liquid solidified using gel sachets or granules?
- Infusion bags. How are these handled? The appropriate disposal route will depend on the contents, as bags containing only saline, glucose or other parenteral nutrition products would not usually be classified as pharmaceutical wastes, whereas any containing pharmaceutically active compounds are.

4.3 Pharmacy

A hospital's pharmacy department may comprise several different functional areas, all of which are likely to generate pharmaceutical wastes and should therefore be included in your audit. Key areas may include:

- dispensary (may be divided into In-patients and Out-patients)
- stores
- production unit (including any aseptic suites)

Each of the different areas is likely to encounter the same waste management issues, although to varying degrees.

Things to look out for include:

- Cytotoxic and cytostatic waste

Has a definition of cytotoxic and cytostatic been adopted, and is a list of cytotoxic and cytostatic medicines readily available and on display? This is essential to ensuring that such medicines, which are classified as hazardous wastes, can be segregated from other medicines which are classified as non-hazardous wastes.

- Controlled drugs

Where controlled drug waste is generated, are the controlled drugs denatured before disposal?

Ask to see the controlled drug disposal policy and procedures. Are the denatured controlled drugs deposited into the appropriate waste container (e.g. a denatured controlled drug that is also cytostatic is still classified as a hazardous waste after denaturing so it must still be deposited into a purple lidded container).

- Wastes with different physical properties

Findings from the pharmacy department (and pharmaceutical waste from wards) will show that the waste may be in different forms, such as aerosols, blister strips and liquid medicine in bottles (empty, partial and full). Large volumes of aerosols, glass or liquid may be problematic for incineration disposal processes. Seek advice from your waste contractor to find out how they require these wastes to be packaged.

- Outer packaging from medicines

Is the outer packaging from waste medicines removed prior to disposal? Individual tablets should not be removed from blister packs (the inner packaging) but the cardboard boxes (the outer packaging) containing the blister packs are not a medicinal waste and may be suitable for recycling, subject to adequate removal of any confidential information.

- PPE (e.g. masks and gloves), wipes, swabs etc.

Is waste of this type generated in the production unit? If so, is it contaminated with pharmaceutical products? If it is, it will require consignment for incineration. If not, this can be classified as offensive waste suitable for deep landfill or Energy from Waste.

4.4 Pathology

Pathology departments are complex and high risk waste producers when compared to other healthcare departments and it is important to ensure that all the waste generated in these departments is correctly segregated, packaged, handled and disposed of. Table 3 (overleaf) gives a high level overview of the types of waste generated in each type of laboratory, but is not exhaustive

The departments are normally broken down into separate disciplines, each with slightly different waste streams.

4.5 Accident and Emergency

The range and type of wastes generated in an Accident and Emergency (A&E) department can be similar to that generated on the wards. As such, the information provided in the wards section of this guide (see section 4.2) is equally relevant here. There are, however, some differences and additional waste streams we need to consider.

- Positioning of bins

The location of bins for all types of different waste is key to correct segregation. This is particularly important in A&E due to the high pressure nature of the working environment. Staff may not have the time to think about which bin to use, so positioning containers to enable intuitive and correct use is crucial.

Look for evidence that this has been given consideration and if it's not clear why a particular type of container is in a specific location, ask a member of staff why. Examples of good practice include the removal of infectious waste bins from publicly accessible areas to prevent misuse, and the positioning of domestic waste bins next to hand washing basins to ensure that paper towels are not disposed of into the infectious waste stream.

- Plaster casts from fracture clinics

Gypsum-based plaster casts have specific disposal requirements as gypsum is banned from direct disposal to landfill. Most casts, aside from temporary casts, are no longer made using gypsum. If temporary gypsum-based casts are used, check that measures are in place to address this issue. If so, do they take into account whether plaster casts are infectious or non-infectious? Various compliant disposal options are available for gypsum-based waste. Please seek advice from your waste management contractor.

- Blood transfusion bags

Blood transfusion bags are often incorrectly classified as an infectious waste. Empty blood bags may be suitable for packaging in tiger stripe bags and consigned as offensive non-infectious waste. However, there may be issues with this if liquid content remains in the bag or if confidential patient information is present. Please seek advice from your waste management contractor before making changes to the packaging and disposal methodology for this waste stream.

