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| health service waste audit guidelines |



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Contents

[Audit scope 1](#_Toc2000845)

[Responsibilities of auditor 2](#_Toc2000846)

[Responsibilities of health service 3](#_Toc2000847)

[Appendix 1: Composition categories 5](#_Toc2000848)

[Appendix 2: Volume estimation protocols 6](#_Toc2000849)

[Appendix 3: Auditors’ checklist 7](#_Toc2000850)

[Appendix 4: Audit sheet 8](#_Toc2000851)

[Appendix 5: Health services’ checklist 9](#_Toc2000852)

# Audit scope

## Primary aims

* Conduct a physical waste audit of the specified waste stream to gain an understanding of its composition.
* Identify waste items that could be recovered or disposed of more efficiently.
* Recognise recycling streams operating or not operating within health services in relation to Environmental Data Management System waste streams.

## Timing

* The specified waste stream should be collected and quarantined over one 24-hour period and during a weekday (not including public holidays).
* Delay the audit if a major event, such as a move or major health emergency, has occurred that may affect the data.

## Site specificity

* Each ward/department should be audited separately.

## Bins to be audited

* Only bins with colouring or labelling associated with the specified waste stream should be audited. Colouring and labelling may differ between sites, wards, departments and health services.

## Sampling

* **All** specified waste generated during the 24-hour collection period must be audited.

## Composition categories (detailed descriptions in Appendix 1)

* The primary items identified within each category should be noted and each category photographed and discussed in the report.
* Additional categories may be added by individual health services; however, each addition must be justified within the report and constitute more than 5 per cent of the waste stream.
* Categories are not to be removed from the list because this will result in findings not being comparable between health services.

## Waste categories

* Anatomical waste
* Batteries
* Clinical waste
* Confidential documents
* E-waste (itemised)
* Fluorescent bulbs
* Food waste
* Furniture
* Glass
* Hard plastic (non-medical items)
* Ice bricks
* Metals
* Paper/cardboard
* Pharmaceutical waste
* Polystyrene
* Printer and toner cartridges
* PVC
* Single-use metal instruments
* Sharps waste
* Soft plastic (other than PVC)
* Sterilisation wraps (Kimguard)
* Textiles
* Unused items (materials itemised, and value estimated)
* Other (list main items identified within this category; no weight/volume required)

## Data collection requirements (audit sheet template in Appendix 4)

* Total weight (level of accuracy 100 grams) and volume (estimation protocols in Appendix 2) of each waste category.
* Composition of specified waste stream by weight and volume (%).
* Weight and volume of specified waste stream per patient treated[[1]](#footnote-2).

## Confidentiality and security

Health services retain exclusive ownership of their intellectual property resulting from the audit. These results are not to be discussed with outside parties without prior permission from the health service.

The audited health service is responsible for destroying any confidential paperwork and for identifying documents or clinical waste found during the audit process. These items must be returned to the department/ward of origin.

# Responsibilities of auditor

A detailed checklist of auditor responsibilities can be found in Appendix 3.

## Auditor competencies

* Health services may request auditor references.
* The auditor must be willing and able to adopt best practice auditing processes and the audit scope according to these *Health service waste audit guidelines.*

## Accuracy and estimation

* All scales must be calibrated before beginning the audit.
* The weight of all containers used to collect and weigh waste categories must be noted before beginning the audit for the net weight of waste to be established.

## Report content

* Executive summary
* Methodology
* Data for each department/ward to include:
	+ total weight (level of accuracy 100 grams) and volume (estimation protocols in Appendix 2) of the specified waste stream
	+ composition of the specified waste stream by weight and volume (%)
	+ weight and volume of the specified waste stream per patient treated
	+ sample images of each waste stream
	+ list of primary items identified in waste categories: ‘E-waste’, ‘Unused materials’ and ‘Other’
	+ the estimated value of items identified in the waste category ‘Unused materials’
* (If requested) the site analysis of the ward audited should include:
	+ an assessment of the suitability of bin placement, signage and waste streams provided
	+ how the findings from this assessment may have influenced the waste composition findings
* Analysis of the current costs of the specified waste stream and potential savings from reducing contamination levels identified in the audit
* Recommendations for improvement

# Responsibilities of health service

A detailed checklist of health service responsibilities can be found in Appendix 5.