4.6 Oncology/Haematology

Any department delivering cancer treatment or care is likely to generate cytotoxic waste in significant quantities and some forms of cancer treatment may also result in the production of low level radioactive waste. These are waste streams that must be segregated from and disposed of separately to other clinical wastes.

- Cytotoxic and cytostatic medicines

Are the areas where cytotoxic drugs are used clearly defined and are measures in place to package the

	Biochemistry (Clinical Biochemistry, Chemical Pathology) 1	Histology / Histopathology / Cytology 2	Haematology / Blood Sciences 3	Microbiology / Immunology / Virology / Bacteriology, Mycology / Parasitology 4
Waste samples and sample containers, 1, 2, 3, 4	Are the bodily fluids within the samples potentially infectious? If yes, they may require consignment for alternative treatment as infectious waste, packaged in orange bags. If not, they can be classified as offensive waste suitable for incineration or landfill and can be packaged in tiger stripe bags, but only if the liquids are solidified or stabilised. If liquids are present packaging in orange lidded rigid containers for alternative treatment may be suitable.			
Chemical reagents 1, 2, 4	Are separate chemical waste disposal arrangements in place to those for clinical waste disposal? Check that hazardous chemicals and empty containers contaminated with hazardous chemicals are not being deposited into orange bags destined for alternative treatment as disposal via incineration is required.			
Hazardous gels 1, 4	Certain analytical techniques used in biochemistry labs can involve the use of hazardous chemicals in gel format that is then present on waste swabs, wipes, laboratory plastic ware and so on. Primary examples include Ethidium Bromide and Acrylamide. Are any of these materials used and how is the waste disposed of? Check that the waste is not being deposited into orange bags destined for alternative treatment as disposal via incineration is required.			
PPE (personal protective equipment such as masks and gloves) wipes, swabs, etc 1, 2, 3, 4	Is the waste contaminated with either chemicals or infectious materials? If it is, it may require consignment for incineration (chemical and/or infectious) or for alternative treatment (infectious only). If not, this can be classified as offensive waste suitable for incineration or landfill and can be packaged in tiger stripe bags.			
Human tissue samples and organs 2	<p>It is common for Histology departments to store organs and other anatomical samples for a set period of time and then there is a regular clear out of samples. Ask how this is done and what containers are used. Ask if the department is compliant with the Human Tissue Authority Code of Practice. If bulk volume disposals are carried out advice should be sought from your waste contractor.</p> <p>As the material is classed as recognisable anatomical waste and is also covered by the Human Tissue Act, it must be sent for incineration. Best practice is to use a leak proof rigid container with a red lid. These can then be consigned as 180102 if non-infectious samples, or 180103 for infectious. The description on the consignment note indicates that the waste is anatomical and/or for incineration only.</p>			
Chemical preservatives such as formalin (formaldehyde) 2	Anatomical specimens may be preserved in flammable chemicals such as formaldehyde. Ask how waste formaldehyde is disposed of to ensure chemical disposal arrangements are in place.			
Sharps (including blades and scalpels and sharp tips) 1, 2, 3, 4	Check that there is no pharmaceutical or chemical content. If so, then orange lidded sharps container should be appropriate.			
Wax 2	Is waste wax disposed of in bulk volumes or in small quantities with other wastes? Is it contaminated with chemicals or potentially infectious bodily fluids? Appropriate classification, packaging and consignment will depend on this, as per PPE (see above). If bulk volume disposals are carried out advice should be sought from your waste contractor.			
Blood products and blood bags 3	How are waste blood products and blood bags packaged and disposed of? They are not likely to be infectious waste, however they cannot be consigned to landfill as offensive waste as liquid wastes are not permitted in landfill sites. These wastes should therefore be consigned for disposal via incineration or where permitted for alternative treatment. Please seek advice from your waste management contractor before changing the disposal route for this waste stream. The packaging used should be suitable for liquid wastes.			

	Biochemistry (Clinical Biochemistry, Chemical Pathology) 1	Histology / Histopathology / Cytology 2	Haematology / Blood Sciences 3	Microbiology / Immunology / Virology / Bacteriology, Mycology / Parasitology 4
Blood samples 1, 3,4	Discarded blood samples may be either infectious or non-infectious waste. Have staff taken this into account when deciding on the appropriate packaging and disposal route? This may impact on the classification of the waste, however the disposal requirements are likely to be the same as for blood products.			
Cultures including (broths and agar) 4	<p>Microbiological work often involves the intentional propagation or concentration (cell culturing) of cells that may comprise of or include pathogens. There are therefore strict controls on laboratories engaged in this work, and on the management of waste arising from these areas. Key questions to ask are:</p> <p>Are all cell cultures autoclaved on site prior to disposal?</p> <p>How is autoclaved laboratory waste including cell cultures disposed of? Tiger stripe bags consigned as offensive waste for landfill may be appropriate.</p> <p>If not autoclaved on site are active cell cultures packaged in rigid containers and sent for incineration?</p> <p>Do any of the cell cultures disposed of without on-site autoclaving contain Category A pathogens? If so, there are stringent additional packaging and handling requirements that must be adhered to.</p> <p>For detailed guidance on the management of waste containing live cell cultures please refer to the sector guide on laboratories in HTM 07-01.</p>			
Waste containing Genetically Modified Micro-organisms (GMMs) 4	Microbiological work often involves the intentional propagation or concentration (cell culturing) of cells that may comprise or include GMMs including pathogens. There are therefore strict controls on laboratories engaged in this work and on the management of waste arising from these areas. Key questions to ask are the same as for cell cultures listed above, and detailed guidance on this is also covered in the sector guide on laboratories in HTM 07-01.			

Table 3 – Waste from hospital laboratories

waste appropriately in these areas? Both In-patient wards and Out-patient day units will administer chemotherapy drugs that are cytotoxic. A mix of sharps containers, rigid containers and bags may be necessary as the cytotoxic contaminated waste may comprise needles, syringes, bulky giving sets and associated swabs, wipes and PPE. All of these containers should be colour coded purple (sharps and burn bins with purple lids or purple lettered bags).

- Low level radioactive waste

Some forms of Radiotherapy used to treat cancer will result in the production of low level radioactive waste. Some hospitals send this waste off-site to incineration facilities that are authorised to dispose of low level radioactive waste. Other sites store it to allow the radioactivity to decay to background levels after which it can be disposed of as non-radioactive waste. Check that processes are in place to manage the waste by one of these methods, and that in either case the waste is packaged and stored separately from other clinical wastes. If the radioactive waste is decayed to background levels and then disposed of

as clinical waste, ensure that staff are removing the radioactive labelling after the decay storage time has been completed.

- Blood transfusion bags

Blood transfusion bags are often incorrectly classified as an infectious waste. Empty blood bags may be suitable for packaging in tiger-striped bags and consigned as offensive non-infectious waste. However, there may be issues with this if liquid content remains in the bag or if confidential patient information is present. Please seek advice from your waste management contractor before making changes to the packaging and disposal methodology for this waste stream.

4.7 Theatres

Theatre departments generate especially large volumes of waste, so segregating properly in these areas can have significant cost saving implications. There are also a number of waste types generated in these areas that may have specialist disposal requirements.

- Anatomical waste

Recognisable anatomical waste (limbs, organs and digits) must be disposed of via incineration. Are appropriate procedures in place to ensure that anatomical waste is segregated from other wastes and is packaged in red lidded containers?

- Single use metal instruments

Significant quantities of single use instruments are disposed of from theatres departments. Are they segregated and packaged in instrument bins or mixed in with other waste in bags or other rigid containers? This should be checked and recorded as recycling options may be available for such wastes.

- Implanted medical devices

After implanted medical devices, such as pacemakers, are removed or replaced the device must be disposed of. As the devices may be classed as waste electrical and electronic equipment (WEEE) they should not just be disposed of in the clinical waste stream for either treatment or incineration. It may be feasible to disinfect the devices on-site and dispose of them via a take back scheme provided by the device manufacturer.