## Waste collection

The health service is responsible for effectively labelling and quarantining the specified waste stream to be audited over the 24-hour period, ensuring that waste can be easily associated with the ward/department that it has been collected from.

The health service must ensure that all staff responsible for collecting the specified waste stream – for example, Environmental Services staff – are aware of the procedures and expectations regarding collection, labelling and quarantining of waste during the 24-hour collection period.

It is also recommended that staff are supervised over the 24-hour period to ensure effective quarantining and labelling of the specified waste stream is taking place.

## Data collection

The health service is responsible for gathering patient activity data for the 24-hour audit period. The health service must request that the auditor use this data to calculate the weight and volume of the specified waste stream per patient treated and include these findings in the report.

It is essential that this information is calculated, either by the auditor or health service, to establish a benchmark for the ward/department audited. Without this benchmark, findings cannot be compared with future audits or other health services.

## Occupational health and safety

If the audit is to be conducted at a health service, the health service must prepare a site-specific OH&S plan before beginning the audit. This should include, but not be limited to:

* audit alignment with the health service’s OH&S policy
* sample collection and risk-minimisation procedures including:
	+ identifying site-specific OH&S issues
	+ a project-specific risk identification process and standard operating procedures for specific risk (for example, a step-by-step process to specify procedures for securing a syringe found during a waste sort)
* ensuring that the audit site is equipped with a first aid kit
* ensuring auditors, health services and all subcontractors have appropriate levels of personal and professional indemnity and workers compensation insurances
* monitoring ambient site conditions during the audit processes
* checks with the auditor that they have relevant personal protective equipment (PPE) and vaccinations.

## Site analysis

As part of the audit process a review of waste management systems within each ward/department should take place to gain an understanding of issues or current practices that may contribute to waste composition.

This can be conducted by the health service or auditor.

# Appendix 1: Composition categories

| **Category** | **Description** |
| --- | --- |
| Anatomical waste | Human tissues, organs, body parts, pathological specimens and body tissue taken during laboratory testing, surgery or treatment |
| Batteries | Domestic, rechargeable and car batteries including nickel cadmium (NiCd), nickel metal hydride (NiMH) and lithium ion (Li-Ion) |
| Clinical waste | Any waste items identified as clinical waste, as per EPA guidelines |
| Confidential documents | Documents containing patient information, or other confidential information relating to legal, HR or procurement matters |
| E-waste | Equipment powered by a connection to an electrical outlet or by batteries (such as televisions, computers, printers and mobile phones) that have been discarded as waste without the intention of re-use |
| Fluorescent bulbs | Includes compact fluorescent lamps (CFLs), linear fluorescent light bulbs or fluorescent tubes, mercury vapour lamps and high-intensity discharge (HID) lamps |
| Food waste | All food waste (avoidable and non-avoidable) |
| Furniture | Repairable or un-damaged furniture |
| Glass | Glass in forms able to be processed by the health service’s recycling contractor |
| Hard plastic (non-medical items) | Displaying codes 1–5  |
| Ice bricks | Gel coolant packs for transport of pharmaceuticals |
| Metals | Any metal items *excluding* single-use metal instruments (**single-use metal instruments**) and blades or scalpels (**sharps waste**) |
| Paper/cardboard | Not including any confidential papers |
| Pharmaceutical waste | Expired drugs or pharmaceutical substances or containers where drugs have been partially dispensed but not completely used. |
| Polystyrene | Expanded/extruded polystyrene |
| Printer and toner cartridges | Inkjet cartridges, toner cartridges and toner bottles |
| PVC | Oxygen masks and tubing, IV fluid bags and suction tubing composed of code 3 (vinyl) plastic |
| Single-use metal instruments | Single-use metal instruments only. Not to include reusable instruments, blades or scalpels |
| Sharps waste | Any item that is able to cut or penetrate the skin |
| Soft plastic (other than PVC) | Plastic films, bags, packaging and so on that cannot be placed in the comingled recycling stream |
| Sterilisation wraps (Kimguard) | Layered polypropylene wrap |
| Textiles | Includes huck towels and patient clothing |
| Unused items  | Includes but is not limited to unopened medical equipment that **has not exceeded** its use-by or sterilisation dateSubcategory – unopened medical equipment, food etc. that **has exceeded** its use-by or sterilisation date |
| Other | Any other waste items including confidential waste (other than paper) |