- Cytotoxic and cytostatic medicines

Cytotoxic and cytostatic medicines are routinely used in certain medical procedures and may be generated in Theatre departments. Ask staff if they are aware if any cytotoxic or cytostatic medicines are being used and if so how they are disposed of.

- Domestic / municipal type wastes

Theatre departments generate significant quantities of uncontaminated packaging, particularly in preparation areas or rooms. Ask how this waste is handled as it is often consigned unnecessarily as infectious clinical waste when it may be suitable for domestic waste disposal or recycling.

- Blood transfusion bags

Blood transfusion bags are often incorrectly classified as an infectious waste. How are used blood bags handled and disposed of? Empty blood bags may be suitable for packaging in tiger stripe bags and consignment as offensive non-infectious waste suitable for deep landfill. However, there may be issues with this approach if liquid content remains in the bag or if confidential patient information is present on the bag. Please seek advice from your waste management contractor before making changes to the packaging and disposal methodology for this waste stream.

- Inhalation anaesthetics

Does the department dispose of inhalation anaesthetics? These products are expensive and have a long shelf life so are not routinely disposed of in significant quantity, but this should be checked as, when disposed of in bulk, they can cause emissions problems at incineration facilities.

- Plaster casts

Gypsum-based plaster casts have specific disposal requirements as gypsum is banned from direct disposal to landfill. Most casts, aside from temporary casts, are no longer made using gypsum. If temporary gypsum-based casts are used, check that measures are in place to address this issue. If so, do they take into account whether plaster casts are infectious or non-infectious? Various compliant disposal options are available for gypsum based waste. Please seek advice from your waste management contractor.

- Dental amalgam

Dental amalgam is approximately 50% mercury. Mercury is a toxic metal with very low emissions limits at incineration facilities. Inappropriate segregation of dental amalgam waste is one of the biggest single sources of emissions limit breaches at incineration facilities in the UK. Ask staff to explain the procedures that are in place for the packaging and disposal of waste containing dental amalgam.

Specialist arrangements should be in place to ensure that all wastes contaminated with amalgam are segregated and packaged in designated amalgam waste containers. Amalgam contaminated wastes include amalgam capsules (spent and expired), teeth with amalgam fillings, amalgam trap separator contents, and matrix bands, drill bits and burrs all of which may have amalgam contamination.

4.8 Medical imaging

Medical imaging comprises a wide range of investigative and diagnostic activities including non-invasive techniques such as X-ray/radiography, magnetic resonance imaging (MRI), computed tomography (CT), ultrasound and nuclear medicine, as well as invasive techniques such as endoscopy. These activities do not usually generate significant volumes of waste but do generate some high risk wastes in smaller quantities

- Low level radioactive waste

Some forms of nuclear medicine used for diagnostic purposes will result in the production of low level radioactive waste. Some hospitals send this waste off-site to incineration facilities that are authorised

to dispose of low level radioactive waste, whereas others store the waste to allow the radioactivity to decay to background levels after which it can be disposed of as non-radioactive waste. Check that processes are in place to manage the waste by one of these methods, and that in either case it is packaged and stored separately from other clinical wastes. If the radioactive waste is decayed to background levels and then disposed of as clinical waste, ensure that staff are removing the radioactive labelling after the decay storage time has been completed.

- X-ray fixer and developer

Most hospital X-ray departments now operate fully digital systems that no longer require the use of photographic fixer and developer chemicals. Check with the staff and if any fixer and developer chemicals are used check that arrangements are in place for its collection and disposal. Fixer and developer chemicals should not be disposed of with any other clinical or healthcare wastes.

- Contrast media and Barium Sulphate

Empty containers and packages containing residual quantities of X-ray contrast media or Barium Sulphate must not be washed and should be classified as a medicinal waste, and can therefore be packaged in a blue lidded container. If disposal of full containers is required (e.g. expired or damaged stock), advice should be sought from your waste management contractor.

- Offensive and domestic waste segregation

Medical imaging departments generate significant quantities of wastes that are either uncontaminated or are contaminated with non-infectious materials. Examples include packaging waste, or couch roll and wipes that may be contaminated with non-infectious bodily fluids. Ask how this waste is handled as it is often consigned unnecessarily as infectious clinical waste when it may be suitable for domestic waste disposal, recycling or the offensive waste stream.

4.9 Out-patients

The range and type of wastes generated in an out-patients department can be similar to that generated on the wards. As such, the information provided in the wards section of this guide (see section 4.2) is equally relevant here. There are, however, some differences and additional waste streams that need to be considered.

- Positioning of bins

The location of bins for infectious, offensive, domestic and recycling waste is key to correct segregation. This is particularly important in

consulting and treatment rooms in an out-patients department where poor segregation of domestic waste from clinical waste is commonplace. Look for evidence that this has been given consideration and if it's not clear why a particular type of container is in a particular location, ask a member of staff about this. Examples of good practice include the removal of infectious waste bins from consulting rooms where no treatment is provided, and the positioning of domestic waste bins next to hand washing basins to ensure that paper towels are not disposed of into the infectious waste stream.

- Plaster casts from fracture clinics

Gypsum-based plaster casts have specific disposal requirements as gypsum is banned from direct disposal to landfill. Most casts, aside from temporary casts, are no longer made using gypsum. If temporary gypsum-based casts are used, check that measures are in place to address this issue. If so, do they take into account whether plaster casts are infectious or non-infectious? Various compliant disposal options are available for gypsum-based waste. Please seek advice from your waste management contractor.

- Cytotoxic and cytostatic medications in out-patients

Cancer treatment is often provided through out-patients departments. The information provided in the Oncology/Haematology section of this guide should be reviewed if this is the case (see section 4.6). Rheumatology and dermatology departments often administer cytotoxic and cytostatic medications too.

4.10 Dental and Maxillofacial

Dental and maxillofacial departments do not generate significant quantities of waste, but do generate certain categories of high risk waste with specific disposal requirements.

- Dental amalgam

Dental amalgam is approximately 50% mercury. Mercury is a toxic metal with very low emissions limits at incineration facilities. Inappropriate segregation of dental amalgam waste is one of the biggest single sources of emissions limit breaches at incineration facilities in the UK. Ask staff to explain the procedures that are in place for the packaging and disposal of waste containing dental amalgam.

Specialist arrangements should be in place to ensure that all wastes contaminated with amalgam are segregated and packaged in designated amalgam waste containers. Amalgam contaminated wastes include amalgam capsules (spent and expired),

teeth with amalgam fillings, amalgam trap separator contents, and matrix bands, drill bits and burrs, all of which may have amalgam contamination.

- Plaster casts and moulds

Gypsum-based plaster casts have specific disposal requirements as gypsum is banned from direct disposal to landfill. Most casts, aside from temporary casts, are no longer made using gypsum. If temporary gypsum-based casts are used, check that measures are in place to address this issue. Various compliant disposal options are available for gypsum-based waste, please seek advice from your waste management contractor.

- X-ray fixer and developer

Most hospital X-ray departments now operate fully digital systems that no longer require the use of photographic fixer and developer chemicals. Check with the staff and if any fixer and developer chemicals are used check that arrangements are in place for its collection and disposal. Fixer and developer chemicals should not be disposed of with any other clinical or healthcare wastes.

4.11 Maternity

Maternity departments comprise any ante-natal, post-natal and birthing wards or suites as well as any separate birthing centres or units. The range of wastes generated is comparable to those in a ward so the information provided in the wards section of this guide is relevant (see section 4.2).

- Placenta waste

Waste placentas are classified as anatomical waste. Is this waste stream packaged into red lidded, rigid containers and consigned for incineration?

- Oxytocin based products

Oxytocin, oxytocin based products and synthetic alternatives (including syntometrine, syntocinon and ergometrine) are often used in labour wards and in some cases other areas within the maternity department. All of these are cytostatic wastes and should be disposed of in purple lidded bins

5. Reviewing the data and writing the report

5.1 Reviewing the data

Before the audit report can be written, the findings obtained during the departmental inspections need to be reviewed and interpreted.