# Appendix 2: Volume estimation protocols

From the [*Victorian public health services waste reporting tool*](https://www2.health.vic.gov.au/about/publications/FormsAndTemplates/victorian-public-health-services-waste-reporting-tool) <https://www2.health.vic.gov.au/about/publications/FormsAndTemplates/victorian-public-health-services-waste-reporting-tool>

| Waste type | Broad activity | Density in kg/m3 |
| --- | --- | --- |
| Clinical waste | Anatomical | 227 |
| Clinical waste | 227 |
| Cytotoxic | 227 |
| Pharmaceutical | 227 |
| Quarantine | 227 |
| Sharps | 227 |
| General waste | Bins | 115 |
| Compactor | 348 |
| Continence aids | 170 |
| Enviropoles – butt bins | 170 |
| Hygiene waste | 170 |
| Nappy disposal | 170 |
| Sanitary waste | 87 |
| Skips | 87 |
| Liquid waste | Grease traps | 950 |
| Recycling | Batteries | 900 |
| Cardboard | 55 |
| Commingled | 110 |
| E-waste | 230 |
| Fluorescent tubes | 285 |
| Mattresses | 50 |
| Metals | 120 |
| Mixed paper/cardboard | 131 |
| Mobile phones | 230 |
| Organics – food waste | 350 |
| Organics – green waste | 91 |
| Other plastics | 78 |
| Paper | 228 |
| Polystyrene foam | 21 |
| PVC medical | 78 |
| Sterilisation wraps | 78 |
| Toner and print cartridges | 190 |
| Wood/pallets | 156 |
| X-ray | 300 |
| Secure documents | Confidential paper | 228 |

# Appendix 3: Auditors’ checklist

| Task | Completed |
| --- | --- |
| Ensure you have appropriate levels of personal and professional indemnity and workers compensation insurances |  |
| Organise the required PPE and vaccinations before the audit |  |
| Establish with the health service whether they require a site analysis to be conducted |  |
| Attend a pre-audit meeting with health service representative to discuss:* the audit process
* provision of audit equipment and site
* timelines
* provision of patient treated data to auditor
* PPE and auditor vaccinations
* any other issues/requirements
 |  |
| Establish a deadline for when patient treated data is required from the health service  |  |
| Acquire from the health service estimated kilograms or volume of waste to be audited  |  |
| Site analysis (if requested): |  |
| * List of all waste streams available on ward/department audited
 |  |
| * Waste streams/processes that have the potential to be more effective
 |  |
| * How findings from the analysis may have influenced waste composition findings
 |  |
| * Assessment of suitability of bin placement, signage, waste streams provided
 |  |

Report checklist

| Content | Completed |
| --- | --- |
| Executive summary |  |
| Audit methodology  |  |
| Site analysis findings (if requested) |  |
| Data collection: |  |
| * Total weight (level of accuracy 100 g) and volume (estimation protocols in Appendix 2)
 |  |
| * Composition of the specified waste stream by weight and volume using prescribed categories
 |  |
| * Weigh and volume per patient treated (on ward audited)
 |  |
| * Itemised list of items in the ‘E-waste’ category (if any)
 |  |
| * Itemised list and estimated value of items in the ‘Unused items’ category (if any)
 |  |
| * Identification of main items in the ‘Other’ category
 |  |
| Analysis of current costs of the waste stream and potential savings from adopting the recommendations |  |
| Recommendations for improvement |  |