There are various ways to interpret the findings of the audit. No specific method is recommended in this guidance as each waste generating organisation may have its own procedures and processes for internal audit, which may be defined as part of a documented management system.

Using a systematic approach you should be able to develop a clear picture of what's going on in the hospital, where practice is good and where improvements are needed. This will help you to write the summary report.

For example, if the review identifies that seven out of 10 wards were incorrectly segregating cytostatic medicines, then it's clear that this is a major problem that needs tackling. Alternatively, if it identified that only one ward was incorrectly segregating cytostatic medicines this could just be an isolated or one-off occurrence that can easily be dealt with.

5.2 Report introduction

After the audit has been completed and the data interpreted everything needs to be compiled to form the report. To meet the EA's requirements the report has to contain the following introductory information, most of which should have been gathered during your audit.

- Name and address of the healthcare facility

If the audit covers more than one site, ensure that all sites are identified to allow the waste contractor to assign the audit to the correct sites.

- Name and job title of the auditor

Additional information regarding experience of waste management, for example, would be useful to the contractor to show that the auditor is suitably experienced.

- Date the audit started and finished

- About the facility

Provide an overview of the facility, number of beds and any special services offered. Key questions might include: is it a teaching hospital?; what training do the staff receive?; and is there a waste management policy? Etc.

- For each type of healthcare waste generated, the associated hazards and the quantity generated over a stated period.

Your waste management contractor may be able to assist in providing this information. Consider presenting the information by waste type in a tabular format.

- A list of departments and if they were audited.

Please note that all departments should be inspected if this is your first audit. For each subsequent annual

audit, if the results of the previous audit were satisfactory you only need to audit one third of the departments but must ensure that every department is audited at least every three years.

5.3 Summary report and action plan

The summary report is an essential part of the report as your waste contractor (and the EA if they ask to inspect your audit) needs to be able to see an overview of how your hospital is performing.

If the person reading the report has to read each individual departmental audit sheet because there's no summary of findings then the audit is incomplete.

After you've finished the systematic review of the departmental inspection data you will be able to write a summary report of the findings, setting out the overall standard of segregation and packaging for each of the types of waste generated. Clearly state the areas of good and poor practice, and include recommendations for improvement.

Following on from the recommendations, devise an action plan stating how you will address each of the recommendations. Actions should be clearly defined by what is required and who is responsible, and given deadlines for completion. If your pre-acceptance audit has been undertaken by a third party auditor it may not be possible for them to generate the action plan. If this is the case you will need to review their recommendations and generate the action plan yourself. This should then be submitted to your waste contractor alongside the third party auditor report and recommendations. If the actions have been completed by the time you submit your report then also include the date that the action was completed.

The purpose of the action plan is to provide evidence to your waste contractor and to the EA that any deficiencies identified will be addressed.

5.4 Compilation of the final report

The final stage of the audit is to compile the report for submission to your waste contractor. As outlined earlier in this chapter, it is recommended that the audit report comprises the following elements:

- Report introduction
- Summary report of findings
- Action plan where appropriate
- Completed departmental inspection records and consignment paperwork review records. These may form appendices to the main report.
- Any other relevant information referenced in the summary report such as policies, procedures or training documentation, these may form appendices to the main report or may be made available on request.

Once the final audit report has been completed, a copy should be sent to your waste contractor. Wherever possible,

the entire document should be submitted as one single electronic file.

After completion of your action plan you should also submit a completed copy of this to your waste contractor.

5.5 What next?

After you have submitted a copy of your audit report to your waste contractor it is highly recommended that you put measures in place to implement your action plan and make the necessary improvements in time for your next audit.

It is important to assign responsibilities and timescales to the identified actions and to ensure that the action plan is regularly reviewed.

It should be noted that the EA are able to view copies of pre-acceptance audits via your waste contractor and they do not have to ask your permission to do so. They will be aware of the findings and recommended action plans for your organisation. It would, therefore, be considered good practice to notify your waste contractor of any improvements implemented, especially if they were identified as high priority.

Finally, it is suggested that as soon as your audit is completed, you plan for the next one. You should be aware of how often your organisation must be audited and when the audit is due for renewal.

6. References and further reading

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