# Appendix 4: Audit sheet

| **Waste stream audited:** | **Date:** | **Sheet number:** | **Department/ward:** |
| --- | --- | --- | --- |
|  |  |  |  |

| Material | Recycling available on ward? | Weight | Volume |
| --- | --- | --- | --- |
| Kg | % | M3 | % |
| Anatomical waste | n.a. |  |  |  |  |
| Batteries |  |  |  |  |  |
| Clinical waste | n.a. |  |  |  |  |
| Confidential documents |  |  |  |  |  |
| E-waste (itemised) |  |  |  |  |  |
| Fluorescent bulbs |  |  |  |  |  |
| Food waste |  |  |  |  |  |
| Furniture |  |  |  |  |  |
| Glass |  |  |  |  |  |
| Hard plastics (non-medical) |  |  |  |  |  |
| Ice bricks |  |  |  |  |  |
| Metals |  |  |  |  |  |
| Paper/cardboard |  |  |  |  |  |
| Pharmaceutical waste | n.a. |  |  |  |  |
| Polystyrene |  |  |  |  |  |
| Printer and toner cartridges |  |  |  |  |  |
| PVC |  |  |  |  |  |
| Sharps waste | n.a. |  |  |  |  |
| Single-use metals |  |  |  |  |  |
| Soft plastic (other than PVC) |  |  |  |  |  |
| Sterilisation wrap (Kimguard) |  |  |  |  |  |
| Textiles |  |  |  |  |  |
| Unused items (itemised and estimated value)  |  |  |  |  |  |
| Other (itemised) |  |  |  |  |  |
| Total: |  |  |  |  |
| Total per patient treated: |  | **–** |  | **–** |
| Notes: |

# Appendix 5: Health services’ checklist

### Have you…

| Timing | Action  | Completed |
| --- | --- | --- |
| Prior to audit: | * Identified which ward/department(s) are to be audited
 |  |
| * Identified the waste stream(s) to be audited
 |  |
| * Engaged a waste auditor
 |  |
| * Informed the auditor whether a site analysis will be required
 |  |
| * Provided the auditor with the waste audit guidelines
 |  |
| * Identified the location of the waste audit to take place and performed an OH&S assessment (if audit conducted on site)
 |  |
| * Discussed providing patient activity data with the relevant hospital department
 |  |
| * Met with the auditor to discuss:
	+ audit process
	+ provision of audit equipment and site
	+ timelines
	+ provision of patient activity data
	+ estimated weight/volume of waste that will be generated over audit period
	+ PPE and auditor vaccinations
	+ any other issues/requirements
 |  |
| * Arranged for the waste stream from the audited ward/departments(s) to be stockpiled and labelled in a secure location for 24-hour period
 |  |
| Following audit: | * Provided patient activity data to the auditor (If requested)
 |  |

### Has the auditor…

| Action  | Completed |
| --- | --- |
| Audited all waste generated over the 24-hour period |  |
| Produced a report containing: |  |
| * A list of all waste streams available on the audited ward
 |  |
| * Itemised items in the ‘E-waste’ category (if any)
 |  |
| * An itemised list and estimated value of items in the ‘Unused materials’ category (if any)
 |  |
| * Identified the main items in the ‘Other’ category
 |  |
| * The weight and volume of each waste category
 |  |
| * The weight and volume per patient treated (if requested)
 |  |
| * A site analysis (if requested)
 |  |

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1. Waste is normalised to ‘per patient treated’, which is an aggregation of in-patient (occupied) bed-days, residential aged care bed-days, separations and emergency department presentations. [↑](#footnote-ref-2)